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PROCEEDING

isai 3rd

International Seminar on Animal Industry 2015

THE THIRD INTERNATIONAL SEMINAR ON ANIMAL INDUSTRY

"Sustainable Animal Production for Better Human Welfare and Environment"

September, 17-18 2015
IPB International Convention Center
Bogor-Indonesia

Organized by:

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FACULTY OF ANIMAL SCIENCE
BOGOR AGRICULTURAL UNIVERSITY
2015

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Proceeding of the 3rd International Seminar on Animal Industry, Bogor, 17-18 September 2015

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FOREWORD FROM CHAIRPERSON OF ORGANIZING COMMITTEE

Distinguished,

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

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

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

All participants of the International Seminar on Animal Industry 2015

Good morning ladies and gentlemen,

It is my great pleasure to welcome you all, 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 Scientists.

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 use of natural resources in relation with environmnetal aspects, toward a sustainable animal production. There will be 97 papers presented during the two days seminar; 9 by invited speakers, 69 for oral and 28 for posters presentations. The speakers came from different coutries including Australia, Egypt, France, Korea, German, Netherland, Indonesia, Malaysia, Nigeria, Pakistan, Thailand, USA.

This is a great opportunity for scientists, 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 among scientists 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 Bussines Program for all advice and funding support.

The success of this seminar could only be achieved with all the valuable supports and sponsorship from some recognized institutions in this country. In this regards, I would like to address my greatful thanks to Directorate General of Livestock Services and Animal Health-Indonesia Ministry of Agriculture for funding support, and Infovet and Trobos, Green TV as promotion agency. To: Sierad Produce, Kaltim Prima Coal, BRIngin Life, Adaro Indonesia, Trouw Nutrition Indonesia, Nutricell Pasific, Sweni Transfer Indonesia, Charoen Phokphand, Wide & Pin, Pupuk Kujang, and ANTAM 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 assistanship, to international and national reviewers and the Scientific Committee for hard working and such great contribution. Last but not least, to all my dear coleagues of the Organizing Committee members, who have been working smartly and full of dedication and passion, to make this seminar a great succesfull event.

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

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

Bogor, September 17th, 2015

The Isai 3rd 2015,

Chairperson of Oraganizing Committee

Asnath M. Fuah

REMARKS FROM DEAN OF ANIMAL SCIENCE FACULTY

Prof. Dr. Muladno, MSA
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 ANTAM 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 warahmatulaahi wabarakaatuhu.

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

SEMINAR PROGRAM

Conference Program

Thursday, September 17, 2015

Venue: IICC - Ballroom		
Time Slot	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	
	Plennary Session 1 *Moderator: Prof. Dr. Ir. Komang G. Wiryawan*	
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	

Time	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
14.20-14.30	**Rusdi** Evaluation of Eleutherine (*Eleutherine americana*) as Feed Additive for Poultry	**H. A. Sukria** Physical Quality And Storage Time Pellet Indigofera Spleaves
14.30-14.40	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 (*Pennisetum Purpureum* 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 Ruminal 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

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	
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***
14.55-15.05	**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 Sppropolis, 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	Theme
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

Time	Venue : HCC Ballroom	
	Event	Speaker
8.00-8.30	Registration	Committee
8.30-8.35	Opening Ceremony	Master of Ceremony
	Plennary Session 2 ***Moderator: Dr. Jean Pierre Bidanel***	
8.35-8.55	Invited speaker 1	**Prof. Wayne Pitchford** Outcomes of Selection for Residual Feed Intake in Australian Beef Cattle
8.55-9.15	Invited speaker 2	**Prof. Myunggi Baik** Molecular Mechanisms Regulating Beef Quality in Korean Cattle
9.15-9.35	Invited speaker 3	**Prof. I Wayan Teguh W.** Vaccination and Subclinical Manifestasion of Avian Influenza in Indonesia
9.35-9.50	Discussion	
9.50-10.00	Appreciation to Invited Speaker	Prof. Luki Abdullah
10.00-10.10	**Coffee Break**	
	Plennary Session 3 ***Moderator: Prof. Wayne Pitchford***	
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 I and J)
Session 5	***Moderator: Sutresniwati***	***Moderator : Dr. Irma isnafia Arif***
13.50-14.00	**Sumiati** Effect of drinking gambir extract (*Uncaria gambir Roxb*) 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 Suplemented with Mineral Zinc-Proteinate	**Hajrawati** Meat Quality Of Marica Goat (Capra Hircus) Meat Fed Different Protein Level
14.10-14.20	**Putri O. N** The Effect of Adding Fermented Waste Cabbage in Calf Starter Pellets on Total Lactic Acid Bacteria And *Escherichia coli*	**Suharyanto** Skim Milk Powder Substitution With Soymilk Powder Could Improve Physical Properties Of Beef Surimi-Based Sausage
14.20-14.30	Discussion	Discussion
Session 6	***Moderator : Prof. Khalil.***	***Moderator : Salina AB***
14.35-14.45	**Ninasari Ra** Subtitution of Fish Meal by Cricket or Indigofera Shoot Leaf Meal on Japanese Quail (Coturnix japonica) Performance	**Lilis Suryaningsih** Effects Of Local Flour Types On Physical Properties And Acceptability Of Beef Sausage

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 (*Murraya paniculata [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***
15.30-15.40	**G. F. Bira** Incremental Level Of Chromolaena Odorata In Complete Diet Does Not Impair Intake, Rumen Fermentation And Microbial Protein Synthesis Efficiency In Cattle	**Salina A.B** An Analysis Of Cattle Traders Practices On Animal Traceability In Malaysia
15.40-15.50	**Arini NMJ** Subtitution Of Fish Meal By Cricket Or Indigoferasp Shoot Leaf Meal To Evaluate Protein Balance Of Japanese Quail (Coturnix Japonica)	**Hotnida C H Siregar** Effect Of Moisture Reduction Method, Storage Period And Temperature On Honey Quality
15.50-16.00	**Mokhamad Faesal R. Hakim** Feeding Ecology of Sumatran Orangutan (Pongo abelii, Lesson 1827) in West Batang Toru Forest Block, North Sumatra	**Iman Rahayu** Biodiversity Based On Fatty Acid And Amino Acid Profile Of Indonesian Local Chickens
16.00-16.10	Discussion	Discussion
Session 8	***Moderator :*** ***Mokhamad Faesal Rakhman Khakim***	***Moderator : Dr. Burhanudin Sundu***
16.15-16.25	**D. Latipudin** Level Of Malondialdehyde (Mda), Uric Acid And Lymphocyte: Neutrphyl Ratio Of Laying Hen In The Different Temperature Humidity Index (Thi)	**I M. A. Sudarma** Weight Loss Of Inter-Island Transported Cattle From Kupang Is Reduced By Feeding High Protein-Mineral Mix Block During Quarantine And Sea Transportation
16.25-16.35	**Windi Al Zahra** The Using Of Thermograph As Non-Invasive Method To Observe Subclinical Mastitis In Tropical Dairy Cattle	**Ummi Noorhakimah Abdullah** Cattle Importation And The Trend Of Fmd Occurrence In Peninsular Malaysia From 2000-2010
16.35-16.45	**A. Sudarman** Physiological Responses And Blood Profiles Of Sheep Fed Cassava Leaves Silage (*Manihot Esculenta* Sp.) Reared Traditionally In Petir Village	**Moh Yamin** Harmony Between Livestock Behaviors: Birth Time and Sites Selection Behaviors in Sheep and Goats
16.45-17.00	Discussion	**Erika B Laconi** Strategy of Beef Cattle Development Based on Agricultural Product in Kuningan District, West Java
17.00-17.10		Discussion

Time	Ballroom (Theme 3 and 4)
Session 5	***Moderator : Anneke Anggraeni***
13.50-14.00	**Surya Nur Rahmatullah** Phenotypic Variation In Male Local Chicken At Tapin Regency Using Significant Analysis
14.00-14.10	**Parsaoran Silalahi** Effects Of Selection On The Efficiency And Variability Of Sow Reproduction And Maternal Abilities
14.10-14.20	**Oktora Dwi Putranti** Effect Of Caffeine On Morfology Of Epididymis Spermatozoa Of Bali Bull
14.20-14.30	Discussion
Season 6	***Moderator : Ir Anita S.T. MRur.Sc***
14.35-14.45	**Lisa Praharani** Comparisson of Anglo Nubian X Etawah Grade Goats And Saanen X Etawah Grade Goats For Some Reproductive Traits
14.45-15.00	**Maria Haryulin Astuti** Service Per Conception In Beef Cattle With Artificial Insemination In Kapuas Basarang District of Central Kalimantan
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
15.10-15.20	Discussion
15.20-15.30	Coffee break
Season 7	***Moderator : Dr. Epi Taufik***
15.30-15.40	**R.Iis Arifiantini** Hypoosmotic Test In Rabbit Spermatozoa
15.40-15.50	**Nalley Wmm** Effect Of Freezing On Bovine Sperm Morphology
15.50-16.00	**Tuty L Yusuf** Determination of Soy Extract Concentration In Tris Buffer of Frisian Holstein Chilled Semen
16.00-16.10	Discussion
Season 8	Moderator : Surya Nur Rahmatullah
16.15-16.25	**S. Rusdiana** Estimated Value of Live Buffalo Prices In The Economic Analysis Of The Income of Farmers In The Village
16.25-16.35	**Aslina Asnawi** Financing Preferences For Cattle Farmers In Bone Regency South Sulawesi
16.35-16.45	**Sumarti T** Women, Gender Equality In Livestock Development: Case Study From Papua and Central Java
16.45-16.55	Discussion

Closing Ceremony, Venue IICC Ballroom

Time Slot	Event
17.10-17.15	Opening
17.15-17.25	The Best Presenter (Oral and Poster) Announcement
17.25-17.35	Presence of Presents
17.35-17.45	Speech from Representative Invited Speaker: Prof. Wayne Pitchford
17.45-17.55	Speech from Representative Invited Speaker: Thongsuk Jetana
17.55-18.05	Closing Speech from Dean of Animal Science Faculty

LIST OF CONTENTS

Determination of Soy Extract Concentration in Tris Buffer of Frisian Holstein Chilled Semen

T. L. Yusuf[1], I. R. Arifiantini[1], W. M. M. Nalley[2] & E. Sukmawati[3]*
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Abstract

This aim research was to investigate the best soy extract concentration on the quality of Frisian Holstein (FH) bull's chilled semen. Semen were collected from 5 FH bulls belong to Lembang Artificial Insemination Centre using artificial vagina. Immediatly after colection the semen evaluate macro-and microscopycally. Semen samples with >75% progressive motility and contained <20% sperm with abnormal morphology were used in the experiment. Semen individually divided into 4 tubes and diluted with 2.5%, 3.75%, 5%, or 6.25% Tris soy extract (TSE), diluted semen than store at 5 °C. Sperm motility and viability were evaluate once a day. The results showed that sperm diluted in 2.5% TSE was the highest sperm motility (30.25±8.45%) at 72 hours of storage (day 3) than in 3.75% (18.00±5.12%), 5% (7.17±2.32%) or 6.25% (4.45±1.02%) TSE. No differences was found on the viabiliy of sperm, between all four TSE concentrations at 0 and 12 hours of storage. At 24 until 72 hour of storage, semen diluted with 3.5% TSE significantly higher than other concentration. This research conclude that sperm motility diluted in 2.5% soy extract better than other concentration, while 3.75% soy extract maintain sperm viability better than other concentration.
Keyword: chilled semen, FH bull, soy extract, tris

Introduction

Artificial insemination (AI) was the first great biotechnology applied to improve reproduction and genetics of farm animals. The widespread use of AI in cattle can partly be attributed to the availability of suitable diluents. The general requirements for semen diluents are: ionic or non-ionic substances to maintain the osmolarity and to buffer the medium; a source of lipoprotein or high molecular weight material to prevent cold shock, such as egg yolk or milk; glucose or fructose as an energy source; and other additives such as enzymes and antibiotics (Vishwanath and Shannon, 2000).

Soymilk powder or more precisely soy extract (brand Melilea) is full of protein with eight essential amino acids, 40% higher than protein in unprocessed plants. Every 100 g of soy extract contains of 23 g protein, 22 kinds of amino acid, omega 6 and omega 3 fatty acids, and Protein Disgestibility Amino Acid Score (PDCAAS). In addition, melilea contains isoflavon, calcium, magnesium, iron, potassium, phosphor, selenium, zinc, and lecithin (Koswara, 2009).

The used of soy extract in tris buffer for buck chilled semen was previously reported by Putra *et al.* (2013). In there research 2.5% of soy extract was the best concentration on the sperm motility and viability of buck chilled semen at 72 hours of storage. Soy extract powder is widely available, and it could be found in most domestic public markets. Information and ingredients of Tris buffer diluents for bull semen are widely available as well. This research aims to develop a Tris-soy extract modified diluents, for Frisian Holstein (FH) bulls chilled semen.

Materials and Methods

This research were conducted at three places; Lembang Artificial Insemination Breeding Center in Bandung; Reproductive Rehabilitation of Reproduction and Obstetric division, Department of Clinic, Reproduction and Pathology, Faculty of Veterinary Medicine, Bogor Agricultural University.

Media Preparation

Tris buffer was prepared by mixing 30.28 g Tris-hydroxymethyl-aminomethane, with 17.8 g monohydrate citric acid and 12.5 g D-fructose, dissolved in 1000 mL distilled water according to Arifiantini

et al. (2006). Four concentrations of soy extract which were; 2.5% TSE ($TSE_{2.5}$), 3.75% TSE ($TSE_{3.75}$), 5% TSE (TSE_5), or TSE 6.25% ($TSE_{6.25}$), in Tris buffer (W/V) according to Putra *et al.* (2013). The soy extract was weighed separately based on the treatment and dissolved with Tris buffer to reach 100 mL. Tris and soy extract were homogenized using a stirrer, centrifuged at 2000 rpm for 10 minutes; the supernatant was collected and used as diluents finnaly added with antibiotic.

Semen Collection, Evaluation and Processing

Semen from five FH bulls were collected using artificial vagina, based on Lembang Artificial Insemination Center standard protocol; only the first ejaculates of each semen collection were used in the experiment. Following collection, individual semen sample was evaluated macros and microscopically including semen volume, pH, mass activity, progressive motiliy, individual scoring (velocity), viable sperm, sperm concentration, and sperm morphology. Semen samples with >75% progressive motility and contained <20% sperm with abnormal morphology were used in the experiment.

Semen were processed individually; each ejaculate was equally divided into four tubes and diluted with $TSE_{2.5}$, $TSE_{3.75}$, TSE_5, or $TSE_{6.25}$ to reach the total sperm concentration of $10x10^6$ mL^{-1}. The diluted semen were stored at 5 °C (colling box) and transported to the laboratory at Faculty of Veterinary Medicine, Bogor Agricultural University for further examinations. The progressive motility and viable sperm were evaluated every 12 hours for 3 days observation (72 hours).

Statistical methods

The data were analyzed using analysis of variance, repeated measurement, the soy extract concentration and time of storage were analyze seperately and to test differences the Turkeys test was use to compare treatment means using the statistical software Minitab 14 version. Data were presented as means±SD.

Results

Semen diluted with $TSE_{2.5}$ showed the highest sperm motility (30.25±8.45%) at 72 hours of storage (day 3) than those diluted with other concentration the sperm motility in $TSE_{3.75}$, TSE_5 or $TSE_{6.25}$ were 18.00±5.12, 7.17±2.32, and 4.45±1.02%, respectively (Table 1). The decrease on sperm motility occurred in all diluents and observes after 12 hours after storage.

Table 1. Percentage of sperm motility in different soy extract concentration (means±SD)

Storage time (hours)	$TSE_{2.5}$	$TSE_{3.75}$	TSE_5	$TSE_{6.25}$
0	75.00 ± 4.05^{aA}	75.00 ± 4.05^{aA}	74.50 ± 4.11^{aA}	74.25 ± 3.60^{aA}
12	71.37 ± 3.89^{abA}	71.87 ± 2.58^{aA}	69.37 ± 3.19^{aA}	65.25 ± 2.28^{bB}
24	65.63 ± 3.90^{bcA}	62.25 ± 3.50^{bA}	53.01 ± 8.19^{bB}	42.87 ± 4.88^{cC}
36	58.61 ± 5.64^{cA}	50.75 ± 6.16^{cB}	33.50 ± 5.96^{cC}	25.25 ± 2.24^{dD}
48	46.75 ± 6.47^{dA}	32.13 ± 5.69^{dB}	15.90 ± 2.85^{dC}	12.75 ± 2.05^{eC}
60	39.13 ± 8.10^{dA}	24.90 ± 5.40^{eB}	11.15 ± 1.64^{deC}	8.225 ± 0.58^{fC}
72	30.25 ± 8.45^{eA}	18.00 ± 5.12^{fB}	7.17 ± 2.32^{eC}	4.45 ± 1.02^{gC}

Note: different lower case letters in superscript in the same column demonstrate significant differences ($p<0.01$); different capital letters in superscript in the same row demonstrate significant differences ($P<0.01$); $TSE_{2.5}$ = TSE 2.5%; $TSE_{3.75}$ = TSE 3.75%; TSE_5 = TSE 5% and $TSE_{6.25}$ = TSE 6.25%

The semen diluted with 2.5% modified tris soy extract demonstrated the highest sperm motility percentage than those diluted with other tris soy milk concentrations. This fact maybe related with the osmotic pressure of the diluents. The osmotic pressure of 2.5% TSE diluents was 320 mOsmol/kg, while the 3.75%, 5%, and 6.25% of TSE had higher osmotic pressures which were 357, 364 dan 400 mOsmol/kg respectively. The osmotic pressure of FH bull fresh semen was 250-350 mOsmol/kg. Thus, it is not surprising that 2.5% tris soy milk diluents was better than other tris soy concentration. The osmotic pressure of semen extender is important in preserving sperm survival during storage (Soylu *et al.*, 2007).

In general, the percentage of viable sperm in this study showed a similar decrease with the percentage of sperm motility. The percentage of viable sperm was decreased by 3-5% during the first 12 hours of observation; however, there were no significant differences between all four TSE concentrations. At 24, 36,

48 and 72 hours of storage, semen diluted with 3.5% TSE showed the best viable sperm than those diluted with 2.5%, 5% and 6.25% TSE (Table 2).

Table 2. Percentage of viable sperm in different soy extract concentration (means±SD)

Storage time (hours)	$TSE_{2.5}$	$TSE_{3.75}$	TSE_{5}	$TSE_{6.25}$
0	88.72 ± 2.50^{aA}	88.97 ± 2.38^{aA}	89.25 ± 2.54^{aA}	89.22 ± 2.54^{aA}
12	83.96 ± 3.08^{bA}	85.69 ± 1.21^{bA}	85.02 ± 0.90^{bA}	84.01 ± 3.36^{bA}
24	76.29 ± 2.67^{cB}	81.25 ± 1.59^{cA}	79.96 ± 1.52^{cA}	79.29 ± 4.20^{bAB}
36	71.04 ± 3.59^{dB}	76.58 ± 2.48^{dA}	75.66 ± 1.35^{dA}	72.52 ± 4.49^{cAB}
48	66.74 ± 3.18^{eC}	71.82 ± 1.98^{eA}	71.07 ± 1.32^{eAB}	67.44 ± 4.41^{cdBC}
60	62.70 ± 2.64^{fB}	67.52 ± 1.46^{fA}	66.21 ± 2.16^{fAB}	62.42 ± 4.36^{dB}
72	57.29 ± 3.84^{gB}	63.01 ± 1.70^{gA}	60.59 ± 3.49^{gAB}	56.88 ± 3.74^{eB}

Note: lower case letters in superscript in the same column demonstrate significant differences ($p<0.01$); different capital letters in superscript in the same row demonstrate significant differences ($P<0.01$); $TSE_{2.5}$ = TSE 2.5%; $TSE_{3.75}$ = TSE 3.75%; TSE_{5} = TSE 5% and $TSE_{6.25}$ = TSE 6.25%

Base on the result the best concentration of soy extract on the motility was 2.5% in the otherhand 3.75% of soy extract was best for sperm viability in the same storage time. In buck semen the highgest sperm motility and viability were showed by 2.5% soy extract until 72 hours of storage. Although sperm motility is not direcly related to the fertilizing capacity, it is one of the most important factors affecting sperm quality (Oberoi *et al.*, 2014). Base on that statement this research concluded that 2.5% TSE was the best concentration for liquid semen presevation. Future study is needed to add more carbohydrat to improve sperm motility.

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