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ABSTRACT

Plenary Session
SESSION 1

Recent Knowledge on the Use of Feed Enzyme in View of the Quality of Feed Resources

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ABSTRACT

Several issues that would be challenging upon practical use of dietary enzyme were proposed and discussed. Five issues were raised in view of current feed resources and quality. Whether the dietary enzyme supplementation to ruminant animal is worth it was discussed by comparing the type of enzyme on rumen hydrolysis as well as milk production performance. A derivative action following the enzyme specific hydrolysis was discussed when it would be probably occurring in feed having complex substrate. Single or multiple combination enzymes were discussed whether and when each would be worth. Finally, whether the effect of enzyme would be different by either sex or age of animal was also discussed.

Key words: Dietary enzyme, Dairy cow, Derivative hydrolysis, Multiple enzymes, Age of poultry
Higher income growth, urbanization and population growth contribute to higher meat demand throughout the world. Higher demand of meat can be met through intensification of livestock and poultry production. Thus, intensification of livestock and poultry production must come along with better production system, better feeding management includes fulfilment of nutrient requirements and feed supplement. Most common feed supplement used is in-feed antibiotics. In-feed antibiotics have been used since the 60s. It has been used extensively in livestock and poultry farming to improve growth performance, feed efficiency and disease prevention. However, the cases of antimicrobial resistance keep increasing due to the abuse of antibiotic use in animal feed. World Health Organization (WHO) reported that in North America and Europe, an estimated 50% in tonnage of all antimicrobial production is used in food-producing animals and poultry. The largest quantities are used as regular supplements for prophylaxis or growth promotion, thus exposing a large number of animals, irrespective of their health status, to frequently subtherapeutic concentrations of antimicrobials. Such widespread use of antimicrobials for disease control and growth promotion in animals has been paralleled by an increase in resistance to those bacteria (such as Salmonella, and Campylobacter) that can spread from animals, often through food, to cause infections in humans. It has also been shown that faecal E. coli isolated from pigs and was resistant to antibiotics such as neomycin, oxytetracycline, nalidixic acid and chloramphenicol (Loh et al., 2006). Shazali et al (2014) reported that many species of lactic acid bacteria isolated from the faecal samples of broiler chicken are also resistant to the antibiotics commonly used in the farm. Recent reports from different countries reveal that the benefits in animal production from the use of in-feed antibiotics are minimal in modern food animal production. Infections caused by resistant strains of enterococci, streptococci, Salmonella, Campylobacter, E. coli, etc are the current treatment problems originated from the use of antimicrobials in animal production. Furthermore, many consumers support a ban on in-feed antibiotics application and the alternatives to in-feed antibiotics in animal food production. Therefore, there is a need to reduce the usage of antibiotics as growth promoters and alternative substance that environmentally friendly and ease in farm application needs to be explored. Thus, metabolites produced from lactic acid bacteria (LAB) which is also known as postbiotic is proposed and will be reviewed extensively in the presentation.
Tissue culture, genetic transformation, genome editing and risk assessment

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Introduction. Forage grasses can be grouped into two large categories; warm- and cool-season grasses. Warm-season grasses produce most of their growth during the warmer periods of the growing season, while the opposite is true for cool-season species. These grasses are utilized in many different agricultural production systems with greatest value as feeds for livestock. They are also useful for preventing soil erosion and maintaining soil fertility. A species may be grown alone, or in mixtures with other grasses or legumes at high or low levels of soil fertility. They may be grazed, or made into hay or silage for conservation.

Many important warm-season perennial grasses multiply either by vegetative propagation, or form their seeds by an asexual mode of reproduction called apomixes. Possibility of improving of these plants by conventional breeding method depends on availability of natural genetic variation and its manipulation through breeding and selection. However, there are naturally not many genetic variations in apomictic grasses to generate new genetic variation.

Plant tissue culture techniques have complemented conventional plant breeding programs in important Poaceae species (Akashi, 1991; Akashi and Adachi, 1994; Akashi et al., 1994; Akashi and Kawamura, 1998; Akashi et al., 2002). Major categories of these methods can be summarized as induction and screening of desirable mutants at cellular and tissue level, somatic hybridization between remotely related species, induction of haploid plants as breeding materials, and direct transformation in protoplasts, as well as micropropagation of unique genotypes.

Tissue culture methods ordinarily consist of two phases; firstly, initiation of callus and secondly, regeneration of plants from the callus. Many plant cells have been proved as totipotent, that is, for example, a non-embryogenic cell has the potential to differentiate into an embryogenic cell and then to develop into an entirely new plant. However, the requirements of each species for growth and regeneration are still unclear. Therefore, to make practical use of tissue culture, the ability to regenerate plants from callus and protoplast should be demonstrated in each appropriate species. We have established a system for plant regeneration from in vitro-cultured calluses, suspension cells and protoplasts in some tropical grass species including apomictic species. In addition, we focus on describing current and future applications and impact of genetic transformation in tropical grasses.
SESSION 2
Sorghum spp : A Promising Forage crop to Increase Ruminant Production in The Dry Land

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Abstract. Increasing population growth and awareness of the importance of consumption of livestock protein triggers an increase in food demand. The increase in demand must be balanced with the supply of adequate livestock products. Problems which are still faced in the process of livestock production, especially ruminants, are the low quality and fluctuations in the supply of forage feed and the limited land that can be used for production. Scarcity of forage in the dry season makes the ruminant animal feed problem very important to find a solution. To overcome these problems, it is necessary to develop feed plants that have good quality nutrients, able to adapt to climate and land conditions in Indonesia. Agricultural land is preferred for food crops and industry, while forage crops utilize suboptimal (marginal) land that is minimal in nutrients and has low rainfall. There are around 13.3 million ha of dry temperate suboptimal land spread across East Kalimantan, East Java, Bali, NTB and NTT which are potential to be used for feed crop production. Potential plants planted on this land Sorghum spp. Sorghum is a C4 plant originating from East Africa that has high biomass production, is able to survive on suboptimal land, is drought resistant and at the same time resistant to inundation and can grow back after harvesting. This plant can be used as a producer of food, feed, and development of renewable energy sources (bioethanol) and can be planted together with other plants with intercropping systems to increase production and nutrient content. Besides various advantages mentioned above, sorghum plants contain toxic compounds that can cause death in livestock, namely prusic acid compounds or cyanogenic glycosides. To overcome this, efforts should be made to find among them varieties that are low in prusic acid content, harvest age management and nitrogen fertilizer management, and feed conservation. Conservation of feed in the form of silage in addition to preserving feed, to overcome the scarcity of feed in the dry season, during the fermentation process will reduce prusic acid content and this method is more suitable because silage contains enough water and excess forage occurs in the rainy season. There are a variety of sorghum varieties in Indonesia, kawali varieties and sorghum plants which are resistant to dry but their production is not as high as super-2, on the other hand BMR varieties are mutant sorghums that are low in lignin content and higher in crude protein content very promising to overcome feed scarcity in the season dry.
Facilitating Family Farm Business Build-up: The Underpinnings of Organisational Citizenship in Carabao-based Enterprise Development (CBED)

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ABSTRACT

The Philippine Carabao Center facilitated the creation of production bases in non-traditional dairy communities across the country to pave for the availability of commercial volumes of genetically water buffaloes that will instrumentally become socio-economic springboards for improved well-being of rural farming communities. Thought deductive philosophical approach guided actions towards behavioural changes and cohesive congruence among development drivers on resource mobilisation, community participation, co-ownership and strategic alliance building. Evidences can be seen on the envisioned increased herd size of improved dairy buffaloes owned by smallholder farming families and the operable emergence of cooperative-enterprises as analogy of empowered clients along the Carabao Value Chain and heightened recognition of PCC as lead R4D agency on livestock research, biotechnology and enterprise development. As driver of change, the altruism of PCC’s organizational citizenship is anchored on the strong sense of belongingness drawn from organisational effectiveness in managing macro interventions on genetic improvement to massively upgrade Carabaos as economic instrument for family business opportunity, community development and extension services to manage technology development and transfer to inspire clients’ engagement to skills development and partners’ trust to cohesively create an enabling environment for community-based social enterprise development program. PCC’s organizational citizenship behaviors is well exhibited on its workforce’s goal-directed behaviors supportive of organizational objectives on quality service delivery by way of the 120,000 technical services rendered to 60,000 clients to produced 55,000 genetically improved buffaloes yearly. Various forms of cooperation and helpfulness to others that support the social and psychological context of family farm business build up through social entrepreneurship by way of business models (Milka Krem, Dairy Box) & tools (iREB Dashboards) that showcased the proliferation of privately-owned businesses across the Carabao value chain. Values congruence and a supportive corporate culture and core values guided the preference for a person-job fit for outcomes and courses of action resulting to: 1) the social-economic prestige of (5,999) family farms owners as producers of quality milk and dairy buffaloes (13,818 head inventory) associated on the emerging markets for Carabao-based products; 2) the improved business trust of
intermediaries and product processors to invest on services and value-adding; 3) the growing revenue of home-based and (233) cooperative enterprises from patronage of quality conscious customers of Carabao-based products. Keywords: Carabao-based Enterprise Development (CBED), Family farm business, Organizational Citizenship
SESSION 3

Broiler Breeder Research in Kuwait

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Abstract

The objective of this report is to examine the structure and the development of the Kuwait poultry industry over the past 15 years and explain the increasing consumption of poultry meat. 40,000 tonnes of poultry meat were produced in Kuwait 2016 with a value of $56.1 million, however this represented 30% of the total poultry meat consumption (57.5 kg/person). The Kuwait poultry industry is economically competitive with imported poultry meat, but the expansion is limited because of the availability of suitable land and water resources. The poultry companies therefore, increase revenues by producing a higher proportion of higher value products (fresh and chilled meat, further processed chicken products, and live bird sales). The industry currently gives practically the entirety of its requirements for broiler chicken hatching eggs; however the productivity is decreased in the late summer months when the combinations of high temperatures and high humidity make outrageous climatic conditions. There is a need for research in the future to improve production efficiency and training, and instruction of staff to guarantee a proceeded with expertise base for the industry.

Key words: Kuwait, broiler chicken, hatching eggs, temperatures
Marketing of Livestock is Boost for Livestock Production in India
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Abstract
Livestock husbandry has been an important economic activity for mankind since antiquity. The variable agro-climatic conditions resulted in diverse forms of livestock rearing practices ranging from nomadic herding to permanent husbandry both in traditional and commercial nature. It is not only economic asset and diversified form of agriculture but a way of life and culture. More than 60 percent of Indian farmers are practicing livestock husbandry especially resource poor marginal and farmers with small size of operational holding of lands. The country ranks the first in number of livestock in the world. Study revealed through the livestock census data of different periods that the proportion of various species in terms of their number has been changing in response to change in market demand of live animals as well their products. Livestock marketing is basically rural market oriented and meat industries located in town areas. The government livestock marketing policy and restricting meat production led to shift in trend and pattern of livestock production system with cattle, buffalo, goat and poultry. Shift in market demand from beef to buffalo, mutton and chicken modified the structure of livestock share in agricultural economy in the country. Farmers are leaving cow rearing as the unproductive cattle and their calves are not being traded freely in the markets. Increasing trends of urbanization, improvement in disposable income among middle class income group both in urban and rural area, changing in food habits from vegetarian to non vegetarian and enhancement in health conscience through nutrition intake also brought a dramatic change in the demand in market for animal derived food products recently in the country. It needs a proper management and an efficient marketing system linking rural livestock producing area to processing units as well as consumer markets at local, regional, national and international level. Such endeavour will result in surge in livestock production and socio-economic transformation in the nation.

Keywords: antiquity, commercial, resource poor, rural market, agricultural economy, unproductive cattle, socio-economic transformation.
The effects of Sloping Land Conversion Program on livelihoods in rural China

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Abstract: In the late 1990s, China aimed to mitigate environmental degradation from agricultural production activities by introducing the world’s largest “Payments for Environmental Services” program: the Sloping Land Conversion Program (SLCP). We develop a microeconomic Agricultural Household Model, which can model the production, consumption, and nonfarm labor supply decisions of agricultural households in rural China in a theoretically consistent fashion. Based on this theoretical model, we derive an empirical specification, which we econometrically estimate using the Hausman–Taylor method and a large longitudinal farm household data set. The empirical results significantly differ between regions, but are generally consistent with the results of our theoretical comparative static analysis, for example, that the SLCP significantly decreases agricultural production. While the SLCP only increases nonfarm labor supply and total consumption in some regions, these effects could not be observed in others. The recent reduction of the SLCP compensation payment rates generally had negligible effects on agricultural production and off-farm work and only very small effects on household consumption.

Keywords: Sloping Land Conversion Program; Agricultural household model; Hausman–Taylor estimator
ABSTRACT
Parallel Session

Animal Breeding and Biotechnology
THE SUCCESS OF ARTIFICIAL INSEMINATION BY USING DOUBLE DOSE OF FROZEN SEXING SEMEN ON ONGOLE CROSBCRED COWS

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Abstract: Fattening beef cattle requires cattle with male sex, because it has faster growth and more expensive. The purpose of this study is to find out the success of artificial insemination using frozen semen of non-sexing and sexing. The sexing method was performed with Percoll Density Gradient Centrifugation (SGDP) which was produced by Artificial Insemination Center Unit at Singosari Malang Indonesia (BBIB Singosari). The material used were 77 head non-sexing AI acceptors and 77 head sexing AI acceptors who were double doses in AI. This research method uses was field experiment. The parameters observed included the Non Return Rate (NRR), Service Per Conception (S / C) and Conception Rate (CR). Data was processed by using analytical descriptive. The results on each treatment for AI non sexing and sexing were the percentage of NRR-1 values was 90.91% and 77.92%, NRR-2 values were 88.31% and 76.62%, the value of CR is 79.22% and 57.14% and pregnancy rate value of 84.42% and 75.33% respectively. it can conclude that the success of AI by using non-sexing frozen semen was higher than AI using frozen sexing semen.

Key Word: Artificial Insemination, sexing sperm, double dosage.
The Correlation between Blood Metabolic and Reproduction Performance on the Holstein-Friesian Crossbred Dairy Cows

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Abstract. This research was conducted to investigate the correlation between blood metabolic and reproduction performance on the Holstein-Friesian crossbred. Twenty heads of the cow on the second to the third lactation were used in this research. The blood was collected through a jugular vein, eight hours after feeding. The collected blood was used for investigating serum protein, serum glucose, and estradiol. Estradiol was analyzed for supporting the data. The reproduction data obtained from the recording included service per conception (S/C), postpartum mating (PPM), and calving interval (CI). The data were analyzed using the Pearson Correlation Model. The average of serum protein and serum glucose concentration were 7.17±0.86 g/dl and 56.14±4.56 mg/dl respectively. The average of estradiol was 4.97±0.75 pg/mL. The average of PPM, CI, and S/C were 150.40±69.85 d; 433.60±106.01 d; and 1.6±0.75 t respectively. The results showed that the correlation coefficient of the estradiol on serum protein and serum glucose were 0.309 and 0.329 respectively. The correlation coefficient of serum protein on PPM, S/C, and CI were -0.096; -0.333; -0.134 respectively. While that of serum glucose on PPM, S/C, and CI were -0.109; -0.327; and -0.309 respectively. Serum protein and serum glucose had a weak positive correlation on estradiol. It could be explained that serum protein had a weak negative correlation on S/C and had a very weak negative correlation on PPM and CI while serum glucose had a weak negative correlation on S/C and CI, and had a very weak negative correlation on PPM.

Keywords: Calving interval, Estradiol, Postpartum mating, Serum glucose, Serum protein, Service per conception.
MALE PROPORTION OF ARTIFICIAL INSEMINATION RESULTS BY USING SEXING SPERM WITH DOUBLE DOSE ON ONGOLE CROSBDRED COWS

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Abstract. The technology of artificial insemination is very popular methods to increase the population of cattle in Indonesia. In addition, this technology could be more valuable with sexing spermatozoa in order to get the offspring as expected. The aim of the research was to know the accuracy of calf sex that born from cows which are inseminated by using Y sexing semen double dosage that produce from centrifugation gradient densities percoll method on crossbreed Ongole cows. The material were 43 calves which was born from cows with inseminated with Y sexing frozen semen and non sexing semen from Artificial Insemination Center Singosari. four calves was born from inseminated cows with non-sexed semen and nineteen calves with Y sexed semen. The method used in this study was direct observation method. The percentage of sperm proportion X and Y was performed with measured the size of the head in each spermatozoa by using a microscope with a micrometer on the ocular lens. The data were analysed using descriptive analysis. The result showed that the proportion of Y spermatozoa in sexed semen was 80.79 %. Furthermore, the percentages of the males that born from Y sexing semen double dosage was 78.95 %, while non sexing semen was 21.05%. It can be concluded that the artificial insemination using double dosage sexing semen had a high accuracy based on results of male sex was born and the Y sperm proportion in sexing semen.

Key Word: Artificial Insemination , sexing sperm , double dose.
Reproduction Characteristics of Gayo Buffalo in Wih Pesam District of Bener Meriah Regency

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Abstract. The purpose of this study was to identify the Gayo buffalo reproductive characteristics in Wih Pesam district of Bener Meriah Regency. This research used survey method in four villages within Wih Pesam district, namely: Blang Paku, Wonosobo, Blang Benara, and Karang Rejo. Fourty respondents of buffalo breeders were selected based on purposive sampling methods, with the minimum requirement of breeder keep two productive buffalos which have been given birth twice and breeder have experience more than one year. Data collection done by interview and discussion techniques. The collected data was analysed descriptively using frequency tables and percentage. Excel sheet is used to process the data. The parameters observed were: (a) the age of Gayo buffalo puberty; (b) the age the first mated of Gayo buffalo; (c) conception period; (d) the age of Gayo buffalo gave birth to the first child; and (e) calving intervals. The results showed that the female buffalo reproductive characteristics in Wih Pesam district of Bener Meriah Regency in Province Aceh was good enough. The age of Gayo buffalo puberty was 25.75 months, with the first mated age of 33.0 months. The average age of Gayo buffalo gave birth to the first child was 43.73 months, the conception period was 318.62 days, while the average calving interval was 15.32 months. The sex ratio of male and female buffaloes is 1:6 with the percentage of male 71.35% and female buffalo 11.35%
Identification of Single Nucleotide Polymorphisms and Restriction Enzym on Prolactin Gene in Alabio and Mojosari Duck

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Abstract. Prolactin plays important roles in avian reproduction as it induces broody behavior and regulates follicular development. The objectives of this study were to detect Single Nucleotide Polymorphisms (SNPs) of prolactin gene in Alabio and Mojosari ducks and determine the restriction enzymes for genotyping. Genomic DNA was isolated from 50 blood samples per each Alabio and Mojosari ducks. PCR amplification and sequencing were carried out to identify the SNP. In this study, SNP T-6068C was found based on three GenBank sequences alignment. Two SNPs (C-5796A and T-5817C) in intron 4 region were detected based on sequences of Alabio and Mojosari PCR products. Enzymes Fok1, BtsCl, BsrI were detected to recognize the SNP C-5796A. SNP T-6068C can be digested by enzym TspDTI. However no enzym was detected to recognize SNP T-5817C. In conclusion the SNPs detected from this study may be used in future studies to investigate the association of prolactin gene and egg production traits in Alabio and Mojosari ducks.
Breeding value of candidate bulls based on birth weight in Kebumen Ongole Grade Cattle

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Abstract. The study was aimed to estimate breeding value of candidate bulls in Kebumen Ongole Grade cattle based on birth weight. One thousands and five (1005) heads of offsprings generated from 127 sires and 868 dams were used in this study. Heritability was calculated using paternal half sib correlation method. Breeding Value (BV) was calculated based on absolute dan relative value. The results showed that the heritability (h²) of birth weight was in high category (0.76 ± 0.12). Ten candidate bulls with the high breeding values (35.92–34.99) were obtained. These results are expected to be an initial recommendation in selecting candidate bulls in Kebumen based on BV.

Keywords: Breeding value, Candidate bulls, Birth weight, Kebumen Ongole Grade cattle
Genetic Parameters for Egg Production Trait in Alabio and Mojosari Ducks under Selection

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Abstract. Genetic parameters for egg production traits in Alabio and Mojosari ducks kept under selection for total number of quarterly egg production were estimated. Egg production data were collected from 547 Alabio ducks (530 females and 17 males) and 477 Mojosari ducks (461 females and 16 males). All the ducks were 6th generation kept under a selection program for egg production trait at the BPTU-HPT Pelaihari. Heritability for seven traits was estimated using paternal half-sib correlation method in a one-way analysis of variance. The result showed that heritability estimates for body weight at 16 weeks of age were high, with estimates of 0.63±0.242 in Alabio duck and 0.88±0.269 in Mojosari duck. High estimates of heritability were also found for age at first egg, with estimates of 0.59±0.232 in Alabio duck and 0.84±0.246 in Mojosari duck. Estimates of heritability for body weight at first egg and average weight of the first three eggs produced were 0.55±0.23 and 0.34±0.21, respectively in Alabio duck and 0.44±0.222 and 0.94±0.22, respectively in Mojosari duck. The heritability estimates were found to be moderate to high for total number of eggs produced from months 1 to 3 (EN3) and 1 to 6 (EN6), ranging from 0.30 to 0.46. The estimates of heritability for total number of eggs produced from months 1 to 12 (EN12) was high in Alabio duck (0.62) and moderate in Mojosari duck (0.46). The EN12 had high genetic correlation with EN3 and EN6, with values ranging from 0.80 to 0.99. In addition, the EN12 had a negative genetic correlation with body weight and age at first egg, with values ranging between -0.81 and -0.21. In conclusion, the heritability estimates for egg production traits in Alabio and Mojosari ducks were moderate to high. Furthermore, positive and negative genetic correlations were found between egg production traits. This indicates that EN3 could be used as a selection criteria to increase EN12 in Alabio and Mojosari ducks. This indicates that EN3 could be used as a selection criteria to increase EN12 in Alabio and Mojosari ducks.
The Estimation of Stock Availability and Population Dynamics on Ongole Grade and Limousin-Ongole Grade Cattle in Tuban Regency, East Java Province

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Abstract. Tuban Regency is well known for the center of beef cattle in the East Java Province. The objective of this study was to estimate natural increase value, population dynamics, and potential output production of beef cattle. The study was conducted from April to July 2019. The materials used in this study were 446 farmers as respondents having beef cattle. The research method used was survey in which the location was determined by using purposive sampling. Respondent samples were taken from three sub-districts that were chosen one village per sub-district which have low, medium, and high population of beef cattle. Data were collected by interviewing livestock farmers as respondents. The result was analyzed descriptively. The results showed that the natural increase (NI) value of Ongole Grade and Limousin-Ongole Grade cattle were 45.48% and 19.82% respectively, net replacement rate (NRR) of female Ongole Grade and Limousin-Ongole Grade cattle were 94.00% and 642.57% respectively. Ongole Grade cattle output was low category 10.90%, and Limousin-Ongole Grade cattle output was high category 44.55%. Estimation of population dynamics on beef cattle in Tuban Regency from 2018 to 2022 will increase 6,118 head or 1.77% per year. In conclusion Tuban Regency was appropriate to be source of Limousin-Ongole Grade cattle stock.
Female Bali Cattle Performance In Field Station Of Sekolah Peternakan Rakyat (SPR), Sungai Lilin District, Musi Banyuasin Regency

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Abstract. Bali cattle conventionally kept in field station of Sekolah Peternakan Rakyat, IPB University (SL-SPR-IPB) has been consolidated well, although all cattle have not physically not yet been located in a communal stall. This study was conducted to design a baseline performance of female Bali cattle as the main component at the cattle breeding production system in the SL-SPR-IPB. Ninety seven female Bali cattle owned by 45 animal farmers from three villages including Cinta Damai, Bukit Jaya, and Berlian Makmur Villages in Sungai Lilin District were measured and recorded based on their production and reproduction performances. Survey and observation were done on January, 2019. Data were analyzed using statistical and descriptive methods. The data were obtained from determined parameters including: cattle origin, ownership status, management system, system of matting, age average, calf total average, calf sex ratio, and body condition score (BCS). The results indicated that 55% of female Bali cattle maintained was originated from the outside of SL-SPR, while the others were from the inside; 88% were fully owned, while others were partial ownership; 52% were maintained intensively, while others were extensively or semi-extensive; and 51% mated with artificial insemination, while others were natural fertilization. 23% of female cattle kept by farmers was five years old in age average, with 36% of the female has one calf in average. The calf sex ratio between male and female was 49%:51%. 48% female has BCS of 3 (max scalae of 5). Results obtained were part of a comprehensively ultimate goal to start establishing a collective breeding cattle industry in the village to increase the livestock population and genetic quality.

Keywords: Animal breeding, Female Bali cattle, Sekolah Peternakan Rakyat
Supplementation of Water Clover (Marsilea crenata) Extract in Egg Yolk Skim Milk on Frozen Goat Semen Quality.

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Abstract. The use of frozen semen has the advantage that it can be stored longer, but the effect of cold shock during processing will reduce the quality of semen. Antioxidants in water clover extract are expected to be able to maintain the quality of frozen semen of goats. The study aimed to evaluate the addition of water clover extract (WCE) in the base dilution of egg yolk skim milk to the quality of post-thawing semen. The material used in this study was semen of goat 2.5 to 3 yar old, which was collected for a twice per week using artificial vagina. Semen used in this research selected base on at least 70% viability and individual motility. The semen treatment was divided into four treatments, namely T0 as control (Egg Yolk Skim Milk + 0% WCE), T1 (Egg Yolk Skim Milk + 1% WCE), T2 (Egg Yolk Skim Milk + 3% WCE), and T3 (Egg Yolk Skim Milk + 5% WCE), ten replications each. The variables observed were individual motility, viability, abnormalities, and membrane integrity of the spermatozoa. This study used a Randomized Completed Design, analysis of variance, and continued with Duncan's Multiple Range Test. The results showed that the addition of water clover extract to egg yolk skim extender had a significant effect (P<0.05) on the motility of individual spermatozoa, viability and membrane integrity, but did not have a significant effect (P>0.05) on sperm abnormality. It was concluded that the addition of 3% water clover extract in egg yolk skim milk extender was the best concentration to maintain the quality of frozen goat semen.

Keywords: Water Clover, before freezing, post-thawing, goat, sperm
The Effect of Andromed® and Coconut Water + 20% yolk As Diluents on Sperm Motility of Belgian Blue Cattle

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Abstract. The purpose of this study was to observe the potential use of coconut water + 20% yolk as an alternative diluents Andromed® substitute on sperm motility of BB. Coconut water used in this research because easy to find in rural area and the prices was cheaper than Andromed®. The sample of this study were fresh sperm collected from 3 years old BB Cattle using artificial vagina tool. The fresh sperm was diluted into Andromed® extender (P1) and coconut water + 20% yolk (P2). The data of motility were collected every 0, 2, 4, 6, 12, 24 and 48 hours after dilution and then analysed using t-test analysis. The result of additional Andromed® and coconut water + 20% yolk as diluents showed a significant effect on motility. The average of diluted semen motility (%) with treatment P1 was 77,67±2,51, 74,67±2,51, 72,33±2,51, 70,67±1,54, 69,33±1,54, 66,33±2,88 and 63,33±2,88 respectively. The average of diluted semen motility (%) with treatment P2 was 71,67±2,89, 65,00±5,00, 60,00±5,00, 58,33±2,89, 46,67±7,64, 41,67±7,64 and 26,67±7,64 respectively. As the results, it could be concluded that the additional of Andromed® can maintain motility of sperm very well until 2 days. But coconut water + 20% yolk can maintain motility of sperm very well only for 24 hours and it is good for Artificial Insemination (AI) using liquid semen.

Keywords: Andromed®, Belgian blue cattle, Coconut water, Equilibration, Motility
Identifying the Stakeholders and Sustainability Indicators for Sonok Breeding System

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Abstract. Sonok is a cultural event involving cattle in Madura Island, Indonesia. Sonok breeding strategy and contest is unique since they involve only the female cattle. There are many stakeholders who participate in the value chain of cattle in this system. Aim of this study was to identify stakeholders who play important role in Sonok breeding system and to determine sustainability issues and indicators. The study was conducted by a literature review and discussion with experts. The procedures are consisted of 3 phases, including problem definition, identifying and analysis relevant stakeholders, determining Economic, Ecological and Societal (EES) relevant issues. Next step, the EES issues will be translated into sustainability indicators. As a results, there were two stakeholders, primary and secondary stakeholders. Primary stakeholders consisted of cultural groups, farmers and policy makers. For secondary stakeholder consisted of local government, inseminator/veterinarians, butchers and traders. Several issues were elaborated at the farm level. Non-production functions, such as financing, insurance, social status and manure production were important issues at the farm level. Other relevant issues that also identified were feed availability, health and disease, animal welfare and environmental quality. The sustainability indicators that can be used were economic benefits, management of cattle, and performance of cattle and additional function of cattle. According to the result, the present stakeholders and sustainability indicators need to tested and confirmed with data to assess the sustainability of Sonok breeding systems.
The Effect of Altitude on Hematological Parameters in Healthy Wonosobo Sheep

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Abstract. This present study was conducted to evaluate the effects of altitude on hematological parameters of Wonosobo sheep. A total of 50 apparently healthy female sheep with minimum age of 6 months were included in this study. All animals were reared in Sumbing hillside of Wonosobo district, Central Java, Indonesia, with two different factors of altitude (1000 m above sea level; n=25 and 1600 m above sea level; n=25). Blood samples were collected from jugular vein into a vacutainer tube containing EDTA as an anticoagulant and subjected to hematological analysis using a hematology analyzer machine (System, KX-21). The results showed that female sheep reared at the altitude of 1600 m above sea level had higher concentrations of Hb, HCT and RBC than those reared at the altitude of 1000 m above sea level (P < 0.01). We concluded that altitude had a significant impact on hematological parameters of female Wonosobo sheep.

Keywords: blood, hematology, prevalence, wonosobo sheep
UTILIZATION OF DISTILLATION WASTE OF LEMON GRASS (Cymbopogon nardus) AS LITTER FOR REDUCING PARASITE DISEASES AND ITS INFLUENCE ON BROILER PERFORMANCE

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Abstract. The study aimed to know utilization of distillation waste of lemongrass (C. nardus) as a litter floor to reduce the growth of A. galli worms and achieving the optimum broiler performance due to the use of litter from distillation waste of lemon grass (C. nardus). The used of one hundred and seventy five day old chicks (DOC) divided into 5 treatments and 5 replications and used 7 DOC each. The infectious A. galli worm eggs were infected at 4 weeks old broiler with 100 eggs/bird. The analysis used were Analysis of Variance followed by Duncan's Multiple Range Test. The results showed that utilization of distillation waste of lemon grass as litter and antiparasitic has no significant effect on feed intake, body weight gain and feed conversion ratio of broiler than rice husks litter.

Keywords: distillation waste of lemon grass, litter, antiparasitic, egg of A. galli, performance broiler
Deworming Potential of *Sesbania grandiflora* Aqueous Extract against Adult Stage of Goat’s Parasitic Nematodes

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Abstract. Resistance against conventional deworming drugs have caused the development of the interest for natural dewormer from plants. In this study, the potential of *Sesbania grandiflora* as natural dewormer for goats was determined. Tannins as targeted anthelmintic compound in *S. grandiflora* was measured using Folin-Ciocalteu method. Aqueous extract of *S. grandiflora* containing tannins at three increasing 2-fold concentrations (0.6 to 2.4 mg/ml) then was tested against three selected major species of goats’ parasitic nematodes namely, *Haemonchus contortus*, *Trichostrongylus colubriformis* and *Strongyloides papillosus*. The reaction of the adult nematodes was closely observed under a stereomicroscope at 40x magnification after one hour incubation followed by next observation for every 6hrs interval up to 24hrs. For the results, tannins were measured at 1.0842% and categorized as medium level. All three targeted nematodes did not showed any inhibition effect on the motility after one hour exposure with the *S. grandiflora* aqueous extract. This negative effect was continued after 6hrs observation for *S. papillosus*, but two highest doses of the extract displayed minimum inhibition of motility for another two species of targeted nematodes. Lowest concentration was only affected *S. papillosus* with low inhibition rate less than 10% after 18hrs. The inhibition effect of motility against these three species showed consistently increasing trend up to 24hrs with the highest inhibition rates were observed on *T. colubriformis* at 73% and *H. contortus* at 66.67%. Meanwhile, the highest inhibition of motility for *S. papillosus* was only at 50%. This observation showed that *S. grandiflora* could be a natural dewormer against parasitic nematodes in goats and the potential should be well-promoted to be used by local farmers.

Keywords: Deworming, *Sesbania grandiflora*, Adult Stage, Goats’ Parasitic Nematode
The Effect of Lactation on Hematological Constituents in Sapera and Ettawa Crossbred Goats

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Abstract. One of the stressors affecting the animal was lactation phase. The study aimed at investigating the change in hematological value during the lactation phase of Sapera and Ettawa crossbred goats. It included 17 clinically healthy, 2–3-year-old, 8 lactating Saanen, and 9 Ettawa crossbred goats. Blood was taken aseptically through jugular vein for blood hematology. The MCH and MCHC levels of lactating crossbred Ettawa goats were significantly higher (P<0.05) than lactating crossbred Sapera goats. Meanwhile, there was not any significant difference in RBC, HB, PCV, MCV, WBC, MCH, L and N levels (P>0.05). It was concluded that the lactation phase had significant effect on the increase in the MCHC and MCH levels of the lactating crossbred Etawa goats than those of the lactating crossbred Sapera goats. It indicated that the capacity to consume sufficient oxygen played an important role in the process of milk synthesis. The same response of the two groups of crossbred goats was the decrease in the RBC, HB, PCV, MCV, WBC, L and N.
The Quality of Post Thawing Semen in Boer Buck on Phosphate Buffer Saline (PBS) Medium Supplemented with Bovine Serum Albumin (BSA)

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Abstract. Frozen semen called cryopreservation is a method of preserving semen for future artificial insemination (AI) or also in In Vitro Fertilization (IVF). There are problems often found when using frozen semen, like the presence of cold shock and intracellular changes due to the formation of crystals during freezing. In IVF, spermatozoa must have optimal quality, a decrease in the quality of sperm from a frozen straw can be minimized by increasing the quality of the diluents as supplementation, besides the incubation period in the IVF preparation process also affects the percentage of spermatozoa quality. This study aimed to determine the quality of spermatozoa after post-thawing in PBS medium supplemented with BSA to optimize the quality. Frozen semen was obtained from BBIB Singosari which is analyzed for quality after initial thawing. In this research, using Complete Randomized Design (CRD) the addition of BSA is divided into three treatment, P0 (BSA 0%), P1 (BSA 0.1%), and P2 (BSA 1%). The PBS medium was added and then incubated, spermatozoa quality tests then were carried out. Data were then analyzed statistically and test their significance using p value. The results showed a percentage of the quality of spermatozoa after initial thawing on motility, viability, and abnormalities in a row at P1 were 64 ± 8.9%, 79.9 ± 4.7%, and 1.9 ± 1.14%, at P2 60 ± 0%, 81.3 ± 2.79%, and 1.1 ± 0.54%, while the results of the percentage of quality of spermatozoa on motility, viability, and abnormalities in a row at P1 were 36 ± 5, 47%, 58.5 ± 12.33%, and 1.9 ± 0.65%, in P2 amounting to 38 ± 4.47%, 57.7 ± 14.35%, and 1.3 ± 0.75% and finally on P3 by 40 ± 0%, 60.4 ± 19.79%, and 1.8 ± 1.25%. The conclusion of this study is that adding BSA as complementary nutrition in PBS medium is more recommend on P2 treatment even though it is not significantly different (P <0.05).

Keywords: BSA, Medium, Semen, Spermatozoa, PBS, Supplement
Genetic Identification of POU1F1|PstI gene of Lakor Goat from Lakor Island, Southwest Maluku Regency

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Abstract. Lakor goat is a domestic animal from Lakor Island, Southwest Maluku Regency. They successfully survive and reproduce where limited water, grass and high temperature. Pituitary Specific Transcription Factor 1 (POU1F1) is known as PIT1 gene and play role of growth and carcass traits. The objective of this study was to identify of POU1F1 gene in Lakor goat from Lakor island in Southwest Maluku Regency. Sixty three samples of hair tail were collected from three locations such as Ketti Letpey (18), Werwawan Jamluli (26) and Letoda (19). DNA was extracted by DNA isolation kit. POU1F1 gene was amplified using PCR technique while genotyping used PCR-RFLP with PstI restriction enzyme. Result showed that only one genotype (TT) was found and monomorphic. No variation genetic of POU1F1 gene in this population may be caused limited of buck at Lakor island and indicated of inbreeding has occurred. Improving of genetic variation is needed, Artificial Insemination (AI) or natural mating could be applied.

Keywords: POU1F1 gene, monomorphic, Lakor goat, Southwest Maluku Regency
Quantification of Quality and Fertility Capacity of Cryopreserved Sumba Ongole Spermatozoa Using Computer Assisted Semen Analysis (CASA)

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Abstract. The study was undertaken to analyze the quality and fertility capacity of frozen-thawed Sumba Ongole (SO) bull spermatozoa added selected amino acid as measured by CASA. A total of 18 ejaculates, collected once a week from three Sumba Ongole bulls were diluted in tris-citric-fructose-egg yolk (TCFY) extender and addition of selected amino acids in various concentration. Diluted semen was equilibrated for 2 hours at 5°C in a cold handling cabinet and enter the freezing stage using liquid nitrogen. Using computer-assisted semen analysis (CASA) technique, the post-thaw spermatozoa were analyzed for motility, head behavior and swimming pattern of spermatozoa. Total motility (72.56±3.20), progressive motility (71.11±3.31) and recovery motility (98%) of Glutamine 5% significantly different (p<0.05) than other treatments. The addition of cysteine 7mM were significantly (p<0.05) higher velocity characteristics (VAP, VCL, VSL) than other, and significant (p<0.05) higher in DAP, DCL, DSL. In conclusion that the introduction of CASA systems made it possible to measure quantification the motility characteristics of individual spermatozoa, and CASA could be used to predict the fertilizing capability of semen based on the velocity characteristics of spermatozoa.

Keywords: SO bull, cryopreservation, CASA, spermatozoa, amino acids.
Multiplex PCR assay for animal species identification in meat bone meal

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Abstract. The authenticity of meat bone meal (MBM) in animal feed is needed to be considered due to inappropriate feed ingredients for certain types of livestock may cause various diseases. This work was aimed to identify animal species in meat bone meal (MBM) using multiplex PCR assay with 12S rRNA gene as a target region. Total of eight DNA samples were extracted from three species (chicken, bovine, and porcine) which are used as positive controls and three MBM samples. The MBM samples were collected from three different importers. Additionally, a multiplex PCR assay has been performed to identify animal species in MBM. Multiplex PCR of 12S rRNA gene was designed to detect bovine, chicken, and porcine in MBM samples. The PCR products was visualized using 2% agarose gels under the UV light. The results showed that multiplex-PCR of 12S rRNA gene was able to identify bovine which is indicated by 155 bp of DNA band. Chicken and porcine were not found in MBM samples. Meat bone meal samples used in this study might be used to be a feedstuff for poultry, porcine, and other non-ruminants. In conclusion, Multiplex-PCR using mt-DNA 12S rRNA was effective and accurate technique to identify species contained in MBM samples.
The Effect of 0.6 and 0.8% Bovine Serum Albumin (BSA) Level on Ongole Cross Bred Sperm Post-Thawing Motility using Cauda Epididymal Plasma-2 (CEP-2) Diluent

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Abstract. Decreasing in post-thawing sperm motility of Ongole Cross Bred influenced pregnancy successful through Artificial Insemination (AI). Sperm membrane damage during frozen storage was thought to be the cause of a decrease in post-thawing motility. Motility or progressive movement of sperm was one of the important indicators of frozen semen processing AI purposes. The use of Cauda Epididymal Plasma-2 (CEP-2) diluent with the addition of Bovine Serum Albumin (BSA) as the extracellular membrane was expected to reduce membrane damage and support the function of egg yolk to prevent cold shock sperm during frozen semen processing. This study aimed to assess the best BSA levels in CEP-2 diluent in maintaining sperm post-thawing motility. The material of this study used fresh ejaculate, a three-year-old bull (body weight was 388 kg) was collected once a week using an artificial vagina. The minimum requirements for fresh ejaculate, namely individual motility > 70%, mass motility > 2+, viability > 80% and abnormalities <20%. The bull was reared in the Beef Cattle Research Station, Grati Sub District, Pasuruan District, East Java Province, Indonesia. The research method used was a laboratory experiment with BSA level 0; 0.6 and 0.8% in CEP-2+10% egg yolk. The results showed that different BSA levels in CEP-2+10% egg yolk diluents were able to maintain post-thawing sperm motility. 0% BSA level was (42±2.58)%; 0.2% was (44±2.11)% and 0.4% was (44±2.11)%. The conclusion was that CEP-2+10% egg yolk+0.6% BSA level was effectively maintained sperm post-thawing motility. Suggestions for further research were 0.6% BSA level for frozen semen production and the effectiveness of production costs.

Keywords: ejakulat, membran, extracellular cryoprotectant
Madura cattle stratification as a signature of traditional selection and diverse production systems

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Abstract. Selection of livestock had been known to modify the structure and the genetic variation of a population. Farmers practiced-selection and diverse production systems applied on the Indigenous Madura cattle and procured a stratification system. We aimed to study the Madura cattle population structure, especially in Sonok area, and explained the respective traditional selection and production system. Focused group discussions and interviews involving farmers, key-persons and stake holders were conducted. Data on mature body measurements and weight were collected. The strata bottom up were commercial cattle, pajangan (multiplier) and elite. The breeding pyramid’s shape, however, was distorted; as pajangan was of the largest number. Cattle were owned by smallholder farmers whom gathered in communities. Production system is specific within community. Elite dams were the selected ones, eligible to participate in local contests on body conformation and aesthetic. Sires were the descendant of the previous generation’s elite dams. No specific selections were conducted on sire lines. Elite dams and pajangan were mated with sires; the female offspring will become elite replacements if they manage to enter the contest; else they stay as pajangan. Pajangan’s female offspring failed to enter the contest were kept as dams for commercial stock. Female cattle without status were also mated, shall they produce good offspring, they were kept as pajangan. Farmers did not keep written records; however, mating was always done with inbreeding in consideration. This system managed to improve the cattle’s performance; mature wither height for elite dams were 115.54±1.45 and 131.55±9.30 cm while body weights were 236.26±14.12 and 393.88±43.94 kg on measurement year 2009 and 2017 respectively.

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ABSTRACT. Artificial Insemination (AI) of local Indonesian goat using freezing semen was performed at smallholder farmer level at Senduro, Lumajang District East Java. This AI implementation is considered an initial field test of freezing semen producing of selected buck of this new breed. This research aimed to evaluate the first AI success rate at the level of the smallholder farmer. Non-pregnant local female goats were selected and synchronized with prostaglandin injection (PGF2A), which was done using a single injection of recorded normal cyclicity. Variable observed were oestrus onset, detection, and pregnancy rate (Non-Return Rate, NRR). At the fixed time, insemination was done twice at 12 hrs interval. Pregnancy test base on NRR was performed at 18 – 21 days for at least two estrus periods post insemination. The result showed that about 80% of female were detected in estrus between 24 – 48 hrs after prostaglandin injection. An overall about 50 - 60 % pregnancy rate was recorded. The main problem is maybe the lower response of estrus onset and its detection accuracy. This early results indicated the feasibility of using AI to enhance the reproductive performans and efficiency in local Senduro goat condition of the environment of a small farmer.

Keywords: Artificial Insemination, Local Goat, Prostaglandin, Small Holder Farm.
ABSTRACT
Parallel Session

Animal Waste and By-Product
The Performance of Biogas Combustion after Carbon Dioxide Absorption Using Sodium Hydroxide (NaOH)

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Abstract. Biogas composition is not pure bio-methane but also contains carbon dioxide gas and small amount of other gases. The improvement of biogas calorific value is required before it is distributed to users. The improvement of its calorific value can be done by carbon dioxide removal. This study aimed to investigate the efficiency of biogas combustion after carbon dioxide removal by the absorption using sodium hydroxide (NaOH). In this study, we used 4 types of sodium hydroxide based on its concentration: 5, 15, 25 and 35% that were named N1, N2, N3, and N4 respectively. The absorption using N1, N2, N3, and N4 decreased carbon dioxide content with the increasing concentration of NaOH. The decrease in carbon dioxide content also led to the increase in biogas combustion that represented by calorific value. The calorific value after the absorption using N1, N2, N3, and N4 were 10711.73 ± 33.98; 1999.53 ± 9.93; 1253.43 ± 28.43; and 1328.13 ± 8.98 kJ respectively. The results also showed that the absorption can increase the water heating value boiled with biogas. The water heating value after absorption using N1, N2, N3, N4 were 187.91 ± 10; 225.42 ± 1.77; 227.91 ± 8.47; and 243.82 ± 1.92 respectively. The efficiency of biogas combustion was analyzed by comparing biogas calorific value with water heating value. The best performance in combustion is biogas after carbon dioxide absorption using 35% NaOH.
The Meat Quality Comparison of Ongole Grade and Kebumen Ongole Grade Cattle

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Abstract. Meat is a strategic food commodity, one that have a role in meeting the nutritional needs of the market. The fulfilment of beef demand is done by maintaining local cattle that produce meat. One of them is Ongole Grade and Kebumen Ongole Grade cattle. Ongole Grade and Kebumen Ongole Grade cattle have several differences, including differences in physical characteristics that cause differences in meat quality. Improving meat quality is considered to meet consumer preference trends in choosing meat quality products. The purpose of this study is to compare meat quality in both Ongole Grade and Kebumen Ongole Grade cattle. Thirty meat samples from both cattle were analyzed for meat quality analysis (carcass weight, pH, tenderness, Water Holding Capacity, water, fat, protein, and collagen content). The data obtained were analysed using the Complete Randomized Design with factorial pattern 2x3 for age and breed factor. Carcass weight is affected by both of age and breed factor, and is significantly greater in Kebumen Ongole Grade cattle in age 4-5 years. Ongole Grade cattle has significantly greater carcass weight, water content, and tenderness than Kebumen Ongole Grade cattle. Kebumen Ongole Grade has a significantly greater fat content than Ongole Grade cattle. In conclusion, breed factor and age factor has a significant effect to meat quality and there is no interaction between the two factors in all traits of both cattle.
The Effect of Eggshell Flour as Media for White Oyster Mushroom (*Pleurotus ostreatus*)

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Abstract. The objective of the present study was to investigate the effect of eggshell flour to substitute lime as mineral source in the mushroom media (grow-bag) with biogas sludge from chicken manure, on mushroom media’s nutrition and productivity. The experiment was divided into four parts (eggshell flouring, mushroom media making, mushroom media analysis, and mushroom productivity measuring) and five treatments (with 3 replications) as the following: lime 2% (control), eggshell flour 0,5%; eggshell flour 1%; eggshell flour 1,5%; and eggshell flour 2%. Each treatment was tested with chemical analysis for its water content, crude fiber, organic matter, organic C, N, P, calcium and the C/N ratio. The variables of white oyster mushroom productivity were: harvesting period, fresh weight per harvest, number of mushroom caps, stalk length, number of harvest and diameter of mushroom caps. The data obtained were statistically examined with the Analysis of Variance-Completely Randomized Design Undirectional and the average difference was tested using Duncan's New Multiple Range Test (DMRT). The result of the chemical test showed that the best quality of the media was obtained with 1,5% eggshell addition as substitute for lime with organic matter, crude fiber, and organic-C were 33,55%, 28,155%, and 7,32% respectively. The best result in oyster mushroom productivity parameters was obtained with the treatment of 1,5% eggshell and 0,5% lime because it could increase the fresh weight into 113,6 gr. This research indicated that the eggshell flour can be used as substitute for lime in mushroom media.

Keywords: Biogas Sludge, Eggshell Flour, Mushroom Media, White Oyster Mushroom
The Effect of Development of Biogas Unit on The Reduction of Greenhouse Gas

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Abstract. Animal waste is not only a major source of carbon dioxide (CO2), a greenhouse gas (GHG), but is also a good source of fertilizer. It is imperative to find ways to reduce these massive amounts. The study was conducted in 1. Studi literature populasi dan jumlah limbah ternak dan 2. Percobaan sludge di Bantur district, Malang, Indonesia between June and November 2014. A randomized full design was employed with five experimental treatments (four replications). Sludge was mixed with traw was added with the following ratio: 1:1, 1:2, 1:3, 1:4 and 1:5 respectively. The treatments included P1 (control) and treatments of P2, P3, P4 and P5. Additionally, the characterization of P1 component, including pH, organic carbon (C), total nitrogen (N), C/N ratio, organic component, phosphorus, potassium, sodium, calcium, and magnesium, showed higher content of nutrients than in P2, P3, P4 and P5. Therefore, P1 was beneficial to be used as compost yang dapat menyuburkan tanaman yang dapat menangkankap CO2.

The conclusions are summed as follows: (1) GHGs production from animal waste (manure) in Indonesia using biogas unit is quite high, (2) the organic sludge from biogas unit is able to accelerate the process of compost making that can be used as plant fertilizer to absorb CO2 (GHGs).

Key word: animals, biogas, GHGs
Biochemical and Physical Properties of Goat Feces Liquid Biofertilizer Fermented with Chicken Excreta Combination and Different Fermentation Condition

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Abstract. Limited soil nitrogen (N) availability is a usual problem in organic agriculture production, which often necessitates additional of N fertilization. The liquid biofertilizer which made from certain animal feces such as goat, which rich with fiber but has limited in N content, need to be improved by substitute with the chicken excreta. This research aims to evaluate the quality of goat feces liquid biofertilizer with chicken excreta addition by aerobic and anaerobic fermentation. The data obtained from the research were statistically analyzed with Completely Randomized Design (CRD) Factorial Pattern with two factors. The first factor was addition level of the chicken excreta (0, 10, 20, and 30%) and the other factor was fermentation treatment (aerobic and anaerobic) condition with 3 replications for each treatment. Fermentation was conducted for 14 days. The observed parameters consisted of the chemical parameter (organic-C, N, P, and K) and the physical parameter (pH, temperature, and the odor). The addition of various level of chicken excreta and fermentation treatments in the process of producing goat feces liquid biofertilizer indicate significantly effect to increase the organic-C, total-N, NH₄, P, K, compare with 5 and 10% liquid fertilizer treatment. The best quality of liquid biofertilizer produced by combining aerobic fermentation and the addition of 30% chicken excreta. Generally, chicken excreta able to increase the nitrogen and mineral content, and putting together with aerobic fermentation system of chicken excreta maximum to 30% can avoid overproduction of unpleasant odor.
Effect of Sludge Biogas on Productivity of *Oryza sativa* L. in Green House Scale

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**Abstract.** The cow releases feces about 23,59 kilograms per day. Cow feces will still become garbage or only become manure if not used as biogas material. Biogas is a gas produced by anaerobic activity or fermentation from organic materials, such as cow feces. The main content of biogas is methane gas. The by-product of biogas is biogas sludge. Sludge biogas is the mud that comes out of the biogas reactor outlet section This mud still contains nitrogen (N), phosphorus (P), potassium (K), magnesium (Mg), calcium (Ca) and iron (Fe). Rice is the main food commodity plant in Indonesia. Segreng is variety of rice which one of the Gunung Kidul Regency germplasm. The purpose of this study was to analyze the productivity of Segreng rice plants on planting media containing biogas sludge and determine the optimum dosage of biogas sludge application for Segreng rice plants. The study was conducted in 4 treatments, namely doses of 0 ml (control), 4 ml, 8 ml, 12 ml and 24 ml sludge biogas every polybag containing one individual plant. Sludge biogas is liquid mud, because the feces that are put in to the inlet of reactor are mixed with water. Polybag contains 5 kg soil. The parameters measured were Nitrate Reductase Activity (NRA), dry biomass and number of grain. The results obtained were tested by One Way Anova followed by DMRT test with a confidence level of 95% ($\alpha = 0.05$). The results of this study was the highest NRA levels at a dose of 0 ml of biogas sludge (control), while the optimum dose for dry biomass and the number of grain was 24 ml biogas sludge per polybag.

**Keywords:** Biogas, feces, productivity, sludge and Segreng rice
Effect of different types of acid solvent on functional and microbiological properties of chicken claw gelatin

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Abstract. Gelatin is a denaturalized protein that is derived from collagen by acidic or alkaline hydrolysis and is an important functional biopolymer that has a very broad application in many industrial fields. This study was aimed to determine the effect of different types of acid solvent on functional and microbiological properties of chicken claw gelatin. This experiment used Completely Randomized Design 2x3 factorial pattern. The first factor is two types of curing acid (HCL and CH₃COOH), the second factor is curing concentration (1%, 3% and 5%) with three replications. This research materials used chicken claw. The variable studies were yield, gel strength, viscosity and total bacteria of gelatin. The results showed that the difference solvent and concentrations had significant effect (P < 0.05) to the functional and microbiological properties of chicken claw gelatin. It was concluded that chicken claw that were processed using 3% acetic acid (CH₃COOH) solvent produces the best functional properties of gelatin and can be applied to food products.

Keywords: Acid solvent, Chicken claw, Functional properties, Gelatin
ABSTRACT
Parallel Session

Cattle and Buffalo Production
Growth Performance of Male Fattening Bali Cattle Farmers Pattern through Complete Feed Supplement Containing Silage of Banana Stems with different level

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Abstract. This study aims to determine the effect of providing complete feed containing silage of banana stems with different levels of daily weight gain, chest circumference, shoulder height and length of fattening Bali cattle farmers pattern. In this study 12 male Bali cattle belongs to farmers were used in the age range of 1 - 1.5 years with a body weight of 111-136 kg, an average of 120.79 kg and coefficient variation of 10.72%. The research method used was the experimental method using a Completely Randomized Design (CRD) with 3 treatments and 4 replications. The treatment in this study is: T0; local feed by farmers in timores + 1 kg complete feed without banana stem silage, T1; local feed by farmers in timores + 1 kg complete feed containing 10% silage of banana stems, T2; local feed by farmers in timores + 1 kg complete feed contains 20% silage of banana stems. Data obtained were analyzed using Analysis of variance (ANOVA). The results of the study show that the weight gain (kg / head/day) T0; 0.40 ± 0.10, T1; 0.58 ± 0.04, T2; 0.46 ± 0.09, Increase in Chest Circumference (cm/head/day) T0; 0.11 ± 0.01, T1; 0.14 ± 0.04, T2; 0.12 ± 0.02, Shoulder Height Increase (cm/head/day) T0; 0.09 ± 0.01, T1; 0.12 ± 0.01, T2; 0.11 ± 0.02, Increase in Body Length (cm/head/day) T0; 0.10 ± 0.01, T1; 0.13 ± 0.02, T2; 0.11 ± 0.05. The results of statistical analysis showed that the treatment had no significant effect of P>0.05 on daily weight gain, chest level, body length and height of fattening male Bali cattle farmers pattern. The conclusion of this study is the provision of complete feed containing silage of banana stems with different levels giving the same effect between treatments on daily weight gain and linear size of fattening male Bali cattle farmers pattern.
Recent Reproduction Status of Pampangan Swamp Buffalo of South Sumatera

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Abstract. The purpose of this study is to learn the reproductive performance of productive of female buffalo in Rambutan Regency, South Sumatera Indonesia, including, length of gestation, birth interval, conception rate (CR) and fertility index. The research method used survey. Primary data was obtained from direct observation on 100 head. The data obtained were analyzed descriptively. Primary data was obtained by survey with questionnaire tools. The result showed that the buffalo reproduction performance was still low. Service per conception 1.04 ± 0.4; Anestrus Postpartum 7.46 ± 3.83 months; calving interval distance 17.82 ± 4.86 months; and Conception Rate 48.5% In conclusion, Reproduction performance that Pampangan Buffalo in Rambutan Regency is Normal. To increase buffalo productivity, buffalo breeding program is continuously based on reproduction control.

Keywords: reproduction performance
Performance of Aceh Cattle Fed by Concentrate with Different Level

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Abstract. Aceh Cattle is one of the local Indonesian cattle and very potential as a meat producer. Aceh Cattle has developed in smallholder farmers level and has its value in the culture of the Aceh people, which contributes meat production in Aceh Province. The feed cost of livestock can reach 70% of the total cost. Improvement of feed quality by feeding of concentrate is essential to get optimum production. This study aimed to measure the performance of Aceh Cattle fed on concentrates as a feed supplement. The study was conducted in Balai Pembibitan Ternak Unggul dan Hijauan Pakan Ternak Indrapuri, Aceh using 20 male Aceh Cattle aged 1.5-2.5 years and divided into four groups which intensively kept for three months (90 days). The group was based on feeding proportion of forage and concentrate with a different level, i.e., T1=100:0 as a control, T2=70:30, T3=50:50, and T4=30:70 on dry matter-based. The cattle were weighed monthly, and their feed intake was calculated. Data were analyzed by one way of ANOVA and followed by Duncan's New Multiple Range Test for significant differences. The results showed that feed intake, feed efficiency, body weight gain, and average daily gain of group T1 was the lowest (\(P < 0.05\)). The average daily gain of T3 and T4 groups did not significantly differ (0.72±0.17 kg and 0.67±0.08). However, there was a significant difference between T1 and T2 (0.17±0.06 kg and 0.46±0.10 kg). The feeding concentrate as a supplement improves the feed intakes and growth performance of Aceh Cattle male. The best ratio on feeding forage and concentrate feed to improve feed intakes and daily gain of Aceh cattle is 50:50%.

Keywords: Aceh cattle, average daily gain, feed intake, growth performance
The Effect of Concentrate Supplementation on The Performance of Bali Cows During Calving in Semi-Intensive System in Oil Palm Plantations

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Abstract. Reducing production costs, cows should be maintained extensively in the pasture all or half day. Use this system, necessary to know the production and quality of forage to optimum productivity. Additional concentrate diet is needed if intake below the requirement, especially for the last period of pregnancy. The purpose of this study was to evaluate the performance of cows that were maintained semi-intensively in oil palm plantation with the addition of concentrate. Twenty Bali cows of around three years old in 6-7 month pregnancy divided into two groups. PI group: given forage grown under oil palm trees an additional 1 kg of concentrate/head/day, PII: were given 3 kg/head/day. Observation of in vivo digestion and feed consumption was carried out by placing cows in cages for seven consecutive days. During the research, cows were grazing in the pasture from 6:00 to 17:00, then put in a cage at night with additional 1 or 3 kg concentrate. The study showed that dry matter digestibility (DMD) and organic matter digestibility (OMD) of 1 kg or 3 kg concentrate supplementation increased by 17.48% and 15.8% (P<0.05); DM and OM consumption increased 52.23% and 50.87% (P<0.05). Addition of 1 or 3 kg concentrate, did not show differences in cow performances, including cow body condition score, birth weight, calf score, except for birth weight. It concluded that the addition of 1 or 3 kg of concentrate at the end of pregnancy did not give different effect; from the economic point of view, it recommended to add during the last period of pregnancy with only 1 kg concentrate.

Keywords: Concentrate supplementation, Bali cows, Semi-intensive system, Oil palm plantation
Physiological Conditions of Bali Cattle Based on the Daily Temperature Humidity Index (THI) in Palm Oil Plantation

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Abstract. Palm oil plantations (POP) in Indonesia in 2018 reached 14.03 million hectares with annual growth of 10.31% per year. In an effort to increase land use and balance efficiency between cattle and plantations, an integrated program of POP and cattle is carried out. But, the environment of POP has a specific microclimate, so research needs to be conducted regarding the suitability of cattle to this environment. Fourteen Bali cattle were observed in physiological conditions based on the temperature humidity index (THI) to study the comfort status of cattle in a POP environment. The data were analyzed using a Completely Randomized Design (CRD) followed by Duncan's multiple range test (DMRT) to distinguish the physiological conditions in the morning (05.00-09.00), during the day (12.00-16.00), and at the night (20.00-24.00). The results showed that the POP environment had a different THI (P<0.05), it was 77.36 ± 1.22 in the morning, 82.91 ± 1.40 during the day, and 79.49 ± 2.63 at night. The highest THI value reached 84.07 at 12.00 WIB and the lowest was 75.99 at 05.00 WIB. The body temperature, respiration frequency, and Heat Tolerance Coefficient (HTC) showed during the day was higher (P<0.05) while the pulse was not different (P>0.05). The result of body temperature was 37.51 ± 0.35°C in the morning, 38.70 ± 0.24 during the day, and 37.57 ± 0.68 at night, for respiration frequency 22, 64 ± 5.33, 37.36 ± 4.43, and 17.64 ± 2.02 (times / minute), for pulse 55.50 ± 10.63, 55.50 ± 10.63, and 59.14 ± 8.75 (times / minutes), and HTC 1.97 ± 0.24, 2.63 ± 0.19, and 1.75 ± 0.09. It was concluded that POP has a potential to give moderate stress to cattle, but the cattle can still overcome them through physiological effort.
Utilization of *Lutur* in The Traditional Grazing System of Buffalo Production in Moa Island - Maluku

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**Abstract.** System of buffalo and food crop agriculture in Moa Island are highly related with “Lutur” availability. *Lutur* is a fence, made of stone or wood 1m height and vary in size; functioning as cattle protection, area border for small-size agriculture farmers and natural pasture. Additionally, groups or communal buffalo grazing system is strongly related to indigenous culture and tradition. This study was to observe the functions and application of Lutur along with traditional grazing system. The research was held in Moa Island, Moluccas Province. The method used was a survey and Focus Group Discussion to the 261 buffalo farmers selected using Purposive Random Sampling. Data were descriptively analyzed. Correlation analysis was done to measure the degree of relationship closeness between area of lutur and number of household members. Independent T-test to measure differences in area widths by region. Research results showed that Luturs shape in East and west Moa were circle, made of limestone and wood in central and west Moa, respectively. They were functioning for food agriculture and shelters. Lutur ownership for food agriculture was 3-5 unit/family with total area of 0,83±0,48 ha and related to traditional practice integration that was used alternatively between buffalo and food agriculture. Lutur as buffalo shelter was used communally within area of 0,7 – 1 ha, containing 250-600 buffalos. They were used as a shelter during raining season, in sickness or pregnancy, marking, milking, protection from other buffalos feces gathering, and not used for food agriculture. Communal groups in East Moa were based on *soa* (surname), while in West Moa based on farmer’s residence. Grazing only happen during raining season for 42-140 days, 5-7 hours daily on empty land owned by *soa*. The higher the number of family members, the greater the ownership of food crops. The area of the cage in East Moa is greater than Central and Western Moa.
Effects of Water Restriction on Behavior, Feed and Water Intake of Ongole Crossbreed Cows at Various Physiological Statuses in the Small farmers

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Abstract. This study was aimed to determine the behavior, feed and water intake of Ongole Crossbreed cows on various physiological statuses at the farmer level. Ten cows, consist of 3 heads non-pregnant, 4 heads pregnant and 3 heads lactations cows were observed their eating and drinking behavior as well as feed and water intake for 8 consecutive days. The behavior observed includes eating and drinking time, frequency of eating, drinking, defecation and urination. Another data was collection of the feed and water intake. Differences in behavior and consumption were analyzed using a Completely Randomized Design and continued with the DMRT test. The results showed that there were significant differences in the level of water intake for cows on different physiological status (P <0.05). The frequency of feeding and urination of non-pregnant and pregnant cows were lower (P <0.05) than lactation cows. Non-pregnant cows spend less time eating than pregnant and lactation cows. The non-pregnant cows also have a lower frequency of defecation (P <0.05) than the pregnant and lactating cows. It could be concluded that the raising of cows with restricted water shows that lactation cows have the most water intake, the longest eating time, and the frequency of eating the most frequency of defecation and urination.

Keywords: Behavior, Consumption, Ongole crossbreeds cattle, Different physiological status
Seasonal Effect on Productivity of Bali Cows in Palm Oil Plantation in Riau Province, Indonesia

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Abstract. The study was conducted to determine the effect of the seasons on the productivity of Bali cows kept in oil palm plantations in Riau province, Indonesia. Twenty cows and one Bali bull were kept semi-intensively (grazed from 07.00 a.m. to 05.00 p.m.) in the palm oil plantation area without supplementary feeding used as research material from August 2016 to September 2018. Seasonal grouping based on birth time, dry season (DS) May - October and the rainy season (RS) November - April. The estimated consumption of dry matter (DM) of cows during grazing was calculated using the Minson equations. The result showed that during the DS, the consumption was better (1.96%BW), compared to the RS (1.83%BW) (P<0.01). The calving interval did not differ in the two seasons (P>0.05), which was 425.77±94.78 days (RS) compared to 386.36±84.67 days (DS). The high rainfall and air humidity caused the mortality of calf was higher in the RS (19.05%) than the DS (17.65%). Birth weight and weaning weight was also not different in the two seasons (P>0.05), so that the cows reproduction index (CRI) (RS 0.69±0.36 and DS 0.76±0.46) and cows production index (CPI) (RS 42.42±27.04 and DS 41.44±33.05) not different (P>0.05). The conclusion was that the seasons did not significantly affect the Bali cows productivity kept in palm oil plantations. However, birth more recommended in the DS than RS due to lower calf mortality.

Keywords: Effect of season, Bali Cows Productivity, Oil palm plantation
Effect of Feeding with Different Forage and Concentrate Level on Carcass Characteristics and Meat Quality of Aceh Cattle

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Abstract. Aceh cattle is one of the local cattle in Indonesia, which has its role in the culture of the Aceh people. The feed is an important factor in livestock management. Improved quality of feed is important to get the optimum product. This study aims to look at the carcass characteristics and meat quality of Aceh feeding with forage and concentrates at a different level. Twelve (12) head of male Aceh cattle that have been treated with different levels of forage and concentrates, i.e., T1=70:30, T2=50:50, and T3=30:70 for three months were used in this study. At the end of the feed trial, the cattle were slaughtered to study carcass and non-carcass weight, and meat samples were taken for meat quality analysis. Data were analyzed using a one-way analysis of variance (ANOVA) and followed by DMRT for significant differences. Male Aceh cattle in the T1 group has a lower value of slaughter BW than T2 and T3 (214.33 vs. 239.67 and 241.33 kg), and carcass weight (119.33 vs. 135.67 and 131.67 kg). The results showed that cattle fed on 50:50(T2) had the highest carcass percentage compared to other cattle (P<0.05), the carcass percentages were 55.77; 56.54 and 54.56% for T1; T2 and T3, respectively. There were no significant differences of T1, T2, and T3 groups on initial BW and the percentage of edible non-carcass. No significant differences were also found on meat quality, i.e. pH cooking losses, moisture, fat content, and protein content of meat, however, there were significant differences (P<0.05) were found on tenderness (9.56 vs 14.92 and 12.46 kg/cm²) and water holding capacity (68.92 vs 72.05 and 72.23%), and collagen content (2.32 vs 1.69 and 1.69%). It is concluded that the cattle fed by 50:50 forage and concentrate have the highest carcass weight, percentage of carcass, tenderness, and water-holding capacity.

Keyword: Aceh cattle, concentrate feeding level, carcass characteristics, meat quality,
Response of Bali Cattle Compared to Bali Crossed Angus Against Trials of Feeding Concentrate on Forage Basal Diet

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Abstract. Bali cattle is one of Indonesian native cattle that has potential as a premium beef, unfortunately, they have small frame size. Crossing with Angus breed is expected to be able to upgrade growth, frame size, and meat quality but need better feed, for example by adding feed concentrate other than only forage. Fourteen Bali crossed Angus and fourteen Bali cattle at 9-15-month-old were used in this research at Kuamang Kuning, Bungo Jambi, Indonesia. The cattle were cared for 30 days in the individual cages to show their adaptability on feeding trial. The animals were given feeding consisted of roughage (80%) and concentrate (20%) (dry matter based), content 11% of crude protein (CP) and 56.2% of total digestible nutrients (TDN). Concentrate diet consists of rice bran (55.31%) and copra cake (44.69%). The result showed that total dry matter intake of Bali cross Angus cattle (5.19 kg/head/day or 2.92% body weight) was higher than Bali cattle (3.39 kg or 2.83% body weight). Crude protein intake was not significant difference (0.26 kg vs 0.26 kg) but TDN intake was lower (1.43 kg vs 1.90 kg). Feed intake had positive correlation with average daily gain (0.52 vs 0.12 kg/head/day). It was concluded that Bali crossed Angus cattle was more adaptable on concentrate feed introduction during the adaptation phase.

Keywords: Bali cattle, Bali crossed Angus cattle, concentrate feeding trial, the adaptation phase
The Effect of Protected Soybean Groats and Lemuru Fish Oil Supplementation In Ration on Performance of Ongole Crossbred Cows

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Abstract. This study aims to determine the effect of the use of protected soybean groats and lemuru (Sardinella longiceps) fish oil on performance of Ongole crossbred cows at postpartum periods. The soybean groats were protected using 37% formaldehyde at 2% of the dry matter of soybeans and then mixed with lemuru fish oil in a ratio of 4:1. The feed has been offered for 30 days prepartum and 70 days during postpartum period. The treatments were: P1 = 90% basal feed + 10% unprotected soybean groats and lemuru fish oil mixture; P2 = 90% basal feed + 5% unprotected soybean groats and lemuru fish oil mixture + 5% protected soybean groats and lemuru fish oil mixture; P3 = 90% basal feed + 10% protected soybean groats and lemuru fish oil mixture. The research variables include the average daily gain and feed efficiency of the cow as well as birth weight and average daily gain of calves. Birth weight of calves at P1, P2, and P3 treatments were 26.00, 31.60, and 28.40 kg, respectively. The results of the variance analysis showed that the use of soybean meal and protected lemuru fish oil in rations significantly affected the daily weight gain of calves but did not affect the daily weight gain of cows as well as feed conversion and efficiency. The conclusion of this study was that the use of 5% protected soybean meal and lemuru fish oil mixture combined with 5% unprotected soybean protection and lemuru fish oil mixture in ration of Ongole crossbred cow able to increased birth weight and average daily gain of calves

Keywords: Soybeans groats, Lemuru Fish Oil, Ongole Crossbred Cow, calf-cow
Milk production and chemical composition of crossbred Friesian Holstein fed by diet containing protected soybean groats as feed supplement

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Abstract. The efforts to improve and to optimize milk performance of dairy cows require the sufficient availability of nutrients, especially in the early period of lactation. The objective of this study was to evaluate milk production and chemical composition of crossbred Friesian Holstein fed by diet containing protected soybean groats as feed supplement. Soybean groat was protected by 1% formaldehyde. It was supplemented to three groups of treatment consisted of basal diet (P1), basal diet supplemented by 2% protected soybean groat (P2), and basal diet supplemented with 4% protected soybean groats (P3). A total of 15 lactating dairy cows (crossbred Friesian Holstein) were used in this study. They were equally grouped into three different treatments. Milk samples were measured using milk scan and they were statistically analyzed using the R programming. Duncan’s multiple range test (DMRT) was also applied to distinguish among treatments. The results showed that supplementation of protected soybean groats significantly affected fat and protein contents. Cows treated by diet supplemented with 4% protected soybean groat was found containing highest milk fat percentage. In addition, supplementation of protected soybean groat in the diet of dairy cow statistically increased milk proteins. Lactose in the milk was not affected by treatment. In conclusion, supplementation of protected soybean groat in the crossbred Friesian Holstein diet improved milk chemical quality.
Assessing current goat rearing towards improving productivity in Tabanan Regency, Bali Province through a hybrid method of SWOT and AHP analyses

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Abstract. This study was undertaken to establish a database for improving goat production in Tabanan Regency. A survey was conducted from April to September 2018 on 38 smallholder goat farmers integrated with Coffea spp., Theobroma cacao, and Syzygium aromaticum plantations, owning a total of 142 goats in Tabanan Regency. Data was used to measure constraints to, challenges of, and opportunities for improving goat production, through a hybrid method of Strengths, Weaknesses, Opportunities and Threats and Analytic Hierarchy Process analyses. Goats that were a crossing of Gembrong, Benggala, Etawah, PE, Boer, Boerka and Boerawa, housed in battery systems and fed forage with cut and carry feeding systems. Overall, goats measured having bodyweights of 32.3 ± 1.6 kg, chest circumferences of 75.2 ± 1.6 cm, body lengths of 67.2 ± 5.4 cm, height at withers of 71.6 ± 1.5 cm and rump heights of 74.2 ± 1.5 cm. This growth was supported by the available feed, and the housing used meant low incidence of parasites as indicated by FAMACHA© scores 1.2 ± 0.1 which were generally low. Problem priority faced was the competition between average numbers of 2.0 ± 0.1 family labourers aged 38.8 ± 2.1 years who cultivated average 0.9 ± 0.1 hectare of commodity plantations integrated with flock size of 2.5 ± 0.2 goats per household. About 33% smallholder goat farmers had just sold all or portion of their goats due to the busy activity of clove and coffee harvesting in July-September and time consuming for cut and carry forage while commercial concentrates were not given to their goats. Recommendation taken was to providing Pennisetum purpureum silage as sustainable feed resource for goats thus improved the nutritious content of feed particularly during dry season where feed was limited or during harvesting and Bali Hindu ceremonies where family labourer was limited. Keywords: assessing goat rearing, Tabanan Regency, SWOT and AHP analyses, limited family labourer, sustainable feed resource.
17β-estradiol and Progesterone Level in Kaligesing Goat

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Abstract. The Kaligesing goat is dual-purpose goat breed for both meat and milk production. Identifying the superior reproductive traits is important to increase the Kaligesing goat population. The study was conducted to determined 17β-estradiol and progesterone levels in Kaligesing goat. Sixteen of Kaligesing goat were monitored for the estrus cycle by using vaginal smear and determined their 17β-estradiol and progesterone levels by using ELISA method with commercial kit (Calbiotech, USA). The results showed that the levels of 17β-estradiol in the proestrus, estrus and metestrus were 51.87±62.47 pg/ml, 47.68±46.08 pg/ml, and 47.94±46.69 pg/ml, respectively. Furthermore, the levels of progesterone hormone in proestrus, estrus and metestrus were 10.01±11.70 ng/ml, 2.11±0.99 ng/ml, and 13.00±15.58 ng/ml, respectively. It could be concluded that 17β-estradiol and progesterone level in Kaligesing goat were very variative depend on the estrous cycle stage.
Production Performances Of Lactating Crossbred Etawah Goats Given Ration Containing Various Levels Of Fermented Cocoa Husk Pod

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Abstract. Crossbred Etawah Goat (CEG) is being developed in West Nusa Tenggara as an alleviation of malnutrition and poverty. The problem faced is the limitation of feed stuffs leading to low goats’ productivity. Cocoa husk pod (CHP) is a by-product that can be fed to goat, but its quality is low because of high fiber and low protein contents. Fermentation technology may increase its nutritional value. The aim of this research is to find optimum level of fermented CHP in the ration of lactating CEG. Sixteen fourth-months pregnancy of CEG were randomly divided into four dietary treatment groups so that each group consisted of 4 goats according to Completely Random Design. The control diet contained 30% non-fermented CHP, and other three diets contained 30%, 40% and 50% of fermented CHP substituting forage needs of lactating goat (on dry matter basis). Field grass was offered ad-libitum as a basal diet with 500 g/head/day concentrate. The variables observed were milk production and its composition, nutrient intake, body weight changes of the does during the study. The results showed that the consumption of dry matter of each feed type given; total dry matter consumption; milk production and its composition; and the body weight changes of the does were not affected by the level of fermented CHP. However, the intake of fermented CHP was higher (P<0.05) than control. The provision of fermented CHP as much as 30% of the forage needs gave the best response of the lactating goats.

Keywords: Crossbred Etawah goats; fermented cocoa husk pod; body weight change; milk production and composition
Hematological Profile of Sumba Ongole Cattle Extensively Reared in Semi-Arid Land, East Sumba, NTT

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Abstract. A hematological parameter has become an important requirement to measure physiological status of beef cattle. The main objective of the study was to measure the hematological profile values of Sumba Ongole (SO) cattle extensively reared in semi-arid land in East Sumba, NTT. Blood samples from seventy-five animals were examined to measure its hematological parameters based on sex and age. Animal were grouped based on sex into male and female in the age groups 1.5 to 3 years (n=42), 3.5 to 4 years (n=23) and ≥ 5 years (n=10). Mean standard error values of all the hematological parameters for The SO cattle, both male and female cattle at different age of group were measured. Several hematological parameters, such as erythrocytes, platelets, hemoglobin, hematocrit and mean corpuscular volume (MCV) level were significantly different (p<0.05) between male and female, while erythrocyte, hemoglobin, hematocrit, MCV were significantly different (p<0.05) within 3 groups of age. These results would contribute to better understanding of the hematological indicators for estimating the physiological status of Sumba Ongole cattle in East Sumba and it can be used as valuable information for beef cattle reared with similar environmental condition, especially in semi-arid tropical climate.
Morning Temperature and Humidity Compatibility Status of Dairy Cows Using Temperature Humidity Index: Case Study in Jongbiru Village, Kediri Regency

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Abstract. The purpose of the study is to know the compatibility of morning temperature and humidity with the dairy cow. Materials used were temperature and humidity taken by dry and wet bulb thermometer. Temperature and humidity were collected as the primary data then processed using THI equation which was specific for dairy cow then classified into six classes based on THI index: (1) comfort; (2) mild discomfort; (3) discomfort; (4) alert; (5) danger; and also (6) emergency. The data then analyzed and explained using descriptive analysis. As a result, the environment temperature and humidity were not suitable for the dairy cow. From thirty-one days, dairy cow suffered 24 times discomfort, six times alert, and twice mild discomfort. The least temperature was 22 degrees Celsius while the highest was 26 degrees Celsius. Meanwhile, the humidity hit the least as much as 80% and reached a peak of 95%. It can be concluded that morning temperature and humidity was not suitable for the dairy cow.

Keywords: Dairy Cow, Humidity, Temperature, THI
Weaning weight of Brahman cross (BX) and Bali cattle under intensive and palm oil plantation-cattle integrated systems

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Abstract. Indonesian territory comprised of a vast archipelago with diverse environmental condition affects cattle’s growth and productivity. This paper aimed to compare the weaning weight (WW) of two genotype groups of cattle (Bali and BX) under different production systems. Data were obtained from palm oil plantation cattle integrated system (POP) in Central Kalimantan (972 BX, 131 Bali), an intensive cattle farm in Java island (15 BX) and a state’s breeding farm in Bali Island (322 Bali). We visualize the distribution of WW from both breeds and analyze the interaction between genotype groups and production systems. Data visualization revealed structures underlie the dataset, we observed that Bali cattle data were clustered into two distinct groups. Least squared means and standard deviation of WW in Bali cattle were 84.26±17.29 and 169±74 kg whereas for BX were 121±32 and 174.28 kg for farm and POP production systems respectively. Results from a linear model which showed that genotype group, production systems, sex, and two ways interactions between genotype group and production system had a significant effect on WW ($\alpha = 0.05$). In their respective farm production systems, BX performed significantly better than Bali cattle. However, in POP-production system both genotype groups had similar performance.
ABSTRACT
Parallel Session

Feed and Animal Nutrition (Rum)
Performance of Ongole Crossbred Beef Cattle With Application of Fermented Total Mixed Ratio (TMR) Derived From Soybean Waste

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Abstract. The objective of study was to identify performances of the “Ongole” Crossbred pregnant cows fed with fermented total mixed ratio (TMR). This study was conducted at colony cages in Boloh Village, Toroh sub-districts, Grobogan district, Central Java. It was conducted for 7 months starting from 1st March to 30th September 2018. In this experiment, there are 12 pregnant cows with initial body weight of 308,71±47 kg with the age of 3-4 years. The TMR with soybean forages and concentrate is fed as much as 2.5% of body weight to six pregnancy cow and the others were used as control with non-fermented TMR. Data observed include gas production, pH and feed in vitro digestibilities. Several parameters that were collected consist of body condition score (BCS), mating interval and S/C. The data were analyzed using independent of t-test statistics. The results showed that based on the feed digestibility, fermented TMR have good digestibility and less gas production which is expressed by 48 hours incubation in-vitro trial.

Keywords: Performance, Pregnant cow, Ongole Crossbred, Total mixed ration (TMR)
Elephant Grass, Rice Straw and Maize Silage as Feeds: A Dynamic Modelling Approach on Their Degradation Kinetics

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Abstract. Ruminant livestock depends on fibrous materials as feeds such as grasses and agricultural residues to sustain life and to produce quality foods for human. This study aimed to evaluate nutritive values of some forages, i.e., elephant grass, rice straw and maize silage by using a dynamic modelling approach. Chemical composition and dry matter (DM) degradation characteristics of the forages were compiled. Degradation characteristics of DM compiled were soluble (S), degradable (D) and undegradable (U) fractions, and rate of degradation of the degradable fraction (kd). Each of the S, D or U fraction was assumed to have a specific rate of passage (kp). The S, D and U fractions are dynamically changed over time according to the following equations: dS/dt = –kdS×S – kpS×S, dD/dt = –kdD×D – kpD×D, and dU/dt = –kpU×U. Degraded S and D fractions form a pool namely cumulative S and D (CSD) and it dynamically increases over time. Integration of all the dynamic models was performed in Vensim software version 7.3.5 using the Euler method. Results revealed that soluble fraction present in elephant grass, rice straw and maize silage disappeared within early hours in the rumen. The degradable fraction of maize silage was degraded more rapidly than that of elephant grass and rice straw. This fraction in all forage sources had been mostly depleted after 40 h of incubation period. Rice straw contained the highest undegradable fraction among the feeds, followed by elephant grass and maize silage. Maize silage had the highest potential CSD as compared to those of elephant grass and rice straw. Microbial biomass production rate between elephant grass and maize silage was relatively similar. It can be concluded that, based on the dynamic modelling approach, maize silage has higher nutritive value for ruminant livestock, followed by elephant grass and then rice straw.
Methane Mitigation Effects of Dietary Nitrate Administration on Ruminants

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Abstract. Methane concentration in the atmosphere has increased over last decades. The gas is a product that formed during the fermentation of feed in the rumen of ruminants. On average, methane emission represents about 7% loss of the energy ingested by the animals. Apart from such energy loss, methane is also a potent greenhouse gas and it contributes significantly to the global warming phenomenon. Nitrate plays a role as a hydrogen acceptor under anaerobic condition and therefore is potential to be used as a feed additive for reducing enteric methane emission. The purpose of this study is to critically review the use of nitrate as a feed additive to mitigate methane emission and its associated effects on nutrient metabolism in ruminants as well as their production performance. Results from multiple experiments have shown that nitrate is an effective strategy to reduce enteric methane emission from ruminants beside many other chemical components. Nitrate undergoes a step-wise reduction process to generate nitrite and subsequent ammonia by taking up hydrogen. However, nitrite production from nitrate is faster than that of ammonia production from nitrite, resulting a nitrite accumulation when nitrate is administered at high dosages. This condition may lead to nitrite toxicity. Such nitrite accumulation may further lead to a production of methaemoglobin in the blood and causes cellular respiratory problem and energy deprivation for ruminants. A number of studies have indicated that gradual administration of nitrate is important so that ruminants can adapt to the ingested nitrate. Use of nitrate at a low concentration in feeds or engineering of slow-release nitrate may provide a solution in order to counteracting the negative effects of nitrate on ruminant metabolism.
Effects of Undegradable Dietary Protein on Milk Production and Composition of Lactating Dairy Cows

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Abstract. This experiment was conducted in order to evaluate the effect of undegradable dietary protein (UDP) level on milk production and composition of 18 lactating dairy cows. Treatments consisted of T0: control diet without UDP; T1: control diet + 40gr/L milk of UDP + mineral mix and T2: control diet + 60 gr/L milk of UDP + mineral mix. Data were analyzed using analysis of variance (ANOVA) and the differences between treatment means were examined by duncan multiple range test (DMRT). The results showed that UDP supplementation significantly affected TDN intake (p<0.05). However, UDP supplementation had no significant effect on milk production, 4% FCM production, intake of DM, organic matter, crude protein, fiber crude and fat crude, but it tended to increase CP intake. A slightly-higher milk production and composition was observed in groups with UDP supplementation. Thus, UDP supplementation may be an alternative supplement for the lactating dairy cows.

Key words: Undegradable dietary protein (UDP); milk production; milk composition; dairy cows
Composition and Amino Acid Profile of Fish Meal Processed using Probiotics and Prebiotic Sources

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Abstract. Conventionally, fish meal is processed by cooking raw fish, followed by pressing drying and grinding. This conventional method, besides producing waste and air emission, it also causes a damage of protein and loss of several dissolved nutrients such as amino acids, fatty acids, vitamins and minerals. Processing fish meal using probiotic combined with prebiotic sources is an alternative to overcome those problems. The study aims to evaluate the composition and amino acids profile of trash fish meal (TFM) processed using Probio_FM probiotics (containing Lactobacillus sp) combined with coconut meal (CM) or palm kernel meal (PKM) as prebiotics sources. The study was arranged in 2x3 factorial completely randomized design with four replications. The first factor was the type of prebiotic sources (CM and PKM) and the second factor was the level of Probio_FM probiotics (0; 1 and 2%). The TFM was processed by mixing trash fish with CM or PKM and Probio_FM then it was milled and dried. The result showed that the TFM processed using CM or PKM combined with 1.0 to 2.0% Probio_FM contained crude protein of 43.77 to 45.81%. The TFM contained all essential amino acids (EAA), but most of the EAA, except methionine, were inferior compared to the NRC 1994 table. Arginine was the first limiting amino acid in TFM, while valine and tryptophan were the second and/or the third limiting amino acid. The chemical score of TFM ranged from 20 to 28%. Combination of PKM with 2% of Probio_FM resulted in the highest values of crude protein (45.81%), methionine (2.15%) and chemical score (28%). It was concluded that the TFM processed using PKM combined with 2% Probio_FM had a potential to be used as a source of protein and methionine as well as a source of probiotics.
Development of soybean production technique by living mulch method with Rhodes grass in southwestern Japan

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Abstract. Tropical grasses mainly utilized in southwestern Japan have exhibited that the dry matter yield is increased as the growth stage developed. However, the nutritive value, such as crude protein (CP) and non-fibrous carbohydrate (NFC) tends to be decreased strikingly as the growth stage developed. Therefore, the introduction or breeding the new grass or crops which have high potential as high protein source will be an urgent problem. Recently, in a cold area of northern Japan, interest has mounted in using soybean as a high-protein source in silage. However, practical success cases have not been reported in a temperate region of southwestern Japan. The aim of the study was i) to investigate the dry matter yield of two soybean cultivars (‘Miyakonojo’ and ‘Williams 82’) under cultivation method that Rhodes grass has been used as living mulch plant after 1st cutting and ii) to investigate the nutritive value of the silage. Rhodes grass thrived after 1st cutting and started to generate the heading. The development growth of the Rhodes grass hampered the growth of soybean at the initial growth stage and the subsequent stages. As a result, the dry matter yield of soybean ranged from 9.8 kg/10a to 26.6 kg/10a, correspond to about 3% and 10% among the total dry matter yield. The nutritive value of EE, CA and CP in Rhodes grass with soybean silage tended to be higher than those of Rhodes grass silage. These results suggest that the addition of soybean biomass could be useful for increasing the nutrition value of silage. Moreover, it is necessary to choose an appropriate sowing date to increase dry matter yield of soybean biomass in southwestern of Japan.

Keywords: Living mulch, Rhodes grass, southwestern japan, soybean
In vitro digestibility assessment of banana stem silage (Musa paradisiaca) inoculated with EM-4 and different accelerators added as ruminant feed

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Abstract. Utilization of banana stem as feed has a great potential to fulfill the nutritional requirement of ruminant, however its usage has a limiting factor because of low crude protein and high crude fiber content. In addition, high water content of banana stems will also accelerate the decay process. Implementation of ensilage technology with the addition of inoculants and accelerators is intended to increase the nutritional value of the banana stem and its storability. The purpose of this study was to evaluate in vitro digestibility of banana stem silage (Musa paradisiaca) inoculated with EM-4 and different accelerators addition as ruminant feed. This study was design by completely randomized design (CRD) consisting of 4 treatments, R0 (control without accelerator), addition of rice bran (R1), cassava (R2) and sago (R3) with 4 replications in each treatment. Parameters measured in this study were in vitro pH value, N-NH₃ concentration, dry matter (DM) and organic matter (OM) digestibility. The result showed that cassava added silage were lowest (P<0,01) in pH value compared to other treatments, and significant increase (P<0,01) in vitro N-NH₃ concentration, DM and OM digestibility compared to control. It was concluded that addition of cassava as accelerators improved the fermentation quality of banana stem, as shown by the lower pH value and the higher in vitro N-NH₃ concentration, DM and OM digestibility.

Keyword: Banana stem, Silage, Accelerators, In vitro, Rumen degradation, Rumen fermentation characteristics
Effect of Urea-Cassava Waste and Protected Soybean Meal Supplementation on Dry Matter, Crude Fiber, and Crude Protein Intake of Rams

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Abstract. The purpose of this research was to measure the effect of urea-cassava waste (UCW) and Leucaena leucocephala crude tannin extract protected soybean meal (PSM) supplementation in ration on dry matter, crude fiber, and crude protein intake of ram, and to determine the best supplementation level based on these three variables. This research was held from October 18th, 2017 until January 10th, 2018 at Experimental Farm and Animal Feed and Nutrition Laboratory, Faculty of Animal Science, Jenderal Soedirman University, Purwokerto. The material used in this research were ±12 m.o rams (23-25 kg), control ration (rice straw : concentrate = 30 : 70%), supplement (urea-cassava waste : protected soybean meal = 54 : 46%), and modification experimental cage. The method of this research was in vivo experiment with completely randomized design followed by orthogonal polynomial if the treatment had significant effect. Treatments tested in this research was the percentage of supplementation that consist of R₀ (control), R₁ (control + 5% DM supplement), R₂ (control + 10% DM supplement), R₃ (control + 15% DM supplement), and R₄ (control + 20% DM supplement). The result of ANOVA showed us that supplementation of UCW and PMS in ration of rams had no significant effect (P>0,05) on rams dry matter and crude fiber intake but had very significant effect (P<0,01) on male sheep crude protein intake with linear shaped curve (Y=113,005 + 1,86X). The conclusion of this research was supplementation of UCW and PSM as much as 20% DM in rams control ration did not affect crude fiber intake and optimalize crude protein intake.

Keyword: urea-cassava waste, protected soybean meal, rams, dry matter intake, crude fiber and protein intake.
Analysis of Potency of Ruminant Feed in Tuban Regency, East Java

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Abstract. Tuban Regency had a large ruminant population of 336,063 or equivalent to 235,427.2 AU consisting of 334,143 beef cattle, 89 dairy cattle and 1,831 buffaloes (Fisheries and Animal Husbandry Department, Tuban Regency, 2017), but the productivity per individual and the rate of population growth in this region were quite low. The potency of ruminant feed in the Tuban Regency for the development of livestock was still needed to be evaluated especially if it was associated with its productivity. The research was conducted in 20 sub-districts in Tuban Regency by both survey and secondary data analysis. Data analysis was focusing on ruminant animal’s populations, land usage, food crop production, forage production, topography, and climate. Analysis of potency of ruminant feed consisted of potential feed from agriculture and plantation waste from a particular area such as grasslands, fields, forests, and others. Ruminant animal population conversion was carried out by equalization in animal units (AU), cattle = 0.7 ST; buffalo = 0.8 ST; sheep = 0.07 ST and goats = 0.08 ST. Feed requirements for each AU were 9.1 kg DM/day. The result showed that feed carrying capacity in 7 sub-districts in Tuban Regency has negative values and 13 other sub-districts were positive. The average value of feed capacity in Regency as a whole is -1236.563, which means that between feed availability and feed requirement was the deficit. It could be concluded that Tuban Regency still cannot develop a population of ruminants. It was recommended to overcome these problems by supplying of forage and agricultural wastes from outside the region around Tuban Regency, such as Bojonegoro, Lamongan, Rembang, and Blora Regency. Other efforts to overcome this problem were increasing of planting forages on marginal lands and applying feed preservation technology livestock.

Keywords: ruminant feed, carrying capacity, Tuban Regency
In vitro digestibility of low-quality rice bran by the addition of Natuzyme®

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Abstract. Rice bran quality is subjected to instability due to season, processes and counterfeiting. The aim of this determine was to study the effect of Natuzyme® addition on low quality rice bran on the concentration of methane gas, pH value and dry matter digestibility by in vitro technique. A completely randomized design of experimental design with 4 treatments; P0 (Rice Bran), P1 (Rice Bran + Natuzyme® 0.02%), P2 (Rice Bran + Natuzyme® 0.04%), P3 (Rice Bran + Natuzyme® 0.06%) and 5 replications each were employed to determine the hypothesis. The observed parameters were the concentration of methane gas, pH value and dry matter digestibility in vitro. The results showed that the addition of different Natuzyme® on low quality rice bran showed no significant difference (P> 0.05) on dry matter digestibility and pH value but had significant difference (P <0.05) on the concentration of methane gas. The addition of Natuzyme® on low quality rice bran has not been able to increase dry matter digestibility and pH value but decreasing the concentration of methane gas.
Effect of Supplementation of various fermentable carbohydrate sources in sorghum straw-gliricidia mixed diet on fermentation kinetics.

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Abstract. Supplementation of fermentable carbohydrate in crop by products based diet is expected to improved diet fermentability and reduced methane production. The objective of the study was to evaluate supplementation of various fermentable carbohydrate sources namely ground corn grain, rice bran or ground sorghum grain in sorghum straw-gliricidia mixture basal diet. Treatment diets evaluated were: Sorghum + gliriciadía leaf meal (Control/T0); Control + 10% ground maize grain (T1); Control + 10% rice bran (T2); Control + 10% sorghum grain. Sorghum straw was chopped and ground then mixed with gliricidia leaf meal at ratio 60:40% DM. Sorghum straw-gliricidia mixture was then supplemented either with ground corn grain, rice bran or sorghum grain at 10% of DM basal diet (control). Sample about 0.5 g was incubated in an in vitro study for 48 hours, gas production was recorded at 4, 8, 12, 16, 24, 36 and 48 hours. Study was conducted in randomized complete design. Results of the study showed that supplementation of rice bran significantly lowered (P<0.05) gas production from insoluble fraction of the diet compared to T1 (99.96 ml in T2 vs 113 ml in T1). Gas production at 48 h incubation of the samples feed was significantly (P<0.05) decreased by rice bran (T2) and sorghum (T3) supplementation compared to control (84, 83 and 104 ml/0.5g substrate incubated respectively for T2, T3 and T0). Whereas only with sorghum supplementation, CH₄ production was significantly decreased and produced the lowest percentage of methane production. From this study can be concluded that fermentable carbohydrate supplementation 10% from sorghum grain to sorghum straw-gliricidia mixture was able to reduced percentage of methane production.

Key words: fermentation kinetics, sorghum straw, gliricidia, fermentable carbohydrate.
Nutrients Value and \textit{in vitro} digestibility of Mulato Grass \textit{(Brachiaria hybrid cv. Mulato)} Grown With Integrated Legume-Horticulture Plants on dry land

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\textbf{Abstract.} This research has been conducted to study the content of dry matter, organic matter, crude protein, and crude fiber, and the \textit{in vitro} digestibility of dry matter and organic matter of Mulato grass \textit{(Brachiaria hybrid cv. Mulato)} grown on integrated legume-horticulture plants. The experimental design used was Completely Randomized Design (CRD) consisted of four treatments and four replicates. Those treatments were T\textsubscript{0} = monoculture Mulato grass without any other plants, T\textsubscript{1} = Mulato grass mixed grown with legume, T\textsubscript{2} = Mulato grass mixed grown with horticultural plants, and T\textsubscript{3} = Mulato grass mixed grown with legume and horticultural plants. Data collected were subjected to analysis of variance (ANOVA). The results showed that dry matter content (%) were 26.64±0.60, 27.61±0.93, 27.90±0.40, and 28.63±0.51 for T\textsubscript{0}, T\textsubscript{1}, T\textsubscript{2}, and T\textsubscript{3}, respectively; organic matter content (%) were 75.18±1.22, 75.30±0.79, 76.89±1.23, and 77.64±0.60, for T\textsubscript{0}, T\textsubscript{1}, T\textsubscript{2}, and T\textsubscript{3}, respectively; crude protein content (%) were 9.74±0.57, 10.47±0.42, 11.07±0.61, and 12.88±1.03 for T\textsubscript{0}, T\textsubscript{1}, T\textsubscript{2}, and T\textsubscript{3}, respectively; dry matter digestibility (%) were 45.34±0.85, R\textsubscript{1} 45.40±1.61, R\textsubscript{2} 47.09±0.91, and 50.30±0.56, for T\textsubscript{0}, T\textsubscript{1}, T\textsubscript{2}, and T\textsubscript{3}, respectively; organic matter digestibility (%) were 47.09±1.00, 48.18±0.87, 48.66±1.87, and 51.54±2.56, for T\textsubscript{0}, T\textsubscript{1}, T\textsubscript{2}, and T\textsubscript{3}, respectively.; Statistical analysis indicated that treatment was significantly (P<0.05) affected the contents of dry matter, organic matter, and crude protein, and as well the \textit{in vitro} digestibilities of dry matter and organic matter of Mulato grass. It is concluded, that integrated legume-horticultural plants resulted in different among treatments on contents of dry matter, organic matter, and crude protein, and as well on the \textit{in vitro} digestibilities of dry matter and organic matter of Mulato grass \textit{(Brachiaria hybrid cv. Mulato)}. 

\textit{Brachiaria hybrid cv. Mulato).}
Growth and Production of 2 Cultivars of Napiergrass (*Pennisetum purpureum* Schumach.) on Regrowth Phase

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Abstract. This study aimed to determine growth and production of 2 cultivars of Napiergrass (*Pennisetum purpureum* Schumach.), namely Tifton and local on regrowth phase. The defoliasi treatment was conducted for a total of 120 days from regrowth phase 1 and 2 of 2 cultivars of Napiergrass, with 3 replicates for each dose. Grasses were planted with space 1x1 m uses trees planted napiergrass divided into 3 plot. Variables observed in the study included vegetative growth (plant height, plant length, segments length, leaves length, stem diameter and number of tiller or shoots) and biomass production (fresh production, dry matter production, and organic matter production). The statistical design used in this study was split-plot design with main plot was regrowth phase (phase 1 and 2), sub-plot was cultivars (Tifton and local) and results of significant variance analysis followed by Duncan’s new multiple range test (DMRT). The results showed that cultivars variety of napiergrass were significant (P<0.05) on biomass production. Tifton produced the highest biomass production on fresh production at 141.79 t/ha, dry matter production (25.85 t/ha) and organic matter production (22.96 t/ha). Regrowth phase 2 showed the highest plant length, number of tiller and biomass production. Based on the results of the study it can be concluded that napiergrass of Tifton cultivar had a higher biomass production than local. Defoliasi can increase vegetative growth and biomass production of napiergrass.

Keywords: Cultivar, Growth, *Pennisetum purpureum*, Production, Regrowth
Improvement of native pasture productivity in Timor by introduction of various types of palatable species on dry land

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Abstract. This research was aimed to evaluate the productivity of native pasture in Timur Island by introducing various palatable grass and legume species. The study was carried out on native pasture in Tuatuka, Kupang Timur Sub-District, Kupang Regency, Timor Island for 7 months from April to October 2017. The study was performed by using ramomized block design (RBD) with 8 treatments (S0: no introduction as control, S1: Cynodon dactilon, S2: Dicanthium aristatum, and S3: Cynodon plecototachyus, S4: Brachiaria decumbens, S5: Desmanthus virgatus S6: Macroptilium artropupureum, S7: Clitoria ternataea) with 4 replications – aggregating 32 experimental plots. Multiple procedures on this study include trial plots (10 x 10 m) preparation, tillers preparation for each plant species which was nourished for one month on polybag, introduction of species in trial plots (20 tillers in 100 m²), maintenance, and observation of the productivity at the age of 60 days after the introduction. Data observed on this study were fresh forage production (ton/ha), dry matter production (ton/ha), dry matter content (%), and stock capacity (animal unit/ha). Data were analyzed for variance based on RBD and differences among treatments were subjected to Duncan’s Test. Analysis of variance showed that introduction of palatable species to native pasture land had a very significant effect (P value <0.01) on all observed variables. Duncan’s Test confirmed that S6 group produced the highest fresh forage and DM production (2.1 ton/ha). The S6 species also had the highest DM content (43.61%), nitrogen free extract (52.52%), and stock capacity (1.06 animal unit/ha). Data were analyzed for variance based on RBD and differences among treatments were subjected to Duncan’s Test. Analysis of variance showed that introduction of palatable species to native pasture land had a very significant effect (P value <0.01) on all observed variables. Duncan’s Test confirmed that S6 group produced the highest fresh forage and DM production (2.1 ton/ha). The S6 species also had the highest DM content (43.61%), nitrogen free extract (52.52%), and stock capacity (1.06 animal unit/ha). The highest crude protein and crude fiber content were found in S5 (4.31% and 36.62%). Meanwhile the highest extract ether was observed in S2 (1.48%). S0 had the lowest productivity, but demonstrated the highest content.

It can be concluded that the introduction of palatable species increased the productivity of native pasture in Timor and Macroptilium artropupureum legume was the best introduced species.

Keywords: species introduction, legume, native pasture in Timor, forage production, grass
The Utilization of *Arachis pintoi* and *Gliricidia sepium* as Substitute Protein-Sources for Dairy Cattle

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**Abstract.** Dairy cattle need high nutrient contents in their ration, especially in the first lactation period. Farmer prefers to feed the livestock by used cheap-low quality concentrate to decrease the feed cost. This condition leads to low milk production. This research aimed to observe the effect of substitution of legume which contains high protein to improve the cheap low-quality concentrate. This research uses twenty-four dairy cattle (8.5 months-pregnancy; average body weight (BW) 359.29±35.63 Kg), which were randomized divided into 3 groups of dietary treatment based on body weight. The treatment were Concentrate I (100% concentrate); Concentrate II (85% Concentrate+15% *Gliricidia* sepium); Concentrate III (Concentrate 85% + 15% *Arachis pintoi*). The observation was done during 16 weeks feeding trial. The parameters observed were feed intake and digestibility, milk production, and feed conversion ratio (FCR). Milk production measured during 3 months-lactation periods. The result shows that concentrate substitution by using 15% *Gliricidia sepium* or *Arachis pintoi* didn’t affect feed intake (11.017-11.388 kg DM/head/day), digestibility (56.70-58.32%), FCR (1.138-1.214 kg DM/L), and total milk production in first 3 months-lactation period (859.07-887.59 L/head). This research concludes concentrate can be replaced up to 15% by *Gliricidia sp* or *Arachis Pintoi* to improve quality without affect livestock performs, but decrease feed cost.
Microbial profile of total mixed ration silage with lactic acid bacteria from local paddy rice (*Oryza sativa*) in tropical climate

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Abstract. Evaluation of microbial profile of total mixed ration (TMR) silage inoculated with lactic acid bacteria (LAB) from local paddy rice (*Oryza sativa*) in tropical climate was studied. This study was compared the effect of local LAB inoculants with commercial strain *L. plantarum* FCC 123 on microbial composition of TMR silage in small scale silage preparation. LAB was isolated from local paddy rice planted around University of Muhammadiyah Malang, East Java, Indonesia. Four paddy rice varieties: Membrano, Ciherang, Rojolele, and Impari 13 were used as LAB sources. LAB was isolated base on Cai methods (1999). LAB was selected and purified in lactobacilli deMan Rogosa Sharp agar (MRS) and partially stored in dimethyl sulfoxide (DMSO) at -30°C as microbial stock. These selected LAB was used as inoculants on room temperature of 30 days TMR silage incubation. These study was designed by completely randomized with 6 treatments (T0: TMR with no fermentation, T1: TMR silage without inoculants, T2: TMR silage with *L. plantarum* FCC 123, T3: TMR with Local LAB 1, T4: TMR silage local LAB 2, T5: TMR silage local LAB 3). Microorganisms composition of LAB, aerob bacteria, coliforms, clostridia, and mold were measured as experiment parameters. This study showed that LAB could be isolated from local paddy rice. Implementation the local LAB in TMR’s silage was not significantly different with commercial *L. plantarum* FCC 123. Both local and commercial strain increase LAB population and decrease harmful microbes (coliform, aerob bacteria, clostridia, and mold ). It could be concluded the LAB isolates from local paddy rice could well prepare as inoculant for TMR silage preparation.
Effect of Tannin Supplementation from *Uncaria gambir* Extract on Rumen Fermentation, Microbial Protein and *in Vitro* Gas Production Kinetics

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Abstract. Gambir (*Uncaria gambir*) is a tropical plant which contains tannin as a main phenolic compounds. This research was aimed to quantify ability of tannin to bind protein and evaluate the addition of tannin from gambir extract on rumen fermentation, microbial protein and *in vitro* gas production. The treatments consisted of RC0 (0%), RC2 (2%), RC4 (4%) and RC6 (6%) of gambir extract level in mix rations with 70:30 ratio (concentrate:forage). Parameters measured were protein precipitation, VFA production, NH₃ concentration, microbial protein and kinetics of gas production. The result showed that tannin from gambir extract had a significant ability (P<0.05) to precipitate protein *Bovine Serum Albumin*. Supplementation of tannin from gambir extract significantly increased (P<0.05) NH₃ concentration and microbial protein. There was no significant effect on VFA total production (P>0.05). Gas production in RC0, RC2, RC4 and RC6 was decreased (P<0.05) after 48 hours incubation by 49.28 ml, 48.41 ml, 47.40 ml and 47.07 ml, respectively. It was concluded that the addition of tannin from gambir extract with level 6% in rations can be used to increased *in vitro* rumen fermentation.
Feed utilization on Thin-Tailed Lambs fed different levels of protein and its’ sources based on blood parameters

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Abstract. A study on assessing feed protein utilization of Thin-Tailed lambs was carried out through the measurement of blood parameters. A total of 20 lambs with the average of body weight of 13.03 ± 2.30 kg were allotted feeding trials using 2x2 completely randomized factorial design (CRD). First factor was protein levels of the ration (13 and 15%); whereas second factor was source of the protein ration (fishmeal and soybean meal). During the experimental period of 63 days, all animals were kept at individual compartments; while ration and drinking water were offered ad libitum. Results of the study showed that the peak of blood glucose and urea nitrogen levels were found on 8 and 4 hours after feeding, respectively. Interaction effect of ration protein level and source of the protein ration to the blood parameters were not significantly (P>0.05) detected at this experiment. Protein levels were individually not affected (P>0.05) glucose blood, but sources of protein were individually affected (P<0.05) glucose blood at their peak levels. Both protein levels and sources of the protein ration were individually affected (P<0.05) urea nitrogen at their peak levels. Lambs fed crude protein ration has not significantly (P<0.05) blood glucose and otherwise 13% fed lower blood urea nitrogen than fed 15% crude protein ration (67.96 mg/dl and 22.29 vs. 29.80 mg/dl, respectively). Lambs fed fishmeal protein source has significantly (P<0.05) higher blood glucose and otherwise lower blood urea nitrogen compared to those fed soybean meal (71.87 vs. 64.04 mg/dl and 23.31 vs 28.78 mg/dl, respectively). Based on the experiment results, it might be concluded that 13% crude protein ration or fishmeal protein source ration were utilized better by Thin-Tailed lambs.

Key Words : blood, glucose, urea, Thin-Tailed Lamb.
Effect of cinnamon bark meal (*Cinnamomum burmanni* Ness ex Bl) addition as cinnamaldehyde source on *in vitro* nutrient digestibility

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**Abstract.** Protection of high-quality protein from rumen microbe degradation by cinnamaldehyde might improve feed protein utilization for ruminants without interfering nutrient metabolism. Objective of study was effect of cinnamon bark meal addition as a source of cinnamaldehyde on *in vitro* nutrient digestibility. This research consisted of the diet without cinnamon bark meal (control) and addition cinnamon bark meal with 1.16, 2.3, 3.5 and 4.6% of dry matter (DM) feed or equivalent to cinnamaldehyde with 200, 400, 600 and 800 mg per kg DM feed. The feed consisted of 60% elephant grass, 30% wheat bran and 10% soybean meal. The experiment was conducted using a completely randomized design with three replications. Variables measured were dry matter digestibility (DMD), organic matter digestibility (OMD), crude protein digestibility (CPD) and crude fiber digestibility (CRD). Data obtained were analyzed by one-way analysis of variance (ANOVA) continued by DMRT. The results showed that the addition of cinnamon bark meal up to 4.6% of DM feed did not affect dry matter, organic matter and crude fiber digestibility but significantly (P<0.05) decreased rumen crude protein digestibility (48 h) and increased total crude protein digestibility (96 h). It was concluded that the cinnamon bark meal adds up to 4.6% of DM feed or equal to cinnamaldehyde with 800 mg per kg DM feed could increase crude protein digestibility (96 h) without any negative effects on *in vitro* nutrient digestibility.

**Keywords:** Cinnamon, cinnamaldehyde, *in vitro* digestibility
Physical and Chemical Quality Silage in Two *Pennisetum purpureum* sp Varieties Supplemented of Molasses with Different Levels

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Abstract. A study has been conducted to determine the quality of *Pennisetum purpureum* sp and *Pennisetum purpureum* cv.Mott silage supplemented of molasses with different levels on the physical and chemical quality. The study was designed using a complete 2 x 3 factorial randomized design. The first factor was grass varieties, *Pennisetum purpureum* sp and *Pennisetum purpureum* cv.Mott and the second factor was supplementation of molasses with levels 0%, 3% and 6%. The variables measured included physical and chemical characteristics of silage. The results showed the treatment of molasses supplementation in *Pennisetum purpureum* sp and *Pennisetum purpureum* cv.Mott produce silage with good physical quality. Increased levels of molasses supplementation in *Pennisetum purpureum* sp and *Pennisetum purpureum* cv.Mott linearly lowered pH and concentration of silage NH$_3$ (P<0.05) and increased linearly the concentration of silage lactic acid (P< 0.05). The treatment of molasses supplementation in *Pennisetum purpureum* sp and *Pennisetum purpureum* cv.Mott showed interactions with pH, NH$_3$ concentration and silage lactic acid concentration. Based on the results of the study, it was concluded that *Pennisetum purpureum* sp with the level of 6% molasses supplementation is the treatment that produces the best physical and chemical quality of silage.

Keywords: *Pennisetum purpureum* sp, *Pennisetum purpureum* cv.Mott, Silage, Supplementation, Molasses.
Effects of cinnamon bark meal (*Cinnamomum burmanni Ness ex Bl*) as protection agent on rumen fermentation characteristic and *in vitro* gas production kinetics of ruminant diet

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Abstract. Cinnamaldehyde as a plant secondary compound which is used as protein protection from rumen microbial degradation might change rumen fermentation. The research aimed to investigate the effect of protein protection on diet contained cinnamon bark meal as cinnamaldehyde source on rumen fermentation characteristics and in vitro gas production kinetics. Five experimental diets (*Pennisetum purpureum* (60%): wheat pollard (30%): soybean meal (10%)) added with cinnamon bark meal equal to cinnamaldehyde level as much as 0, 200, 400, 600, 800 mg based on dry matter (DM) and each treatment was replicated for 3 times. Fermentation parameters were measured by incubating the sample in a rumen liquor buffer that was taken from a rumen fistulated Bali cattle using Menke and Steingass gas production technique. Gas produced were recorded every hour for 48 h. The kinetics of gas production was analyzed using the Fit Curve. Results showed that there was no significant (P>0.05) different among treatments on the rumen fermentation characteristic (pH, NH₃, total volatile fatty acid (VFA) production, and proportional VFA), total gas production and kinetics of gas production. It was concluded that addition the cinnamon bark meal was no negative effects on rumen fermentation.
Potential of Forage Production on Dry Land Agriculture With Mixed Cropping Pattern

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Abstract. The mixed farming system was an alternative to meet the shortage of ruminants feed. This study was conducted to find out the potential forage production in with mixed cropping pattern on dry land agriculture. This research was conducted at the Agro Technology Innovation Center (PIAT) Universitas Gadjah Mada, Berbah, Sleman, Yogyakarta from January until November. The research field as large as 3.000 m² divided into 2 blocks, each block 1.500 m² (30x50 m) for monoculture and mix-cropping. During rainy season the sweet corn as a main crop planted with planting space 70x30 cm on monoculture plot, while on mix-cropping only 1.000 m² planted with sweet corn and the rest of 500 m² on both sides (North and South) planted with Brachiaria brizantha, Arachis hypogaea, and Manihot utilissima with planting space 90 x 30 cm, 90 x 30 cm, 90 x 65 cm respectively. Gliricidia maculata is planted with a space of plant was 150 cm as a hedge that surrounds the mixed plot. After the first harvest, the two plots were then re-processed and planted with Arachis hypogaea with planting space 30 x 20 cm. Forage sampling was done using the quarter method. The variables observed were the production of dry and organic matter of agricultural by-product, in vitro digestibility of dry and organic matter, and the economic income of the main crops. The data obtained were then analyzed using the Independent sample t-test method. The results showed an increase (P<0.05) of production, digestibility, and economic income with the existence of mixed cropping. Based on the results can be concluded that the mixed cropping provides better production, digestibility and economic income compared to a single planting.
Nutrient Intake of Lactating Dairy Cows during the Wet and Dry Seasons in Sleman, Yogyakarta

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Abstract. This study was conducted to determine the nutrient intake of lactating dairy cows in the wet and dry seasons in Wukirsari, Cangkringan, Sleman, Yogyakarta. The experiment was conducted using forty lactating Friesian Holstein cows selected from dairy group farms, with body weight averaging 421.77±28.60 kg, and in 1st to 3rd lactation, housed in permanent pen models stanchion barn with cement floors and rubber mat with feed and drink water. They were fed twice daily, morning and afternoon and drinking water was given ad libitum. Feed samples were taken and analyzed in the Laboratory of Dairy Science and Milk Industry, Faculty of Animal Science UGM. The observed variables were nutrient intake (dry matter, organic matter, crude protein, crude fiber, extract ether, and total digestible nutrients). The comparison results between the two conditions (wet and dry seasons) were tested using independent t-test analysis. The result indicated that intake of dry matter (18.72±3.73 vs. 19.06±2.69 kg DM/head/day), organic matter (16.72±3.28 vs. 17.33±2.44 kg DM/head/day), crude fiber (5.94±1.26 vs. 5.97±0.85 kg DM/head/day), and total digestible nutrient (10.35±1.97 vs. 10.93±1.54 kg DM/head/day) were not differed significantly. However, intake of crude protein (2.52±0.37 vs. 2.22±0.43 kg DM/head/day) was differed significantly (P<0.05) between wet and dry seasons. It was concluded that nutrient intake of lactating dairy cows in the wet season was better than the dry season, especially the intake of crude protein.
Chemical Composition of Seaweed \textit{(Sargassum sp.)} based on the Different Drying Methods

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Abstract. Seaweed \textit{Sargassum} sp. which is not used for food or (for sale) is usually waste and it has the potential as animal feed stuff especially as mineral source. This study aimed to evaluate the chemical composition of seaweed (\textit{Sargassum} sp.) based on different drying methods. Seaweed \textit{Sargassum} sp. was obtained from Sepanjang Beach in Gunungkidul District, Yogyakarta. The seaweed was cleaned from dirt and other materials before drying process. The drying process for seaweed was divided into two methods. The first method was sun-dried base for three days started from 07:00 Am to 14:00 PM, the second method was oven-dried base at temperature of 55$^\circ$C for four days. All of the seaweed were grinded, then analysed using proximate analysis. Data obtained were examined by t-test. The results indicated that different drying process (sun-dried and oven-dried) did not have significant effect on the dry matter (90.07$\pm$3.73$\%$ vs. 89.72$\pm$0.54$\%$), ash (41.77$\pm$7.30$\%$ vs. 46.56$\pm$2.01$\%$), organic matter (58.23$\pm$7.30$\%$ vs. 53.44$\pm$2.01$\%$), crude protein (7.56$\pm$1.32$\%$ vs. 8.77$\pm$0.61$\%$), and crude fat (0.78$\pm$0.25$\%$ vs. 0.62$\pm$0.24$\%$) content. Thus, the sun-dried method can be used optimally to preserve seaweed \textit{Sargassum} sp. without affect the chemical composition.
Evaluation Of Thin-Tailed Sheep Performance Due To Increased Frequency Of Feeding

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Abstract. The objective of the study was to evaluate the effects of native grass feeding method on the productivity performances of thin-tailed sheep. 16 thin-tailed sheep aged 12-14 months and initially weighed 17.0 kg, were arranged into 4 groups of treatment with 4 replications on a completely randomized design (CRD). The treatments were frequency of feeding as follows: group A (2 times/day), group B (3 times/day), group C (4 times/day), and group D (5 times/day). All groups were given ad libitum drinking water. Data observed on this study include consumption and digestibility of dry matter (DM), organic matter (OM), crude protein (CP), crude fiber (CF), extract ether (EE), nitrogen free extract (NFE), and total digestible nutrient (TDN). Average daily gain (ADG) was also recorded. The study showed significant differences on the consumption and digestibility of DM, OM, CP, and CF (P value <0.05). Conversely, significant difference was not seen on the ADG among treatments – but showed increasing tendency along with the increasing feeding frequency (P value >0.05). The ADG on group A, B, C, and D were recorded as much as 58.33±36.65; 61.90±11.48; 63.10±14.87 and 67.86±17.05 g/head/day respectively. According to this study, it was concluded that an increase in feeding frequency could improve productivity performance of thin-tailed sheep.

Keywords: sheep, feeding, method, productivity
Feeding frequency effects on consumption and nutrient digestibility on thin-tailed sheep infected with *Haemochus contortus*

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**Abstract.** In Indonesia, most sheep are reared by farmers on extensive rearing system, in which sheep kept in communal open space. This system creates arising problem that nutrient deficiency and susceptibility to gastrointestinal parasites, especially *Haemonchus contortus* are more prevalent. This study is a laboratory model – demonstrating the actual condition – by increasing the feeding frequency to evaluate the effect of nutrient utilization on sheep infected by *H. contortus*. The study used the sheep as livestock model, with age ±1 year and average body weight ±17 kg. 16 thin-tail sheep were randomly grouped into 4 groups (A, B, C, and D). Treatment on this study were different feeding frequency: A (2 times/day), B (3 times/day), C (4 times/day), and D (5 times/day). All groups were fed with field grass-based feed with no other feed supplementation. Ad libitum drinking water were provided. The treatment period was performed for 12 weeks with 2 weeks of adaptation phase in the beginning. Worm infection process were carried out once a week as many as 200 *H. contortus* infective stage per head per infection. The egg number of *H. contortus* per gram of fecal egg number was observed and examined weekly for 10 weeks. According to this study, higher feeding frequency increases the consumption and digestibility of dry matter (DM), organic matter (OM), crude protein (CP), and crude fiber (CF) (P value <0.05) and increases the percentage of fecal egg number (FEN).

**Keywords:** Feeding frequency, consumption, digestibility, fecal egg number
In vitro rumen fermentation of oil palm frond with addition of *Lactobacillus plantarum* as probiotic

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Abstract. The aim of this research was to study the effects of substitution of elephant grass (EG) (*Pennisetum purpureum*) with oil palm frond (OPF) and addition of *Lactobacillus plantarum* as probiotic on in vitro rumen fermentation. Treatments were T1: Concentrate 60 % + elephant grass 40% + OPF 0%, T2: Concentrate 60 % + elephant grass 20% + OPF 20%, T3: Concentrate 60 % + elephant grass 0% + OPF 40%, T4: Concentrate 60 % + elephant grass 40% + OPF 0% + probiotic, T5: Concentrate 60 % + elephant grass 20% + OPF 20% + probiotic, T6: Concentrate 60 % + elephant grass 0% + OPF 40% + probiotic. Probiotic addition significantly increased gas production each OPF level. Highest gas production from non probiotic treatments was 99 ml, while highest gas production from probiotic treatments was 124.5 ml. Highet OPF proportion decreased gas production. Highest gas production was resulted from T4 (124.50 ml), significantly different from T3 (90.63 ml). Substitution of EG with OPF significantly decreased methane proportion in probiotic treatments. Highest methane proportion was resulted from T4 (7.31%), significantly different from T6 (4.31%). Probiotic has no effect on digestibility and OPF decreased dry matter and organic matter digestibility from in vitro rumen fermentation. It is concluded that substitution of elephant grass with OPF decreased gas production and digestibility in all level. Probiotic treatments increased gas production but cannot maintain rumen digestibility as equal as control treatment (without OPF).

Keywords: oil palm frond, *Lactobacillus plantarum*, probiotic, rumen fermentation
Intake and Digestibility Fiber Fraction in Kacang Goats Supplemented Protein Resource with Combination of Soybean Meal and Calliandra calothyrsus

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Abstract. This study aimed to determine the intake and digestibility of fiber fraction in Kacang goats which supplemented with protein sources with a combination of Soybean meal and Calliandra calothyrsus. Twenty goats were given a basal feed of Pennisetum purpureum cv. Mott (Odot grass) and supplemented with protein-based feed ingredients are soybean meal and calliandra calothyrsus. The proportion of combination from soybean meal and calliandra is T1 = odot grass (ad libitum) + 100% soybean meal; T2 = odot grass (ad libitum) + 25% calliandra + 75% soybean meal; T3 = odot grass (ad libitum) + 50% calliandra + 50% soybean meal; T4 = odot grass (ad libitum) + 75% calliandra + 25% soybean meal; and T5 = odot grass (ad libitum) + 100% calliandra. The amount of feed supplementation was given based on daily protein requirements (gram/DM/head) according to animal body weight. Last ten days conducted collections include total collections of feeding, the residue of the feed, and feces. The fiber fraction being measured include Crude Fiber (CF), Neutral Detergent Fiber (NDF), Acid Detergent Fiber (ADF), and Hemicellulose. Digestibility of fiber fraction is calculated by measuring intake fiber fraction and the fiber fraction in feces. Data obtained from the results of the study analyzed variance using a one-way analysis of variance, so if the results show significant differences, it will be further analyzed by Duncan’s new multiple range test. The results showed that a combination of soybean meal and calliandra did not have a significant effect (P>0.05) on the intake of fiber fraction (g/kg BW<sup>0.75</sup>/day), but the digestibility was a significant effect (P<0.05). The highest (P<0.05) value of digestibility fiber fraction CF, NDF, and ADF is T1 (77.37, 84.14, and 82.91%) and T2 (78.14, 86.99, and 82.53%).

Keywords: Soybean meal, calliandra calothyrsus, fiber fraction, intake and digestibility, Kacang goats
Nitrogen Balance in Kacang Goats Supplemented Protein Resource with Calliandra calothyrsus Substituted Soybean Meal

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Abstract. This study aimed to determine the balance nitrogen in Kacang goats which supplemented with protein sources from Calliandra calothyrsus substituted Soybean meal. Twenty goats were given a basal feed of Pennisetum purpureum cv. Mott (Odot grass) and supplemented with protein-based feed ingredients are calliandra and soybean meal. The proportion of calliandra feed substitution and soybean meal is T1 = odot grass (ad libitum) + 100% soybean meal; T2 = grass odot (ad libitum) + 25% calliandra + 75% soybean meal; T3 = grass odot (ad libitum) + 50% calliandra + 50% soybean meal; T4 = grass odot (ad libitum) + 75% calliandra + 25% soybean meal; and T5 = grass odot (ad libitum) + 100% calliandra. The amount of feed supplementation was given based on daily protein requirements (gram/DM/head) according to animal body weight. Feed was given contained iso protein (CP) 13 to 14% and iso energy (TDN) 56 to 57% to determine the balance nitrogen. Last 14 days conducted collections include total collections of feeding, the residue of the feed, feces, and urine. Nitrogen balance is calculated by measuring intake nitrogen, fecal nitrogen content, and urine nitrogen. Data obtained from the results of the study analyzed variance using a one-way analysis of variance, so if the results show significant differences, it will be further analyzed by Duncan’s new multiple range test. The results showed that supplementation of calliandra substituted soybean meal was a significant effect (P<0.05) on the value of nitrogen balance. The highest value of nitrogen balance (g/kg BW^{0.75}) was 50% substitution of calliandra T3 (1.3±0.12).

Keywords: Soybean meal, calliandra, balance nitrogen, protein supplementation, Kacang goat
Growth and Production of *Cichorium intybus* in the Second Regrowth with Different Planting Densities in Yogyakarta, Indonesia

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**Abstract.** This study aims to evaluate the growth and production of *Cichorium intybus* in the second regrowth with different planting densities in Yogyakarta, Indonesia. *Cichorium intybus* were cultivated by spreading the seeds on a 1x1.5 m plots with different planting density as treatments: 2, 3, and 4 gram/m$^2$ – then named as D1, D2, and D3 groups respectively. Each treatment had 3 replications. Fertilization was performed once, on the day-15. The plant’s height and length were observed weekly for 30 days. *Cichorium intybus* were defoliated 5 cm above the soil surface on the day-28. Variables observed on this study include plant’s height and length, number of leaves, leaf width, number pf plants, dry and organic matter production. All data were evaluated by using one-way analysis of variance on the SPSS-16 computer program. Significant differences among groups were then subjected to further analysis – Duncan’s New Multiple Range Test. Different planting densities significantly alter number of plants, dry matter production, and organic matter production (P<0.05). The group with highest planting density has higher number of plants (198.33 ± 22.50) compared to D1 and D2 groups (108.66 ± 6.50 and 155.66 ± 8.02). Meanwhile, *Cichorium intybus* on D1 group had higher plant height (37.5 ± 0.6 cm) compared to D2 and D3 groups (31.77 ± 1.18 and 31.49 ± 0.92 cm). Based on this study, the *Cichorium planted* on 4 g/m$^2$ of density results in highest production.

**Keywords:** *Cichorium intybus*, planting density, growth and production
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The Effect of Addition of Turmeric (Curcuma longa L.) on The Rancidity Process of Concentrate Feed Based on Lactic Acid Bacteria Fermentation During Aerob Storage

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Abstract. This study was carried out to determine the effect of the addition of turmeric (Curcuma longa L.) on minimalizing the rancidity process of concentrate feed based on lactic acids bacteria fermentation (CFLAB) in aerobic storage conditions. The treatment given was the addition of turmeric extract, turmeric flour, and vitamin E as a source of antioxidants in feed with levels of 0%, 0.5%, 1%, 1.5% and 2%. Storage was carried out for 0 days, 10 days, 20 days, 30 days, and 40 days with 3 replications. Antioxidant activity was carried out by 2,2-Diphenyl-1-picrylhydrazyl (DPPH) analysis. Value of pH measurement, free fatty acids numbers (FFA), and organoleptic analysis were carried out to determine the concentrate feed quality during storage. The data obtained were analyzed by a completely randomized factorial design. Significantly different data obtained due to the treatment then tested by Duncan Multiple Range Test (DMRT). The results showed that the addition of antioxidant sources inhibits the rancidity process during aerobic storage. DPPH analysis showed that turmeric extract and vitamin E had the best antioxidant activity. pH value indicated that the more levels of additional antioxidant sources, the lower the pH was achieved until the end of storage. In this case, the treatment of adding 2% turmeric extract, 2% turmeric flour, and 2% vitamin E had the best results with the lowest pH value during storage. Based on the FFA level analysis, the addition of antioxidant compounds can significantly decrease FFA levels compared to controls except for the addition of vitamin E, but in terms of the percentage increase in FFA levels during storage, the addition of 1.5% turmeric flour gave the best results (lower than controls). The results of physical quality in the form of color, odor, texture, and fungus, indicated that the quality of the feed lasting well with the addition of sources of antioxidants in all additions to the source of antioxidants.

Keywords: Turmeric, Antioxidant, Rancidity, Feed.
A Comparison of Three Highly Fermentable Carbohydrate Sources (Corn, Cassava Powder or Cassava Pulp) on In Vitro Digestion

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Abstract. Cassava powder and cassava pulp are feedstuffs that contain high levels of carbohydrate and variable starch so that they may have the potential as substitutes for corn grain in beef cattle rations. This study aims to determine whether feedstuffs sourced from cassava (cassava powder and cassava pulp) can replace corn as an energy source in rations as assessed by in vitro fermentation characteristics data (pH, VFA, NH₃-N, microbial protein concentrations and DM digestion). Using a completely randomized design, three rations were formulated using three different types of fermentable carbohydrate source (corn, cassava powder or cassava pulp) and palm kernel cake as a protein source with a ratio of 60:40 (carbohydrate:protein source). This was mixed with rice straw (20% and concentrate mix (80%) for the final ration. In vitro fermentation was for 48 hours fermentation and analysis of samples after fermentation. Use of cassava powder and cassava pulp in the diet increased (P<0.05) VFA concentration over that from corn (14.6 and 18.2 vs. 11.3 mM, respectively) and decreased NH₃-N (4.73 and 4.55 vs. 8.26 mg/100mL, respectively) in the rumen fluid compared to corn (P<0.05). pH did not change and ranged from 7.10 to 7.24. Rations containing cassava pulp showed the greatest microbial N concentration (P<0.05) compared to rations containing corn or cassava (5.85 vs. 4.52 and 4.43 mg/100mL, respectively). It may be concluded that cassava powder and cassava pulp can substitute corn in ruminant rations with a positive effect on the characteristics of rumen fermentation.

Keywords: Rice straw, Cassava powder, Cassava pulp, Corn, Palm kernel cake, In vitro fermentation characteristics
**Calliandra calothyrsus as a protein source in goat's diets: feed intake and ruminal fermentation parameters**

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**Abstract.** The aim of the study is to evaluate the use of Calliandra leaves (*Calliandra calothyrsus*) as a protein source in the Kacang goat’s diet and as an alternative to substitute the use of soy bean meal in goat’s diets in the women farmer’s group Wonolagi, Gunungkidul. The study was conducted with fifteen female Kacang goats with average weight 20 to 23 kg were plotted randomly into three diets treatments and evaluated with *in vivo* method. The diet consisted of basal diets (local forages were provided in accordance with farmer’s practices) with three treatments: 100% Calliandra (T1), 50% Calliandra + 50% SBM (T2), and 100% SBM (T3). Observation was conducted for three weeks, followed with two weeks total collection. Parameters observed in this study were: feed intake (Dry matter intake, DMI; Organic matter intake, OMI; Crude protein intake, CPI; and Crude Fiber Intake, CFI) and ruminal fermentation parameters after 3 hours feeding period (pH value, total volatile fatty acid (VFA), acetate, propionate, butyrate and A:P ratio). Collected data were analyzed using one-way ANOVA and different between means were analyzed using DMRT. Dry matter intake, organic matter intake and crude fiber intake did not significantly differed among treatments, however, greater SBM content in T3 improved crude protein intake (CPI) 34.21% significantly (P<0.05) compared to T1 diet. Ammonia, total VFA, acetate and propionate profile were greater in T2 diets compared to T1 diet (P<0.05) as much as 11.42%; 39.61%; 46.48% and 34.12% respectively. Meanwhile, the pH value, butyrate profile, and A:P ratio had no significant difference between different diets. From this study, it can be concluded that in local farmers practice the use of Calliandra to substitute SBM should be in the 50 to 50 ratio to optimized the intake and ruminal fermentation profile, furthermore, further studies involving digestibility of Calliandra leaves should be evaluated to provide further evidence regarding the use of Calliandra leaves as protein source in Goats diets.

**Keywords:** *Calliandra calothyrsus*, soy bean meal, intake, ruminal fermentation
Production of Starter Culture to Produce Biomass of Probiotic Indigenous Lactic Acid bacteria

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Abstract. The purpose of this study was to compare the mixture of three strains probiotic lactic acid bacteria (LAB) that would be produced into strarter cultures. The bacteria consisted of: Lactobacillus murinus Ar-3, Streptococcus thermophilus Kp-2, and Pediococcus acidilactici Kd-6. The study was conducted by observing the growth of LAB in the glucose yeast peptone medium for 24 hours. The variables observed were the growth rates of three strains of LAB. Data from the research result analyzed using regression test to see the relationship between incubation time and optical density value of each bacterium. The result showed that the growth rate of Lactobacillus murinus Ar-3 was 3.25 ± 0.006 hours, Streptococcus thermophilus Kp-2 3.68 ± 0.1 hours, and Pediococcus acidilactici Kd6 3.74 ± 0.04 hours. The results of the regression analysis showed that the comparison of Lactobacillus murinus Ar-3, Streptococcus thermophilus Kp-2, Pediococcus acidilactici Kd6 in starter culture production was found to be 1,00: 1,18: 1,16 v / v. It be concluded that the generation of three strains of probiotic bacteria is different.

Keywords: Lactic acid bacteria, growth rate, starter culture
In Vitro Digestibility of Ruminant Ration in Response to Protected Feed Substitution

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Abstract. Excessive degradation of feed, especially high protein feed, in the rumen can reduce nutrient utilization efficiency of feed in the hind gut (post-rumen). Protected feed is expected to increase the undegraded proteins that enter and then absorbed in the intestine. This in vitro study was conducted to determine whether the addition of protected feed in ruminant rations can reduce rumen degradability as well as improving post-rumen degradability of feed. The protected feed used in this study was soybean meal and crude palm oil mixture (4: 1) which was added with 0.3% Agromix. Independent sample t-test was used to compare two dietary treatments (T1/control = commercial ration, and T2 = commercial ration with 4.4% protected feed substitution). Each dietary treatment was done in 6 replications. Both dietary treatments were tested for their digestibility using a 2-stage in vitro technique of Tilley and Terry (1963). Rumen fluid pH did not change (range 7.24 – 7.28). Compared to the T1 treatment, the T2 treatment showed lower (P<0.05) digestibilities of dry matter (DMD, 56.7 vs. 54.5%, respectively), organic matter (OMD, 57.3 vs. 54.6%, respectively), and crude protein (CPD, 7.96 vs. 5.10%, respectively) in the first stage (rumen stage). In the second stage (post-rumen stage), the T2 treatment showed greater (P<0.05) DMD (56.1 vs. 52.6%), OMD (53.1 vs. 49.9%), and CPD (37.9 vs. 23.4%) than the T1. It can be concluded that protected feed substitution in ruminant ration effectively decrease digestibility in the rumen and increased post-rumen digestibility, which imply that protected feed substitution can improve the nutrient utilization in the post rumen.

Keywords: Protected feed, In vitro digestibility, Ruminant ration, Substitution
Rumen Fermentation Characteristics of Ongole Crossbred Bulls in Response to Different Inclusion Levels of Gaplek and Palm Kernel Cake

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Abstract. Rumen digestion and the efficiency of microbial protein synthesis in the rumen can be changed by varying starch and true protein digestion in the rumen. The purpose of this study was to determine the best proportion of gaplek (dried cassava powder) and palm kernel cake (PKC) with a fixed proportion of rice straw as assessed by rumen fermentation characteristics. Three rations were offered to 14 Ongole crossbred bulls with average weight at 200±20 kg. The rations were mixtures of rice straw, gaplek, and PKC at ratio of 20:70:10 (T1), 20:50:30 (T2), and 20:30:50 (T3), respectively. To maintain adequate rumen degradable N, 2% urea in gaplek was added to each ration. Ruminal fluid samples were obtained 2 hours after feeding from all bulls using a Geishauser probe at week 14 to measure pH and analyze VFA, NH₃-N, and microbial N concentrations. Rumen pH did not change (range 7.1 - 7.5). The T2 and T3 treatments showed lower total VFA concentrations (P<0.05) than T1 treatment (71.6 and 70.3 vs. 88.4 mM, respectively). The highest NH₃-N concentration (P<0.05) was shown by T2 and there were no significant differences between T1 and T3 treatments (9.92 vs. 4.64 and 5.44 mg NH₃-N/100mL, respectively). The greatest microbial N concentration was shown by T3 treatment, and was followed by T2 and T1 (6.66, 4.95, and 3.83 mg microbial N/mL, respectively, P<0.05). It can be concluded that a high inclusion of gaplek caused no adverse rumen digestion characteristics but in associated experiments this treatment caused a depression in food intake. A safe combination of rice straw, gaplek, and PKC was at a proportion of 20:30:50.

Keywords: Rice straw, Dried cassava powder, Palm kernel cake, Rumen fermentation characteristics
Effect of Protected and Non Protected Corn Oil Supplementation on In Vitro Rumen Fermentation

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Abstract. This study aims to determine the effect of supplementation of balanced corn oil (CO) and protected corn oil (PCO) using formaldehyde on the parameters of rumen fermentation. Protection of corn oil is carried out by mixing refined milk powder and CO (2:1) using formaldehyde 1.5%. Rumen fluid for in vitro dry matter digestibility (IVDMD) and organic matter digestibility (IVOMD) and in vitro gas production was collected from rumen fistulated Balinese cattle which had been adapted with elephant grass and wheat bran (60:40) as basal substrate. The supplementation given is the balance ration of CO and PCO : T0 (0%:0%) as a control, T1 (5%:0%), T2 (3.75%:1.25%), T3 (2.5%:2.5%), T4 (1.25%:3.75%), and T5 (0%:5%). The parameters observed were total gas production, pH value, NH₃, IVDMD, and IVOMD. Data were subjected to Oneway ANOVA using Completely Randomized Design. The differences found between mean were tested by Duncan's Multiple Range Test. The results showed that T1 and T2 significantly (P<0.05) decreased total gas production at 48 hours incubation and decrease the number of protozoa. In addition, T1 (P<0.05) significantly reduced NH₃, and IVDMD. Based on the research conducted, it was concluded that supplementation of CO balance of 3.75% with PCO of 1.25% could reduce the production of total gas production and the number of protozoa, but did not cause a decrease IVDMD and IVOMD.

Keywords : Corn oil, protected corn oil, formaldehyde, in vitro, rumen fermentation.
Identification of Galactogogues in *Gliricidia maculata*

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Abstract. Galactogogues are needed by periparturient dairy cows for boosting milk production and preventing negative energy balance. A long-term use of commercially galactogogues have caused toxicity which open a detrimental effect to normal health status of both human and animals. The study was conducted to identify a herbal galactogogues from bioactive compounds of *Gliricidia maculata* ethanol extract. The samples were harvested randomly from edible portion of plants at optimal cutting age (80 days). Lyophilization was carried out at 55°C for 3 days and pulveration was done by Foss Tecator Cyclotec\(^{TM}\) 1093 Sample Mill (300 mesh, 1 mm screen). The bioactive compounds were extracted by an ultrasonic asissted extraction method (20-40 kHz for 90 minutes) and identified by the GCMS-QP2010S SHIMADZU instrument with Rtx 5 MS column (low polarity), 30 meters column length, 0,25 mm internal diameter, 0,25 µm of crossbond diphenyl dimethyl polysiloxane as a wall coated open tubular, Helium (He) as a carrier gas, 70 electrons volt of ionizing energy and 300°C injection temperature. Spectra produced by MS are translated into chemical structures and data were presented in table form which contains of: retention time (minutes), peak area (%), molecular formula (CxHyOz), molecular weight and the name of bioactive compound based on the similarity index of the GCMS library. The determination of galactogogues properties were based on reference studies. There were five major galactogogues of *Gliricidia maculata*: phytol, 1-Octadecyne, 2,6,10,15,19,23-hexamethyl-Squalene, n-Eicosane and 4-Hexadecen-6-yne.

Keywords: Galactogogues, *Gliricidia maculata*
The Effect of Addition of Turmeric (Curcuma longa L.) on the Rancidity Process of Concentrate Feed Based on Lactic Acid Bacteria Fermentation During Aerated Aerobic Storage

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Abstract. This study was done to determine the effect of additional of turmeric (Curcuma longa L.) in preventing the rancidity process of concentrate feed based on lactic acids bacteria fermentation (CFLAB) in aerated aerobic storage conditions. The treatment given was the addition of pure turmeric, extract turmeric, and vitamin E as a source of antioxidants in feed with levels 0%, 0.5%, 1%, and 2%, while each treatment has three replications. All treatment were stored in aerobic conditions with aeration treatment. Aeration was done every morning and evening for 40 days. Observation of the rancidity process was carried out at storage for 40 days with three replications. The parameters observed were pH values, numbers of free fatty acids (FFA), and physical quality (color, odor, mold, and texture) of CFLAB. The data obtained were analyzed by a completely randomized factorial design. If the results obtained were significantly different due to the treatment then tested by Duncan’s Multiple Range Test (DMRT). The results showed that the addition of antioxidant sources during aerated aerobic storage showed a marked difference in FFA and but no significant on pH value. The addition of three sources and five levels of antioxidant sources maintain a pH value in the neutral range during storage. Based on the FFA analysis, the addition of turmeric and turmeric extract was suppressed increasing of FFA value better than control and vitamin E. So that it can be concluded that the provision of sources of antioxidants was suppressed increasing levels of FFA during storage. The results of organoleptic test showed that the quality of CFLAB persisted quite well in all treatments with aerated aerobic on 40 days storage.

Keywords: Turmeric, FFA, CFLAB, pH value, antioxidant
The Effect of Addition Waste Product from Banana and Mango as Malic Acid Source on Methane Gas Production

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Abstract. The research aims determine effect of addition waste product from Banana (Musa acuminata cavendish subgroup) and Mango (Mangifera indica, var. Gedong) on methane gas production. The research was conducted based on Menke and Steingass’s in vitro gas test fermentation (1979) method and tannin content was added by 0, 1, 2, 3% vassed on dry matter of substrate. Factorial experiment design (2x4) was used to analyze methane gas production. The result showed that waste product from Banana and Mango had significant effect on methane gas production (P <0.01). It could be concluded that waste product from banana and mango which containing secondary metabolites can reduce in vitro methane gas production.

Keywords: Banana, Mango, in vitro gas production, methane, waste product.
Effect of *Leucaena leucocephala* Substitution on In Vitro Rumen Fermentation, and Methane Emission in Thin Tailed-Sheep

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**Abstract.** This study aimed to evaluate the effects of substitution of *Leucaena leucocephala* (LL) leaves on in vitro rumen fermentation and methane emission in thin tailed-sheep. Rumen fluid were collected form two thin tailed-sheep fed with mixed-forages. The basal diet used in in vitro systems consisted of 30% of concentrate and 70% of forages. LL Leaves substituted forages of basal diet by 10% or 25%. Methane production, carbon dioxide (CO$_2$), ammonia concentration, microbial protein, protozoa, volatile fatty acids (VFA) were obtained according to in vitro gas production methods described by Menke and Staingass (1988) followed by microbial diversity evaluation. Substitution of LL leaves reduced the pH, ammonia and microbial protein regardless percent of substitution. Protozoa counts were lower as the increasing of LL leaves substitution. However, there were no significant effects of LL leaves substitution on VFA production, CO$_2$ and methane emission. It can be concluded that substitution of LL leaves to forages basal diet up to 25% was not enough to reduce methane emission although some ruminal fermentation parameters were affected.
ABSTRACT

Parallel Session

Feed and Animal Nutrition (Non-R)
Growth Performance of Broiler Chickens Fed Diets Containing Amorphophallus campanulatus Fermented with Bacillus subtilis

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Abstract. This study aims to investigate the effect of the utilization of fermented Amorphophallus campanulatus (FAC) by Bacillus subtilis in ration on growth performance of broiler. One hundred and twelve broilers aged eighth days were randomly allocated to four dietary treatments (four replication with seven birds per replicate pen) and feed containing 0, 5, 10 and 15% FAC. Diets and drinking water were provided ad libitum for 5 weeks. The obtained data were statistically analyzed using one way ANOVA. Duncan's new multiple range tests were subsequently used to separate data with a significant difference. The result showed utilization FAC until 15% in ration had no effect on feed intake, body weight and feed conversion ratio (P>0.05). These results suggest that fermented Amorphophallus campanulatus (FAC) by Bacillus subtilis can be used until 15% in broiler's ration.

Keywords: Broiler chickens, Amorphophallus campanulatus, Growth performance
Growth Optimization of *Bacillus subtilis* 11A Isolated from Indonesian Native Chicken (*Gallus domesticus*) for Bacteriocin Production

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**Abstract.** This study aimed to obtain the optimal growth of *Bacillus subtilis* 11A isolated from Indonesian native chicken (*Gallus domesticus*). The growth optimization included pH medium conditions (5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5) and different incubation temperatures (31, 33, 35, 37, 39, 41°C). The Isolate was incubated for 12 hours (stationary phase) using *Luria Bertani broth*. The optical density was observed using spectrophotometer at wavelength λ600 at 0 and 12 hours incubation. Growth curve of *Bacillus subtilis* 11A made using optimum pH and temperature and bacteriocin activity against pathogens *Staphylococcus aureus*, *Salmonella typhimurium* and *Escherichia coli* using a well-diffused method. Growth optimization data was statically analyzed using a one-way analysis of variance (ANOVA) followed with Duncan’s New Multiple Range Test (DMRT) to distinguish the treatment means. The results showed that the optimum pH value for maximum bacterial growth raised at pH 6.5 and followed by pH 7.0, 6.0, 7.5, 8.0. Optimum incubation temperature for maximum bacterial growth was at 39°C and followed by 41, 37, 35°C. The highest bacteriocin activity of *Bacillus subtilis* 11A against three pathogenic bacteria (*Staphylococcus aureus*, *Salmonella typhimurium* and *Escherichia coli*) was resulted at stationary phase (1906.14, 2179.79, 2343.07 AU/ml). It could be concluded that optimum pH and temperature for bacteriocin production of *Bacillus subtilis* 11A isolated from Indonesian native chicken (*Gallus domesticus*) growth was pH 6.5 and 39°C. The highest bacteriocin production and activity produced by *Bacillus subtilis* 11A at stationary phase.

**Keywords:** *Bacillus subtilis*, Bacteriocin, *Gallus domesticus*, Growth optimization, Pathogens.
Digestibility of Nutrients of Growing Pigs Fed Fermented whole Tamarind Seeds

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Abstract. Tamarind seeds are nutritious but they have hard seed coats and contain anti-nutrient called tannin. Feed processing, by soaking the seeds in water and fermenting them with soluble carbohydrate, was believed to increase the nutrient content, which should enhance digestibility in pigs. As a continuation of Experiment I, the objective of Experiment II was to evaluate the digestibility of nutrient and anti-nutrient in growing boar pigs fed fermented whole tamarind seeds. Twenty-five of three to four-month-old of growing boar crossbred Landrace were fed with one of the five following dietary treatments in five replicates. The treatments were R0 = diet without fermented tamarind seeds or diet with fermented tamarind seeds, where the seeds were soaked in water for 2 d and fermented with 20% palm juice for 72 h (R1) or 108 h (R2); or the seeds were soaked in water for 4 d and fermented with 20% palm juice for 72 h (R3) or 108 h (R4). The variables measured were the digestibility of nutrient and anti-nutrients of the fermented tamarind seeds. Results showed that R1, R2, R3, and R4 increased nutrient and anti-nutrient digestibility. In short, before fed to pigs whole tamarind seeds should be soaked in water and fermented with palm juice to enhance feed digestibility. It was suggested to soak the seeds in water for 2 d before fermented them with 20% palm juice for 72 h.

Keywords: Soaking, Borassus Palm Juice, Boar, Grower
Effect of garlic powder (Allium sativum) as feed additive on native chicken performances

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Abstract. The aim of this research was to evaluate the effect of Garlic Powder as feed additive on native chickens performances. A total number of 300 native chickens were divided into 5 treatments; there were 5 replications in every cage has 12 birds per replications. Native chicken were fed with 5 experimental diets, basal diet and diets with 0.25%, 0.30%, 0.35% and 0.40% of Garlic Powder. The respective native chickens performance were determined every week. Data were collected every week consist of feed consumption, daily body weight, and Feed conversion ratio (FCR). The data was analyzed using GLM in a windows-based software package, SAS version 9.1. The differences were tested by LSM. Significant level used in the group comparisons was set at p<5%. The addition of garlic powder as feed additive has significantly effect (P < 0.05) on average body weight and feed conversion ratio. However, the addition of garlic powder as feed additive did not significantly affect (P > 0.05) on feed consumption. The addition of 0.35% of garlic powder improves performances of native chickens including average body weight and feed conversion ratio.
Dietary Supplementation of Fuvic Acid and Moringa Oleifera as Bio-Antibiotic on Laying Performance and Physical Quality of The Egg

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Abstract. This research was conducted to study the effect of ground Moringa oleifera leaves (processed steamed and unsteamed) and fulvic acid supplementation in the diet on the performance and Egg quality of the experimental laying chicken. As many as 64 Laying Hens aged 18 weeks old were used and reared for 8 weeks (18-26 weeks). The laying performance parameters measured were feed intake, FCR, egg production (hen day) and the physical quality measured were egg weight, egg index, egg yolk weight, egg white weight, egg shell weight, thickness of the shell and yolk color score. The treatments consist of four treatments with and without inclusion of antibiotic. The treatments were Control diet with antibiotics (A1), Control diet without antibiotics + 0.5% fulvic acid (A2), Control diet without antibiotics + 0.5% fulvic acid + 5% moringa leaves (A3) and Control diet without antibiotics + 0.5% fulvic acid + 5 % moringa leaves (A4). The experimental design used completely randomized with 4 replications. The results showed that supplementation of fulvic acid and Ground Moringa oleifera leaves in the diets did not significantly affect (P> 0.05) the feed intake, egg production (hen day), the FCR as well as the egg weight, egg index, yolk weight, albumin weight, eggshell weight, egg shell thickness. However the egg production of chickens fed the diet without synthetic antibiotic containing steamed gound moringa 5% + fulvic acid 0.5% (A4) tend to be higher compared to the Control diet (A1). The result of this research showed that the yolk color score were significantly different (P <0.01). From this research, it can be concluded that the diets containing steamed and unsteamed moringa oleifera leaves and fulvic acid result in increasing the yolk color, indicated high antioxidant content. The combination of fulvic acid 0.5% and steamed ground moringa leaves 5% (A4) may be use as substitution of synthetic antibiotic without any negative response to the performance and the eggs quality.
The Effect of Alfalfa (Medicago Sativa L.) Supplementation on Hybrid Duck Performance

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Abstract. The aim of this study was to determine the effect of alfalfa supplementation in the rations on hybrid duck performance. 90 hybrid ducks with 3 treatments and 5 replications were used in this study. Each replication consists of 6 ducks. Three type of diet were used in the study consisted of P0 = Basal ration without alfalfa supplementation, P1 = Basal ration + 3% alfalfa supplementation and P2 = Basal ration + 6% alfalfa supplementation. Either 3% or 6% alfalfa was computed based on dry matter, but offered to duck in fresh condition. Drinking water was given in ad libitum. Parameters observed included feed intake, body weight gain and feed conversion ratio. This study used a Completely Randomized Design. Data collected was analyzed using Statistical Product for Service Solution version 22 and Duncan's new Multiple Range Test have been used in the analysis with significant result. Results showed that alfalfa supplementation up to 6% did not affected to feed conversion ratio but 3% alfalfa supplementation significantly affected (P<0.05) to feed intake and body weight gain of hybrid ducks. The conclusion from this study is 3% alfalfa supplementation can increase feed intake and body weight gain of hybrid ducks.

Keywords: Alfalfa, body weight gain, feed conversion ratio, feed intake, hybrid ducks.
Blood Lipid Profile of Broiler Chicken As Affected By a Combination of Feed Restriction and Different Crude Fiber Sources

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Abstract. The aim of the present study was to elaborate the effect of feed restriction and different crude fiber sources on blood lipid profiles of broiler chicken. A Completely Randomized Design (CRD) in Factorial Arrangement (2 x 4 with 3 replications) was employed in the present study. One hundred and twenty broiler chicken from Cobb strain aged 3 weeks old were randomly allocated into 24 experimental units. Feed restrictions were carried out at the age of 21 - 28 days old. Soon after restrictions, birds were fed commercial diets ad libitum until the period of 42 days time. ‘A’ factor was restricted feeding regime which was consisted of: no restrictions (A0), and 20% restricted feeding regime (A1). ‘B’ factor was source of crude fiber which was consisted of: commercial feed (B0), commercial feed + coffee hull meal (B1), commercial feed + rice bran (B2), and commercial feed + coconut oilcake (B3). Parameters measured were: serum cholesterol, triglycerides, low density lipoprotein (LDL), and high density lipoprotein (HDL) level. The results showed that the combination of feed restriction and source of crude fiber in the diets did not affect (P > 0.05) serum cholesterol, triglycerides, LDL, and HDL level. ‘A’ factor gave a significant (P < 0.01) on serum cholesterol and LDL level. ‘B’ factor gave a significant (P < 0.05) on serum cholesterol, LDL, and HDL level. It can be concluded that feed restriction up to 20% and source of crude fiber from coconut oilcake gave a better results on serum cholesterol, triglyserides, LDL, and HDL level.

Keywords: Broiler, Blood lipid profiles, Feed restriction, Crude fiber source
In Vitro Study: Optimization of Antimicrobial Activity of The Kapok Leaves Extract (*Ceiba pentandra* (L.) Gaertn.) using Nanoencapsulation Technology

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Abstract. This research aims to identify the antimicrobial activity of the kapok leaves extract (*Ceiba pentandra* (L.) Gaertn.) going to be used as a basic application for kapok leaves extract supplementation as a feed additive for broiler chicken ration. The research was designed by using Completely Randomized Design (CRD) with one way ANOVA. The method applied was agar well diffusion method. The treatment was divided into positive control/ tetracycline 100 mg/L antibiotic (P1); negative control/aquadest (P2); kitosan 2.5 mg/ml (P3); Sodium tripolyphosphate/STPP 7.5 mg/ml (P4); kapok leaves extract (KLE) 20 mg/ml (P5); and kapok leaves nanoencapsulation extract (KLNE) 20 mg/ml (P6). Each treatment was divided into three replications. The inhibition test was conducted to *Salmonella typhimurium, Escherichia coli, Staphylococcus aureus,* and *Lactobacillus acidophilus* bacteria. The research result showed that the KLNE application improved the antimicrobial activity in real (P<0.05) better than that of KLE. In fact, the *Escherichia coli* has the highest antimicrobial activity (P<0.05) than the positive control. Based on the result, it was identified that the nanoencapsulation technology can optimize the antimicrobial activity of kapok leaves extract.

Keywords: antimicrobial, *Ceiba pentandra,* leaves extract, nanoencapsulation
Antibacterial activity and characterization of *Annona muricata* Linn. leaf extract-Nanoparticles against *Escherichia coli* FNCC-0091 and *Salmonella typhimurium* FNCC-0050

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**Abstract.** The objective of this study was to evaluate the antibacterial properties and inhibitory effects of *Annona muricata* Linn leaf extract loaded by chitosan nanoparticles on the growth of *Escherichia coli* FNCC-0091 and *Salmonella typhimurium* FNCC-0050. The Chitosan-sodium tripolyphosphate-nano particles (CS-TPP-NPs) have been extensively studied during the past few decades due to their well-recognized applicability in various fields. CS-TPP-NPs were prepared by ionic cross-linking of CS and TPP and were physico-chemically (particle size and zeta potential) and morphologically characterized using transmission electron microscopy (TEM). The optimum formula for CS-TPP-NPs was analyzed using centrifugation 1:1:0.02 to 1:1:0.01 of Chitosan (CS): *Annona muricata* Linn leaf standardized extract (AmE): sodium tripolyphosphate (TPP) ratios were evaluated with constant CS. Data obtained for bacterial activities were statistically analysed using one-way analysis of variance (ANOVA). The means between groups were separated with Duncan post-hoc test. The result showed that the optimum formula for CS-TPP-NPs of AmE was 1:1:0.01. The optimum formula was characterized by particle size, zeta potential, and morphology CS-TPP-NPs of AmE. The results showed that the average particle size of CS-TPP-NPs was 234.00 ± 22.5 nm with PI 0.42 ± 0.20 and zeta potential was 34.77 ± 4.97 mV. It was shown that the formulation increased solubility and stability of AmE. Antibacterial activity of the CS-TPP-NPs-AmE was performed by well diffusion method against *Escherichia coli* FNCC-0091 and *Salmonella typhimurium* FNCC-0050. It is concluded that CS-TPP-NPs of AmE in the ratio 1:1:0.01 has efficient antibacterial activities against *Escherichia coli* FNCC-0091 and *Salmonella typhimurium* FNCC-0050.

**Keywords:** *Annona muricata* Linn leaf extract, Antibacterial activity, Chitosan-sodium tripolyphosphate nanoparticles
In Vitro Antibacterial Activity of Mindi (Melia azedarach Linn.) Leaf Extract with Nanoencapsulation Technology

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Abstract. Purpose of this study was to examine the effect of nanoencapsulation technology in protecting the bioactive components of mindi (Melia azedarach Linn.) leaf extract as alternative natural antimicrobial agents for poultry. The first step of this study was formulation of the ratio of mindi leaf extract: chitosan: sodium tripolyphosphate (STPP) for nanoencapsulation by ionic cross-linking. The results showed that the optimum formulation ratio of mindi leaf extracts: chitosan: STPP was 1:7:1/175. Upon accomplishing the optimum formula, nanoencapsulation characteristics of the fitobiotic was measured, using particle size (PSA), zeta potential value, morphology of nanoencapsulation (TEM), and bacterial growth inhibition as responses variables. The second step was measuring the bacterial growth inhibition using the well diffusion technique with 6 treatments and 3 replications. The treatments were: aquadest without antibiotic or phytobiotic addition (negative control; T1), aquadest with 100 ppm antibiotic Tetracycline addition (positif control; T2), aquadest with 0,2% chitosan (T3), aquadest with 0,04% STPP (T4), aquadest with 2% mindi leaf extract (T5); and aquadest with nanoencapsulated mindi leaf extract (T6). The results showed that particle size of nanoencapsulation mindi leaf extract was 535.2±12.83 nm with Polydispersity Index (PI) value 0.436±0,21 and zeta potential value 59.73±0.35 mV. The formulation of mindi leaf extract was found to possess inhibitory activity against Escherichia coli, Lactobacillus acidophilus, and Salmonella typhimurium. The research concluded that formulation of mindi leaf extract was clear, stable and had antibacterial activity.

Keywords: Antibacterial property, Mindi leaf extract, Nanoencapsulation technology
Antibacterial effects of essential oils of *Cymbopogon citratus* and *Amomum compactum* under self-nanoemulsifying drug delivery system (SNEDDS)

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**Abstract.** Microbial population in the gastrointestinal tracts of broiler chicken can be modulated by herbal additives that contained phytochemical substances. Essential oils (EOs) have potential phytochemical compounds, but are lipophilic and of low solubility in water. Therefore, self nanoemulsifying drug delivery system (SNEDDS) might be one of the formulation strategies to improve the solubility of essential oils. In this study, the antibacterial activity of *Cymbopogon citratus* and *Amomum compactum* EOs by SNEDDS was conducted using disc diffusion method on *Escherichia coli* and *Salmonella typhimurium*. Zone inhibition was found on both pure EOs and SNEDDS formulations. SNEDDS formulations of *Cymbopogon citratus* and *Amomum compactum* EOs were effective against *Escherichia coli* and *Salmonella typhimurium* (P<0.05). *Cymbopogon citratus* essential oil has the highest inhibition zone, when compared to the other formulations, followed by *Amomum compactum* essential oil. On the other hand, SNEDDS formula of *Cymbopogon citratus* and *Amomum compactum* essential oil showed similar antibacterial activity as tetracycline and penicillin antibiotics in inhibiting the growth of *Escherichia coli* and *Salmonella typhimurium*. It can be concluded that the use of SNEDDS formula of essential oil would be useful to reduce the population of the microbial pathogen in the intestine of poultry.

**Keywords:** *Amomum compactum*, Antibacterial activity, *Cymbopogon citratus*, Essential oils
Potential of Atung Seeds (*Parinarium glaberrimum* Hassk.) as a Phytobiotic Candidate in Poultry Rations Based on Nutrient Composition, Phytochemical and Antibacterial Properties

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Abstract. Antibiotic growth promoter as a feed additives in poultry rations has been banned, so many studies was directed to find the alternative replacements, among using of metabolites seconder of plant. Atung (*Parinarium glaberrimum* Hassk.) is a forest plant that is widely found in Moluccas- Indonesia, which is traditionally used as medicine and food preservative by the people. This study aims to determine nutrient composition, phytochemical composition, and antibacterial activity of atung seed as a phytobiotics candidate in poultry rations. Analysis of nutrient seeds includes proximate analysis, calcium-phosphorus, and gross energy. Extraction of atung seeds powder by maceration method using ethanol 96% as a solvent. Qualitative analysis of phytochemical compounds atung seed extract using the thin layer chromatography method. The inhibitory test on pathogenic and non-pathogenic bacteria used agar diffusion method with 8 concentrations of atung seed, and tetracycline as a positive control. Data of nutrient composition and phytochemical components were analyzed descriptively. Data of inhibitory zone were analyzed by analysis of variance in a Complete Randomized Design using 9 treatments and 4 replications. The results showed that the highest of atung seed nutrient was found to nitrogen free extract and gross energy which 75.08% and 5847.78 kcal/kg respectively. Atung seeds contain phenol compounds, tannins, flavonoids, saponins, and alkaloids. Atung seeds have a moderate to strong inhibition of pathogenic bacteria *Escherichia coli*, *Salmonella* sp., *Salmonella pullorum*, and *Staphylococcus aureus*. In contrast, the seeds has a weak inhibition against *Bifidiobacterium bifidum*. It can be concluded that atung seed have the potential to be a phytobiotic candidates based on phytochemical components and their ability to inhibit the growth of pathogenic bacteria.
Effect of blend of natural essential oils addition in the drinking water on productivity, carcass yield and meat quality of broiler

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Abstract. Herb contents, especially essential oils have been evaluated as feed additives to increase poultry production. Essential oils have antibacterial properties against E. Coli, C. perfringens and control coccidian infection that affected for modulation of gut microflora and health improvement. The aim of the present study was to evaluate the influence of blend of essential oils from the nine plant extract on meat quality and carcass yield of broiler. The blend of essential oils were given in the drinking water from day 10 to 35 (1 ml/ liter water). In total, 60 male day old chick broiler were randomly separated in two treatments with six replicates per treatment and 5 birds per replicate. Results showed that supplementation of blend of essential oil has not effect on the body weight, feed intake, feed conversion ratio and slaughter weight (ns). Birds supplemented with blend of essential oil had significant effect in carcass yield (1652 vs 1490 g). The slaughter body weight and carcass presentation showed no different (ns) between treatments. The cooking loss (22.60 vs 16.14%), tenderness (5.40 vs 3.93%), and water holding capacity (33.27 vs 26.60 mg H₂O) increased (p<0.05) when birds supplemented with blend of essential oil compared with that from no treatment birds. No different (ns) was found in moisture (77.74 vs 79.54%) and pH of carcass (6.20 vs 6.18). It can be concluded that supplementation of a blend of essential oils in the drinking water increased carcass yield, cooking loss, tenderness, and water holding capacity as parameter of meat quality.

Key words: essential oil, broiler, productivity, carcass yield, meat quality
Supplementation of Lauric Acid and Feed Fiber to Optimize the Performance of Broiler

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ABSTRACT. The aim of this research was to optimize the role of lauric acid (LA) and feed fiber (FF) to increase performance of broiler. Three hundred and sixty unsex Lohman MB 202-P broiler chicken were divided into thirty-six experimental unit used in this research. A factorial experiment with two factors based on completely randomized design was used in this study, where the first factor was level of LA i.e. 1.30%; 1.95%; and 2.60%, while the second factor was level of crude fiber (FF) i.e. 5%, 6%, 7%, and 8% in the diet. The level of lauric acid was equivalent with application coconut oil in feed that is 3%. Each experimental unit was repeated three times, so that each treatment combination applied on 30 birds. The observed variables were weight gain, cumulative feed intakes, feed conversion, and final body weight. Feeding trial showed that utilization of lauric acid and feed fiber highly significantly affected (P<0.01) weight gain, cumulative feed intakes, and final body weight, but not significantly different (P>0.05) on FCR. The conclusion of this study indicated that the used of 1.95% LA and 8% FF level on the diet would have an optimize cumulative feed intake, weight gain, feed conversion ratio and final body weight of broiler.

Keywords: Lauric acid, Feed fiber.
The Effect of Fresh and Hay Alfalfa (*Medicago Sativa* L.) Supplementation on Hybrid Duck Performance

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**Abstract.** The aim of this study was to determine the effect of fresh and hay alfalfa supplementation in rations on hybrid duck performance. 75 hybrid ducks with 3 treatments and 5 replications were used in this study. Each replication consists of 5 ducks. The ration was used in the trial consisted of P0 = Basal ration without alfalfa supplementation, P1 = Basal ration + 6% fresh alfalfa supplementation (computed based on dry matter) and P2 = Basal ration + 6% alfalfa hay supplementation (computed based on dry matter). Drinking water was given in ad libitum. Parameters observed were feed intake, body weight gain and feed conversion ratio. This study was arranged with Completely Randomized Design. Data collected was analyzed using Statistical Product for Service Solution version 22 and Duncan's new Multiple Range Test have been used in the analysis with significant result. The results showed that basal ration and fresh alfalfa supplementation significantly affected (P<0.05) to feed intake, body weight gain and feed conversion ratio. Supplementation of 6% alfalfa fresh resulted the highest body weight gain, followed by control (basal diet) and alfalfa hay. The conclusion from this study is supplementation of 6% alfalfa fresh give a better performance than alfalfa hay supplementation.

Keywords: fresh alfalfa, hay alfalfa, hybrid duck, performance
The Potential of *Tribulus terrestris* L. as Nutraceutical

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Abstract. Background: *Tribulus terrestris* was a shrub plant that can grow in all types of soil. This plant was popularly used as a traditional Chinese medicine, but there were not many reports regarding the use of *T. terrestris* in animal. **Objective:** The aim of this study was to determine content of nutrient and secondary metabolites of *T. terrestris*. **Methodology:** The whole plants of *T. terrestris* was collected from Yogyakarta. Nutrient content was analyzed by proximate analysis and content of secondary metabolites used spectrophotometer. **Result:** *T. terrestris* contain high fiber (25.78%) and protein that was almost the same as grass (13.03%). The content of each secondary metabolite consisted of alkaloid 311.65 ug/g, phenol 3.90 %/b/b, flavonoid 0.78 %/b/b, tannin 28.99 %/b/b, and essential oil <0.12 %/v/b. **Conclusion:** Based on the content of nutrients and secondary metabolites, *T. terrestris* can be used as a feed or medicine.
Effect of ‘BAV’ addition as feed additive in laying hen ration on quality and chemical composition of egg

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ABSTRACT. Formulation of the feed additive with objective to substitute the Antibiotic as Growth Promoter (AGP) in the ration of poultry has been developing. The potential role of essential oils (EO) as the immune-stimulator have gained much of interest recently. Some reports indicated that the EO have an antibacterial properties against pathogen bacteria. The purpose of this study was to investigate the effect of the addition of ‘BAV’ consisting a blend of 9-natural EO mixed with iodized salt as feed additive in the ration of laying hens on the quality and chemical compositions of egg. Thirty laying hens (strain Lohmann Brown, aged 56 weeks) were divided into two groups (5 pen/each group, 3 birds/pen: 15 hens/group) for 6 six weeks of treatment. The feed treatment was added 2 g/kg of ‘BAV’ and mixed thoroughly in the ration. Data on hen daily average (HDA), feed intake, feed conversion ratio (FCR), egg quality (weight, length, width, albumen high and width, yolk high and width, yolk colour, shell thickness, shell weight and haugh unit) and egg’s chemical composition (yolk cholesterol, yolk protein, albumen protein, xanthophyll) were collected and analyzed by T-test for statistic different. The results showed that BAV addition significantly increased HDA (P<0.05). However, birds fed with the BAV shown had no effected in their feed intake and FCR (P>0.05). The addition of ‘BAV’ increased yolk wide (P<0.05) and tent to improved egg mass (P=0.07) and albumen width (P=0.10), but there is no difference on egg length and width, albumen length, albumen and yolk height, yolk color, shell thick, shell weight and haugh unit. The ‘BAV’ significantly (P<0.05) decreased (21%) the cholesterol content of yolk (9.52 vs 12.14 mg/g), although ‘BAV’ has no affect on xanthophyll level (1.11 vs 0.95 mg/100g) and both of protein content of yolk (18.10 vs 17.59 g/100g) and albumen (11.56 vs 11.30 g/100g). It seem the addition of ‘BAV’ as feed additive in the ration of laying hens has potential to improve the quality and chemical compositions of egg.

Keywords: BAV, essential oil, antibiotic, feed additive, egg production, laying hen
Nutrients and Bioactives Potential of Clove and Carrot as Natural Feed Additive/Water Additive Candidate for Organic Broiler Chickens

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Abstract. The research was conducted to evaluate the functional character of nutrients and bioactives of clove (*Syzygium aromaticum*) as natural feed additive and carrot (*Daucus carota*) as natural water additive on organic broiler chickens. Research was done by laboratory analysis to phytochemicals, proximate on chemical compounds, β-carotene, and antioxidant potency of clove and carrot. Data were analysed by descriptive method. Results showed that phytochemical screening by color visualization were positive in flavonoid, tannin, saponin and triterpenoid for clove, and positive in saponin and triterpenoid for carrot. Quantitative analysis by spectrophotometry found total flavonoid 0.17% (w/w) on carrot, phenol total 80.07% (w/w) on clove and 4.08% (w/w) on carrot. Beta-carotene on clove 1.43% and carrot 0.45%. Proximate analysis on clove were dry matter 82.59%, ash 7.23%, crude protein 7.53%, crude fat 4.48%, crude fiber 14.14%, Ca 2.287%, P 0.087% and gross energy 4652.04 Kcal; and on carrot were dry matter 88.27%, ash 11.84%, crude protein 9.21%, crude fat 4.74%, crude fiber 12.14%, Ca 1.362%, P 0.335% and gross energy 3414.66 Kcal. Carrot was high in protein and aspartic acid (92.79 ppm). And clove was high in amino acids serine (76.80 ppm) and phenylalanine (67.73 ppm). It can be concluded that clove and carrot can be used as an alternative feed additive/water additive because of its nutrients and bioactive compounds.

Keywords: Additive, Bioactives, Carrot, Clove, Nutrients.
Effects of curcumin supplementation in aflatoxin B1-contaminated diet on the performance and egg quality of laying duck

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Abstract. Aflatoxin B1 (AFB1) contaminants are a major concern in poultry industry because result significant economic losses and public health burden. The objective of this study was to assess the effect of curcumin supplementation in AFB1-contaminated diet on the performance and external egg quality of laying duck. Forty eight seven-months female Alabio ducks (Anas platyrinchos Borneo) were randomly allocated into 3 groups with 4 replicates of 4 ducks per pen: (1) Control (commercial feed); (2) AFB1 100 ppb diet (Control + AFB1-contaminated diet) and (3) CUR diet (AFB1 100 ppb diet + 0.05% Curcumin). Experimental diet was conducted for 42 days. Ducks were weighed on day 21 and 42 to calculate the body weights change. The percentage of egg production was calculated since 21st day. Egg weight, egg shell thickness and yolk weight percentage were determined in eggs collected on the last three days of the experiment. Data were subjected to analysis of variance (IBM SPSS 21). Result showed live weight and weight gain were significantly lower in AFB1 diet (P < 0.05), and curcumin inclusion could diminish this toxic effect of AFB1. However, treatments had no significant effects (P > 0.05) on egg production and egg external qualities. It was concluded that curcumin supplementation has positive effects on the laying duck performance which exposed by AFB1 through contaminated diet ingestion.
The Effect of Graded Levels of Fermented Duckweed in Quail Diets on Egg Production and Yolk Cholesterol

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Abstract. This study aims to examine the effect of feeding graded levels of fermented duckweed meal (FDM) in quail diets on production performances and egg internal quality. A total of 100 two months old quail layer (Coturnix coturnix japonica) were randomly allocated into four dietary treatments, in which each treatment consisted of five replications consisting of 5 birds each according to a completely randomized design. FDM used in each treatment were: P0 (0%), P1 (5%), P2 (10%), and P3 (15%), complementing other feed ingredients. Observations were conducted for 6 weeks following a week of adaptation to diets and environment. On the last two days, six eggs from each replication were collected for determination of yolk cholesterol using the Liebermann Burchard method. Daily egg production varied from 66 – 76%. Egg production of birds received diet with 10% duckweed was not different (P<0.05) from those of control, but those fed diet with 15% was significantly lower. Egg weight and yolk weight decreased when level of FDM increased, but eggshell and egg yolk cholesterol were not affected (P>0.05) by dietary levels of FDM. The results suggests that fermented duckweed meal using mixed culture probiotics can be fed up to 10%.

Keywords: fermented duckweed, egg production, egg yolk cholesterol, quail
The Effect of Feed Containing Fish Hydrolysate to The Feed Quality Improvement and the Produced Egg Quality

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Abstract. Addition of 1-2% of fish hydrolysate into the standard feed of laying hens has been reported to reduce total nitrogen content and the total water content in the excreta. The reduction in total nitrogen content in the excreta is one of the simple indications of improved digestion and the better quality of feed given. This paper reports the effect of fish hydrolysate addition to the standard feed at various concentration on improving feed quality and egg quality of laying hens. A population of 114 laying hens of ± 86 weeks old were divided into three treatment groups. Each group consisted of 38 individual hens, and each group performed three replications. The chickens are kept in a battery cage by treating standard feed mixed with fish hydrolysates with varying fish hydrolysate concentrations (0; 1; and 2%). To investigate the effect of fish hydrolysate addition to standard feed on the feed quality, the total weight of the excreta produced by each chicken was measured, and the beta carotene content in the yolk of the egg is determined. The results showed that the total weight of excreta produced was significantly affected (sig <0.05) by the addition of fish hydrolysate to the standard feed. The weight of the excreta gradually decreases from the first day of the feeding treatment until the fifth day, and the weight reduction of the excreta has a similar tendency to the decrease of the total nitrogen in the excreta that has been reported. Therefore, the reduction in weight of the excreta can also be considered as better digestion due to the increased quality of feed given. The increase in feed quality, which results in an improved digestion process, also led to an increase in egg quality characterized by a 250% increase of carotenoids content in egg yolk compared to chicken eggs fed with standard feed. The conclusion is the mixing of 1-2% fish hydrolysate in standard feed can improve feed quality which is characterized by a decrease in the total weight of excreta and also increase the egg quality characterized by an increase in total carotenoid in the yolk.

Keywords: fish hydrolysates, carotenoid, excreta, egg
Effect of Supplementation Sugarcane Juice Containing Phytase Enzymes on Broiler Body Weight Gain

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Abstract. The component of poultry feed is about 80% in the form of grains, many contain phytic acid as an anti-nutrient for poultry because it can bind minerals, proteins and carbohydrates so that it disrupts its availability. Phytic acid can be hydrolyzed using phytase. Naturally, phytase is also found in sugarcane juice (Saccharum officinarum L), but its use as a poultry feed supplement has never been done. The purpose of this study was to determine the effect of sugarcane juice supplements on the performance of broiler chickens. The study used liquid sugarcane juice, dry nira, and DOC as many as 400 birds with a completely randomized design (CRD) of 8x5x10 consisting of 8 treatments, 5 replications, each replication of 10 birds. The data obtained were analyzed continued by DMRT (Duncan’s Multiple Range Test). The results showed that the administration of 2.5% liquid sugarcane juice, dry nira 2.5% singly or in combination with commercial phytase and also the provision of 500 FTU/kg commercial phytase could increase broiler production. Liquid sugarcane juice 2.5% can be used as a liquid supplement to increase body weight 9.65%.

Keywords: sugarcane juice, phytase, broiler
Growth Performance and Carcass Production of Meat-Type Chickens Fed Diets Supplemented with Commercial Additive Bio Maxter in Drinking Water

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ABSTRACT

Responses of broiler chickens to the drinking water supplementation with commercial feed additive Bio Maxter (administered via drinking water) was investigated using nutrient and energy utilization, growth performance, carcass production, and abdominal fatness as response criteria. The basal commercial diet BROILER I produced by PT. Japfa Comfeed Indonesia Tbk. was given to 100 New Lohmann meat-type chickens. The birds were given one of the two dietary treatments according to factorial 2x2 arrangement (for female or male; with or without 0.2% v/v feed additive Bio Maxter supplementation) in a Completely Randomized Fashion for 35 days. Each treatment was comprised of 5 replications with 5 birds in each replicate pen. Diets and drinking water were provided for ad libitum consumption. The different response between treatment groups were based on the probability value for less than 5%. Results indicated that dietary addition of 0.2% v/v feed additive Bio Maxter didn’t influence protein and energy utilization, growth performance, carcass production, or abdominal fatness, but increased protein efficiency ratio (P<0.05). Male birds in this study had higher values of feed intake (P<0.05), feed efficiency (G:F), final weight, average of daily gain, broiler index (P<0.001), carcass production, as well as energy-protein consumption and efficiency ratio (P<0.05), with lower fat content in the abdomen (P<0.05) than those of female birds. It can be concluded that beneficial properties of feed additive Bio Maxter addition throuh drinking water was more revealed on male birds than on female ones.

Keywords: Carcass and fat production, Feed additive, Growth performance, Meat-type chickens, Protein-energy efficiency
The Quality of Low Fat-Fermented Goat Milk and of Cow Milk Containing Probiotic Cultures

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Abstract. Goat milk product is still found rarely in Indonesia. These research has been conducted to study about the low fat-fermented milk containing probiotics cultures using goat and cow milk. The quality observed of fermented milk containing Streptococcus thermophilus (ST) and mix cultures of probiotics (Lactobacillus acidophilus, Bifidobacterium longum, and Lactobacillus casei, ABC) were acidity, pH, Brix value, viscosity as well as sensorial detection after 9 hours of incubation at 39°C. The result of two products containing ST and ABC of low fat fermented goat milk indicated that the pH were (4,25 ±0,02); (5,03 ±0,02), the Brix value were (6,05 ±0,10); (9,00 ±0,00), and the viscosity were (32,70 ±2,25); (4,05 ±0,30) of respectively. While, two products containing ST and ABC of low fat fermented cow milk indicated that the pH were (3,76 ±0,00); (4,80 ±0,00), the Brix value were (5,53 ±0,09); (5,27 ±0,22), and the viscosity were (7,08 ±0,09); (3,00 ±0,08) respectively. Sensorial acceptance have indicated that sweetness, and acidity of low fat fermented goat milk containing ST and ABC were 1,80 ±0,29; 2,00 ±0,29 respectively, while for low fat-fermented cow milk containing ST and ABC were (1,6 ±0,52); (1,1 ±0,32) respectively. It can be concluded that ST-containing fermented of both milk were better growth than ABC-containing low fat fermented goat and cow milk. And, low fat-fermented goat milk is better preferred by entrained panelis than those of low fat-ferented cow milk.

Keywords: fermented milk, goat milk, cow milk, probiotic cultures, quality and acceptance
Chemical Composition of Honey Produced by the Indonesian Stingless Bee: *Tetragonula laeviceps* from Different Geographical Origins

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**Abstract.** The objective of this study was to evaluate the chemical composition of honey produced by the Indonesian stingless bee: *Tetragonula laeviceps* from different geographical origins. Honey was obtained from three geographical origins were the Faculty of Animal Science Universitas Gadjah Mada (UGM), Nglipar Gunungkidul, Yogyakarta and North Lombok, West Nusa Tenggara. The chemical composition of honey was analyzed by proximate analysis consisted of moisture content, dry matter, ash, fat, and carbohydrate. The pH of honey was measured by pH meter, glucose to moisture ratio, electrical conductivity was determined by the equation EC = 0.14+1.74 A (where A is the ash content). All data were statistically analyzed using one-way analysis of variance (ANOVA) followed by honestly significant difference (HSD) test. The results showed that the geographical origins had a highly significant effect (P<0.01) on moisture, dry matter, carbohydrate, and pH. Furthermore, geographical origins had a significant difference (P<0.05) on ash, fat, electrical conductivity, and glucose to moisture ratio. The chemical composition of several honeys was varied that indicate the geographical origins affect the honey quality.
Free Amino Acids Profile of Honey Produced by the Indonesian Stingless Bee: *Tetragonula laeviceps*

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Abstract. The objective of this study was to determine free amino acids profile of honey produced by the Indonesian stingless bee: *Tetragonula laeviceps*. Honey was obtained from meliponiculture result in the Ngrandu Katongan Village Nglipar Gunungkidul. The free amino acids was determined by LC-MS/MS method and the data was analyzed by descriptive analysis. The results showed that free amino acids content from honey *Tetragonula laeviceps* were arginine 591.83, histidine 561.93, lysine 882.03, phenylalanine 232.74, isoleucine 12.34, leucine 73.55, tyrosine 9.24, methionine 0.29, valine 20.39, proline 60.56, glutamic acid 119.82, aspartic acid 77.31, threonine 45.72, serine 168.65, alanine 62.46, and glycine 60.26 mg/kg while cysteine not detected. It can be concluded that the free amino acids content of *Tetragonula laeviceps* honey has 16 free amino acids with large quantity were lysine, arginine, histidine, phenylalanine, serine and glutamic acid.
Quality of Fermented Goat Milk and Powder Milk Using *Lactobacillus plantarum* and Optimization of Antibacterial Ability On Enterobactericeae

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**Abstract.** The purpose of the study was to evaluate the quality of fermented goat milk using *Lactobacillus plantarum* and determine its antibacterial ability to enterobactericeae. The quality of fermented milk was obtained through measurement of pH, lactic acid levels, protein levels and total bacteria. The antibacterial ability was obtained by measuring the extent of the inhibitory zone through inhibitory tests on enterobactericeae. The experiment was applied in a completely randomized design with factorial pattern consisting of two factors, namely factor A, type of milk (goat's milk and powder milk), factor B, level of *Lactobacillus plantarum* (2.5, 5 and 7.5%) and 3 equal replicates. The data were subjected to analysis of variance, and continued to Duncan’s multiple range test to determine the difference between treatment at 1% probability. The results indicated that milk type and *L. plantarum* level had a very significant effect on pH, lactic acid levels, and the inhibitory zone width. There is an interaction between treatment factor. While the type of milk has a very significant effect (P <0.01) on protein content, and total lactic acid bacteria. In conclusion, fermented goat milk has better quality and antimicrobial ability to enterobactericeae than powdered milk.

**Keywords:** antibacterial, enterobactericeae, fermented milk, lactobacillus plantarum, zone width
Effect of pollard supplementation on probiotic (*Lactobacillus acidophilus*) growth and acidification rate

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Abstract. This study aimed to determine the effect of the addition of pollard as a potential prebiotic on growth and acidification rate of probiotic *Lactobacillus acidophilus* (*L. acidophilus*) in fermented milk. The study was conducted by adding the pollard with concentrations 1, 3 and 5% in the fermentation medium with 15% skim milk. Observed growth parameters including the total number of probiotic bacteria, pH decreasing and titrable acidity during the fermentation process. The results showed that the addition of pollard speed up the fermentation time, accelerate the process of decline in pH, increasing the titrable acidity and total number of probiotic bacteria. This study shows that pollard supplemented in fermented milk could enhance the growth characteristics of probiotics *L. acidophilus*. 
Evaluation of skim milk-curd quality using biduri (*Calotropis gigantea*) latex as a plant coagulant for a rennet replacement

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Abstract. The purpose of this study was to evaluate physical and chemical quality of milk curd using various biduri latex as a rennet placement. The materials used are rennet, commercial skim milk and biduri latex powder. Making rennet according to the modified method of [1]. Making powder of biduri latex using a method according to [2], and producing curd by modifying from [3]. Water content testing (gravimetric method), dry matter (DM) and protein content (Kjeldahl method) according to [4]. Fat content (Soxhlet method) according to [5]. The weight and yield (based on dry matter content /%) curd are determined according to [6]. Experimental design with Complete Randomized Design of One Way Design and statistical analysis using Variance Analysis of One Way Design followed by a mean difference test (Dunnet). The treatment used is P0: rennet 0.02% + CaCO3 0.01%; P1: biduri latex powder 0.015% + CaCO3 0.01%, P2: biduri latex powder 0.020% + CaCO3 0.01% and P3: biduri latex powder 0.025% + CaCO3 0.01%. Fat content, weight and yield of curd were higher in addition of biduri latex than controls, but protein content was lower. The addition of biduri latex to 0.025% can replace rennet with better physical quality.
The Characteristics of Fermented Goat Milk by using Combinations of Starter Kombucha and *Lactobacillus casei*

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Abstract. Kombucha tea has the potential to be developed as a starter in the milk fermentation process. This purpose of this study was to evaluate the effect of the combination between kombuca starter from green tea and *L. casei* starter on the quality of fermented goat milk. The goat milk was fermented by 5% starter of *L. casei* combined by 0% (as a control), 5% and 10% kombucha starter. Quality analysis of fermented goat milk included microbiological qualities (total of bacteria, probiotics, yeast, and acetic acid bacteria); the chemical qualities (pH, acidity, lactose, fat, protein, moisture, and fatty acid); antioxidant activity, viscosity, and sensory quality. Data were statistically analyzed by one-way ANOVA. The microbiological qualities showed that the addition 5 and 10% of kombucha starter did not affect on the total of bacteria and probiotic but statistically different (P<0.01) on the total yeast and total acetic acid bacteria. The chemical quality did not differ on pH, acidity, lactose, fat, and protein, whereas the linoleic acid was higher in fermented milk with 5% kombucha starter than 10% starter and the control. Moisture content and antioxidant activity in fermented milk treated with 10% starter were higher than the control or 5% kombucha starter. The viscosity of fermented goat milk affected (P<0.05) to addition 5 and 10% kombucha starter. Sensory acceptance of fermented milk by kombucha starter addition of 0 or 5% was higher than 10%. Based on this result concluded that 5% kombucha starter combined with *L. casei* was the best proportion to produce fermented goat milk.

Keywords: goat milk, fermentation, *L. casei*, and kombucha
Physicochemical Properties of Honey Produced by the Indonesian Stingless Bee: *Tetragonula laeviceps*

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Abstract. The objective of this study was to evaluate the physicochemical properties of honey produced by the Indonesian stingless bee: *Tetragonula laeviceps*. Honey was obtained from three regions for the meliponiculture, the Faculty of Animal Science Universitas Gadjah Mada (UGM), Nglipar Gunungkidul, Yogyakarta and Klaten, Central Java. The chemical properties of honey were analyzed by proximate analysis were water content, dry matter, ash, fat, protein, carbohydrate, and organic matter. The electrical conductivity (EC) was determined by the equation EC = 0.14 + 1.74 A (where A is the ash content). All data were statistically analyzed using one-way analysis of variance (ANOVA) followed by honestly significant difference (HSD) test. The results showed that the geographical origins had a highly significant effect (P<0.01) on water content (21.21 to 26.81%), protein (0.18 to 0.72%), dry matter (73.19 to 78.79%) and carbohydrate (71.48 to 78.36%). Furthermore, geographical origins had a significant difference (P<0.05) on ash (0.07 to 0.49%), organic matter (99.51 to 99.93%), and electrical conductivity (0.27 to 0.99 mS/cm) but not on fat (0.18 to 0.55%) (P>0.05). The results showed that there is great variability in the composition of honey from different geographical origins. Thus, Faculty of Animal Science UGM can be used for meliponiculture stingless bee: *Tetragonula laeviceps*. 
Application of Conventional, Vacuum, and Retort Packaging on the Physicochemical and Sensory Parameters of *Ayam Kalasan* at Ambient Temperature in Indonesia

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Abstract. This study aimed to determine the suitable packaging to maintain shelf life of *ayam kalasan*, one of indigenous fried chicken from Indonesia. The treatment of packaging materials were P0 (conventional packaging), P1 (vacuum packaging), and P2 (retort packaging). Shelf life test was conducted at 0, 2, 4, 6, and 8 weeks with triplication for each samples. The parameters tested were physicochemical and sensory evaluation. Physicochemical tests were pH, water binding capacity (WBC), tenderness, and proximate analysis (water, collagen, protein and fat). Sensory parameters which were analyzed namely color, taste, texture, juiciness, and springiness. Data were analyzed using One Way ANOVA combined with Duncan test. The results showed that the packaging material with three different methods produced different physicochemical and sensory qualities. The pH value were ranged from 5.96-6.18, WBC at 35.00%-49.30%, and tenderness at 1.94 kg/cm²-3.08 kg/cm². Results showed that chemical parameters among different packaging ranged from 1.84%-2.15% for collagen, 6.94%-7.62% for fat, 59.40%-67.31% for water, and 24.13%-28.02% for protein. The sensory parameters including color, taste, texture, juiciness, and springiness ranged from 3.20-4.36; 3.73-3.90; 3.73-3.90; 3.10-3.82; and 3.00-4.00 respectively. This study could benefit for small and medium industry which sell *ayam kalasan*, knowing nutrition facts, and understand the sensorial acceptability of *ayam kalasan* when they used direct selling (usually in Indonesia sold at day 0). Moreover, the completion of this study could be used as reference for appropriate packaging of *ayam kalasan* at ambient temperature in Indonesia.
Chemical and Sensory Quality of Broiler Meat Fed Diets Containing Fish Oil and Different Levels of Purslane Meal (Portulaca oleraceae)

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Abstract. The aim of the study was to evaluate the effect of dietary supplementation of purslane meal and sardine fish oil as a source of omega-3 fats on the chemical and sensory quality of broiler meat. A total of 180 one-day old unsexed Cobb broiler chickens were used in this study. The chickens were randomly allocated into 30 pens with each pen consisting of 6 birds. The pens were randomly assigned to five diets with 6 replicates (36 birds per treatment). The diets were prepared from a basal diet (P0). The diets were formulated by supplementation of the basal diet containing 1.5% sardine fish oil with levels of purslane meal 0 (P1), 6 (P2), 12 (P3), and 18% (P4). Six chickens for each treatment were processed as carcass. Breast meat samples were collected for chemical and sensory quality analysis. The sensory attributes of the meat were evaluated by 40 panellists. The data was analysed using analysis of variance (ANOVA). Results showed that the inclusion of 1.5% fish oil and purslane meal at a level of 18% into the diet (P4) significantly increased (P<0.05) fat content of meat (5.09%) compared to those fed the basal diet (P0), diets containing fish oil 1.5% without purslane meal (P1) or diets containing a combination of fish oil 1.5% and purslane meal 6% (P2). Feeding P4 diet significantly enhanced (P<0.05) crude protein content (22.38%) compared to those fed P1, P2, and P3 diets. Collagen content of meat fed P3 diet was higher (1.72%) compared to those fed P0, P1, and P2 diets. Color, aroma, taste, flavour, tenderness and overall evaluation were not significantly influenced by the dietary treatments. It was concluded that dietary levels of purslane meal up to a level of 18% containing 1.5% fish oil increased fat and crude protein content and did not have negative effects on the sensory quality of broiler meat.
The Effect of Different Level Beetroot Powder (Bp) on Physicochemical and Sensory Aspects of Chicken Sausage

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Abstract. The objective of this research to evaluate the effect of differences beetroot powder level on physicochemical and sensory aspects of chicken sausage. Beetroot is processed into powder and decided within four different levels. The result of Nutrient contains chicken sausage (as fat) were not affected by the addition of red beet powder. Red beet significantly increased the moisture and fat content (p<0.05) and affected color traits. Redness dramatically increased with red beet powder (p<0.05). Color and flavor by sensory evaluation also showed a significant effect from red beet addition (p<0.05), whereas the other sensory properties such as tenderness, juiciness, and overall acceptability were not affected by the addition of red beet powder. Therefore, red beet could be a good natural colorant in the processing of chicken sausage.

Keywords: chicken sausage; quality characteristics; beetroot powder, and natural colorant.
Abstract. This study aims to study and find out the effect of adding fresh and dried Kecombrang leaves (*Etlingera elatior*) to the level of decomposition, microstructure and sensory quality of meat at the refrigerator storage temperature. This study was conducted with three treatments, which were control (P1), powder (P2) and fresh (P3) and each treatment with a storage time of 0, 3 and 6 days. Variables measured included the beginning of decomposition, microstructure and sensory quality. The initial process of decomposition used the Eber test. Microstructure used Hemactosiline-Eosin (HE) and was observed. Preliminary data of decomposition and microstructure with descriptive analysis. Sensory quality data were analyzed by the Kruskal Wallis hedonic test. The results of this study indicated that until the 6th day, there was no initial decomposition. Meat microstructure began to damage on the 3rd day in treatments P1 and P2, while the on the 6th day, the decomposition did not occur in the P3 treatment. Sensory quality on raw appearance affected the administration of Kecombrang leaves to the color, aroma, texture, while sensory quality on cooked appearance affected the administration of Kecombrang leaves to the color, aroma, acceptability and did not affect the taste and the texture. This study concluded that the storage time of meat which gave the best results was with the addition of fresh Kecombrang leaves.
The Effect of Carbohydrate and Protein Protection in Additional Feed on Carcass, Non Carcass and Physical Quality on Bligon Goat Meat

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Abstract. This study aimed to determine the effect of additional food with carbohydrates and protein protection on carcass, non carcass and physical quality of Bligon goat meat. The eight Bligon goats Livestock with an average age of 1.5 years were used and divided into two treatment groups. The first treatment was additional feeding without heating (control feed), the second treatment was additional feeding with heating (additional protection feed). Three of the four goats in each treatment were cut and observed their carcass and non carcass quality. Variables observed in the carcass quality included weight and percentage of carcass, rib eye area, weight and percentage of heart, pelvic or kidney fat. The variables observed in non carcasses were blood, head, feet, skin, heart, lungs, liver, clean digestive tract and spleen. The physical quality of the Bligon goat meat observed included meat color, fat color, marbling score, water binding capacity, pH, cooking decrease, and tenderness. The carcass and non carcass quality data were analyzed using the independent sample T-test, using SPSS 16. The physical quality data obtained from Bligon meat were analyzed using variance analysis with a complete design of 2x2 factorial patterns, if there were significant differences continued by Duncan's New Multiple Range Test (DMRT). The Additional protection feed did not affect carcass and non carcass quality, but it affected significantly the physical properties of Bligon goat meat such as color, fat color, marbling score, water binding capacity, pH, cooking decrease, and tenderness (P<0.05 ). The carcass percentage of the control and the feed carcass protection were 34.4±0.60% and 45.57±1.73%. The non-carcass percentage of the control feed were 25.78±0.73% and the non-carcass percentage of additional feed was 28.7% ± 0.36%. Additional protection feed affected the liver percentage (P<0.05). The liver percentage of the additional protection was 2.04 ± 0.14%. The color of meat with feed without heating and heating were 5.27 and 4.94. The color of fat with feed without heating and heating were 4.56 and 3.61. The marbling score with feed without heating and heating were 2.22 and 2.78. The binding capacity of water with feed without heating and heating were 28.01% and 23.17%, pH with feed without heating and heating is 6.56 and 6.36. Cooking loss with feed without heating and heating were 25.84% and 18.09%. Tenderness with feed without heating and heating were 5.42 kg/cm2 and 4.68 kg/cm2. The conclusions of the study were the additional feed protection could improve the physical properties of the Bligon goat meat, but not the carcass and non carcass quality of the Bligon goats.

Keywords: Bligon goat, Carbohydrate and protein protection, Carcass, Non-carcass, Physical quality meat
Physicochemical and Sensory Characteristics of Chicken Nugget with Curcuma (Curcuma zanthorrhiza) Flour Fortification

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Abstract. Loss of weight and appetite are significant concerns for many parents with toddlers and preschoolers as poor or ‘picky’ eaters. The combination of healthy yet delicious food for kids is greatly needed to cope this problem. One of them is providing chicken nugget with nutritional content such as curcumin which is able to boost the children appetite. This experiment was conducted to find out the effect of curcuma flour fortification on physicochemical and sensory characteristics of chicken nugget. Five formulations were developed: 0, 0.5, 1, 1.5, and 2% (w/w) of filler. The chicken nugget were characterized for their physical characteristics (pH value, water holding capacity, and tenderness), chemical characteristics (protein, fat, vitamin E, and curcumin contents), and sensory characteristics (colour, aroma, flavour, texture, juiciness, and acceptability). The data of physical and chemical characteristics were analysed statistically using analysis of variance (ANOVA) and the means differences were tested by Duncan’s Multiple Range Test. The data of sensory characteristic were analysed statistically using Hedonic Kruskal-Wallis. The results showed that the curcuma flour fortification did not affect on water holding capacity, tenderness, protein, and fat contents of chicken nugget (P>0.05), while the fortification of curcuma flour was able to significantly (P<0.05) increase the vitamin E and curcumin contents of chicken nugget. Sensory characteristic test results showed that the fortification of curcuma flour did not affect on acceptability in the sensory characteristic of chicken nugget. In conclusion, chicken nugget with curcuma flour fortification at the level of 2.0% showed the best characteristic of the chicken nugget.

Key words: Chicken nugget, Curcuma flour fortification
Chemical and Microbiological Quality of Fermented Goat Meat Dendeng With Different Levels of *L. Plantarum*

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Abstract. Dendeng was known as a favorite Indonesian traditional food for several years ago that only have limited type. According to the Indonesian market, mostly dendeng was made from beef. Producing dendeng with different raw material such as goat meat and applied some indigenous process such as fermentation, might have an excellent innovation then is expected to increase the level of consumers interest. Fermentation process using Lactic Acid Bacteria (LAB) can be applied during the manufacturing process of dendeng that could improve the nutritional quality. *Lactobacillus plantarum* is one of the lactic acid bacteria that more resistant to acidic condition so that potentially used for controlling the growth of spoilage bacteria that can extend the shelf life of dendeng. The purpose of this research was to evaluate the quality of goat meat dendeng fermented with *L. Plantarum*, and the result could be used as information for producing commercial fermented goat meat dendeng. The Chemical and Microbiological quality of the fermented goat meat dendeng, containing three different levels of *L. Plantarum* (0.3 mL, 3 mL, and 30 mL), at room temperature, was evaluated by way of Completely Randomized Design (CRD) with 4 treatments and 4 replications and continued by Duncan’s Multiple Range Test (DMRT). A significant different result of pH, titratable acidity (TA), and Total Plate Count (TPC) was found on fermented goat meat dendeng added with *L. Plantarum*, except for total lactic acid bacteria (LAB). Formulations containing 30 mL of *L. Plantarum* indicated the better characteristics concerning chemical quality, with the lowest values for pH 5.16±0.25, highest Titratable Acidity 22.66 ±0.73 then resulted in a high number of microbiological quality including, Total Plate Count (TPC) 6.34±0.56 CFU/g and Total Lactic Acid Bacteria (LAB) 6.84±0.69 CFU/g, respectively, when compared with the control sample without *L. Plantarum* added.

Keywords: fermentation, goat meat, lactic acid bacteria
Good Manufacturing Practices Implementation and Microbiological Quality of Meat at the Slaughterhouses in the Province of Bangka Belitung Islands

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Abstract. This study was aimed to evaluate the implementation of GMP, microbiological quality of meat and their relationship at the slaughterhouses in the Province of Bangka Belitung Islands. This study used 13 slaughterhouses in five regencies. Questionnaires were used to measurement the implementation of GMP in the slaughterhouses. The aspect of GMP observed was 1) location, 2) layout and design, 3) main building facilities, 4) equipment, 5) production, 6) personal hygiene, 7) sanitation. GMP implementation at the slaughterhouse observed by using methods of observation and interviews to the respondent (butchers). Microbiological quality of meat was determine by using TPC. Data implementation of GMP were analyzed by using descriptive analysis. The relationship between GMP implementation and microbiological quality were analyzed by Pearson Product Moment correlation. The results showed that the respondent implemented few aspect of GMP with the score of layout and design 2.12, main building facilities 2.62, equipment 2.23, production 2.31, personal hygiene 2.21, sanitation 2.10, whereas in the aspect of location, they implemented some aspect of GMP with the score of 3.44. The average score of GMP implementation of slaughterhouse in the Province of Bangka Belitung Islands was 2.30 (45.99%). There was 2 respondent implemented most aspect of GMP, 6 respondent implemented some aspect of GMP and 5 respondent implement few aspect of GMP. TPC of meat was lower than standard of SNI. There was negative correlation between GMP implementation and TPC value with the r = - 0.396 (P = 0.030). This study concluded that the implementation of GMP has applied some of the aspects (40 – 60%) with the level of TPC which still is in terms of SNI. There is a significant negative correlation between the implementation of GMP and microbiological quality of meat at the slaughterhouse in the Province of Bangka Belitung Islands.

Keywords: Implementation, Correlation, Microbiological, Contamination, Quality, Meat, Slaughterhouse, Cattle, GMP, Sanitation
Employee Satisfaction Rate of the Quality of Halal Certification Services in Yogyakarta

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Abstract. One of the efforts in meeting the basic needs and rights of every citizen of goods, services, and administrative services that was provided public services by the state. One of the public services in the field of halal was carried out by the Food, Drugs and Cosmetics Research Institute of the Indonesian Ulema Council (LPPOM MUI) of the Special Region of Yogyakarta. LPPOM MUI DIY was an institution formed by Ulema Council and was tasked with auditing companies that want Halal certificates from Ulema Council. In this regard, a study of the level of customer satisfaction with the process of issuing halal certificates from this institution of halal certification Yogyakarta Special Region needs to be done. This study aims to determine the level of customer satisfaction with the process of issuing halal certificates. This study used a survey method, while the method of taking respondents by purposive random sampling. Respondents were partners who submitted halal certification in LPPOM MUI of Yogyakarta, totaling 272 respondents. Based on the results of the analysis and interpretation of the calculation results of this institution services for Yogyakarta and 2016 and 2017, it could be concluded that the performance of this institution in 2017 is better compared to 2016. It was based on the value of Community Satisfaction Index (CSI) to the service in 2016 it was 77.2 with service quality B and good performance, while in 2017 the value of the CSI services was 96.31 with service quality A and excellent performance. One of the improvements in the quality of services was supported by the existence of halal auditor's advancing training annually. Evaluation of overall service criteria, the greatest value is in the category of auditor having honest nature, while the smallest value of service criteria was in the category of speed and accuracy of work of LPPOM MUI DIY officers.

Keywords: Certification, Community Satisfaction Index, Halal
ABSTRACT
Parallel Session
Livestock Business and Management
Demand Analysis of Beef, Poultry and Fish at Household in West Sumatera Province (Application of Almost Ideal Demand System Model)

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Abstract. A study was carried out using triangulation approach to explore Padang existing condition to establish an integrated model of developing indigenous chicken in West Sumatra on November to December 2018. Triangulation process consisted of a feeding availability analysis to support strengthening indigenous chicken; location quotient (LQ) rule to analyze the location of indigenous chicken development basis as well as SWOT analysis. The results showed that there were five sub-districts categorized as basis location. Feeding availability could be likely at an increasing of 63 % (265,000 head) to the existing number of indigenous chicken. SWOT analysis revealed that there will be an increasing opportunity to develop indigenous chicken using an integrated model where sustainable development goals used as a main reference.
The role of a dairy development project in affecting the milk value chain in Merapi through promoting an inclusive business model

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Abstract. A dairy development project funded by private company in collaboration with government, university, NGO, cooperatives, and other stakeholders was carried out to revitalize the dairy sector in Merapi area. The project started in 2012 in order to help dairy farmers who were affected by big eruption of Mount Merapi in 2010. Some challenges occurred during the implementation of the project such as the low milk productivity, the low milk price, the animal health (Brucellosis), the low experience in dairy farming activity and the uncertainty of capital endowment (in particular cows) leading to a critical situation. Together with formal and informal farmers’ leaders, the project management then changed the project activities by promoting, implementing and supporting an inclusive business model (in phase 2). The study aimed at understanding the role of the dairy development project phase 2 in 2016 to 2017 in affecting the milk value chain through an inclusive business model. The data were collected from the focus group discussion and the in-depth interview with 35 farmers, project management, NGO, private sector, community leaders, and other stakeholders. Qualitative and descriptive analysis were performed to understand the situation. The result showed that there was a change in milk value chain in the area. Initiated by beneficiary farmers, a new milk cooperative was established with more transparent and professional management. What is attracting farmers in joining this cooperative was the higher and the individual milk price given by this cooperative in order to have more profitability. Led by a vet and experienced farmers, cooperative members believed that this cooperative could bring more happiness not only for farmers but also for the cows. To conclude, the study underlines the importance of project activities in affecting milk value chain through promoting an inclusive business model.
A typological characterization of dairy farming system towards economic sustainable farm in West Java (Indonesia)

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Abstract. Small scale family farms play an important role in Indonesia. It contributes to create job opportunity and to reduce poverty in rural area. However, shortage of capital become the main challenge for small farm. To fostering economic sustainable farms, the diversity and the characteristic of dairy farms should be understood. This study identified farmers’ type by using typology approach based on the capital as active variables (natural capital, physical capital, human capital, social capital, and financial capital). The primary and secondary data were obtained from interview with experts, direct observation, formal survey to 353 farmers, recording from the public authorities and the milk cooperatives. We performed MFA and HCA analysis by using R application and descriptive as well as comparative analysis by using Minitab. The indicator of economic sustainability (total income per family worker) was chosen through in-depth interview with experts and the scoring was created by considering the poverty line and the regional minimum wage. Results showed that there were five farmers’ types in the study site. The largest number of farm (113 farms) belonged to the type 2 (small farm with low productivity of land for forage production). In addition, the result clearly indicated that farmers type 5 was more economic sustainable than other types. In other words, specialized farms with higher level of capital and more productive worker were able to generate more family income and might be more sustainable economically. To conclude, the study underlined the importance of typology approach to understand the diversity and the characteristic of farming system. It was also useful to identify in what condition dairy farm is economic sustainable. In order to have more economic sustainable farm, strategy in increasing farm capital and productive worker should be done for instance by credit access and technical support.
Analysis development of livestock in Wakatobi District Southeast Sulawesi

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Abstract. The fulfillment of beef demand still depends on imports. Another target of the 2014 PSDS program as the continuity of PSDS was to increase beef cattle population to 14.2 million head in 2014 with an average growth of 12.48% per year. It is necessary to develop the potential of farming optimally in Southeast Sulawesi. The Wakatobi government as one of the districts in Southeast Sulawesi is trying to conduct a study to participate in developing livestock. This research was conducted to examine the potential of land and human resources in and around the development of animal husbandry areas and obtain objective data on supporting resources (physical and biological) in Wakatobi Regency. The analysis used in this study is LQ (Location Quotient) analysis, and SWOT analysis. Literature study were conducted to complete data and information, then analyzed descriptively. There was potential for the development of cattle and goats in this area, because some people develop these types of livestock for various purposes including savings. With intensive maintenance systems, both types of livestock can be developed population and production. Wakatobi Regency chicken production is higher when compared to broiler production, because native chicken is domestic poultry that can be developed in various locations even in a small area. Animal husbandry development in Wakatobi can implement a livestock development strategy through an integrated center area (cluster) which is directed at a specific area or integrated with other commodities and is concentrated in an area.

Keywords: development, potential, location, livestock and cluster
Motivation of farmers to raise goats in Tamalatea District, Jeneponto Regency

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Abstract. Goat is one of the livestock commodities which contributes significantly to the increase in community income. In addition to the economic benefits obtained, goat farming also has its own advantages, namely raising goats does not require large capital, a fairly simple maintenance system and goat livestock resistant to disease compared to other livestock commodities such as cattle and broiler farming. From this fact, many people in Jeneponto Regency are motivated to carry out goat raising efforts in an effort to increase the income of their families. This study aims to determine the motivation of farmers raising goats. Sampling was carried out by simple random sampling of 60 farmers in Tamalatea District. Data collection was done through interviews and FGD using the Likert scale on each measured variable, namely 1 = disagree, 2 = doubt, 3 = agree which was analyzed using descriptive statistics. The results showed that the motivation of farmers raising goats consisted of: (1) economic value; (2) request; and (3) the role of the government is in the agreed category. Keywords: economic value, demand, the role of government, motivation, goats
Motivation of farmers do the business partnership system of beef cattle (*teseng*) in Patimpeng District, Bone Regency

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Abstract. Motivation can encourage farmers to establish a partnership system of beef cattle (*teseng*) in an effort to increase the income of their families. This study aims to determine the motivation of farmers to establish a business partnership system of beef cattle (*teseng*). This type of research is quantitative descriptive. Types of research A total of 50 farmers were distributed in ten villages in Patimpeng District. This is quantitative descriptive. The sampling technique was done in a simple random. Data collection was done through interviews with the help of questionnaires analyzed using descriptive statistics. The results of the study showed that the motivation of farmers to establish a partnership system for beef cattle (*teseng*) consisting of sub-variables: (1) family economic demands; (2) limited business capital; (3) improve social status; and (4) the application of *teseng* is easier in the good category. Keywords: motivation, farmers, partnership system, beef cattle.
Characteristics Of Business And Income In Broiler Partnership System In Yogyakarta Indonesia

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Abstract. Recently the growing system of broiler chicken was a partnership system to support business productivity. Meanwhile broiler chickens were relatively inexpensive meat substitution products and the production cycle was fast. This study aimed to identify the characteristics of the business, measure the amount of income, and analyze the factors that influence the income of farmers. The research was conducted in Sleman and Bantul Regencies, Special Region of Yogyakarta. Census sampling of 150 farmers consisted of 69 samples in Sleman Regency and 81 samples in Bantul Regency. The analysis was carried out in quantitative descriptive and continued with Multiple Linear Regression Analysis. The results of business characteristic research showed that the average scale of business ranged from 3604 to 6340 head, 35 days maintenance time, business experience was 7-10 years, 97% of farmers used the open house system, livestock mortality rate was 4-7%, average selling weight 1.91 – 1.96 kg/head and value FCR 1.43 – 2.40. The highest average cost was the purchase of feed concentrates (74-75%). The farmer's income in Sleman was IDR. 18,538,846.00 / farmer / period, while Bantul was IDR 2,683,627.00/farmer /period. The farmer's income in Sleman was greater because the scale of business, selling weight was higher and the mortality rate was smaller than Bantul. Multiple linear regression analysis showed the results of the Determination Coefficient (R²) of 44.55%. The independent variable that has a positive and significant was the scale of business (P <0.01), while the capital and sanitation cost have a significant and negative effect on income (P <0.01). As a whole, to increase farmers' income, there needs to be an effort to assist businesses from the core, agencies and educational institutions to improve livestock management. In addition, increasing environmental sanitation was also needed in order to reduce the high mortality rate.
The Potential of Livestock Development in Pandeglang District, Banten Province

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Abstract. Located in sub urban area which is very close to the capital city of Jakarta, Pandeglang Regency has great potential in the development of livestock sector that leads to an independent and reliable economic growth. The aim of this research was to identify and determine the potential region for livestock development in Pandeglang Regency. The study used location quotation (LQ) and added capacity of ruminant population (ACRP) analysis. The result of LQ analysis from 35 districts indicates that each sub-district has a livestock base with a positive LQ value. Data presents an indication of animal activities in some sub-districts based on LQ Values. Maximum potential land resources in Pandeglang Regency is 102 891.22 Animal Unit (AU) and the real population is 75 951.57 AU. So, opportunity for added capacity of ruminant population based on land resources is still available for 26 939.65 AU. The result shows that Cikeusik sub-district has the highest potential to increase the number of livestock population up to 6 900 AU, followed by 4 800 AU for Panimbang sub-district, and Sobang Sub-district is about 3 800 AU. Meanwhile, the potential land resources in Sumur sub-district is not sufficient for the animals due to over capacity of -1 733.46 AU. It can be concluded that the development priorities take precedence in the sub-districts of Cikeusik, Panimbang and Sobang.
Investigate the economic sustainability of small scale dairy farming at Pasuruan Regency of East Java, Indonesia

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Abstract. Research was held on the smallholder dairy farming at Tutur Sub-district of East Java Indonesia. This study proposed to examine the economic sustainability of the small scale dairy farming based on farm-scales. Total of 180 farmers were grouped into three farm-scales based on daily milk production namely, small-scale (less than 40 litre), medium-scale (40-60 litre), and large-scale (more than 60 litre). The economic sustainability in dairy farming was assessed by the relative importance of their sustainability attributes. Results discovered that the economic sustainability reveals moderate sustainable for the large-scale (57.31%) compared with the fewer categories for the medium-scale (47.82%) and the small-scale (40.93%) dairy farming. The increasing on the input subsidy, dairy cattle productivity, and number of primary-product, as well as the enhancing fresh and processing milk market should take into consideration in pursuing dairy farming economic sustainability.

Keywords: primary-product, subsidy, productivity, market
The Role of Education as Moderating Variable in Social Media Adoption of Small Medium Enterprise

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Abstract. The success of communications technology intervention with the internet on the promotion mix of small medium enterprises is affected by the acceptance of such technology. Technology Acceptance Model (TAM) is commonly applied to analyse contributions of determinant variables on the adoption of communications technology. However, consideration to identify variables to moderate relationships between determinant variables and adoption of technology is important in order to increase its applications by the users. This research is aimed to explore education variables in predicting and moderating of determinant variables on the adoption of communications technology. The study was conducted by survey design and involving 100 respondents who were determined through judgmental sampling method with a specified criterion that the respondents are owners or manager of small medium enterprises in Bantul Regency, Special Region of Yogyakarta. The research showed that Perceived Ease of Use affected Perceived Usefulness \(p \leq 0.001\) and that both were critical factors for Attitude Toward Social Media Use \(p \leq 0.001\). The study also revealed that Intention to Adopt Social Media is affected by Attitude Toward Social Media Use and Perceived Usefulness \(p \leq 0.001\). Moderation tests found that education moderates relationships between Attitude Toward Social Media Use and more influential users on those with lower education backgrounds \(p \leq 0.05\). Even so, education did not moderate relationships between Perceived Usefulness and Intention To Adopt Social Media. In short, the proposed model was able to explain 52,5% of its variance that was slightly higher than explained by the original TAM that was 52,1%.

Keywords: education, moderating variable, communication technology adoption, small medium enterprise
Understanding the Farming Systems and Cattle Production in Tanah Laut, South Kalimantan

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Abstract. Demand for beef in Indonesia has been increasing due to growth in population and household income. However, demand has been outstripping supply, and the self-sufficiency ratio at the national level hovers around 65% in the past 10 years. To increase local cattle supply and reduce the reliance on imports, the Government of Indonesia has been promoting crop and cattle integration in 11 provinces since 2002. Tanah Laut district in South Kalimantan was one of those sites selected, but with mixed results. In 2019, more than 50% of total demand in the district is met by live cattle imports from other provinces such as NTT, NTB, East Java and Sulawesi. The objective of this paper is to examine how, and to what extent, the farming systems in Tanah Laut, which include cattle production, have been shaped by technical, agro-climatic, socioeconomic and institutional factors. The main method used is informant interviews with farmer group leaders. Key results are: cattle is the main source of income; the cattle distribution program provided the initial breeding stock, but inadequate technical and extension support and inconsistent development programs have resulted in slow growth in cattle population; Javanese and Balinese migrants may be more inclined to adopt new technology, but some locals, too; and women are involved in various farming activities, but their contribution is not acknowledged, not even by themselves. The implication is that better understanding of farming systems and underlying socioeconomic and institutional factors will result in better-informed development policies, and facilitate adoption and scaling out of production technology.
Induction of estrus by laserpuncture exposure in Etawah Crossbred Does with the anestrus post-partum problems at different parities

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Abstract. Anestrus post-partum is the symptom in animals where the estrus is not detected for long time following giving birth. This study was conducted to induce the estrus by exposure of laserpuncture in the Etawah Crossbred goats with anestrus post-partum symptom at different stages of parities. Materials used were mature Etawah Crossbred treated by induction of laserpuncture in the reproductive acupuncture spots. The does used were at parities 1, 2, 3, 4, 5 and 6. The laserpuncture was exposure for 10 sec per spot for three consecutive days and conducted on 17 reproductive acupuncture spots located at the 1.5 cm lateral columna and lumbal vertebrae L1 to L7 and one at vulva. Estrus was observed from day 1 of laserpuncture exposure until 11 days following the latest of exposure. Variable observed were exhibition of estrus, length of estrus, and onset estrus. Result showed that the animal showing estrus was 76.32%. According to parity, the percentage of does showing estrus was increase form parity 1 to 3 (91%), and decrease slightly form parity 4 to 6 (50%). Response of laserpuncture exposure to the onset estrus was higher from parity 2 to 3 (2 – 6 h) and longer period from parity 4 to 6 (6 – 13 h). The length of estrus was shorter in the parity 1 and 2 (55 h) than in the parity 3 to 6 (>80 h). It was concluded that laserpuncture exposure for 10 min in 3 consecutive days could induce estrus exhibition in poor body condition of does. The more acceptable estrus response to laserpuncture exposure was showed by does at the parity 1 to 3 than the older those at parity 4 to 6.

Keywords: acupuncture spot, reproduction, parity, Etawah crossbred Goat.
A field investigation of forage composition, distribution and supply pattern in cattle farm of East Java and West Java

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Abstract. Forage plays an important role to the development of ruminant farming as it sources of main feed. This research survey was conducted to investigate the current agricultural practice of feed production system in small, medium and big scale of farmers’ community or enterprise and forage value chain. This research survey was carried out in 3 months from August – October 2018. Survey location were conducted in two provinces. The location was carried out in West Java and East Java as following: 1) West Java Province: Dairy farm in Pangalengan, Lembang – Bandung Regency and Cibungbulang-Bogor Regency; Cattle in Jonggol - Bogor Regency; 2) East Java Province: Dairy farm in Malang Regency; Cattle in Tuban Regency. The selected locations for the survey are based on the high density of population of dairy and beef cattle. Descriptive statistics are used to describe the basic features of the data in this study. Farmers generally provide sufficient quantities of feed for ruminants in accordance with the needs of the livestock. The type of forage depends on the type of livestock and the availability of forage around the farm location. In large scale farms, farmers will buy forage during a large number of planting seasons and then processed and stored it in the form of silage. While for small scale farmers, forage purchases are made based on daily needs. These research concluded that forage type and distribution depend on forage availability on farm and supplier level.
Time Allocation of Family Labor in Beef Cattle Farming Based on Gender

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Abstract. At present many gender issues are discussed. Likewise on the work time allocation activities for the maintenance of beef cattle. This research aimed to calculate time allocation of family labor on cattle farming based on gender, and to analyze some factors influencing the time allocation for beef cattle farming. The research was conducted in the Bucu Village, Kembang Sub-district, Jepara Regency, Indonesia. The research respondents were 71 beef cattle farmers selected by purposive sampling. Data were analyzed descriptively and multiple linear regression analysis. The results showed that the ratio of women's participation to men's participation in maintenance of beef cattle was 95.94%. While the contribution of women to the allocation of work time was 25.11% and 74.89% for men. The ratio of the time allocation of the female family workforce to that of male family workforce on beef farming was influenced by all independent variables simultaneously with $R^2$ of 0.407. Partially independent variables having positive effect significantly on the dependent variable were the proportion of women productive age and the proportion of men who work outside farming ($P \leq 0.01$). And the independent variables having negative effect significantly on the dependent variable were the proportion of education for women who have completed 12 year basic education; the proportion of women who work outside farming ($P \leq 0.01$), and the number of children under five years old ($P \leq 0.10$). It can be concluded that on the small scale beef cattle farming in the rural, the male family workforce were more dominant than the female family workforce. In the social construction, the physical condition and domestic role of the women still become a consideration for their participation in the small scale beef cattle farming.

Keywords: Beef cattle farming, Family labor, Gender, Prediction
Income Over Feed Cost of Aceh Cattle Fattened with Forage and Concentrate in Different Level

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Abstract. This study aims to determine the income over feed cost of Aceh cattle fattened with forage and concentrate on different levels. The research was conducted on May-August 2018 in BPTU-HPT Indrapuri with 20 males Aceh cattle aged 1.5 to 2.5 years and similar initial body weight. Aceh cattle were divided randomly into four treatments based on different forage and concentrates level, namely T1 (100:0) as a control feeding by 25 kg forage, T2 (70:30) feeding by 20 kg forage and 1 kg concentrate, T3 (50:50) feeding by 15 kg forage and 2 kg concentrate, and T4 (30:70) feeding by 10 kg forage and 3 kg concentrate. Gain, average daily gain (ADG), feed intakes (FI), feed conversion (FCR), feed efficiency (FER), feed cost per gain (FCG) and income over feed costs (IOFC) were analyzed using one-way ANOVA and continued by DMRT. The result shows that concentrate feed increases (P <0.05) the total DMI, daily DMI and ADG, decreases (P <0.05) FCR value more than 50% and increases (P <0.05) FER from 4.52 up to 9.81%. The feeding by concentrate (T2, T3, T4) can decreases (P <0.05) the FCG more than Rp.14.894 and increases (P <0.05) IOFC up to Rp.8.715 compared to those given only forages (T1). The IOFC value in line with the DMI, ADG, and FER, where is the T3 group (50:50) has the highest number but is not differ with the T4 group (30:70). The provision of forages and concentrates with a 50:50 level can compensate for the 30:70, and even tends to be better values obtained. The conclusion is the feeding concentrate as a supplement in fattening business improves the feed intake, ADG, FER, and IOFC of male Aceh cattle and the best ratio on forage and concentrate feed is 50:50%.

Keyword: Aceh cattle, average daily gain, dry matter intake, feed cost, feed efficiency
Determinants of Household Beef Consumption in Indonesia: A Binary Logistic Analysis

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Abstract. Consumption of high-value food such as beef tends to responsive to the changes of price and income. Household expenditure data were used in this study. Binary logistic regression model analysis was used to investigate the selected socioeconomic and demographic characteristics of consumer/household regarding beef consumption. Household size, working participation of wives, region, level of education, and price factors are influencing the household’s decision on beef consumption. This study reveals households in Indonesia sensitive to the change of beef price. Marginal effect value from binary logistic regression analysis showed that households tend to increase consuming beef varies from 0.5 to 1.6 times associated to socioeconomic factors of the households. Furthermore, potential increasing of beef consumption require availability of its foods by enhancing its production. Price intervention should be introduced in order to stabilize the fluctuation in beef prices

Keyword: beef consumption, price, marginal effect, income, Indonesia
Consumer’s Preferences on Sheep Attribute for Eid al-Adha Celebration Base on Roadside Livestock Traders in Yogyakarta, Indonesia

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Abstract. Sheep have an important role in the lives of Indonesia people, especially in the celebration of Eid al-Adha. There are several things in the selection of sheep as sacrificial animals. This study aims to assess the consumer’s preferences on sheep attribute for Eid al-Adha celebration base on roadside livestock traders in Yogyakarta, Indonesia. This research was conducted by an in-depth interview with a total of 36 roadside livestock traders in Yogyakarta, Indonesia. The results in this study are the preference roadside livestock traders on the sheep criteria that were in demand by consumers is characteristics of the body, weight, posture, age, breed, and others, respectively. Sheep body characteristics that were in demand by consumers is the sheep that have horns, large body size, black ring eye pattern, incisors has changed, dense and nice hair, and white color pattern on the leg, respectively. Conclusions of this study are the preference on sheep attribute most demanded by consumers for Eid al-Adha period base on roadside livestock traders in Yogyakarta is a body characteristic of sheep, wherein horned sheep are frequently requested criteria.

Keyword: livestock trader, preference, religious festival, sheep characteristics, sheep trader
Marketing Efficiency of Bali Calf in Nusa Penida Sub-District, Bali Province

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Abstract. Nusa Penida is a refining area of Bali Cattle based on the Minister Decree of Agriculture. There is no livestock market in Nusa Penida, this condition makes livestock marketing has a long market chain. This is survey research that aims to analyze the marketing efficiency of Bali Calf in Nusa Penida. The number of respondents used in this study was 70, consisting of 60 farmers and 10 middlemen. Data were analyzed using marketing efficiency analysis. The results show that the marketing of Bali Calf in Nusa Penida was efficient, with farmer's share of marketing channel I 100%, marketing channel II 78.79%, marketing channel III 74.57%, and marketing channel IV 70.78%. The value of marketing efficiency of marketing channel I 0%, marketing channel II 7.30%, marketing channel III 8.97%, and marketing channel IV 10.56%. Marketing efficiency of Bali Calf in Nusa Penida are efficient in all marketing channels, with maximal value 10.59%.
A market chain analysis of interisland cattle trade into South Kalimantan, Indonesia

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Abstract. South Kalimantan (KalSel) had 164,219 beef cattle in 2017. But local production has been unable to meet demand. 33,041 head of live cattle were imported, while 7,616 head were exported to neighboring provinces in 2017. Cattle imports have increased further in recent years as exporting provinces divert cattle to Kalimantan from their traditional markets in Jakarta and West Java, which have become less profitable because of competition from frozen beef imports. As more and more cattle are imported into KalSel, local smallholders are experiencing falling prices. The objectives of this paper are to understand the market chains of live cattle arriving from NTT, NTB, East Java and South Sulawesi, and to assess the cost competitiveness of local cattle vis a vis imports. Main methods used in this research are market chain analysis and gross margin analysis. Key findings are: the number of live cattle imports into KalSel was approximately 5000 head per month; the main suppliers were NTT and NTB (Bima), followed by South Sulawesi and East Java (Madura); while cattle arriving from East Java were Limousin and other crossbreeds, other provinces supplied mainly Bali cattle; interisland cattle were traded based on price per kg and actual live weight using weighing scales, while local cattle were traded based on price per head and visual estimation of live weight; among the suppliers, cattle from East Java was most price competitive, followed by NTT/NTB and then South Sulawesi; in terms of taste, beef from crossbreeds was better, followed by beef from Sulawesi (raised in an intensive system), which was in turn better than beef from NTT or NTB (raised mainly in an extensive system); and finally local cattle were cost uncompetitive partly because of the pricing method used and partly because of small scale production and low productivity.
Community Perception in Korong Padang Mantuang Nagari Kayutanam on Dairy Cattle Existence

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Abstract. This study aimed to assess the community perception in Korong Padang Mantuang Nagari Kayutanam, 2x11 Kayutanam District, Padang Pariaman Region, West Sumatera Indonesia, on dairy cattle existence. Community perception indicated by benefit and negative impact that occur because of dairy cattle existence. It could be used as a reference to develop and to continuity of dairy cattle activities in Korong Padang Mantuang Nagari Kayutanam Kecamatan 2x11 Kayutanam. This study was conducted with survey method and determined respondent with purposive sampling which is 160 respondents who live near at dairy cattle. Based on Slovin's Formula, determined 32 respondents to assess their perceptions about dairy cattle perception and the data that obtain was analyse descriptively. The result showed that community perception of negative impact on dairy cattle existence especially feces of cattle in Korong Padang Mantuang Nagari Kayutanam was in low category (46.35%) or it could be described as the existence of dairy cattle was not disturbing daily life in Korong Padang Mantuang Nagari Kayutanam. In another side, 79.68% community perception on dairy cattle existence was in high category feel the benefit on dairy cattle existence.
Measuring efficacy and success of community-based goat provision program, which aims to support conservation in Gunung Palung National Park

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Abstract. Tropical forest deforestation contributes to annual carbon emissions in the atmosphere, impacting climate changes. A suggested approach to reduce deforestation is community empowerment, specifically around Gunung Palung National Park. Some local communities in and around the National Park use slash-and-burn agriculture as their primary source of income, even though it is illegal to do that method within the boundaries of the National Park. In partnership with its American environmental conservation partner Health in Harmony, Alam Sehat Lestari (ASRI), a local NGO, supports these communities to alter/shift to more environmentally-friendly livelihoods/occupations/trades such as sustainable agriculture and organic fertilizer collection. This article examines the ‘Goats for Widows’ program, a community-based goat provision program intended to support forest conservation by improving economic independence and reducing reliance on forest resources. This program gives 1-2 goats to a widow (dead spouse or divorced), and the first offspring is given to ASRI, and they will be given to another widow. In the ten years of the program, ASRI has established 205 widows partners and manage 303 goats until the end of 2018. The widows, the beneficiary of the program, has a source of sustainable income and liquid assets that provide safety nets to support their family in case of emergency. In 2018, 41 widows earned an average IDR 1,833,000 from selling the goats. Education and follow-up training are recommended in community-based farm-animal provision programs to increase the knowledge of best breeding practices for the widows/ recipients. This community-based goat provision program increases the economic stability of the beneficiary and has a positive impact on forest conservation in Gunung Palung National Park.

Keywords: economic independence, community-based farm-animal provision, Gunung Palung National Park
Sheep Farm: An Alternative Community Livelihood In Kampung Laut, Cilacap

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Abstract. It is estimated that from year to year the area of Segara Anakan Lagoon will continue to decline an affect fisheries production. This condition requires the community to look for other activities besides being fishermen, one of which is the development of sheep farming which has been started since 2014 in Kampung Laut. Hence, the research aims to determine the potential of sheep farming as an alternative livelihood for the people of Kampung Laut, using secondary data on brackish water fisheries production and sheep populations in Kampung Laut Subdistrict originating from the Central Bureau of Statistics of Cilacap Regency. The result shows that the average growth of brackish water fisheries production from 2011 to 2016 has decreased by 6.30% while the average growth of the sheep population from 2011 to 2016 has increased by 6.75%. Based on these results, sheep farming has the potential to become an alternative livelihood for the people of Kampung Laut.
Improving Livelihood of Smallholder Farmer Through Cattle Fattening Based on Forage Tree Legume in the Arid Sumbawa

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Abstract. Majority of people in the arid Sumbawa rely on agriculture and mostly practicing integrated farming with maize and cattle being the most common crop and livestock enterprise. While cattle productivity has been low, profit margin from crops is substantial, making large number of people live just on the poverty line. A research for development project promoted the utilization of Leucaena leucocephala, to improve cattle productivity hence farmers’ livelihood through cattle fattening. This paper provides insight that livelihood improvement has been made possible through cattle fattening and how the innovation has been taken in a wide scope. A case study was conducted in Jatisari and Labangka as an existing and new Leucaena feeding practice. The study found that planting and feeding Leucaena, farmers were able to earn profit from fattening about IDR. 500,000/head/month. One household were fattened around 4-6 bull/six months period and potentially earn around IDR. 18 million to 21 million/year compares to crops which was about IDR. 3 to 4 million once a year. It is concluded that cattle fattening based on Leucaena is an option to improve small holder farmers’ livelihood in tropical areas like Sumbawa.

Keywords: integrated crop-livestock, small holder, traditional system, livelihood improvement.
Value Chain Constraints and Strengths in the Milk Industry in Magelang Regency of Central Java

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Abstract. Magelang Regency is a district in the province of Central Java, where the agriculture and livestock sectors are the main sectors in the development of this district. The milk value chain is a sequence of activities to produce milk until the product gets value. The purpose of this study was to analyze the constraints and strengths of the value chain in the dairy industry in Magelang District, Central Java. Respondents are dairy farmers who are members of the Tri Argomulyo Association, and the heads of dairy cooperatives as informants. Data were analyzed using descriptive statistical analysis, accompanied by explanations. The results showed that the constraints experienced were the quality of milk, the level of formal education, the risk of raising livestock, the low level of use of technology and the market became an obstacle to the value chain in the dairy industry in Magelang District, Central Java. While the strength possessed is support from the government and CSR, the power of bargaining power and easy access to extension services because they are incorporated into one association, non-formal skills and knowledge, communal cages for each group and infrastructure. So it can be concluded that dairy farming in Magelang Regency has great potential to be developed. With the existence of this dairy farmer association, it provides opportunities for bargaining power to stakeholders. In addition, it is necessary to collaborate with universities to further improve the skills and knowledge of farmers. And there needs to be a role for the government to open the milk market in Magelang.

Keywords: value chain, dairy industry, dairy farmer, Magelang Regency
Evaluation of Farmer Knowledge Level about Artificial Insemination Program and Success of Beef Cattle's Pregnancy in Central Java and Yogyakarta Province

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Abstract. The cow’s pregnancy rate due to artificial insemination (AI) is one of AI successful indicator. Human is the main factors in the success of AI since they act as a central role in the AI process. In addition, the rate of AI acceptance is also determined by farmes’ perceptions and characteristics. One of the perceptions measurements can be seen from the level of farmers’ knowledge about AI. This study aims to determine the level of knowledge of beef cattle farmers towards AI and to know the success of the AI implementation by looking at the cow’s pregnancy rate. This study involved 400 farmers as in Central Java and Yogyakarta Province as respondents selected by multistage random sampling. This study uses a descriptive analysis. Frequency distribution used to determine the level of knowledge of beef cattle farmers on the AI program and the success rate of pregnancy. The results showed that the farmers in this study had a low level of formal education (elementary school) and had a various understanding of AI benefit. Most of the farmers included in the medium category of understanding the benefits of AI and only 25.5% have a high understanding of the benefits of AI. Farmers in this study already knew the signs of estrus in cow and had applied it to determine the right time for AI, but the success rate of pregnancy for beef cattle in this study was still low (48.5%).
Increased Of Farmer's Income Through Use Cassava As Main Ingredient Of Beef Cattle Concentrate Feed In Playen Subdistrict, Gunungkidul, Yogyakarta

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Abstract. Feeding concentrates to beef cattle is not widely practiced in Indonesia and live weight gain (LWG) and income from sale of cattle can be low. This study analyzed the increase of beef cattle farmer's income through the use of cassava as a main ingredient of a concentrate feed. Fifty Ongole (PO) bulls, aged 12-18 months, were used in this study. They were divided randomly into five feed treatments and each treatment consisted of 10 cattle. The control treatment (T0) was the current feeding system by farmers. Treatment one (T1) used concentrate supplementation at 1% of live weight (W)/day with composition 50% cassava, 25% copra meal, 25% palm oil cake and treatment 3 (T3) was the same concentrate fed at 2% W/d. Treatment two (T2) and four (T4) used a concentrate mix of 50% cassava, 25% copra meal, 25% soybean skin fed at 1%W/d (T2) and 2%W/d (T4). Cattle were fed for 12 weeks (April to July 2018) in Banaran Village and Bleberan Village in Playen Subdistrict, Gunungkidul Regency, Yogyakarta. The increase in income from the use of cassava-based concentrates was analyzed using the Partial Budget, based on feed costs and LWG of the cattle. The increase of farmer's income per animal over the control was Rp. 751,500.00, Rp. 1,323,000.00, Rp. 810,000.00 and Rp. 1,017,000.00 for T1, T2, T3 and T4 respectively. It was concluded that concentrate supplementation at 1%W/d with composition 50% cassava, 25% copra meal, 25% soybean skin gave the highest increase in income per head.

Keywords: Income increase, Cassava, Ongole (PO) bulls
Determinant Factors of Applying Mixed Crops and Livestock Farming in Indonesia

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Abstract. Smallholder farmers have been integrating their limited resources as a strategy of farming sustainability. Mixed Crops and Livestock (MCL) Farming becomes the most popular approach in developing countries. However, MCL farming remains a question of whether farmers apply this farming practice as an income generating activity or a survival strategy. This paper aims to study the determinant factors of MCL practice among farmers in Indonesia. A cross-sectional data of the Indonesia Family Life Survey (IFLS) in 2014 was used by involving 3,702 farm household (2,957 of non-MCL farmers and 745 of MCL farmers). A binary choice model was employed to estimate the probability of practicing MCL farming in Indonesia. The results showed that the cultivated land size and age of farmers negatively explained the choice of practicing MCL among farmers in Indonesia. This indicated that MCL farming tends to be practiced by younger farmers with smaller land size. The livestock asset is insignificance toward the MCL farming. It indicates that crop farming is the primary farming while keeping livestock is more complementary activity among MCL farmers.
ABSTRACT
Parallel Session

Poultry and Science Management
Effect of pecan seed flour (Aleurites mollucana) in diet on egg quality of native chicken laying hens

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Abstract. Research aims to understand how the level of the use of flour the pecan seed in feed on the quality of native chicken. Random metode statistical methos random design and continued by test Duncan’s. There are 5 treatment (R0 = 100 % based diet (BD), R1= 98.5% (BD) + 1.5 % (DPS), R2 = 97 % (BD) + 3% (DPS), R3= 4.5 % (BD) + 95.5% (DPS), R4 = 94% (BD) + 6 % (DPS) and 5 replications, each replications consists of 8 brids. Every week a period of egg native chicken take 50 grains kampung chicken egg to on analysis quality of egg. Data were egg weight (g/egg), egg albumen (g/egg), egg yolk color, egg yolk weight (g/egg), egg shell weight(g/egg), egg shell thickness (mm), egg cholesterol (mg/100g) and blood cholesterol (ml/dl), blood LDL cholesterol (ml/dl), blood HDL cholesterol (ml/dl) and blood triglycerides (ml/dl). The results, it can be concluded effect of pecan seed in diet 6 percent have significantly affect ( p <0.05) on the content of egg weight, egg albumen, egg yolk color, egg yolk weight, egg cholesterol, blood cholesterol, blood LDL cholesterol, blood HDL cholesterol and blood triglycerides but have no significant ( p> 0.05) on the egg shell weight and egg shell thickness.Conclusion is that the use of 6 % pecan seed in rations do not have negative effect on the performace and native shicken’s eggs quality

Keywords: Native chicken laying hens
Egg production trajectories of quails fed moderate energy and protein levels supplemented with digestibility enhancer

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Abstract. Betaine is proven as a digestibility enhancer that improves egg production. This study investigated the trajectory of egg production of quails fed diet supplemented with betaine. The experimental population comprised of 204 female laying quails (Coturnix coturnix japonica) which were allotted to two treatments and six replicates with 17 quails each. The quails were given a basal diet containing 2,700 kcal/kg of metabolizable energy and 18% crude protein, without (Control) and with 0.12% betaine supplementation (Betaine). Egg production percentage were collected from adaptation (age 42-62) and treatment period (age 63-118), and they were subjected to T-test for both treatments. The data were plotted to obtain the trajectory of egg production. A logistic regression model was employed to see the trend of the egg production patterns. There was no significant difference in egg production during the adaptation period. Furthermore, during the treatment period, the egg production was enhanced (p<0.01) following betaine supplementation (59.54±13.11 vs 63.72±13.52). This finding was confirmed by the egg production trajectory curves. Results from logistic regression, however, showed that the trend for both treatment groups were similar with slightly different fitness. Coefficient determination (R²) for both groups were 0.96 and 0.95, respectively. Betaine supplementation was able to improve quail egg production; however, the trend of trajectory was similar from that without supplementation.

Keywords: quails, egg production, betaine, trajectory, fitness
Effects of L-Threonine and L-Tryptophan Supplementation on the Feed on the Body Weight and Internal Organs Weight of the Native Chickens Aged of 14 Weeks

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Abstract. The aim of this study was to determine the effect of L-threonine and L-tryptophan supplementation on the body weight and internal organs weight of the native chickens aged of 14 weeks. 112 native chickens of six weeks old was used in the experiment. They were allocated randomly to four treatments and four replicates. The four dietary treatments used were: (1) T_0 (control); (2) T_1 (supplementation of 0.25% L-threonine and 0.07% L-tryptophan); (3) T_2 (supplementation of 0.58% L-threonine and 0.14% L-tryptophan); and (4) T_3 (supplementation of 0.85% L-threonine and 0.20% L-tryptophan). The parameter observed was body weight, liver weight, pancreas weight, gizzard weight, and intestinal length of native chickens. The result showed that the body weight of T_0, T_1, T_2 and T_3 were 1044.28, 1081.91, 1115.95 and 1151.34 g/bird, respectively. The liver, pancreas, and gizzard weights and the intestinal length were 2.56, 2.66, 2.81 and 2.91 g/bird; 3.90, 4.17, 4.43 and 4.46 g/bird; 26.00, 28.63, 30.26 and 31.28 g/bird; 124.80, 131.90, 137.88 and 139.73 cm/bird, respectively. The result indicated that the body weight, liver, gizzard, and intestinal length affected by level of L-threonine and L-tryptophan (P<0.01) but pancreas weight was not affected. It was concluded that supplementation with 0.85% L-threonine and 0.20% L-tryptophan on the feed of native chickens aged 6-14 weeks resulted in optimal of their body weight and internal organs weight.
Comparative Study of Herbal and non-Herbal Egg Protein Profiles using Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis

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Abstract. Chicken egg yolk and albumen contain some bioactive proteins. The present study was conducted to compare the protein profile of yolk and albumen of herbal and non-herbal chicken egg. The herbals that supplemented into chicken feed consisted of turmeric, sambiloto leaves, soursop leaves, ginger and lemongrass. The protein profiles were measured in term of the numbers of bioactive peptide fraction and their molecular weight by SDS PAGE using descriptive qualitative analysis. The antioxidant binding protein were also evaluated. The result show that SDS-PAGE can separate the egg yolk protein fraction and albumen protein with molecular weight between 14-97 kDa. Egg yolk protein fraction of herbal eggs separated better than non-herbal eggs, whereas giving herbal to laying hens does not affect the number of fractions in albumen protein. Antioxidants from herbals were indicated binding the apoprotein and apolipoprotein of egg yolk, also avidin and ovalbumin of albumen. It can be concluded that herbals supplementation affect the bioactive protein fraction in chicken eggs.

Keywords: Chicken eggs, Herbal, Bioactive compound, SDS PAGE, Protein
Effect of Litter Type on Digestive Tract and Accessory Organ in the Native Chicken

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Abstract. This research was aimed to study the size of digestive tracts and digestive organs, as well as accessory organs in the digestive system of native chickens under different litter materials. One day old Kampung Unggul Balitnak (KUB) chicken as many as 108 unsexed birds were randomly placed into three treatment groups of different litter materials, namely rice hulls, wood shavings, and corn cobs mills. Data collected included the final body weight (g/bird), relative weight (%) and length of the digestive tract (cm), digestive organs, and accessories organ of the digestive system. Relative weight (%) measurements include the digestive tract, esophagus, crop, proventriculus, gizzard, small intestine, duodenum, jejunum, ileum, caeca, large intestine, and accessory organs. The accessory organ consists of the liver, gallbladder, and pancreas. Length measurements include the small intestine, duodenum, jejunum, ileum, caeca, and large intestine. Furthermore, the relative weight (%) is calculated for each segment of the digestive tract and accessory organs. Data were analyzed using variance analysis, followed by Duncan's New Multiple Range Test using the SPSS version 16.0 application. The results showed that the different litter material had no effect on the relative weight (%) of the digestive tract, digestive organs, and accessory organs, except the proventriculus and caeca (P <0.05). The litter material has no effect on the entire length of the digestive tract, small intestine, duodenum, jejunum, ileum, caeca, and large intestine. The highest relative proventriculus weight is found in chickens given wood shavings litter and the lowest on corn cobs. The highest relative caeca weight is found in chickens given wood shavings litter. There is no difference in the weight of caeca between chickens given rice hulls and corn cobs litter.

Keywords: Native chicken, Digestive organ, Accessory organ, Litter
Egg production of black and brown Japanese quails raised under battery cage system

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Abstract. Evaluation of egg production in black and brown Japanese quails is very important for researchers and small holder farmers due to their potentials to produce animal protein. The objective of this study was to observe the egg production traits of black and brown Japanese quails raised under battery cage system. The material used was black and brown Japanese quails originated from Karanganyar and Boyolali regions. One hundred Japanese quails were divided into four types of line as treatments: Black 1 (L1), Brown 1 (B1), Black 2 (L2), and Brown 2 (B2). Each treatment consisted of 25 quails as replication. The commercial starter feed for broiler was given to quail until 30 days of age, and commercial feed for laying quail was given started from 30 to 90 days of age. This study used a Completely Randomized Design (CRD). The data observed in this study was body weight at 42 days, age at first egg-laying, egg weight, and egg production. In addition, the data was analyzed using analysis of variance, and pairwise differences among quail line was conducted using Duncan’s multiple range test (DMRT). Body weight at 42 days of age and egg weight were significantly different among lines. Body weight at 42 days of age in L2 and B1 populations were higher than L1 and B2 lines ($P=0.0007$). In addition, higher egg weight was also found in L2 and B1 lines ($P=0.0005$). Age at first egg-laying and egg production were not different among lines. These findings may be useful for development of quail breeding strategy in the future.
Characteristics of carcass and non-carcass in F₁ population crossbred brown and black Japanese quails

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Abstract. Layer quail can be utilized as meat source after not producing egg. The aim of this study was to evaluate characteristics of carcass and non-carcass in F₁ population crossbred brown and black Japanese quails. A total of 80 heads of Japanese quail have been raised under the same feeding and management in battery cage system. They were divided into four groups based on type of crossing. Brown male quail and Black female quail crossing produced Brown layer lines (BL12 and BL21 lines, respectively), on the other hand Black male quail and Brown female quail crossing produced layer populations called LB12 and LB21 lines. The data observed was live body weight, carcass and non-carcass percentages, and abdominal fat percentage. Moreover, the data was analysed using analysis of variance and if there was pairwise differences among lines Duncan’s multiple range test (DMRT) was performed. Significant differences among lines have been found for live body weight, carcass and non-carcass percentages, and abdominal fat percentage. Moreover, the data was analysed using analysis of variance and if there was pairwise differences among lines Duncan’s multiple range test (DMRT) was performed. Significant differences among lines have been found for live body weight, carcass and non-carcass percentages of F₁ population crossbred between brown and black Japanese quail lines. Live body weight (g) in crossbred populations between Black male and Brown female Japanese quail were significantly higher than others (P<0.001). In addition, highest carcass percentage and lowest non-carcass percentage were found in LB12 population (P=0.0175 and P=0.0159, respectively). Abdominal fat percentage was not different among lines. In conclusion, F₁ population of LB line had overall better live body weight, carcass and non-carcass percentages than BL lines. Further study may be needed to evaluate their potentials to be broiler Japanese quail.
Effects of Feed Form on Broiler Small Intestine Histomorphology

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Abstract. This experiment was conducted to study the effects of different feed forms namely, mash, crumble and pellet on small intestine histomorphology of broiler chicken at 35 days of age. A total of 72 unsexed New-Lohman broiler chicks were randomly placed into three treatments. Feed treatments were given in two phases: 0-21 days and 22-35 days. The treatment group consisted of T1 (0-21 days: mash form, 22-35 days: mash form = mash: mash form), then T2 and T3 were crumble:crumble and crumble: pellet form, respectively. Each group consisted of three replications and each replication consisted of 8 chicks. Parameters evaluated in the current study were small intestine (duodenum, jejunum, and ileum) histomorphology (villus height, villus width, crypt depth, and villus height to crypt depth ratio), as well as their weight (g) and length (cm). Data were analyzed using analysis of variance followed by Duncan’s Multiple Range Test. The results showed that villus height, crypt depth, and villus height to crypt depth ratio in the duodenum and jejunum of T1 were higher than T2 and T3. The length and weight of duodenum and jejunum of T2 and T3 were higher than T1, while T2 was not significantly different compared to T3. It can be concluded that broilers fed by crumble: crumble and crumble: pellet form could improve the development of small intestine as well as its histomorphology.

Keywords: Broiler, Feed form, Small intestine, Histomorphology
Growth of Probiotics for Poultry in Glucose Yeast Pepton Media, Production of Biomass, Viability and Stability after Encapsulation with Spray Drying

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Abstract. The objectives of this study were to determine the specific growth rate and biomass cells production of probiotics bacteria isolated from gastrointestinal tract of Indonesian native chicken, i.e. Lactobacillus murinus Ar-3, Streptococcus thermophilus Kp-2 and Pediococcus acidilactici Kd-6. For specific growth rate study, probiotic bacteria were grown in glucose yeast peptone (GYP) medium, while mixture of probiotic bacteria base on rasio of specific growth rate were employed to the experiment for biomass production study using sugar cane molasses medium. Fermentation was conducted in 2 litres bioreactor at 37°C for 24 hours pH 6.0. Encapsulation was carried out after the biomass was harvested by centrifugation and then coated using skim milk/maltodextrin medium and dried with spray drying. Biomass viability before and after spray drying was evaluated, while encapsulation stability was evaluated during storage at room temperature. The results showed that L. murinus Ar-3 had a generation time of 3.25 ± 0.006 hours, S. thermophilus Kp-2 3.68 ± 0.1 hours and P. acidilactici Kd-6 3.74 ± 0.04 hours in GYP medium, thus the ratio of generation time was (1) : (1.18) : (1.16). The growth of mixture of probiotic in molasses showed the same pattern. Mixture of probiotic cells were harvested when the maximum cell yield of 9.33±0.12 log 10 cfu/ml was achieved. Base on this yield, calculation of fermentation effiency regarding to biomass cells production was 51 %. The viability of mixed probiotic culture encapsulated in skim milk/maltodextrin were 10.12 log 10 cfu/ml before spray drying and 9.12 log 10 cfu/g after spray drying or 90.11%. The stability of encapsulated probiotics in room temperature during 21 days storage was 90.89%.

Keywords: Probiotics, Poultry, Encapsulation, Viability, Stability
The Effect of Different Feed Forms on The Performance and Carcass Yield of Broiler Chickens

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Abstract. The aim of the research was to prove that the different feed forms affects the performance and carcass production. The experimental design was 240 New Lohmann MB 202 day-old chickens were randomly divided into five groups of treatment for 35 days of rearing period. There were 6 replications with 8 birds per pen. The chickens were fed starter feed at 1-21 days and finisher feed at 22-35 days with different feed forms, such as mash-mash (MM), mash-crumble (MC), mash-pellet (MP), crumble-crumble (CC), and crumble-pellet (CP). The collected variables in this research were feed consumption (g/bird/week), weight gain (g/bird/week), feed conversion, percentage of carcass, weight of chest, back, lower thigh, and drumstick. The data were obtained and statistically analyzed by One Way Analysis of Variance, then followed by Duncan’s New Multiple Range Test by using SPSS (SPSS for Windows, 16.0, SPSS Inc.). The results proven that feed form did not give any effect to feed consumption and weight gain but it affected feed conversion (P>0.05). MP feed treatment kept the highest rate of feed conversion by the end of rearing period. However, the result of carcass yield showed that various feed form that consumed on days 0-21 did not affect carcass percentage of broiler chickens. On the other hand, the birds which ate pelleted feed on days 22-35 tend to have higher (P>0.05) carcass weight than those consumed mashed and crumbled feeds. It is concluded that chicken fed with mash-pellet feed had the best feed conversion. Besides, the birds which ate pelleted feed on days 22-35 had highest carcass weight.
An integrated model for developing indigenous chicken in Padang, West Sumatra, Indonesia

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Abstract. A triangulation approach was used to explore Padang existing condition to construct an integrated model of developing indigenous chicken in West Sumatra on November to December 2018. Those consisted of feeding availability analysis to strengthen indigenous chicken; location quotient (LQ) to analyze the location of indigenous chicken development basis as well as SWOT analysis. The results showed that there were five sub-districts categorized as basis location. Feeding availability could be likely at an increasing of 63 % (265,000 head) to the existing number of indigenous chicken. SWOT analysis revealed that there will be an increasing opportunity to develop indigenous chicken using an integrated model, where poverty eradication and disaster risk reduction involved as main consideration.

Keywords: indigenous chicken, integrated model, triangulation approach, Padang.
Expression profiles of avian β-defensin (AvBDs) in the chick cecum and effect of probiotics treatment on the AvBDs expression.

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Abstract. The intestine is one of the organs which have high risks of infection by pathogenic microbes. Fourteen types of avian β-defensin (AvBD1-14) are antimicrobial peptides that have antimicrobial activity involved in innate immuno-defense system in the chicken. They may play roles in the innate defense-system in the intestine of young chicks. However, AvBDs expression profiles in the chick intestine and the effects of probiotics on that AvBDs expression are still unknown. Therefore, the aim of this study was to determine the expression profiles of AvBDs and the effect of different probiotics treatment on the AvBDs expression in the chick cecum. In experiment 1, the cecum from day-old (D0), and 7 days-old (D7) chicks were collected for RT-PCR analysis and immunohistochemistry. In experiment 2, the newly hatched chicks were treated for 1 week with or without general probiotics products which contained \textit{Lactobacillus reuteri} and/or \textit{Clostridium butyricum}; namely no probiotics group (Con), \textit{Lactobacillus reuteri} group (Lac), \textit{Clostridium butyricum} group (But), and \textit{Lactobacillus reuteri} and \textit{Clostridium butyricum} group (L+B). The cecum in each group was collected for quantitativity PCR. In experiment 1, the gene expressions of 10 AvBDs were detected in the cecum of D0 or D7. The AvBD2 immunoreactive cells were localized in the lamina propria of cecum mucosa, and immunoreactive AvBD4 were localized in the surface of epithelial cells of villi and crypt. In experiment 2, the expression levels of 3 AvBDs in But or L+B were significantly higher than that in Con (\(P > 0.05\)). In conclusion, the AvBDs are expressed and produced in the cecum of chicks. The findings in this experiment suggest that probiotics treatment may be used for enhancing the AvBDs production in the chick intestine to prevent the infection by pathogenic microbes.

Keywords: Chick intestine, avian β-defensin, probiotics.
Utilization of Palm Oil Sludge Fermented by *Aspergillus niger* in Feed for Growth and Income Over Feed Cost (IOFC) of Pekin Ducks

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**Abstract.** The research purposed to observe the utilization of palm oil sludge fermented by *Aspergillus niger* on the consumption rate, average daily gain, feed conversion ratio and income over feed cost of Peking ducks till 8 weeks. The research method used completely randomized design (RCD) with 4 treatments and 5 replication, each replication consist of 4 ducks. The treatment used in this experiment are R0 (basal feed non palm oil sludge fermented), R1 (10% palm oil sludge fermented), R2 (20% palm oil sludge fermented), R3 (30% palm oil sludge fermented). The result of this research that the application of palm oil sludge fermented by *Aspergillus niger* with level 10–30% did not give significantly different (P>0.05) to the consumption rate, average daily gain and feed conversion ratio, but give significantly different (P<0.05) on income over feed cost. The conclusion that palm oil sludge fermented can be used until 30% in peking duck feed.
The Difference of Growth Performance, Litter Condition and Blood Composition of Broiler Chickens Reared in Seven Types of Litters

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Abstract. This experiment aimed to study the effect of seven materials as litter bedding on the performance of broiler chicken growth, blood performance and litter conditions during 35 days experiment. Two hundred and eighty day-old broiler chickens were randomly placed in seven different types of litter bedding. The litter material namely, litter material from dreg of clove (P1), peanut shell (P2), wood shaving (P3), rice husk (P4), lemongrass husk (P5), dreg of tea (P6) and corn cob (P7). Each treatment was repeated four times, and each repetition consists of 10 broiler chicks. The observed performance parameter of broiler chicken were growth, feed consumption, body weight gain (g/bird), and feed conversion, blood condition and as well as litter temperature, humidity, pH and ammonia on the litter during 35 days. The statistical analysis shows that there are significant differences in the use of 7 different types of litter material for performance including feed conversion ratio, gain weight, and body weight and litter quality, but not for blood composition and feed intake. The best feed conversion was chickens of P3 and P4. The body weight was chickens of P3 and P7. Temperature, humidity, pH, and ammonia content, were differs between the seven litter materials, but is still in the normal range. It concluded that citronella oil refining waste, corn cob, peanut shell, rice husk, and furniture waste can be use as litter bedding without interfering production performance and does not cause stress or environmental disturbances

Keywords: broiler, litter bedding, performance production, ecology
ABSTRACT
Poster Session
Nutrient Content of Coffee Berries Husk Fermented with Different Types of Inoculant

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Abstract. Nutrient content of coffee berries husk can be improved through a fermentation process using inoculants. A study was conducted to determine the nutrient content of the coffee berries husk fermented with different types of inoculant. The study was conducted on fruit skin robusta 5 years of age are kept farmers in the village of Sanda Subdistrict Pupuan Tabanan regency. Research using a completely randomized design (CRD) consisting of 4 treatments and 6 replications. The treatment given is: coffee berries husk without fermentation (K1), coffee berries husk fermented with inoculant Aspergillus niger for 5 days (K2), coffee berries husk fermented with inoculant yeast tempe (Rhizopus oryzae) for 5 days (K3) and coffee berries husk fermented with yeast tapai inoculant (Saccharomyces cerevisiae) for 5 days (K4). The parameters observed were: (1) the content of dry matter, (2) crude protein, (3) gross energy, (4) fat, (5) organic material, (6) ash, (7) crude fiber, (8) calcium and (9) of phosphorus. The results showed that the crude protein content is highest at treatment K2 which amounted to 10.23%, and crude fiber content was lowest for the treatment K3 which amounted to 27.17%. This study suggests that the fermentation process is able to increase the crude protein content of the coffee berries husk.

Keywords: coffee berries husk, fermenting, inoculants, crude protein, crude fiber
Productivity of First Ratoon Sweet Sorghum (*Sorghum bicolor* (L) Moench) as A Source of Bali Cattle Feed

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Abstract. Sweet sorghum (*Sorghum bicolor* (L) Moench) have ratooning ability so that the productivity can be maximized. The research was conducted to determine the productivity of the first ratoon sweet sorghum as source of Bali cattle feed. This research was conducted in the agro innovations farming park BPTP Bali for 90 days. The study was arrange with completely randomized design with 3 fertilization treatments and 15 replication. The fertilizer given was: bio urine 1 liter/tree (S1), biourin 1 liter + compost 250 g / tree (S2) and compost 500 grams / tree (S3). Parameters observed included: (1) plant growth, (2) weight of fresh grains, panicles, stalks and leaves, and (3) weight of dried grains, panicles, stalks and leaves (DM). The results showed that sorghum growth generally did not differ, but the highest stalk diameter was found in S1 treatment, which was 2.06 cm. However, the highest production of fresh biomass was found in S3 sorghum plants which were 508.86 grams / tree. Sorghum grains production can be used for Bali cattle feed sources with a body weight of 250 kg as much as 16.17 head / ha / year while biomass production is 8.95-14.08 head / ha / year. This study suggest that the first ratoon sorghum cultivation is potential as a source of Bali cattle feed.

Keywords: ratoon, feed, Bali cattle
Potential of Wasted Crops and Its Carrying Capacity for Improving Bali Cattle Productivity Case Study in Bali Province

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Abstract. The cattle business obstacle is limited availability of land due to competition from food crops. The farming system is integrated between food crop and livestock, one of the solutions to ensure the availability of feed. To analyze the potential development of Bali Cattle business in the province of Bali the calculation of the increasing capacity of ruminant livestock (KPPTR). This analysis requires data on harvested area and production of food crops such as sweet potatoes, cassava, mung beans, peanuts, soybeans, corn and paddy. The results of KPPTR-SL calculation, all the provinces in Bali have negative KPPTR values with the highest values found in Denpasar city, while the lowest values are found in Karangasem District. The food crop waste produced can be used as a source of forage for the high livestock population in Buleleng and Karangasem, but when viewed from the value of KPPTR-SL Karangasem and Buleleng regencies have overpopulated and low capacity for develop livestock. In terms of TDN and crude protein production from each food crop waste has not been sufficient to meet the nutritional needs of cattle in Buleleng and Karangasem districts. Karangasem and Buleleng as districts with the highest cattle population produce total digestible nutrient (TDN) based on crop waste is 38,633.08 DM/ton and 53,776.22 DM/ton. TDN production from food crop waste is still not sufficient to meet the needs of TDN for cattle weighing 250-350 kg. Karangasem district produces crude protein from agricultural waste of 3,103.37 tons/DM while the need for cattle assuming a weight of 250-350 kg 26.269.02 tons/year/populations. The same thing shown in Buleleng district that producing crude protein from agricultural waste of 3,226.75 tons/DM with needs that must be met for cattle weighing 250-350 kg is 28.718,61 – 33.697,11 tons/year/population. The combination of agricultural waste and legumes can be an effort to increase the crude protein content of feed, in addition to the add with concentrates with local feed ingredients can be use to increase the TDN content of feed.

Keywords: waste crops, cattle population, carrying capacity
Nutrient Intake and Performance of Male *New Zealand White* Rabbits Fed Different Level of Leucaena Leaf Meal in Pelleted Complete Diets

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**Abstract.** This study aimed to determine the nutrient intake and performance of male *New Zealand White* rabbits fed complete feed pellets containing different level of leucaena leaf meal (LLM). A total of 20 rabbits were randomly divided into four groups, and fed diets containing 0% LLM (P0), 5% LLM (P1), 10% LLM (P2), and 15% LLM (P3), for a duration of 10 weeks. The crude proteins of the diets were 17.7-18.1% and energy of the diets were 2,277.1-2,541.7 kcal/kg. The complete pellet ingredient were corn, pollard, *Pennisetum purpureum cv. Mott*, molasses, soybean meal, LLM, copra cake, tapioca meal, and premix. Data on nutrient intake, average daily gain (ADG), and feed conversion were collected on a weekly basis and analysed based on completely randomized design analysis. The results showed that nutrient intake, ADG, and feed conversion of male *New Zealand White* rabbits fed pellet containing 10% LLM was significantly higher (P<0.05) than those fed the other diets. The dry matter (DM) intake, crude protein (CP) intake, extract ether (EE) intake, crude fiber (CF) intake were highest, they were 80.04 ± 3.96, 16.43 ± 0.81, 6.64 ± 0.33, 15.84 ± 0.78 (g DM/head/day), respectively. The ADG were 20.20 ± 2.29 g/head/day and feed conversion were 4.60 ± 0.55. It is concluded that 10% LLM in complete feed pellets improved the growth performance and nutrient intakes of male *New Zealand White* rabbits.
Parameter of ruminal feed fermentation in vitro with addition of clove essential oil (*Syzygium aromaticum* L.) as feed additive

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**Abstract.** Modification of fermentation process in rumen could be used to increase ruminal feed efficiency. Essential oils (EO) majority have an antimicrobial activity which makes it possible to be used as feed additive rumen modifier. Effect of clove essential oils (CEO) on parameter of ruminal fermentation was studied using in vitro gas production technique. Feed consisted of king grass, wheat pollard and rice bran (60:20:20) were incubated in buffered rumen liquid at 39ºC for 24 hours. Rumen liquor of Ongole grade cattle were used as rumen microbe donor. CEO was added and mix with feed material before incubation to meet its levels of 0, 25, 50, 75, and 100 µl/L fermentation medium. The total volume of gas production was measured at the end of fermentation, and broth was collected further for measurement of pH, protozoa number, ammonia, and synthesis of microbial protein. Medium pH range from 7.12 to 7.20, were not affected by CEO addition. The volume of gas production which represent feed degraded were reduced at the doses of CEO 75 and 100 µl/L (P<0.01). Ammonia concentration at all treatment groups was higher compared to control, whereas protozoa number were lowered by CEO addition (P<0.01). Reduction of protozoa number began at CEO dose 25 µl/L and continued reduction at CEO dose of 50 and 75 µl/Land the lowest number at level 100 µl/L. The number of protozoa ranged from 18.08 to 32.81 x 10^4 cell/mL. Meanwhile, protein microbe at CEO doses 25 and 50 µl/L (141.54 lmg/100 mL and 141.11 mg/100 mL) were higher than control (121.23 mg/100 ml) (P<0.01), whereas treatment doses at 75 and 100 µl/L did not change microbial protein synthesis i.e. 120.25 and 118.65 mg/100 mL respectively. In an overall conclusion seems that, CEO addition up to 50 mg/L increase feed efficiency in ruminal fermentation.

**Keywords:** Clove essential oil, Feed additive, Rumen modifier, Ruminal feed fermentation
Evaluation of Rumen Microbial Nitrogen Supply in Merino sheep Fed Different Ratio of Concentrate-Forage Diets

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Abstract. Concentrate-forage ratio that may affect microbial nitrogen supply in the rumen of the growing ruminant can be considered as one of feeding strategies. Effect of different concentrate-forage ratio on rumen microbial nitrogen supply in Merino was evaluated. Twelve male Merino sheeps aged 10-12 months were given three experimental diets in one-way design using 14 d adaptation and 7 d collection periods. Experimental diets were concentrate (wheat pollard) and forage (Pennisetum purpuroides) offered with ratio 20:80, or 30:70, or 40:60 (w/w, DM basis). Total urine collections were performed for 24 h during collection periods. Subsamples of urine were stored at refrigerator and subsequently analysed for allantoin, uric acid, xanthine-hypoxanthine, and purine derivatives. Feed and refusal feed were analysed for dry matter and organic matter. Concentrate-forage ratio tends to influenced daily allantoin, xanthine-hypoxanthine, and purine derivatives excretion, as well as absorbed purine and rumen microbial protein synthesis. Feeding concentrate up to 40% significantly increased N urinary excretion (P<0.05). It indicated that concentrate level at 30% in the diets could fulfill animal protein requirement. Merino sheep fed by concentrate-forage ratio 30:70 or 40:60 showed both purine absorbed and rumen microbial protein synthesis 2-3 fold higher than those of 20:80. It could be concluded that Merino sheep were efficient in utilizing degradable dietary N with concentrate:forage ratio 30:70.
Effects of a Natural Preparation Based on Marl, Olive Leaf, Turmeric and Mild Paprika on the Performance of Laying Hens

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Abstract. The effects of 3% of a natural preparation based on a mixture of marl and phytobiotics (olive leaf, paprika or turmeric) were studied in 96 H&N-Super Nick strain laying hens from 35 to 42 weeks through an experimental design of three treatments (control group, marl-olive leaf-mild paprika group and marl-olive leaf-turmeric group). Eight replicates of four hens were assigned to each of treatments. Laying performances (number, weight and egg mass) were recorded daily. Egg quality traits (albumen and yolk weight, Haugh units and yolk color), shell strength, egg classes and moisture droppings were recorded per period of two weeks. The experimental diets did not make any significant changes in laying performances. However, the rate of eggs large caliber (class 3) was significantly less accentuated (P=0.02) by diets based on marl-olive-turmeric (-49%) and marl-olive-mild paprika (-38%). In terms of quality traits, turmeric-based diet, significantly improves the yolk color (+10% ; P=0.01) and the relative weight of yolk (+4.1 ; P=0.04), while the mild paprika-based diet, enhances the Haugh units value (+4.4%, P=0.04). The droppings state was greatly improved by a significant increases of dry matter (+24.6% and 19.8% ; P=0.001), respectively, with paprika and turmeric based diets. Results of this trial highlight the importance of marl and natural additives in improving the egg qualities and the well-being of laying hens.
Beef Chain of Managing from Sumber Rejeki Slaughterhouse (TPH), Cirebon District.

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Abstract. Study of the Beef Chain of Beef from Sumber Rejeki Slaughterhouse, Cirebon District has been carried out from September to December 2018. The method of study was carried out through case studies in TPH Sumber Rejeki and the data obtained were analyzed using descriptive methods. This site selection uses purposive random sampling because 1. TPH Owner Sumber Rezeki is the Chairperson of the Association of Animal Slaughtering Entrepreneurs, 2. The TPH receives supervision and guidance of the BATTEMBAT Abattoir (RPH) which is the Technical Implementation Unit (UPT) of the Department of Agriculture, Plantation, Animal Husbandry, and Forestry (DISTANBUNNAKHUT) Cirebon Regency, West Java, 3. TPH Sumber Rejeki has been registered as an individual company with the number TDP 102255208696 at the Department of Industry and Trade (DISPERINDAG) of Cirebon Regency, West Java. The results obtained indicate that the beef trading chain which is a product produced by TPH Sumber Rejeki is quite short so it can reduce the selling price of the product. The difference in product prices is due to the type and quality of the product, the volume of purchases, and the marketing distance.

Keywords: Beef, Beef Chain, TPH Sumber Rejeki
Plasma Progesterone of Normal Cycling and Repeat Breeding Ongole Grade Cows

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Abstract. The present study was carried out to compare plasma progesterone of normal cycling and repeat breeding Ongole grade cows. On the beginning of the luteal phase, blood samples were collected from 15 fertile and 15 repeat breeding Ongole grade cows. Progesterone was measured by using the Enzyme-Linked Immuno-Sorbent Assay (ELISA) and progesterone hormone kit (DRG, Germany) for the progesterone hormone levels. The data were analyzed by using independent sample t-test to determine the differences of progesterone level in repeated breeding and fertile dairy cows. The finding of the study showed significant different progesterone level of between repeat breeding and fertile cows. Repeat breeding cows were found to have lower levels of progesterone level (1.17 ± 0.39 ng/ml) than that of fertile cows (3.07 ± 0.33 ng/ml). Finally, progesterone level of repeat breeding Ongole grade cows was lower than fertile cows. Low level of progesterone can have some effects on reproductive problems as repeat breeding.

Keywords: plasma progesterone, Ongole grade cows, repeat breeding.
The Effect of Supplementation of *Leucaena leucochepala* Leaves in Friesian Holstein Cows Ration on Milk Production and Composition

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**Abstract.** The study was conducted to investigate the effect of supplementation of *Leucaena Leucocephala* leaves in the rations on milk production and composition of Holstein Friesian cow. The experiment was designed followed completely randomized design, consisted of 3 treatments, namely P0, P1 and P2 with 4 replications. Treatment P0 was basal ration, composed of 40% concentrates + 60% forage, while P1 and P2 were mixed diet containing of basal ration and *Leucaena Leucocephala* leaves as much as 10% and 20% of total forage dry matter, respectively. The experiment was done on 60 days, used 12 lactating cows weighting 428 to 457 kg, 2 to 3 months of lactation. The results showed that supplementation 20% *Leucaena Leucocephala* leaves significantly increased milk production of 0.02 L/d (P<0.05). Protein, fat and lactose in milk of supplemented cows were significantly higher than non-supplemented (P<0.05). The average protein, fat and lactose of milk in control diet (P0) were 2.87%, 4.73% and 4.44%, respectively, whereas those in supplemented diets P1 and P2 respectively were 2.99 and 3.29%, 4.86 and 4.91%, 4.59 and 4.60%. The conclusion is supplementation with *Leucaena Leucocephala* leaves as much as 10% and 20% of total forage dry matter increased milk protein, fat and lactose, but milk production only increased by level supplementation of 20%.
Effects of Stocking Density and Litter Type on Litter Quality of Native Chicken

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Abstract. This study was conducted to identify the effect of stocking density and litter materials on litter quality of Native chicken. Three hundred twenty four unsexed native chickens were used for 12 week duration of this research. The day-old chickens were randomly assigned in three stocking density groups: 8, 12 and 16 chickens/m². Each stocking density group was further divided in three litter groups: Rice hull, wood shaving and corn cob. Chickens in the each group were randomized in to three replicates at hatch were housed in a deep litter pen (1x1 m). The litter temperature, litter pH, water holding capacity, litter moisture and ammonia content were analyzed by analysis of variant (Anova) with three levels of stocking density and three levels of litter material, then followed by Duncan’s Multiple Range Test. The result showed that the stocking density had significant effect on the litter temperature, litter pH, water content (P<0,05) and ammonia (P<0,01). The litter materials had significant effect on litter pH, water holding capacity, water content and ammonia (P<0,05), but there no interaction between stocking density and litter type. It is concluded that greater stocking density of more than 8 chicken per square meter and rice hull type of litter material was degraded the litter quality indicators. Litter materials of wood shavings and corn cobs can be used as a substitute for rice hull because it provides a better indicator of litter quality.

Keywords: litter material, native chicken, stocking density.
Polymorphism Study of BMP15 gene in Indonesian Goats

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Abstract. Bone Moprogenetic Protein 15 (BMP15) is the family of Transforming Growth Factor β (TGFβ) superfamily which essential for early ovarian folliculogenesis. The aim of this study was to detect the genetic variation within BMP15 gene in four Indonesian goat breeds. A total of 27 blood samples of Gembrong, Kosta, Samosir, and Kacang goats reared in Indonesia Goat Research Center Sei Putih, North Sumatera were collected. Sequence alignment using of 4 samples represent each breeds has revealed one synonymous mutation in position g.735A>G (position number refer to GenBank JQ320890), which did not induce the change of lysine in position 135. Genotyping based on SNP g.735A>G was accomplished using BbsI restriction enzyme with PCR-RFLP method. All three genotype (AA, GG, and AG) showed in Gembrong, while in Samosir and Kacang goat the GG genotype was absent. Interestingly, Kosta goat only has AA genotype. The A allele (83%) was higher than G allele (17%), followed with AA (70%, n=19), AG (26%, n=7), and GG (4%, n=1) genotypes. The hardy-weinberg equilibrium analysis resulted that the sample population was not deviated (X²<5.59). It can be suggested that SNP g.735A>G might be used for further study in association the gene with reproductive traits in goat.
Comparison of Exterior Qualitative Characteristics Between Parental (Male) KUB Chicken and Their Crossed-F1 With Layer

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Abstract. Visual appraisal of external qualitative characteristics is one of commonly selection method in small farmer. The aim of study was to compare the exterior qualitative between parental Kampung Unggul Balitnak (KUB) chicken and their crossed-F1 with Layer. Forty male KUB chicken with different comb types and eighty chickens that were forty male and forty female of their crossed-F1 with Layer have been used for characterizing their external qualitative. Exterior data included beak color, eyes color, crown and neck feather color, chest and abdomen feather color, back feather color, primer and secondary wings color, thigh feather color, membrane shank and shank color. The data were tabulated into head, body and tail parts, and analysed statistically using descriptive statistics. As a results, the external characterization of F1 is more variable compare to their male parental especialy in feather, shank, beak and eye color. New feather color have been indicated in all type of combs parental group. The color variations appear in offspring the Pea comb type and most of them are in the abdomen 12,12% and back feather color 12,12%. On the shank color, 7,5% of the white color was not previously found in male parental. On the beak color, the variations of black (18,75%), blackish yellow (32,5%) and blackish white (8,75%) were also previously not found in male parents. The eye color in both parental and their male and female offspring are dominated with dark color. However, F1 male from pea group have been found 10% of them having light eye color. In conclusion, this study may provide an important view for designing selection program based on visual appraisal.

Keywords: Exterior qualitative, Kampung chicken, Crossed-F1, Layer
Marketing Mix in The Slaughterhouse (TPH) Sumber Rejeki Cirebon District

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Abstract. Abstract. Rejeki slaughterhouses (TPH) are located in Batembat Village, Tengah Tani Subdistrict, Cirebon Regency. This business has been established since 2000, buffalo and cattle meat sales center and TPH Sumber Rejeki in 2005 until now also sells qurban animals, providing slaughtering services. qurban and buffalo meat and beef sales center. That is why the purpose of this research is to find out the marketing mix at TPH Sumber Rejeki. The study was conducted in September - December 2018 and used the observation method. This site selection uses purposive random sampling because 1. TPH Owner Sumber Rezeki is the Chairperson of the Association of Animal Slaughtering Entrepreneurs, 2. The TPH receives supervision and guidance of the BATTEMBAT Abattoir (RPH) which is the Technical Implementation Unit (UPT) of the Department of Agriculture, Plantation, Animal Husbandry, and Forestry (DISTANBUNNAKHUT) Cirebon Regency, West Java, 3. TPH Sumber Rejeki has been registered as an individual company with the number TDP 10225208696 at the Department of Industry and Trade (DISPERINDAG) of Cirebon Regency, West Java. The results of this research marketing mix activities which include product, place, price and promotion have been going well because 1) the main product to the follow-up product (skin) is processed and has added value. 2) Strategic place of business with plered, kanoman and indramayu markets. 3) The price of meat for each trader has a difference of Rp 5,000 - Rp 10,000, 4) Promotions have been made to bind customers.

Keywords: marketing mix, TPH Sumber Rejeki, beef and buffalo
THE EFFECT OF FEED ADDITIVE THAT CONTAIN YOUNG PAPAYA SEEDS ON GASTROINTESTINAL PARASITES IN BROILER CHICKEN

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Abstract. The study aimed to determine the effectiveness of young papaya seeds in liquid probiotics against investment worm of broiler chicken. The study used a randomized block design of three treatments five replicates with 7 broilers (CP 707) one week old divided into three treatments, Po = Control (without probiotics), P1: 2 ml probiotics bio-grow in 1 liter of drinking water, P2 : 3 ml of probiotics bio-grow in 1 liter of drinking water. Commercial feed and drinking water are given ad libitum until the age of four weeks. Fresh fecal sampling of poultry is carried out 4 times (week 1 before treatment, week 2.3 and week 4 before the end of harvest). Lab results showed that broilers before being treated with all positive samples were infected with 3 species, worms, 2 Nematode worms (Ascaris sp and Heterakhis sp) and 1 Cestoda (Reillentina sp), with the highest worm infection rate by Heterahis sp worm by 50.7 %, Ascaris: 19.7%, combined infections Heterachis and Ascaris: 15.7% and Relitinna worm infections: 14.1%. Provision of bio grow probiotics 3 ml / liter of drinking water is very effective in suppressing the development of heterakhis worms: 49.5%, ascaris worms: 13.73% combined worms (heterakhis and ascaris): 7.89% and able to reduce the number of heterakhis worm eggs to 28%, ascaris worms 30.40%, combined worms heterakhis and ascaris 31.58%. The level of infection that occurs is moderate.

Keywords: Broiler Chicken, Probiotics, Worm Type
Economic Analysis Of Superior Native Chicken In Tembuku Bangli

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Abstract. Native Chickens are maintained as part-time businesses to utilize the home page, generally maintained traditionally, as a container for the rest of the kitchen and at any time can be cashed. Traditional maintenance causes low productivity and very high chicken mortality rates. Provision of rations that are in accordance with the nutritional needs of native chicken and with a semi-intensive maintenance system can increase chicken productivity while increasing farmer's income and profits. In this regard, research has been carried out to analyze the economic agribisnis of superior native chicken (KUB) that have been carried out in Bali. The survey method was carried out in December 2018 - March 2019 in the Sato Nadi native chicken farmer group. The results shown that the average maintenance of superior native chickens was 200, with semi-intensive cages, feed was obtained by buying at the nearest stalls. maintenance of native chickens at the study site mostly for fattening, egg production and production of day of chick (DOC). The purpose of maintenance is to fatten up to the age of 3 months, whereas if kept for brooders until the age of 1.5 years. For purposes of fattening, the costs spent amounted to Rp. 5,085,950, egg production amounting to Rp. 46,660,000 and for breed production of Rp. 70,170,000. From the feasibility analysis each obtained B / C value of 0.41 (for fattening), 0.26 (for egg production purposes) and 0.65 (for DOC production).

Keywords: economic analysis, agribusiness, native chicken
Qualitative Characteristics of Saburai Goats at Weaning in Tanggamus District Lampung Province Indonesia

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Abstract. This research aim to know qualitative characteristics of Saburai goats during weaning in Tanggamus Regency. This research was conducted in February--March 2019 at the location of Saburai Goat development in Tanggamus Regency, Lampung Province. This research used a survey method. Observation of the qualitative characteristics of male and female Saburai goats when weaning 3--4 months old by observing the head color, body color, color of the feet, color of the tail, ear color, shape of the body, shape of the ear, eye shape, face shape, face profile, birth and weaning weights. The saburai goat used was 31 male and 32 female. The results of this study showed that the qualitative characteristics Saburai goats in Gisting Subdistrict and Sumberejo Subdistrict are more closer to the characteristics of Boer goats. The weaning weight of Saburai goats in Gisting subdistrict is higher than Sumberejo subdistrict.

Keywords: saburai goat, qualitative characteristics, weaning
The effect of sex on nutritional status of post-weaned Bligon goats under controlled feeding management

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Abstract. Bligon goat is a crossbred goat that is widely raised by livestock keepers in Indonesia, especially in rural areas. In Indonesia, goat farming is characterized by low productivity of animals due to low input of poor quality feed and inadequate feed availability. The aim this study was to test the effect of sex on nutritional status of post-weaned Bligon goats under controlled feeding management. For this purpose, a total of 16 post-weaned goats (4 months of age), with initial body weight of 11.06±2.08 kg in females and 11.09±2.42 kg in males, were fed with the same diets that meet the basic requirements for goat maintenance. They were targeted to reach average daily gain (ADG) of 100 g. The diet contained 14.58% crude protein and 80.78% total digestible nutrient. All goats received 3% to 4% dry matter ratio of the body weight. Drinking water was provided ad libitum for all goats. The variables observed were nutrient intake and digestibility, ADG, and feed conversion ratio (FCR). It was found that sex had a significant effect (p<0.05) on crude fiber (CF) intake, ADG and FCR, with mean values of 10.13±1.23 g/kg BW⁰.⁷⁵/day, 80.62±25.11 g, and 5.88±1.69 in female goats, respectively, and 11.06±1.64 g/kg BW⁰.⁷⁵/day, 132.25±27.71 g, and 3.61±0.62 in male goats, respectively. In can be concluded that sex affects CF intake, ADG and FCR of post-weaned Bligon goats.
Phenotypic characteristics of Belgian Blue x Brahman Cross and Wagyu x Brahman Cross crossbred populations

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Abstract. The aim of the study was to identify, analyze, and distinguish the phenotypic characteristics of the first filial of BB x BX (F₁-B) cows, Wagyu x BX cows (F₁-W), F₂-B (crosses of male F₁-B with female F₁-B, F₁-W, and BX) and F₂-W (crosses of male F₁-W with female F₁-W, F₁-B, and BX) at PT. Widodo Makmur Perkasa, Klaten, Central Java. The materials used were 9 F₁-B, 13 F₁-W, 6 F₂-B and 7 F₂-W. The data collected include the exterior characteristic (coat color), average daily gain (ADG) at pre-weaning (90-days old), and body size of cattle (body weight (BW), body length (BL), wither height (WH), heart girth (HG)) at 90-days old. The results showed that F₁-B have dominant colour was black, while F₂-B have dominant colour was brown at male and dark brown at female. F₁-W have dominant colour was black brown at male and brown at female, and F₂-W colour were light brown, brown, and dark brown. Average daily gain (ADG) F₁-B was 0.70 ± 0.15 kg, F₁-W was 0.58 ± 0.06 kg, F₂-B was 0.64 ± 0.17 kg, and F₂-W was 0.60 ± 0.25 kg. The size of cattle (BW, BL, WH, and HG) at F₁-B in sequence were as follow 95.10 ± 12.07 kg; 77.98 ± 3.80 cm; 85.32 ± 2.85 cm; and 101.93 ± 4.51 cm, F₁-W was 86.21 ± 9.60 kg; 77.64 ± 5.92 cm; 88.25 ± 2.43 cm; and 101.97 ± 3.09 cm, F₂-B was 88.22 ± 4.50 kg, 87.29 ± 13.45 cm, 94.18 ± 6.90 cm, and 104.13 ± 2.29 cm, then F₂-W was 90.91 ± 27.70 kg, 80.77 ± 15.41 cm, 86.36 ± 7.80 cm, and 99.92 ± 11.88 cm. Belgian Blue Cross had significant influence on average daily gain (ADG), body length (BL) and heart girth (HG) at F₁ and F₂ (P>0.05). The conclusion overall crossbreed of Belgian Blue Cross have ADG and body size of cattle bigger than Wagyu Cross.
Heterosis Effects of Morphometric Traits in Crossbred Goats of Anglo Nubian and Etawah Grade

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Abstract. Crossbreeding was applied to increase production performance of local goats. This study was conducted to evaluate the heterosis effect of morphometric traits of crossbred does produced from a mating of Anglo Nubian (AN) and Etawah Grade (PE) goats. A total of 34 does of AN, 66 F-1 ANxPE and 40 PE were used to analyze heterosis effect of morphometric traits. Data were analyzed using general linear model with age and genotype as fixed effects. Morphometric traits were affected significantly by genotype (P<0.05), but head with, body length and chest width. Heterosis of body weight, head length, head width, ear length, ear width, body length, heart girth, chest width, wither height, hip height, hip width, foreleg length, rear leg length, tail length, tail width were -2.75, -2.60, -2.09, -13.79, -3.90, 0.21, -3.82, 0.14, -3.1, -5.42, 6.06, -6.16, -5.88, -9.44 and 2.88%, respectively. Crossbreeding of Anglo Nubian and Etawah Grade resulted in low heterosis effects of morphometric traits. This study indicated crossbreeding of Anglo Nubian and Etawah grade need to be considered.

Keywords: morphometric trait, heterosis, Anglo Nubian, Etawah grade
Exploration Of Local Microorganism From Rumen And Its Potentials To Make Silage From Agriculture Waste

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Abstract. Agricultural wastes are very diverse in type and have low nutrient values, especially the levels of lignin and cellulose that are difficult to digest so technology is needed to improve them. One effort that can be done to overcome this problem is by biological treatment, use of microorganisms or often known as a silage. The availability of bioactivators that are cheap in terms of price and easy to make must also be taken into consideration. Local microorganisms can be a solution to overcome this problem. This study focuses on processing food crop wastes, corn leaves into silage as animal feed by local microorganism as the bioactivators. The research was conducted at the Agrotechnology Laboratory, University of Jember. The experimental design was a completely randomized design with 4 treatments. The parameters tested were local microorganism quality (pH, total microbial, and organoleptic) and silage quality (nutrient composition, pH, and organoleptic). The organoleptic local microorganism test results in all treatments Treatment 1 (rumen), Treatment 2 (rumen +banana humps), Treatment 3(rumen+petung bamboo shoots) and Treatment 4 (rumen+gamal leaves) after 3 weeks were clear colors, acid aroma, small number of fungi and normal pH of 3-5. The results of silage quality based on organoleptic tests showed that the resulting local microorganism could be used as bioactivator in silage fermentation process with maturity level indicated by color change green to brownish green with sweet and acid aroma such as softer tape and texture with pH concentration between 4- 6. The proximate test results of silage feed made using local microorganism have better nutrient content in the addition of formulations in the manufacture of local microorganism. Petung Bamboo shoots, gamal leaves and banana humps can increase the nutrient content, mainly protein, in proximate silage test results. The conclusion of this study is that local microorganism from rumen and local materials can be used as activator materials in making silage of corn leaves with an increase in the value of waste nutrients.
Haematology Profile of Nematodiasis on Bali Cattle in Lombok Island West Nusa Tenggara Indonesia

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Abstract. The study was conducted to determine haematology profile of Nematodiasis on Bali cattle in Lombok Island of West Nusa Tenggara province. The cattle manage in traditional system and more likely susceptible to gastrointestinal parasite infection. Nematodes infection can cause health problems and affect production and economic losses. Faecal examination to detect the nematode’s eggs by using Wisconsin technique was carried out to 1000 cattle in 53 subdistricts within 5 districts on the island of Lombok. It found that 49% of the total cattle examined was infected by nematodes. Fifteen nematodes infected cattle were randomly selected to investigate the haematological profile. The study shown that the blood of infected cattle had high percentage of eosinophil and low percentage of lymphocytes and monocytes. This indicates that Bali cattle able to develop mechanism to defend against parasite infection and allergic reaction and mild Nematodes infection has no major impact on production.
The Effect of Dietary Protein and Energy Supplementation on Rumen Characteristics and in vitro Digestibility of Bali Bulls

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Abstract. This study aimed to examine the effect of dietary supplementation of protein and energy sources (L. leucocephala for protein and Putak for energy sources) on rumen characteristic and in vitro digestibility of Bali Bulls. The experiment using factorial design, with the dietary supplementation of L. leucocephala (LL), Corypha elata Robx (CeR), and their combination (LL-CeR), each at tree different levels of supplementation (10, 15 and 20%). Proximate, in sacco and in vitro analysis were examined after 6 hours of feeding time. Also, we tested rumen characteristics of pH, NH₃, microbial protein, and volatile fatty acids. We found that dietary supplementation had a significant effect on the digestibility of dry matter (DM) and organic matter (OM), and rumen characteristics (total VFA, acetic acid, propionic acid and NH₃ concentration) (P<0.05), but did not affect the pH, butyric acid production and microbial protein (P>0.05). Conclusion: Dietary supplementation increased rumen characteristics and in vitro digestibility of Bali bulls; L. leucocephala as a protein source and Corypha elata Robx as an energy sources have positive effect on forage basal diet from native pasture in Timor Leste. We recommended that to optimize productivity cattle fed forage from native pasture need protein and energy supplementation.
The Effect of energy and protein supplementation on liveweight change, body dimension and condition score of Donggala bulls fed corn stover

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Abstract. This study was carried out to evaluate the effect of addition of rice bran (energy source) and palm kernel meal (protein source) or their combination on liveweight change, body dimension and condition score of Donggala bulls given corn stover. The experiment used a completely randomised block design with 4 treatment and 7 replicates/bulls. Twenty eight of Donggala bulls (average initial liveweight 181±4.35 (SE) kg) were randomly allocated to 4 dietary treatments. The treatments imposed include corn stover ad libitum (CS) as control, CS added 1% body weight (W) dry matter (DM)/day of rice bran (RB), CS added 1% W DM/d palm kernel meal (PKM) and CS added 1% W DM/d, RB+PKM (1:1). Water drinking was provided continuously during experimental period. There were 2 and 10 weeks for introduction and measurement period, respectively. Parameters measured include average daily liveweight gain (ADG), body dimensions (wither height, heart girth and body length), and body condition score (BCS). Corn stover, RB and PKM contained 7.1, 12.3 and 17.2% of crude protein (CP), and 67.6; 45.6 and 63.7% of neutral detergent fibre (NDF), respectively. Bulls given RB, PKM and RBPKM ate 0.92, 0.74 and 0.84% W/d, respectively. Analysis of variance showed that addition energy and protein source to the basal diet increased significantly (P<0.05) ADG, heart girth and BCS of Donggala bulls fed corn stover. With height and body length of the bull was not affected significantly (P>0.01) by supplement inclusion. Addition of RB or PKM alone showed significant higher (P<0.05) in the increase of ADG, heart girth and BCS, than unsupplemented Donggala bulls. However the highest increase (P<0.05) in ADG, heart girth and BCS was achieved by addition of RBPKM. It was concluded that supplementation of energy in combination with protein increased growth performance of Donggala bulls fed low quality forage.

Keywords: Donggala bull, rice bran, palm kernel meal
Effect of Yeast Supplementation in Diets with Early Feed Restriction on Nutrient Digestibility and Carcass Characteristics of Broiler Chickens

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Abstract. Present study was conducted to determine the influence of yeast supplementation in diets with or without early feed restriction on nutrient digestibility and carcass characteristics of broiler chickens. Three dietary treatments each consisting of three replicates with 11 chicks in each replicate were laid down as 1) control (commercial diet); 2) diet with 0.3% yeast supplement; and 3) diet with 0.3% yeast and early feed restriction at 7 to 14 days of age. Faeces were collected from five days before the end of the experiment and later analysed for crude protein, crude fibre, and crude fat. At the end of the experiment (day-42), two broilers from each replicate were slaughtered. The present study found that crude protein and crude fat were significantly (p<0.05) increased at 92.00 ± 1.46% and 96.33 ± 0.42%, respectively, over broilers fed commercial pellet only at 84.50 ± 0.56% and 94.17 ± 0.48%, respectively. However, when employing feed restriction on broilers fed on diets with 0.3% yeast, no further improvement significantly (p>0.05) on nutrients digestibility was observed after yeast supplementation in diets. Dressing and abdominal fat of broiler chickens fed a diet with yeast supplement were significantly different (p<0.05) with broilers fed commercial diet. Dressing of broilers fed on diet supplemented with yeast was enhanced significantly at 71.74 ± 3.00% over commercial diet at 64.51 ± 2.20%. While abdominal fat of broilers was decreased significantly at 0.79 ± 0.07% over fed on commercial diet. When imposing feed restriction on broilers fed on yeast supplement, both parameters were response differently. Dressing of broilers was no difference (p>0.05) when compared to broilers fed with yeast supplementation and commercial diet. Abdominal fat broilers-yeast supplement under feed restriction regime was significantly increased over broilers fed-yeast supplement without restricted feeding and no difference when compared to broilers fed commercial diet. The present study concludes that generally, the yeast supplementation improved positively on digestibility of crude protein and crude fat and dressing and abdominal fat but no further improvement on those parameters when early feed restriction imposed. Implementation of early feed restriction on broiler fed diet-yeast, however, potentially reduces the cost of feed consumption without deleterious impact to nutrient digestibility and carcass characteristics.
Management of dairy cattle breeding in the semi-arid region of eastern Algeria

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Abstract. This study was conducted on 119 Holstein and Montbéliarde dairy cows in 4 pilot farms and one private farm in the semi-arid region of Sétif in eastern Algeria. The objective of this study is to analyze the reproduction following criteria: the interval calving-calving (CCI), calving-first insemination interval (CFI1) and the calving-fecundating covering interval (CFCI). The results obtained show that the calving-calving interval is on average 381.23 ± 65.56 days with a CV of 16.36%. On the other hand, the CFCI interval varies between 55.05 ± 39.9 days and 194.61 ± 134.01 days with an average of 105.65 ± 66.65 days and a CV of 62.09%. In addition, the average fertilization time is judged in the accepted standards, it depends on the CFI1 interval (88.08 ± 36.02 days) and on the other hand the number of protrusions per fertilizing projection (1.52 ± 0.78)-
Target gene prediction and pathway analysis of miRNA targeted AMPK involved in lipid accumulation of bovine granulosa cell luteinization

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Abstract. Luteinization is a post ovulation process of turning granulosa into luteal cells, indicated by the accumulation of lipid. It is known that luteal cell will produce progesterone as support further pregnancy. AMPK belong to genes which control lipid accumulation and its expression was controlled by the presence of miRNAs in pre and/or post transcriptional level. Previously, 4 miRNAs namely miR-19b, miR-130, miR-101, and miR-19a were predicted to target AMPK in control lipid accumulation in bovine granulosa cell. For that, this study aimed to identify the board target of these miRNAs to genes in the specific metabolic pathway. An insilico study using online algorithm molecular databases was performed in this study, that are miRDB (www.mirdb.org) for mining the genes targeted by specific miRNA, and DAVID Bioinformatic Resource (https://david.ncifcrf.gov/) for genes functional annotation, clustering, and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway (https://www.genome.jp/kegg/pathway.html) for pathway mapping. Result shows that miR-19b, miR-130, miR-101, and miR-19a targeted to 1121, 738, 859, and 1117 respectively. A total 3835 genes were analyzed, resulted five annotated functional group namely coiled coil, serine/threonine-protein kinase, ATP-binding, nucleotide-binding, and kinase. In gene ontology analysis, genes were grouped at nucleoplasm, cytoplasm, nucleus, golgi apparatus, and transcription factor complex process. Moreover, pathway analysis found five top KEGG pathway that are FoxO, MAPK, cAMP, Sphingolipid, and prolactin signaling. From these pathways, two genes namely RAF1 and AKT3 were involved in all pathways, and these genes were belongs to threonine protein kinase which known as AMPK activity activator. It is concluded that the expression of specific group of miRNA targeted to AMPK would affect to other complex organizations of cellular metabolism pathway by direct or indirect interaction.

Keywords: target gene prediction, pathway analysis, miRNAs-AMPK, lipid accumulation
Blood Profiles on Friesian Holstein Dairy Cows in the tropical area

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Abstract. To increase milk production in Indonesia, The government import Friesian Holstein dairy cows from Australia and breed by breeding centre to get a good crossbreed of dairy cows. The objective of this study was to determine the profiles of the blood of dairy cows were live in tropical area. Friesian Holstein dairy cows (n=20) were used from Breeding Centre Baturraden, Purwokerto. Blood samples were collected from the caudal vein on days 1 and 4 in a week and blood profiles (glucose, cholesterol, protein and urea) were measured using spectrophotometry. Data obtained were expressed as mean and value for glucose, cholesterol, protein and urea respectively 41.73 ± 10.37 mg/dL, 89.99 ± 17.88 mg/dL, 9.03 ± 0.89 mg/dL, 56.8 ± 13.20 mg/dL. In conclusion the values for glucose, cholesterol were below normal range and protein, urea profiles were above normal range, so the feed provided were not meet sufficient energy. Blood profiles test were important because of its simplicity, low cost and easy for analysis results, it can be considered as a good method for diagnosis nutritional and management at dairy farms.

Keywords: Blood profiles, dairy cows, tropical area
The Correlation between Serum Phosphor and Cholesterol on Reproduction Performance of Holstein-Friesian Crossbred

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Abstract. The research investigated the correlation between serum phosphor and cholesterol on reproduction performance of Holstein-Friesian Crossbred. Sixteen heads of cow in luteal phase on second to third lactation were used in this research. Blood sample was collected eight hours after feeding through jugular vein. Reproduction data obtained from the recording included service per conception (S/C); postpartum mating (PPM); and calving interval (CI). The data were analyzed using Pearson correlation model. The average of serum phosphor and serum cholesterol concentration were 2.27 ± 0.36 mg/dl and 139.74 ± 25.82 mg/dl respectively. The average of PPM, CI, and S/C were 133.56 ± 59.34; 410.43 ± 71.01; and 2.00 ± 0.90 respectively. The results showed that the correlation coefficient of the serum phosphor on PPM, S/C, and CI were -0.080; –0.122; and -0.359 respectively. Correlation coefficient of serum cholesterol on PPM, S/C, and CI were -0.114; –0.573; and -0.402 respectively. It could be concluded that the serum phosphor had a very weak negative correlation on PPM and S/C, and had a weak negative correlation on CI. The Serum Cholesterol had a moderate negative correlation on S/C and CI, and had a very weak negative correlation on PPM.

Keywords: Calving interval, Holstein-Friesian crossbred, Postpartum mating, Serum cholesterol, Serum phosphor, Service per conception.
The Influence of Age to The Volume and Motility of Landrace Boar’s Sperm at Baturiti Artificial Insemination Center

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Abstract. Sperm quality have been a associated with age for many years. This study aims to determine the influence of age to the volume and motility of Landrace boar’s sperm at Baturiti Artificial Insemination (AI) center. Total of 300 ejaculate were used in this study, an ejaculate from five boar was examined until five month. A complete randomized design (CRD) was used with two different boars of block ages, block A (2-4 year) and block B (6-8 year). Three or four glass slides were prepared for each boar sample; a drop of semen was placed on each glass slides. This sample was examined with five spaces in dashboard of glass slides. The research was conducted at Landrace boars in block A have semen volume average 273.60 ml and sperm motility 73.86%, while in block B have semen volume average 107.66 ml and sperm motility 62.92%. It can be concluded that Landrace boars in block A (2-4 year) had higher volume and sperm motility (60.65% and 14.81%) compared to Landrace boars in block B (6-8 year).

Keywords: Volume and sperm motility, Landrace boar, Artificial Insemination Centre.
Distilled Liquid Smoke as Feed Fat Protector and It’s Effect on Fatty Acids In Rumen Fluid

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Abstract. This study aims to determine the effect of dietary fat protection using distillated liquid smoke on rumen fluid fatty acids. Crude palm oil (CPO) as a source of feed fat, mixed with skim milk (1:2), then divided into 3 parts: without protected by distillated liquid smoke (P0) and protected by distillated liquid smoke 2.5% (P1) and 5% (P2). For the in vitro test, rumen fluid was used as a microbial donor with elephant grass and soybean meal (60:40) as substrate. A total of 5% CPO was put in a syringe containing 30 ml of rumen fluid, substrate and buffer, then anaerobically fermented at 39 °C for 48 hours. The parameters observed were rumen fluid fatty acids. This study used a completely randomized design, with 3 treatments (P0, P1, P2) each of 3 replications. The results showed that the source of feed fat protection (CPO) used distillated liquid smoke, increasing (P<0.01) fatty acid composition of rumen fluid fermented. P1 was better at increasing (P<0.01) unsaturated fatty acids in rumen fluids. It can be concluded that liquid smoke can be used as a feed fat protector, because it can reduce hydrogenation and increase unsaturated fatty acids in rumen fluids in vitro fermented.

Keywords: Distilled liquid smoke, Unsaturated fatty acid, Hydrogenation.
Performance of the Local Chickens on Traditional Management in Manokwari District, West Papua Province

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Abstract. This study aims to determine the performance of local chickens in traditional management in the Manokwari district. Two hundred and forty local chickens were taken by purposive sampling in three sub-districts (Prafi, Masni, and East Manokwari) in Manokwari district. Measurements were made on body weight (BW) and body size, i.e. femur length (FL), tibia length (TL), shank length (SL), shank circumference (SC), chest length (CL), and chest circumference (CC). The results of the descriptive analysis showed that the average BW in males and females was 2368.5 ± 626.3 g and 1876.1 ± 413 g; FL in males and females is 11,892 ± 1,659 cm and 10,450 ± 1,522 cm; TL in males and females is 15,825 ± 1,382 cm and 13,283 ± 1,132 cm; SL in males and females is 9.575 ± 1.418 cm and 7.7750 ± 1.008 cm; SC in males and females is 4.9750 ± 0.739 cm and 4.1417 ± 0.490 cm; CL in males and females at 12,500 ± 1,932 cm and 10,758 ± 1,264 cm; and CC in males and females was 34,350 ± 3,180 cm and 31,842 ± 2,494 cm. Statistically it was known that BW and body size of local chickens in males and females differed significantly (P <0.05). Based on the Pearson correlation analysis showed that BW and body size observed in both males and females correlated significantly (P <0.05). The stepwise regression analysis results found that BW of male local chickens can be estimated through the equation: $BW_{male} = -3400 + 430 \cdot SL + 95 \cdot TL + 47 \cdot CC + 54 \cdot CL$, with $R^2 = 76.94\%$. While BW of female can be estimated through the equation: $BW_{female} = -2271 + 71 \cdot CC + 90 \cdot CL + 149 \cdot SC + 44 \cdot TL$, with $R^2 = 47.63\%$. It was concluded that local chickens in traditional management in Manokwari district produced better performance than the same management in other regions, especially in central and western Indonesia. This is because the availability of natural feed is still abundant and inbreeding practices can be avoided.

Keywords: Performance, Local chickens, Traditional management, Manokwari district.
Effect of Cattle Breeds And Initial Body Weight on Daily Weight Gain of Simmental Ongole Crossbred Cattle and Ongole Grade Cattle

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Abstract. One of the effort to increase meat production was by fattening of cattle in hope of high and efficient of body weight gain. The rapid growth rate and high body weight gain was desired. The research was aimed to determine the influence of the breed and the initial body weight on the daily weight gain of Simmental Ongole crossbred (SimPO) and Ongole grade (PO) cattle grown on a feedlot system. The research was conducted at CV. Indonesia Multi Indah Pati, Central Java, for 3 months. The material of research were used 12 head of SimPO and 12 head of PO cattle. The age of cattle about 1.5-2.5 years. The cattle were fed with concentrates and King grass. The data were grouped by breed and the initial body weight of cattle, there were group (I) SimPO cattle with body weight less than 300 kg; group (II) SimPO cattle with body weight above 300 kg; group (III) PO cattle with body weight less than 300 kg; and group (IV) PO cattle with body weight above 300 kg. The variables observed were feed consumption, average daily gain (ADG), feed conversion ratio (FCR) and feed cost per gain. The data were analysed using analysis of variance with 2 x 2 factorial experiments. The result of research showed that the difference of the breed were significant effect on ADG, feed conversion ratio and feed cost per gain. The initial body weight difference were significantly effect on feed consumption, ADG, feed conversion ratio and feed cost per gain. There were interactions between breed and initial body weight differences on feed consumption, feed conversion ratio and feed cost per gain. The highest feed consumption was showed in PO cattle with initial body weight below 300 kg. The highest feed conversion ratio and feed cost per gain were showed in PO cattle with initial body weight above 300 kg. It could be concluded that SimPO cattle had higher ADG than PO cattle, and cattle with initial body weight below 300 kg had higher ADG than initial body weight above 300 kg. The PO cattle with an initial body weight above 300 kg were less efficient if used as feeder cattle in the feedlot system.

Key words: Beef cattle, SimPO and PO cattle, Initial body weight, Feed consumption, Average daily gain, Feed conversion ratio, Feed cost per gain.
The effect of birth type on quantitative characteristics in pre-weaned Bligon goats

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Abstract. Bligon is a crossbred goat derived from Kacang and Peranakan Etawah goats and is widely raised by small-scale livestock keepers in Indonesia. This study aimed to determine the effect of birth type on growth performance in Bligon goats. In total, 88 female Bligon kids kept on a farmer group of Gama Ngundi Lestari, Banyusoco, Gundungkidul, Special Region of Yogyakarta were appraised for quantitative traits. The goat does were divided into two birth type, single and twin. The traits observed were birth weight (BW), weaning weight (WW), ADG (average daily gain), body length (BL), heart girth (HG), withers height (WH) and hip height (HH). All goats were weighed, to determine the birth weight and weaning weight using an electronic weighing scale with accuracy of ±0.05 kg. Body measurements including BL, HG, WH, and HH were determined according to the Indonesian national standard (INS) procedure. Data were analyzed using T-test. The results indicated that birth type had a significant effect (p<0.05) on BW, BL, HG and WH at birth, with mean values of 2.65±0.36 kg, 32.12±3.92 cm, 34.17±3.1 cm and 34.73±2.75 cm in single born, respectively, and 2.03±0.35 kg, 29.43±3.08 cm, 32.29±2.59 cm and 32.88±2.64 cm in twins, respectively. In addition, birth type had a significant effect (p<0.05) on all quantitative characteristics observed at weaning age (WW, HG, WH, and HH), with mean values of 10.27±2.05 kg, 43.97±3.7 cm, 51.05±4.65 cm, 49.41±4.50 cm and 51.65±4.54 cm in single born, respectively, and 8.45±2.47 kg, 41.02±3.55 cm, 44.70±5.48 cm, 43.27±5.09 cm and 44.82±4.97 cm in twins, respectively. The mean ADG in single born (71.31±26.09 g) was significantly (P<0.05) higher than that in twins (88.73±22.07 g). In conclusion, birth type affects quantitative characteristics in Bligon goats.

Keywords: Bligon goat, pre-weaned, quantitative characteristics, birth type
Productivity Diversity of Sensi 1 Agrinak Chicken Crossed With KUB Chicken

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Abstract. Bali Island has been a tourist destination, always lacking in the supply of native chicken, both chicks and ready to cut. For that, Bali Assessment Institute Of Agriculture Technology (BPTP Bali) took the initiative to develop superior native chicken breeding to overcome the existing gaps. KUB Chicken and Sensi 1 Agrinak are superior chicken produced by Agency Animal Research Ciawi Bogor. KUB chicken, which stands for superior native chicken from the Indonesian Agency for Agricultural Research and Development, is the result of selection of native chickens in Indonesia for female line and Sensi 1 Agrinak, which are 6 generations from male line. Sensi 1 Agrinak (Male line) with KUB (Female line) is then crossed to produce native chicken chicks that have superiority in both egg and meat production. The study was conducted in Jehem Village, Bangli Regency. Using 300 KUB chickens (male line) and 80 tails Sensi 1 Agrinak (female line). Maintenance is carried out in a letter enclosure between males and females mixed to facilitate marriage among them. The feed given is chicken feed which is producing with a composition of 40% corn, 35% bran and 25% concentrate. The results of the study show male weight averages 1,718 grams / head with a range of 1,595 - 1,830 grams / head, while females (KUB) average 1,233 grams / tail with a range of 1,210 - 1,420 grams / head. Daily egg productivity (Henday) reaches 45% with an average egg weight of 44.81 g / grain with a range of 32-50 g / grain. The egg fertility produced reached 83.67% with the number of eggs hatching 71.84% and those that hatched in normal conditions reached 93.89%. Mortality is still high at 17.93%, with an average weight of newly hatched chicks (DOC) of 32.23 g / head.

Keywords: KUB Chicken, Agrinak Sensi 1, Productivity, Fertility, Mortality
EXFOLIATIVE VAGINAL CYTOLOGY SAANEN GOAT (Capra hircus) DURING ESTRUS CYCLE

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Abstract. The exfoliative cytology of the vaginal was evaluated in Saanen goat during the estrus cycle. Vaginal smear is a simple technique to determine the stages of estrus cycle and it is a useful tool in determining optimum to identify the stages of estrus phase. The aim of this study was to determine the proportion of exfoliative vaginal cell during the stages of estrus cycle using vaginal smear techniques in Saanen goat. Twenty Saanen goat with weigh 45-55 kg, age of 3-4 years and had a period of estrus 19-22 days in dry period were used. All goats were in natural estrus cycle without synchronization. A vaginal smear and vaginal pH were collected from swabbed vaginal epithelium in does. The result showed the proportion of vaginal cell was significantly different in each phase of estrus cycle. The result showed the proportion of superficial cell was dominated in estrus phase which was 88.03±12.87. Also, the highest pH values were significantly higher in estrus phase rather than in the other phases. In conclusion, the dominant proportion of superficial cell and a high vaginal pH value that occurred in follicular phase that might be used as the base for determining the optimal time for insemination.

Keywords: Vaginal cytology; estrus cycle; Saanen goat, pH vagina.
The 8th International Seminar on Tropical Animal Production

Income Share and Technical Efficiency in The Broiler Partnership System in Sleman Regency, Yogyakarta

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Abstract. Dualism of industrial development in Indonesia has been allowing big enterprises and small enterprises (including the broiler farming) run side by side for two decades and resulting in a welfare gap between the two actors. The policy of the plasma–core, that is small enterprises and big enterprises partnership system was expected to improve the welfare of small enterprises farmers. This study aimed to (1) measure the income share of the owner of production factors of plasma-core in the partnership system, and (2) analyze the technical efficiency based on economics of scale. The research was conducted in Sleman Regency as a center for broiler production taking 64 determined breeders purposively as samples based on farmers’ participation in the partnership for at least 1 year long. Primary data was acquired by survey method with in-depth interviews using questionnaires. Descriptive analysis in the form average and percentage was used to measure income share in the partnership system whereas Cobb-Douglass production function was used to determine technical efficiency. The results showed that the core company as the owner of the production factors took 87.14% of the gross income to pay for the feed, DOC, medicines that were supplied. Plasma gets of income share from labor and management as 1.76% and 1.50% respectively. The Cobb-Cobb-Douglass regression was showing the estimation of coefficient $\hat{\beta} = 0.946$ ($P < 0.01$) which meant the plasma was in a condition of decreasing return to scale. They need better cooperation of core and plasma in the use of production factors of feed and medicines, that the plasma can be technically more efficient.

Keywords: Income share, partnership system, broiler, technical efficiency
Phenotypic Characterization of KUB Chicken with Different Feather Colour Group

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Abstract. The study was carried out to characterize the phenotypic variation of Kampung Unggul Balitnak (KUB) chicken. Fifty-five native chickens, consisting of five males and fifty females made up of 5 chicken group based on its different crown feather color (gray, blackish white, brownish red, black, and blackish brown), were visually appraised for the qualitative traits. Data on 6 qualitative traits (eye, beak, neck feather, abdomen feather, tail feather, and shank) were analyzed using descriptive statistics and compared as percentages. As a results, in the gray group the majority of chicken have light eye (63.6%), black-white beak (54.5%), light gray neck feather (54.5%) and gray abdomen feather (90%), gray tail feather (100%), and black-yellow shank (45%). In blackish white group, the majority of chicken have light eye (63.6%), black-yellow beak (45.5%), black-white neck feather (45.5%), black-white abdomen feather (45.5%), black tail feather (81.8%), and yellow shank (54.5%). In brownish red group, the majority of chicken have light eye (63.6%), white-black beak (54.5%), brown-red neck (63.6%) and abdomen feathers (63.6%), black tail feather (81.8%), and yellow-green shank (54.5%). In black group the majority of chicken have dark eye (54.5%), white beak (100%), black neck feather (63.6%) and black shank (36.4%). In the blackish brown group the majority of chicken have dark eye (54.5%), white beak (72.7%), brown-red neck feather (81.8%), black abdomen feather (45.5%), black-brown tail feather (54.5%), yellow-green shank (36.4%). Based on the results, it can be concluded that the KUB chicken have many colour variation for phenotypic that could be important for designing selection strategies.

Keyword: Feather, Morphological characteristic, Phenotypic characterization, qualitative traits.
Estimation of Production and Quality of Forage Under Palm Oil Plantations in Different Sections

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Abstract. The objective of this experiment was to determine forage production and quality under palm oil plantations in different (i.e. edge and middle) sections. Data were collected from palm oil plantations aged of 9 years in PT. Buana Karya Bhakti, Tanah Bumbu Regency, South Kalimantan with a destructive sampling method. The variables observed were botanical diversity, forage production, and chemical compositions. The data obtained were analyzed using paired and independent T test. The results showed that dry matter forage production in 1 m\textsuperscript{2} sampling area in the edge section (121.42±35.60 g/m\textsuperscript{2}) was higher (P<0.01) than that in middle section (31.44±7.96 g/m\textsuperscript{2}). The estimated forage production total in dry matter per unit area was 3,669±1,265 kg/ha/year consisting of 2,914±854 kg/ha/year in the edge and 754±191 kg/ha/year in middle section. Chemical composition: dry matter (DM), crude protein (CP), ether extract (EE), nitrogen free extract (NFE) and total digestible nutrients (TDN) contents of forage in the edge section were not significantly different with in the middle section, however organic matter (OM) and crude fiber (CF) content in the edge section were higher (P<0.01) than that in the middle section. The fiber content of NDF and ADF in the edge and middle sections were not significantly different, while lignin content of forage in the middle section (15.1±0.6\%) was higher (P<0.01) than that in the edge section (10.8±1.0\%). Under palm oil plantations, 90 plant species were identified which consisted of 30 species grasses, 38 species forbs, 9 species ferns and 13 species other plants. In conclusion that the edge section under palm oil plantation more potential to provide ruminant feed.

Keywords: Forage production, Chemical composition, Botanical diversity, Under palm oil plantation, Edge and middle sections.
Effect of Different Pre-Freezing Time on Quality of Frozen Fat-Tailed Ram Semen

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Abstract. This study aims at determining the effect of temperature changes on the sperm quality of fat-tailed sheep during the freezing process using a microcontroller. This study was conducted from April to October 2018 at the Laboratory of Animal Physiology and Reproduction, Faculty of Animal Science UGM. The materials used were fat-tailed sheep sperm, Andromed sperm diluter, artificial vagina, microscope, Obtilab, Neubauer counting chamber, microcontroller for regulating the speed of pre freezing temperature, and analytical scale. The methods used were sperm collection using artificial vagina, sperm dilution, sperm freezing, thawing and sperm quality test. The pre-freezing temperature time were grouped for 6, 9, and 12 minutes. Data of frozen semen quality (motility, viability, and abnormality) were analyzed using one-way Completely Randomized Design (CRD). The average of spermatozoa motility after sperm freezing with a decrease in pre freezing temperature 5 to -140°C for 12 minutes (50±5.3%) was significantly different (P<0.05) compared to that for 9 minutes (48±4.8%) and 6 minutes (43±4.8%). The average of spermatozoa viability after the average of spermatozoa viability after sperm freezing with a decrease in pre freezing temperature 5 to -140°C for 12 minutes (55±4.7%) was significantly different (P<0.05) compared to that for 9 minutes (52±3.5%) and 6 minutes (49±5.7%). The average of spermatozoa abnormality after freezing with a decrease in pre freezing temperature 5 to -140°C for 6, 9 and 12 minutes was not significantly different (10±2.4%, 9±0.8%, and 10±0.9%). From the results, it can be concluded that sperm freezing with a decrease in pre freezing temperature of 0 to -140°C for 12 minutes can improve the quality of freezing results.

Keywords: pre freezing, fat-tailed sheep sperm, diluter, sperm freezing
Effect of Sorghum Varieties and Molasses Addition on Prusic Acid Content and Quality of Silage

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Abstract. The study was conducted to determine the effect of sorghum varieties and molasses addition on silage making to the physical quality, pH, dry matter, organic matter, fleigh score, and prussic acid content. The study was designed using Completely Randomized Design in the factorial pattern, the first factor was sorghum varieties (super and BMR) and the second factor was level of molasses (0 and 4 molasses) resulted on lower (P<0.05) pH (4.45±0.28) than silage without molasses addition (4.65±0.26). The DM content (16.13±1.83) and fleigh score (49.91±12.43) were statistically significant (P<0.05) on silage with molasses addition. It can be concluded that BMR sorghum silage resulted in better physical and chemical quality than super sorghum silage. The addition molasses on sorghum silage decreases the pH but increases OM content and fleigh score. Ensilage process decreases the prussic acid content of sorghum forage. The combination between sorghum varieties and molasses addition was significantly different.
Analysis Of The Potential Development Of Integration Of Laying Chickens With Corn In West Java

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Abstract. The poultry industry in West Java has strategic value, especially in the supply of animal protein to meet domestic needs. The development of the poultry industry in West Java is colored by various problems that can threaten the future of poultry farming business. The purpose of this study was to analyze various key factors that were the strengths, weaknesses, opportunities, and threats of laying egg businesses to develop laying eggs in West Java. Data collected includes primary data and secondary data. Primary data is obtained by conducting field observations, interviews and questionnaires. Secondary data are obtained from the results of research, seminar papers, articles and literature that are relevant to the problems. Data were analyzed using the strategic management concept approach, IFE matrix and EFE matrix, IE matrix and SWOT matrix, and decision-making stages using QSPM (Quantitative Strategy Position Matrix). The results of the study show the total internal analysis score of West Java is 2,608 (average), the total score of the external analysis is 3,396 (high). The position of West Java is in quadrant II. The strategy for this area is intensive strategy (market penetration, market development, product development) or integrative strategy (backward, forward, horizontal integration). Based on the SWOT matrix, an intensive strategy (market penetration) is an increase in production capacity, an increase the number of employees, and the use of technology for promotion. The integrative strategy is to diversify the business by selling feed and other livestock production facilities. The priority level strategy are (1) production capacity increase with a score of 7,149. (2) increasing the number of employees with a score of 6,354 (3) conducting business diversification with a score of 5,083 (4) utilizing technology to carry out promotions with a score of 5,178.

Keyword: integration, laying chickens, corn, west java
Preferences And Physical Quality Of Superior Local Chicken Meat From Agricultural Research And Development Agency That Given Herbal Medicine And Probiotics Feeds

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Abstract. This research was conducted to determine the effects of the used of herbs and probiotics added of superior local chicken meat from Agricultural Research and Development Agency. The study was conducted on Sato Nadi group, Jehem Village, Tembuku Subdistrict, Bangli District. This study used a Randomized Block Design Factorial pattern with 2 factors, namely the type of feed factor and type of herbal medicine. Feed type factors differentiated into to 2 levels, namely dry feed and wet feed. The type of herbal factor consists of 4 levels, which are 1) P0 = the farmers way; 2) P1 = P0 + herbs; 3) P2 = P1 + Bio L probiotics 2 ml/l through drinking water; and 4) P3 = P1 + Bio L probiotics 3 ml/l through drinking water. The parameters collected consisted of water content (%), water holding capacity (%), cooking shrinkage (%), texture (kg/cm²), pH, and sensory testing of color, texture, taste, juiciness, tenderness, acceptability and ranking test. Treatment the farmer way with herbal medicine and probiotic Bio L 2 ml/liter of drinking water is the best result to physical quality and sensory analysis. The conclusion the best result was P2 which has moisture content 74.63%, cooking shrinkage 36.17%, and texture value 3.30 kg/cm² with the farmer way with treatment herbal medicine and Bio L probiotic 2 ml/liter of drinking water. Preference panelist with score 3.56 (between rather soft to tender) there is number one ranking analysis.

Keywords: chickens, herbs drink, probiotic, and quality
Kinematics Motility of Frozen-Thawed X-Y Chromosome Bearing Sperm of Sumba Ongole Bull

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Abstract. The aim of current study was to investigate the kinematics motility of frozen-thawed Sumba Ongole bull sexing sperm using chaannalbumin column method. Channalbumin column was made with different concentration ratio of top and bottom fraction: 2%:4%; 3%:5%; 4%:6% respectively and BSA 5%:10% as control. Semen pellet was added with Optixcell CSS extender. Sexing sperm then was filled in mini straw 0.25 mL then did a equilibration at 4°C for 2-4 hours, prefreezing for 15 minutes and kept in liquid nitrogen at -196 °C. Kinematics motility were evaluated using Computer Assisted Semen Analyzer (CASA: Spermvision™ 3.7.8) with parameter: Tmot, Pmot, DAP, DCL, DSL, VAP, VCL and VSL. The results of kinematics evaluation in this study showed X sperm of fish protein extract treatment after frozen have better kinematics motility parameter compared to Y sperm, such as: total motility was 42.13-64.09%, progressive motility was 38.7-62.01%, velocity curve line (VCL) was 55.89-61.85 µm/s, velocity average path (VAP) was 102.53-110.14 µm/s, velocity straight line (VSL) was 42.19-45.33 µm/s. In conclusions channalbumin can be used for separation of X-Y chromosome bearing sperm and the top fraction (spermatozoa X) has a higher kinematic value compared to the control and the bottom fraction (Spermatozoa Y).

Keywords: CASA, Frozen-thawed, Kinematics motility, Sexing sperm, Sumba ongole
Nutrients Composition, Relative Feed Value and In Vitro Digestibility of Some Tropical Legume Species in Indonesia

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Abstract. The aim of the current work is to evaluate nutrient profile, relative feed value (RFV) and in vitro true digestibility (IVTD) of 5 tropical legume in Indonesia. Daisy™ Incubator (Ankom Technology Corp, Fairport, NY) was used for IVTD measurement. Arachis hypogea, Indigofera zollingeriana, Leucaena leucocephala, Gliricidia sepium and Vigna radiata were evaluated in this experiment. Variables measured were nutrient composition, relative feed value and in vitro true digestibility. Experimental design of this study was completely randomized design with six treatments and four replications. The results show that L. leucocephala contains the highest crude protein content (31.36%). The lowest neutral detergent fiber (NDF) and acid detergent fiber (ADF) contents were produced by L. leucocephala by 33.16 and 21.43% respectively (P<0.05). L. leucocephala and I. zollingeriana produced the highest RFV and included in “prime” forage quality value. The highest IVTD was produced by I. zollingeriana and L. leucocephala by 74.99 and 73.47%, respectively (P<0.05). Based on fiber profile, RVF and IVTD value, L. leucocephala was the best quality of tropical legume as forage.
Duration of Fertility of Commercial Laying Hen Inseminated with Native Chicken Semen

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Abstract. Duration of fertility is one of the most influential factors to define the accurate frequency of artificial insemination to produce crossbred native chicken. This research conducted to determine the fertility duration of Commercial Laying Hen Inseminated with Indonesian Native Chicken Semen. Semen was collected from three 12-month-old native chicken males. Fresh semen from three males was pooled and evaluated before diluting. Pooled semen was diluted with physiological saline 0.85% NaCl solution. Eight laying hens were inseminated at dose 75 x 10⁶ per 0.1 mL for each. Eggs were collected from 2nd day until 16th day after insemination then incubated for 21 days. The result showed that eggs fertility remained high for the first week and dropped during the second week after insemination. The average duration of fertility in laying hens inseminated at dose 75.10⁶ per mL per hen was 6.5 days. The average percentage of egg fertility was 49.1 ± 18.9%.
Assessing nutritive value and \textit{in vitro} ruminal dry matter digestibility of paper mulberry (\textit{Broussonetia papyrifera} L.) at the different cutting heights

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Abstract. Paper mulberry (\textit{Broussonetia papyrifera} L.) is a type of emerging feed and very popular with its high nutrition and low cost value in tropical and subtropical regions. Purpose of the experiment was to evaluate the nutrient contents, amino acids content and \textit{in vitro} ruminal dry matter digestibility of paper mulberry cut at four different heights (60, 90, 120, 150 cm). Paper mulberry harvested at 60 and 90 cm increased the content of crude protein water-soluble carbohydrate, calcium and total amino acids (P<0.05). There were 10 of 16 kinds of amino acids at relatively high content at 120 cm (P<0.05) while phosphorus content was the highest (P<0.05). The harvesting height of 150 cm showed higher content of neutral detergent fibre and acid detergent fibre than the other treatments (P<0.05). No significant difference appeared in the content of hydrolyzable tannins (P>0.05), but the lowest content of condensed tannin was measured at 150 cm (P<0.05). In terms of \textit{in vitro} ruminal dry matter digestibility, the sample cut at 150 cm was the lowest in all samples (P<0.05). In summary, the quality of paper mulberry at 60, 90 and 120 cm was at a high level. However, when the yield of feed raw material is considered as a factor, it is recommended to harvest at 90 and 120 cm.
Effect of adding *Lactobacillus plantarum* on the fermentation quality of Moringa and Emperor Bamboo Grass silage

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**Abstract.** This experiment was conducted to investigate the effect of additives on the fermentation quality of Moringa (*Moringinae*) and Emperor Bamboo Grass (*Pennisetum sinese* Roxb) mixed silage. Cut Moringa and Emperor Bamboo Grass by 1-2 cm respectively, mixed Moringa and Emperor Bamboo Grass in a 1:1 ratio, and immediately added $2 \times 10^5$ cfu/g of *Lactobacillus plantarum* to the materials of Moringa and Emperor Bamboo Grass. After ensiling, the fermentation quality of silage was measured. The results showed that the 30 days of ensiling, the fermentation quality of Moringa and Emperor Bamboo Grass silage with *Lactobacillus plantarum* addition was improved. The pH decreased significantly ($P<0.05$), and the lactic acid content increased significantly ($P<0.05$), the butyric acid content was not detected. The addition of plant lactic acid bacteria preparation has an effect on improving the quality of and Emperor Bamboo Grass mixed silage.
Growth and Productivity of *Cichorium intybus* Under the Effect of Different Doses of NPK Fertilization

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Abstract. This research was aimed to investigate the effects of different doses of NPK fertilization on growth and production of *Cichorium intybus*. The study was carried out at the farm facility of Faculty of Animal Science Universitas Gadjah Mada. There were 3 different doses of fertilization: 0 kg/ha (P0), 45 kg/ha (P1), and 60 kg/ha (P2) – with 3 replications on each group. Planting was done by sowing seeds in 1 x 1.5 m plot. Fertilization was performed once during the cultivation period on the 15 days old. The plant’s height and length were recorded once a week in 30 days. Defoliation was carried out at the plant’s height 5 cm above the soil on the day-30. Data observed on this study include plant’s height and length, number of leaves, fresh production, dry matter and organic matter production. All data were evaluated by using one-way analysis of variance. Differences among groups were then subjected to Duncan’s New Multiple Range test. The study showed that the fertilization at level of 60 kg/ha provided significant alteration (P<0.05) on the fresh, dry matter, and organic matter production of *Cichorium intybus*. The highest production of *Cichorium intybus* was attained on P2 groups – resulting in 260.8 tons/ha/year of fresh production, 35.53 tons/ha/year of dry matter, and 28.12 tons/ha/year of organic matter. Based on the results of the study it can be concluded that the increasing dose of NPK fertilized given can increase the fresh, dry matter, and organic matter production of *Cichorium intybus*.

Keyword: *Cichorium intybus*, NPK fertilizer, growth, production
Communication Network of Buffalo Farmers in Lar Gili Rakit of Sumbawa island

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Abstract. The transference of buffalo to Lar Gili Rakit by swimming which called "kebo nange", is the local management practice by the Sumbawa farmers for raising livestock. The information needs make individuals communicate with each other and form a communication network. This study determined the structure, cohesiveness, and centrality of actors of the Sumbawa farmers in the network of communication. 200 respondents from nine villages in Empang and Trano Sub-districts were interviewed by using the snowball sampling method UCINET 6 was used to analyze their communication network and discussed descriptively. The results of the study show that the communication network of Sumbawa buffalo farmers in Gili Rakit the three villages are radial personal networks and six villages are interlock personal network. The central network dominant and centered on the main actors namely actors 72, 190, 68, 132, and 104 in the network with the highest local centrality 191 ties, global centrality 96,135 ties and the centrality of actors 18382,875 ties.

Keywords: Communication Network, Gili Rakit, Buffalo Sumbawa
Potency of different banana bunches cultivar (*Musa sp*) as vegetable tanning agents

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Abstract. Leather tanning with natural tannin sources is expected to reduce environmental issues. Banana plants (*Musa sp*) as one of tropical plants are known to have a high tannin contents. This paper aimed to identify the potency of several banana bunches cultivar as vegetable tanning agents. The study was conducted by analyzing the tannin levels of banana bunches extract from three banana plant cultivars. The banana bunches used were Kepok (*Musa parasidiaca* L.), Raja (*Musa textilia*) and Ambon (*Musa acuminata* Cavendish). Tannin extraction were assessed using shoxhlet extractor with 70% ethanol. Determination of tannin content using 10 grams sample with processing conditions temperature were 70°C and 60 minutes extraction time using spectrophotometer at wavelenght 700 nm. Tannin level data were analyzed by descriptive analysis. Based on the concentration of the standard solution and the absorbance produced, the standard gallic acid curve regression were $y = 0.0063x + 0.1082$ with $R^2 = 0.8543$. Results showed that kepok produced highest tannin levels between 0.87% – 2.04%, while Raja between 0.04% – 0.67% and Ambon were between 0.05% – 0.33% at the standard solution concentrations of 20 – 100 ppm. It is concluded that Kepok banana bunches has the best potential as vegetable tanning agent. Further laboratory studies are needed to determine the quality of tanned leather resulting from banana bunches tanning.
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