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PROCEEDING



THE THIRD INTERNATIONAL SEMINAR ON ANIMAL INDUSTRY

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"Sustainable Animal Production For Better Human Welfare and Environment"

September, 17-18 2015

IPB International Convention Center

Bogor-Indonesia



Organized by:



Sponsored by:



FACULTY OF ANIMAL SCIENCE
BOGOR AGRICULTURAL UNIVERSITY
2015

Bogor Agricultural University

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FOREWORD FROM CHAIRPERSON OF ORGANIZING COMMITTEE

Good morning,

Selamat pagi, salam sejahtera bagi kita semua

Rector of Bogor Agricultural University, Prof. Dr. Ir. Herry Suhardiyanto, M.Sc.

Director General of Livestock and Animal Health, Ministry of Agriculture, Republic of Indonesia, Prof. Dr. Ir. Muladno, MSA.

Dean of Faculty of Animal Science, Bogor Agricultural University, Prof. Dr. Ir. Luki Abdullah, M.Sc.Agr.

All participants of the International Seminar on Animal Industry 2015

Distinguished guests, ladies and gentlemen.

It is my great pleasure to welcome you all, our distinguished guests, speakers and participants, to the Third International Seminar on Animal Industry (ISAI 3rd, 2015) held at the IPB International Convention Center Bogor Indonesia. This seminar with the theme “**Sustainable Animal Production for Better Human Welfare and Environment**” is organized by Faculty of Animal Science, Bogor Agricultural University in collaboration with Association of Indonesia Animal Scientist (HILPI).

Following the recommendations from ISAI 1 and ISAI 2, which were held in Indonesia in 2009 and 2012, the strategic issues of ISAI 3rd is emphasized on animal production systems and technology and the wise use of natural resources in relation with environmental aspects, toward a sustainable animal production. There will be 98 papers presented during the two days seminar; 9 by invited speakers, 69 for oral and 29 for poster presentations. The speakers came from different countries including Australia, Egypt, France, Korea, Germany, Netherland, Indonesia, Malaysia, Nigeria, Pakistan, Thailand and USA.

This is a great opportunity for scientist, researchers, private sectors and policy makers to discuss, share information and experiences on interesting topics in animal production in a broad sense, including good farming practices, recent technologies and save animal products. I believe, there is an open window for initiating and strengthening collaboration amongst scientist and institutions during and after the seminar.

On behalf of the Organizing Committee, I would like to express my sincere appreciation and thanks to IPB, and some units within, including Institute of Research and Community Empowerment, Faculty of Animal Science, Department of Animal Production and Technology, Department of Nutrition and Feed Technology, Diploma Program, Management and Business Program for all advice and funding support.

The success of this seminar could only be achieved with all the valuable supports and sponsorship we received from some recognized parties and institutions in this country. In this regards, I would like to address my grateful thanks to Directorate General of Livestock and Animal Health, Ministry of Agriculture Republic of Indonesia for participation and funding support, Infovet and Trobos, Green TV as promotion agency. To: PT. Sierad Produce, Tbk, PT. Kaltim Prima Coal, Tbk, PT. BRIngin Life, PT. Adaro Indonesia, Tbk, PT. Trouw Nutrition Indonesia, PT. Nutricell Pasific, PT. Sweni Transfer Indonesia, PT. Charoen Phokphand Indonesia, Tbk, PT. Wide & Pin, PT. Pupuk Kujang, Tbk, and PT. ANTAM, Tbk, thank you so much with big appreciation, for having being part of this important event and such enormous contributions.

My recognition and gratitude are also forwarded to the Steering Committee for advice and assistance, to international and national reviewers and the Scientific Committee for hard working and such great support. Last but not least, to all my dear colleagues of the Organizing Committee members, who have been working smartly and full of dedication and passion, to make this seminar a great successful event.



To all participants, hopefully, the two days seminar may bring fresh ideas, and enhancing collaborations for future success toward sustainable animal production and industry. Big appologies for any inconvienences during the seminar, wish you all having friutfull discussions and good times.

During your short stay, please enjoy the surrounding of Bogor city, the Museum of Presidential Palace and Historical Botanical Garden of Bogor.

Bogor, September 17th, 2015

17th - 18th September 2015,

Chairperson of Organizing Committee

Susan M. Fua

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Director General of Livestock and Animal Health-Ministry of Agriculture Republic of Indonesia,

Prof. Dr. Ir. Herry Suhardiyanto, M.Sc.
Rector of IPB

Dr. Ir. Asnath Maria Fuah
Chairperson, The 3rd International Seminar on Animal Industry

Our Colleagues from Indonesian universities and research institutes,
Distinguished foreign participants and speakers,

Representative of livestock services officers of local government from all over Indonesia,

Distinguished guests, ladies and gentlemen.

Assalamu'alaikum warahmatullaahi wabarakatuh,

I am pleased to welcome you all to Bogor city for attending "The 3rd International Seminar on Animal Industry 2015" held at Faculty of Animal Science, Bogor Agricultural University (IPB). As the Dean of Faculty, I am also really honored to host this conference.

First, let me introduce briefly about Bogor city. Bogor is one of the major scientific and educational centers in Indonesia. A significant part of academic and research base was laid in the period of Dutch colonization. In particular, since the beginning of the 19th century there were established laboratories and professional schools focused primarily on improving the efficiency of the colonial agriculture. Similar to the prevailing profile of research and academic activity was retained in Bogor after gaining independence. As in the second half of 20th century, and in the 2000s strongest areas were Agricultural sciences, Biology, Animal and Veterinary Sciences. The main educational and scientific center with the utmost national importance is the Bogor Agricultural University (IPB). It is therefore the city regularly hosted various international events, such as international seminars and conferences.

I would like to express my gratitude to IPB for supporting us to hold this conference, and also to the organizing committee of the present conference for their hard work and persistence. I convey my sincere gratitude to all the parties which is supporting this event, such as Directorate General of Livestock and Animal Health-Ministry of Agriculture Republic of Indonesia, Infovet Trobos, Agrina, Green TV as promotion agency and Sierad Produce, Kaltim Prima Coal, BRIngin Life, Adaro Indonesia, Trouw Nutrition Indonesia, Nutricell Pasific, Sweni Transfer Indonesia, Charoen Phokphand, Wide & Pin, Pupuk Kujang, and ANTIAM thank you so much with big appreciation, for having being part of this important event and such enormous contributions. I am very pleased to see here the delegates from various foreign countries as well as representatives from many domestic institutions.

I hope you find this conference and the city, both interesting and stimulating and that you enjoy meeting up with your professional colleagues as well as having pleasure time during your stay in Bogor.

Thank you very much and
Wassalamu'alaikum warahmatullaahi wabarakaatuhu.

Bogor, September 17, 2015
Prof. Dr. Ir. Luki Abdullah, MSc.Agr
DEAN

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SEMINAR PROGRAM

Conference Program Thursday, September 17, 2015

Time Slot	Venue : IICC Ballroom	
	Event	Speaker
08.00-09.00	Registration	Committee
09.00-09.05	Opening Ceremony	Master of Ceremony
09.05-09.15	Report from Organizing Committee	Dr. Ir. Asnath M.Fuah, MS
09.15-09.25	Welcome Address from Dean Faculty of Animal Science	Prof. Dr. Ir. Luki Abdullah, M.Sc.Agr.
09.25-09.35	Welcome Address from Rector of Bogor Agricultural University	Prof. Dr. Ir. Herry Suhardiyanto, M.Sc
09.35-10.00	Opening and Keynote Speech by Ministry of Agriculture / Directorate General of Livestock and Health Services	Prof. Dr. Ir. Muladno, MSA
10.00-10.05	Appreciation for Keynote Speakers from Dean Faculty of Animal Science	Prof. Dr. Ir. Luki Abdullah, M.Sc.Agr.
10.05-10.20	Sponsorship Appreciation from Chairman of Organizing Committee	Dr. Ir. Asnath M.Fuah, MS.
10.20-10.25	Photo session	Photographer
10.25-10.40	Coffee break	
	Plenary Session 1 <i>Moderator: Prof. Dr. Ir. Komang G. Wiryawan</i>	
10.40-11.00	Invited speaker 1	Prof. Dr. Ir. Bas. Kemp Preserving Health, Welfare and Productivity in a Challenging Environment
11.00-11.20	Invited speaker 2	Dr. Jean Pierre Bidanel Genomic Selection for More Sustainable Livestock Production
11.20-11.40	Invited speaker 3	Ir. Yunus Triyonggo, MM Building Human Resources Competency Model in Poultry Industry
11.40-12.00	Discussion	
12.00-12.05	Invited Speaker Appreciation from Scientific Committee	Prof. Dr. Ir. Dewi Apri Astuti, MS.
12.05-12.15	Sponsorship Appreciation from Vice Dean Faculty of Animal Science	Dr. Ir. Moh. Yamin, M.Agr.Sc.
12.15-12.25	Student Plenary	
12.25-13.20	Lunch	
13.20-13.50	Poster session	

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	Room A (Theme D)	Room B (Theme B and C)
Session 1	Moderator : Dr. Rajesh Jha	Moderator : Ummi Noorhakimah
14.00-14.10 Thongsuk Jetana Rain Tree Pod in Livestock Feeds: Opportunity, Challenges and Possibility		Yeni Widiawati Fermentation Kinetics Of Palm Oil Plantation By-Product Based Diet
14.10-14.20 Supriyati Kompiang Effect of Different Protein and Energy Levels in Concentrate Diets on Performances of Anglo-Nubian Goat During Pregnancy and Lactation Periods		Ainissya Fitri Utilization Of Haylage Of Local Agro- Industry By product Pretreated With Afex Method
14.30-14.40 Rusdi Evaluation of Eleutherine (<i>Eleutherine americana</i>) as Feed Additive for Poultry		H. A. Sukria Physical Quality And Storage Time Pellet Indigofera Spleaves
14.40-14.40 Discussion		Discussion
Session 2	Moderator :Thongsuk Jetana	Moderator : Imana Martaguri
14.45-14.55 Utsav Prakash Tiwari Nutrient Profile And In Vitro Digestibility Of Fresh And Ensiled Cassava In Swine		Moh Ali Hamdan Potential Of Dwarf Elephant Grass (<i>Pennisetum Purpureum</i> Schum. Cv. Mott) In Dry Land Areas Of Bojonegoro As Forage- Based Feed Sustainability
14.55-15.05 Alif Putri Effect of Combination Silkworm Pupae Meal and Garlic Meal on Blood Profiles, Visceral Organs and Carcass Broiler		Rido Pande Pardede Development Of Indigofera Zoolingeriana And Pueraria Javanica On Dry Land Integrated With Teak Forest In Bojonegoro
15.05-15.15 Burhanudin Sundu The effect of NaOH Concentrations and Polysaccharides Extract of Palm Kernel Meal on Performance of 4 Weeks Old-Broiler Chickens		Malcky Telleng Growth and Productivity of Different Sorghum Varieties Cultivated with Indigofera in Intercropping System
15.15-15.25 Discussion		Discussion
15.25-15.40 Coffee break		
Session 3	Moderator : Anis Muktiani	Moderator : Lisa T. Praharani
15.40-15.50 Muhamad Nasir Rofiq Combination Effect of Nutritech Feed Additive Containing Saponin, Tanin and Eugenol Essential oils on In Vivo Rumen Methane Production in Dairy Cattle Using Open Circuit Respiration Chamber Technique		Imana Martaguri Carbon Storage Capacity of Forage Native Grasses Growing in Palm Plantation at Transformation Forest Ecosystem in Jambi
15.50-16.00 Dwi Yulistiani Nitrogen Utilization and Ruminant Fermentation of Five Breed of Sheep Fed Concentrate Containing Different Levels of Rumen Undegradable Protein		I Gusti Ngurah Jelantik Herbage Production and Nutritive Value of Some Forage Legumes as Calf Feed Supplement
16.00-16.10 Sutresniwati A Willingness to Pay Evaluation for Silage Implementation for Small Dairy Farmers		Riesi Sriagtula Evaluation of Growth and Production of Sorghum Lines (Sorghum Brown Midrib) at Different of Harvest Time as Feed
16.10-16.20 Discussion		Discussion
Session 4	Moderator : Rusdi	Moderator: Veronica
16.25-16.35 Anita S. Tjakradidjaja Fermentability and Digestibility of Rice Straw - Concentrate Base Ration Added with Probiotic		Nur Rochmah Kumalasari Modelling of Forage Availability Response to Landuse Exchange in Bogor



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Time	Room A (Theme D)	Room B (Theme B and C)
16.35-16.45	Gusti A. Gultom Effects of Solid or Liquid Probiotic Supplementation on Rumen Microbial Population and Enzyme Activity	Khalil The Diversity and Quality of Forages Used for Feeding of Goat in Payakumbuh of West Sumatra
16.45-16.55	Eissa M. M Effect Of Ammoniated Straw On Methane Production In An In Vitro System And On Growth Performance	P.D.M.H. Karti The Addition of Arbuscular mycorrhizal Fungi in Enhancing Productivity and Drought Tolerance Mechanisms of Indigofera zollingeriana
16.55-17.05	Discussion	Discussion

Time	Ballroom (Theme A)
Session 1	Moderator : Iis Arifiantini
14.00-14.10	Fuah A.M Beef Cattle Production, Constraints and Opportunities for Small Farmers in South Central Timor Regency West Timor
14.10-14.20	S.N. Sirajuddin The Application of Tesang Sharing System at Cattle Farms in Indonesia
14.20-14.30	Niken Ulupi Production Performance of Laying Hen in Cage System with Different Housing Temperature
14.30-14.40	Lucia Cyrilla Evaluation of Good Dairy Farming Practice Implementation in Dairy Goat Farm
14.40-14.50	Discussion
Session 2	Moderator : Prof. Cece Sumantri
14.50-15.05	Lindawati Doloksaribu Constraints to, Challenges of, and Opportunities for Rearing Goats in Bali Province. A case study: Rearing Kids in Karangasem Regency
15.05-15.15	Hearty Salatnaya Trigona Spppropolis, Pollen, And Honey Production In Two Different Agroecosystem
15.15-15.25	Prabowo, S Distribution of Thermal Body Surface Ettawah Grade in Different Tropic Microclimates
15.25-15.35	Bram Brahmantiyo Hycole and Hyla Rabbits Performance were Raised in Indonesia
15.35-15.45	Discussion
15.45-16.00	Coffee break

Welcoming dinner. Venue IICC Ballroom

Time Slot	Event
18.20-19.00	Registration and Dinner (Instrument from Gentra)
19.00-19.05	Opening by Master of Ceremony
19.05-19.15	Speech from Chairman of Committee
19.15-19.25	Speech from Dean of Animal Science Faculty
19.25-20.00	Gentra Kaheman
20.00-20.20	Prof. Singer
20.20-21.20	Spontaneity from Country Representative
21.20	Closing



Friday, September 18, 2015

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Time		Venue : IICC Ballroom	
		Event	Speaker
08.00-8.30	1. Diarahkan a. Pengutipan Hak Cipta Diilindungi Undang-Undang Hak cipta milik IPB (Institut Pertanian Bogor)	Registration	Committee
08.30-8.35		Opening Ceremony	Master of Ceremony
		Plennary Session 2 <i>Moderator: Dr. Jean Pierre Bidanel</i>	
08.45-8.55		Invited speaker 1	Prof. Wayne Pitchford Outcomes of Selection for Residual Feed Intake in Australian Beef Cattle
08.55-9.15		Invited speaker 2	Prof. Myunggi Baik Molecular Mechanisms Regulating Beef Quality in Korean Cattle
09.15-9.35		Invited speaker 3	Prof. I Wayan Teguh W. Vaccination and Subclinical Manifestasion of Avian Influenza in Indonesia
09.35-9.50		Discussion	
09.50-10.00		Appreciation to Invited Speaker	Prof. Luki Abdullah
10.00-10.10		Coffee Break	
		Plennary Session 3 <i>Moderator: Prof. Wayne Pitchford</i>	
10.10-10.30		Invited speaker 1	Dr. Kai J. Kuehlmann The Role of Feed Additive in Animal Industry under Tropical Condition
10.30-10.50		Invited speaker 2	Dr. Anjas Asmara Samsudin Recent Advances in Gut Microbiology Research in Relation to Animal Nutrition
10.50-11.10		Invited speaker 3	Prof. Bustanul Arifin Social Economic and Policy in Animal Industry
11.10-11.25		Discussion	
11.25-11.30		Appreciation for Invited Speaker	Prof. Dr. Ir. Sumiati, M.Sc.
11.30-13.20		Lunch and Prayer	
13.20-13.50		Poster session	

Time	Room A (Theme D and G)	Room B (Theme F and J)
Session 5	<i>Moderator: Sutresniwati</i>	<i>Moderator : Dr. Irma Isnafia Arif</i>
13.50-14.00	Sumiati Effect of drinking gambir extract (<i>Uncaria gambir Roxb</i>) as Antioxidant on Performance of 40-43 Weeks Old of Laying Hens	Rudi Afnan Weight Loss And Mortality Of Broiler During Transportation From Different Distances To Slaughterhouse
14.00-14.10	Muktiani, A Live Weight Gain of Beef Cattle Fed on Complete Feed Silage of Water Hyacinth Supplemented with Mineral Zinc-Proteinate	Suharyanto Skim Milk Powder Substitution With Soymilk Powder Could Improve Physical Properties Of Beef Surimi-Based Sausage
14.10-14.20	Putri O. N The Effect of Adding Fermented Waste Cabbage in Calf Starter Pellets on Total Lactic Acid Bacteria And <i>Escherichia coli</i>	Iwan Prihantoro The Potency of <i>Azollapinnata</i> as A High Protein Forage for High Productivity Livestock
14.20-14.30	Discussion	Discussion
Session 6	<i>Moderator : Prof. Khalil.</i>	<i>Moderator : Salina AB</i>
14.35-14.45	Ninasari Ra Substitution of Fish Meal by Cricket or Indigofera Shoot Leaf Meal on Japanese Quail (<i>Coturnix japonica</i>) Performance	Lilis Suryaningsih Effects Of Local Flour Types On Physical Properties And Acceptability Of Beef Sausage



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Time	Room A (Theme D and G)	Room B (Theme F and J)
14.45-14.55	Tresia G.E Benefit of Kemuning Leaves Meal (<i>Murraya paniculata</i> [L.] Jack) Addition in Ration Containing Date Fruit Waste to Suppress Gastrointestinal Parasites Infestation of PE Goat	Soenarno Ms Characteristic Of Lactic Acid Bacteria Isolated From Dangke From Sinjai, South Sulawesi
14.55-15.10	Sri Suharti Rumen Microbe, Protein Microbial Synthesis, Celullase Activity and Nutrient Digestibility of Bali Cattle Rumen with the Addition of Calcium Soap-Soybean Oil In vitro	M. Aman Yaman Increase on Commercial Weight, Carcass Quality and Economic Benefit of Selected Local Meat Chicken Fed on Fermented Diet Contained Digestive Enzymes and Probiotics
15.10-15.15	Discussion	Discussion
15.15-15.30	Coffee break	
Session 7	Moderator : Dr. Lindawati Doloksaribu	Moderator : Dr. Asnath Maria Fuah
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15.00-14.20	Oktora Dwi Putranti Effect Of Caffeine On Morfology Of Epididymis Spermatozoa Of Bali Bull
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15.00-15.10	Anneke Anggraeni Association Of Growth Hormone (Gh Mspi) And Growth Hormone Releasing Hormone (Ghrh Haeiii) Genes With Milk Components Of Hf Cows Under Small Farmers In Lembang, West Java
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Strategy of Beef Cattle Development Based on Agricultural by Product in Kuningan District, West Java

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Abstract

Development of beef cattle in Kuningan District based on agricultural by product will be created with an appropriate strategy. The aim of research was to identify potential of agricultural by product as feed to formulate strategies of beef cattle development in Kuningan District. The research was conducted in three sub-districts namely Cilimus, Japara and Cigugur based on the largest beef cattle population from data on local government of Kuningan District. There were two types of data consist of primary data and secondary data. Primary data was obtained from interview with respondents and data from laboratory analysis. Interview conducted with 30 farmer respondents as much as 10 farmers each district by using a questionnaire guide. The data nutrient composition of agricultural by product obtained from laboratory analysis. Those were the most three types of by product widely used by farmers. It taken each three replicates retrieval. Secondary data obtained from local government of Kuningan District, Department of Food Crops and Central Statistics Agency (BPS). The result showed that Kuningan District can be increase number of beef cattle 21 194 AU based on rice straw as roughages resources and 364 AU using other agricultural by product such as sweet potatoes straw and peanuts hay. Agribusiness system could be done in Kuningan District only for sub-system on farm without processing animal products.

Keywords : agricultural by product, Kuningan district, beef cattle, West Java

Introduction

Livestock is an important sub-sector in helping to meet the needs of protein resources for human. The sustainability of a farm must be supported by good management such as the management of feed. Feed important for the sustainability of livestock because of the costs incurred to meet the feed is the biggest cost reaching 60-70% of livestock cost (Laconi, 2010). Feed given to cattle should pay attention to the quality, quantity and continuity so as to create a good animal productivity. However, there are still many obstacles relating to the quality, quantity and continuity of feed such as the difficulty of providing forage for ruminants. Alternative forage needed to meet the requirement of ruminant forages that are difficult to fulfill than forage cultivation. Foliage should be a kind of alternative forages that do not compete with humans as agricultural by product. BPLHD (2013) reported that West Java Province is one of the provinces that have potential for beef cattle and agricultural by product. One potentially districts in West Java is the Kuningan District. The aim of the research is to identify the potential of agricultural by product used in Kuningan District to formulate strategies for beef cattle development.

Materials and Methods

This study used two types of data are primary data and secondary data. Primary data was obtained from interview with respondents and data from laboratory analysis. Interview were conducted with 30 farmer respondents by using a guide questionnaire, respectively 10 farmers per sub district. Determination of the respondents conducted by purposive sampling. The criteria for selection of the respondents are members of the beef cattle farmer with a minimum of three tail ownership and farmer who use agricultural by product as a source of forage. Agricultural by product nutrient composition data obtained from laboratory analysis. Agricultural by product analyzed are three types of most widely used by farmers. Each type of by product is taken each making three replication in each sub district elected. Nutrient composition analyzed



Kuningan District, Department of Food Crops and the Central Statistics Agency (BPS). Location quation (LQ) method is used to determine the number of sub districts to be added beef cattle using agricultural by product as a source of forage (Hendayana, 2003). Sub district that is considered to develop beef cattle by sub districts with $LQ \geq 1$ value. Production of agricultural by product are calculated based on data from the production of fresh, dry matter (DM), crude protein (CP) and total digestible nutrients (TDN) for each commodity. The calculation of fresh by product, DM, CP and TDN production are as follows:

$$\text{Prod. Agr. BP fresh} = \left(\text{Crops Production} \times \frac{100}{\text{Food Proportion}(\%)} \right) \times \text{Feed proportion} (\%) \text{-----}(1)$$

$$\text{Prod. Agr. BP av}_i = \text{Prod. Agr. BP fresh}_i \times 70\% \times \text{Percentage of Agr. BP}_{\text{Spi}} \text{ real consumption} \text{-----} (2)$$

$$\text{Prod. DM Agr. BP}_i (\text{ton/year}) = \text{Prod. Agr. BP av}_i (\text{ton/year}) \times \text{DM Agr. BP Contents} (\%) \text{-----} (3)$$

$$\text{Prod. CP Agr. BP}_i (\text{ton/year}) = \text{Prod. DM Agr. BP}_i (\text{ton/year}) \times \text{CP Agr. BP Contents} (\%) \text{-----} (4)$$

$$\text{Prod. TDN Agr. BP}_i (\text{ton/year}) = \text{Prod. DM Agr. BP}_i (\text{ton/year}) \times \text{TDN Agr. BP Contents} (\%) \text{--} (5)$$

Prod. Agr. BP fresh : Production of fresh agricultural by product (ton/year)

Prod. Agr. BP av_i : Production of agricultural by product available in each sub district (ton/year)

Prod. Agr. BP fresh_i : Production of fresh agricultural by products in each sub district (ton/year)

Percentage of Agr. BP_{Spi} real consumption: the percentage of real consumption of agricultural by productas feed for beef cattle in each sub district (%)

Prod. DM Agr. BP_i : Dry matter production of agricultural by products in each subdistrict (ton/year)

DM Agr. BP Contents : Dry matter content of agricultural by products (%)

Prod. CP Agr. BP_i : Crude protein production of agricultural by product in each sub district (ton/year)

Prod. TDN Agr. BP_i : Total digestible nutrients production of agricultural by products in each sub district (ton/year)

CP Agr. BP Contents : Crude protein content of agricultural by products (%)

TDN Agr. BP Contents : Total digestible nutrient content of agricultural by products (%)

Ruminant Population Improving Capacity (KPPTR)

Agricultural by product rice straw is used as feed for ruminants limited to a maximum of 2% of body weight based on DM (Setiyadi, 2013). Therefore, the value of rice straw needs separated from the value of agricultural by product needs other than rice straw (Table 1).

Table 1. Beef cattle requirements (head/day)^a

Beef cattle requirements	DM	CP		TDN	
	(kg/head/day)	%	kg/head/day	%	kg/head/day
Feed requirements	8.90	12.60	1.12	70.00	6.23
Consentrat requirements	5.34		0.54		4.07
Rice straw requirements	2.92		0.14		1.43
Other agricultural by product requirements	0.64		0.44		0.72

Data based on results of calculation in accordance with NRC (2000); angus 365kg; Forage (40%), Consentrate (60%); DM (dry matter); CP (crude protein); TDN (total digestible nutrient).

The value of forage nutrient requirements of beef cattle is used to calculate KPPTR Spi using the available agricultural by product production. KPPTR value of beef cattle (KPPTRSp) in Kuningan District is the total of all district selected KPPTR Spi value. The KPPTR Sp value is the number of beef cattle that can be added in Kuningan District using agricultural by product forage source. The calculation KPPTR Spi and KPPTR Sp are as follows:

$$\text{KPPTR}_{\text{Spi}} (a, b, c) (\text{AU}) = \frac{\text{Prod. Agr. BP av}_i (a, b, c) (\text{ton/year})}{\text{Forage Requirement of beef cattle in each sub-district } (a, b, c) (\text{ton/year})} \text{-----} (6)$$

$$\text{KPPTR}_{\text{Sp}} (\text{AU}) = \sum_{i=1}^9 \text{KPPTR}_{\text{Spi}} (\text{AU}) \text{-----} (7)$$

Notes:

- KPPT_R^{Sp_i} : Capacity additions of beef cattle population in a subdistrict (AU)
 Prod. Agr.BP av_i : Production of agricultural by product available in each subdistrict (ton/year)
 a : DM (dry matter)
 b : CP (crude protein)
 c : TDN (total digestible nutrients)
 KPPT_R^{Sp} : Capacity additions of beef cattle population in Kuningan District (AU)
 KPPT_R^{Sp_i} : Capacity additions of beef cattle population in asub-district (AU)

Results and Discussion

The results showed that agricultural by product in the Kuningan District is used as a source of forage consist of rice straw, sweat potatoes straw and peanuts hay. Production of agricultural by product observed was based on dry matter. Total production of agricultural by product is used as feed in increasing the number of beef cattle in the district of Kuningan. The number of beef cattle that can be expressed in value added KPPT_R.

Table 2 Total estimation of agricultural by products and number of increasing beef cattle in Kuningan District West Java^a

Comodities	Productions (ton/year)			
	Fresh	DM	CP	TDN
Rice straw	76 491	27 353	1 343	13 417
Sweat potatoes straw	27 425	5 287	776	2 624
Peanut hay	3 201	994	126	602
Total Productions	107 117	33 634	2 245	16 643
KPPT _R based on rice straw (AU)		21 194	21 704	21 227
KPPT _R based on sweat potatoes straw and peanuts hay (AU)		1 946	364	1 022

DM (dry matter); CP (crude protein); TDN (total digestible nutrient). ^aBased on BPS Kab. Kuningan 2014

Table 2 showed that the highest production of agricultural by product is rice with number of 27 353 tons per year and the lowest was peanut hay with number of 994 tons per year based on dry matter. The lowest supply of nutrients from agricultural by product is DM for rice straw and CP to by product other than rice straw. The lowest nutrient supply become the limiting nutrient in the use of agricultural by product. KPPT_R value is a value based on the supply of nutrients lowest of agricultural by product. Therefore, Kuningan District can be increase the number of beef cattle using rice straw is 21 194 animal unit (AU) and using other agricultural by product is 364 AU.

The development of beef cattle can be use the strategy of agribusiness system which consists of subsystems upstream, on-farm and downstream (Kurniawan, 2013). Agribusiness system is done only on-farm in Kuningan District caused there was not conducting processing of livestock products. Upstream subsystems include resource farmers, agricultural by product and beef cattle potential. Subsystem on farm include beef cattle rearing and feeding (Santosa, 2013). Application of agribusiness strategy in Kuningan District described in the following sections:

Upstream Sub-system

Resources Farmers. Based on observations, farmers located in the Kuningan district are in the productive age range. With so many young farmers, the passion to make a change for the better quality cattle will be high. Age related to productivity prolific farmers because it is considered to have a strong physical condition and active. Experience possessed by farmers in Kuningan District also quite long with more than five years. It's the constraints in raising beef cattle. Thus the more skilled farmers in overcoming obstacles that need to be considered is the level of education of farmers in Kuningan District which is still relatively low. Solution that can be done is to conduct special training for farmers such as training the correct way of feeding, animal by product processing methods, how to measure the weight of livestock, as well as ways to preserve feed.

Agricultural by product potential. Agricultural by product is the most widely used rice straw. Rice straw obtained from a nearby rice field and at no charge. Obstacles that need to be considered is the quality



of agricultural by product such as rice straw has a low protein content and the content of lignin and silica that are difficult to digest by cattle (Donkins, 2013). Provision of rice straw as the sole source of forage are at risk of decreasing the productivity of beef cattle. Long-term solutions that can be done is by induction technology in improving the quality of agricultural by product (Sarnklong, 2010). Induction technology is used as a long-term solution because it takes time to provide guidance and understanding to farmers to carry out the implementation of new technologies. Short-term solutions can be done to overcome the problems of the quality of agricultural by products are varied feeding and the addition of concentrate with good quality in order to obtain good productivity and quality of beef cattle products.

Livestock potential. BPS data of Kuningan District in 2013 reported that beef cattle scattered throughout the district in Kuningan District. The deployment will facilitate the development of beef cattle because there are already accustomed farmers raising cattle beef cattle. Beef cattle population is dominant in Kuningan District is an indication that the beef cattle is a growing livestock in the district of Kuningan.

On-Farm Sub-system

Maintenance pattern. Pattern maintenance done farmer in Kuningan District is still relatively traditional. In addition to feeding system is still not measured properly, there is another obstacle, namely training activities in Kuningan District is only used as a side job. This will lead to less focus attention to productivity of farmers in livestock. Maintenance of livestock by farmers aiming to utilize agricultural by product that farmers have. Extension needs to be done to provide a good understanding of how to raise and prospects that would be obtained if doing business in the field of animal husbandry. Training fertilizer from livestock by product can also be applied to increase the income of farmers. Training and extension for farmers would be easier if applied to the herd so that the farmer is more easily collected and trained simultaneously.

Conclusions

Kuningan District as potential of rice straw, hay and straw sweet potato peanut as a source of beef cattle forage. Kuningan District can be increase number of beef cattle 21 194 AU based on rice straw as forage resources and 364 AU using other agricultural by product such as sweat potatoes straw and peanuts hay. Agribusiness system could be done in Kuningan District only for on-farm sub-system, farmer could animal without processing animal products.

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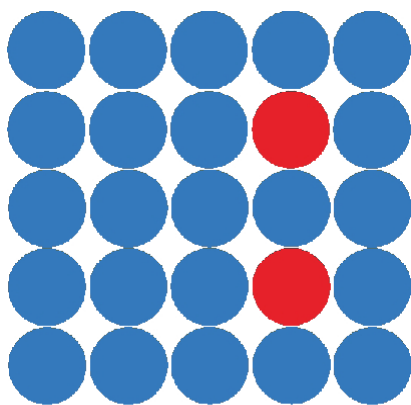


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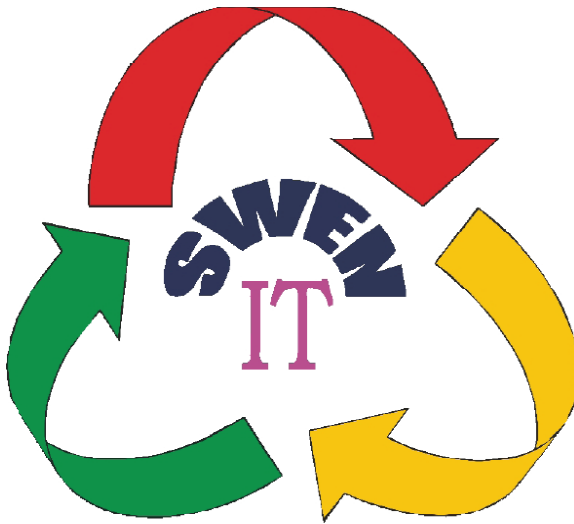
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