The 6th ISTAP International Seminar on Tropical Animal Production

“Integrated Approach in Developing Sustainable Tropical Animal Production”

PROCEEDINGS

October 20-22, 2015
Yogyakarta Indonesia

ISBN: 978-979-1215-26-8

Published by:
Faculty of Animal Science, Universitas Gadjah Mada Yogyakarta, Indonesia, 2015
The 6th ISTAP
International Seminar
on Tropical Animal Production

“Integrated Approach in Developing Sustainable Tropical Animal Production”

PROCEEDINGS

October 20-22, 2015
Yogyakarta Indonesia

Published by:
Faculty of Animal Science, Universitas Gadjah Mada Yogyakarta, Indonesia, 2015
Editor-in-Chief
Cuk Tri Noviandi
(Universitas Gadjah Mada, Indonesia)

Editorial Board

Subur Priyono Sasmito Budhi (Universitas Gadjah Mada, Indonesia)
Zaenal Bachruuddin (Universitas Gadjah Mada, Indonesia)
Ristianto Utomo (Universitas Gadjah Mada, Indonesia)
Widodo (Universitas Gadjah Mada, Indonesia)
Soeparno (Universitas Gadjah Mada, Indonesia)
Yuny Erwanto (Universitas Gadjah Mada, Indonesia)
Adiarto (Universitas Gadjah Mada, Indonesia)
Ismaya (Universitas Gadjah Mada, Indonesia)
Tety Hartatik (Universitas Gadjah Mada, Indonesia)
Wihandoyo (Universitas Gadjah Mada, Indonesia)
Endang Baliarti (Universitas Gadjah Mada, Indonesia)
Krishna Agung Santosa (Universitas Gadjah Mada, Indonesia)
Sudi Nurtini (Universitas Gadjah Mada, Indonesia)
Budi Guntoro (Universitas Gadjah Mada, Indonesia)
Nanung Danar Dono (Universitas Gadjah Mada, Indonesia)
Zuprizal (Universitas Gadjah Mada, Indonesia)
Keshav L. Maharjan (Hiroshima University, Japan)
Henning Otte Hansen (University of Copenhagen, Denmark)
Yukinori Yoshimura (Hiroshima University, Japan)
Allen Young (Utah State University, USA)
Yanin Opatpatanakit (Maejo University, Thailand)

Editorial Staff

Rima Amalia EW, Prisilia Putri S, Miftahush S Haq, Septi Mulatmi,
Aditya Alqamal, Riyan Nugroho A, Pradiptya AH, Satyaguna R,
Zefanya AG, Bagas Pamungkas
PREFACE

On behalf of Faculty of Animal Science, Universitas Gadjah Mada, I am pleased to present you the 6th International Seminar on Tropical Animal Production (ISTAP) which is held on October 20 – 22, 2015 at Auditorium drh. Soepardjo, Faculty of Animal Science UGM, Yogyakarta. Under the main theme “Integrated Approach in Developing Sustainable Tropical Animal Production”, we expect that information and ideas on animal production systems in the tropics and its related problems will be shared among participants, thus we can elaborate an integrated approach in developing sustainable tropical animal production. I believe, this can be achieved since more than 250 animal scientists, researchers, students, and producers from more than 15 countries join this seminar.

In this moment, I have to address my great thanks to all people who have contributed for the success of this seminar. First, to all participants, thank you for your contributions, time, and efforts in participating in all sessions in this seminar. We also would like to extend our gratitude to the reviewers and editors for dedicate their expertise and precious time in reviewing and editing the papers. I deeply appreciate the hard work of all members of the Steering Committee, Organizing Committee, and students of Faculty of Animal Science UGM for making this seminar achieved a great success!

I hope all of you enjoy the seminar and Jogja as well!

Dr. Cuk Tri Novianti

Editor in Chief
REPORT FROM ORGANIZING COMMITTEE

Dear all of the scientists, delegates, participants, ladies and gentlemen,

Praise be to The Almighty for His Merciful and Beneficent to raise up this memorable moment for all of the scientists and delegates from all over the world who were interested in Animal Science field to meet up together.

On behalf of all the members of Board Committee, it is my great pleasure and honor to welcome all of you and impress thankful, and present a high appreciation for your participation in joining the 6th ISTAP in Yogyakarta, one of the Special Region in Indonesia where culture and tradition live in harmony with the modern nuance and educational spirit makes it a beautiful venue of this seminar.

During this event, we have distinguished scientists from all over the world to present plenary papers Livestock Management, Production, and Environment; Feed, Land, and Landscape for Sustainable Animal Production; Livestock Industry and Technology; Economics, Social, and Culture in Livestock Development; and Special issue on Halal Food, Safety and Regulation. It is noted that around 200 scientists as well as livestock producers, companies, graduate and postgraduate students from 15 countries attend the seminar; and more than 160 research papers will be presented. We can see great enthusiasm of all the scientists to solve livestock problems as well as to share valuable information and knowledge for human prosperity all over the world.

The 6th ISTAP Program consists of scientific and technical programs as well as social and cultural activities. The scientific and technical programs offer 4 plenary sessions, field trip, and many scientific sessions (both oral and poster presentation). The social and cultural programs of the 6th ISTAP are very important as the scientific and technical programs since the promotion of friendship and future scientific cooperation are also central to this seminar. Opening Ceremony offers you the Seminar Program a glance. Participants will attend a warm invitation from Dean Faculty of Animal Science UGM in a Welcome Dinner that will give you the most memorable moment to attend. Field trip activity offers a wonderful sightseeing to the most spectacular natural landmark in Yogyakarta, Merapi Lava Tour and Ulen Sentalu Museum. We do hope that you will not miss any of these wonderful opportunities.

Closing Ceremony will be held on October 22nd, 2015, immediately after the last session of presentation. The 6th ISTAP award will be announced for some participant as an appreciation for their valuable research.

Finally, on behalf of 6th ISTAP Committee, I wish all of the participants having a great achievement of success and fulfill the expectation as well as enjoying the interaction with all scientists participating in the seminar.

High appreciation I may acknowledge to the Rector of Universitas Gadjah Mada and Dean Faculty of Animal Science UGM, who have concerned to facilitate the seminar site host.

Special thank to the Steering Committee, Scientific Committee, Reviewers and Editorial Boards for their great contribution to make the seminar successfully organized.

Terima kasih (Thank you).

Sincerely Yours,

Prof. I Gede Suparta Budisatria, Ph.D
Chairman
The Organizing Committee of the 6th ISTAP
WELCOME ADDRESS

Selamat pagi (Good morning)

Dear Rector of Universitas Gadjah Mada, all of Invited Speakers, honorable guests, all of delegates, participants, distinguished guests, Ladies and Gentlemen

Attendants of The 6th ISTAP,

It is my great pleasure and honor to extend a warm welcome to all of you at The 6th International Seminar on Tropical Animal Production, which be held on October 20 – 22, 2015 at Auditorium drh. Soepardjo, Universitas Gadjah Mada, Yogyakarta Indonesia. This seminar is proudly organized by Faculty of Animal Science Universitas Gadjah Mada.

The contribution of this seminar to the development of national food security is truly significant for introducing of new scientific knowledge and equipments that is much needed in Indonesia to maintain a safe and secure environment and to look at more effective ways to meet future challenges. We can see great enthusiasm of the entire participant to present their latest research as well as to share valuable information and knowledge for human prosperity all over the world.

In these 3 days of seminar, we have invited some Plenary Speakers and Invited Papers who are qualified as scientists and bureaucrats in animal science field to share their valuable information and knowledge. Other participants can deliver their precious research through oral and poster presentations.

Finally, on behalf of Faculty of Animal Science, we would like to extend our sincere gratitude to the Minister of Rural, Rural Development, and Transmigration, Republic of Indonesia, Mr. Marwan Jafar, for his generosity to be with us here to give Keynote Speech. Then, it is our great honor and pleasure to have qualified scientists and bureaucrats as Plenary Speakers and Invited Papers to share their valuable knowledge during the plenary and concurrent sessions. Moreover, special thank you is for the Steering Committee, Scientific Committee, Reviewers and Editorial Boards for their great contribution to make the seminar a great success. Also, we would like to congratulate and deliver high appreciation to the Organizing Committee as the organizer for their great contribution and generous efforts to make the seminar successfully organized.

And to all of the participants, I hope that this seminar will always success and bring some acknowledgement for all of us. Also, I wish all of the participants having a great achievement of success and fulfill the expectation as well as enjoying the interaction with all participants.

With all of our hospitality, we will try our best to make your brief visit to our country become a wonderful and memorable moments.

We are looking forward to meeting you all in the future event.

Wish you all a very pleasant and most enjoyable stay in Yogyakarta, Indonesia, beside you scientific journeys.

Terima kasih (Thank you).

Sincerely Yours,
Prof. Dr. Ali Agus
Dean Faculty of Animal Science UGM
OPENING REMARKS

Dear all of Scientists, distinguished guests, delegates, participants, Ladies and Gentlemen,

On behalf of Universitas Gadjah Mada, I am happy to welcome you and present a high appreciation for your participation in joining the 6th International Seminar on Tropical Animal Production hosted by the Faculty of Animal Science UGM in Yogyakarta from 20 – 22 October 2015.

Under the theme of “Integrated Approaches in Developing Sustainable Tropical Animal Production”, we do hope that this seminar concludes with shared ideas and best practices, technology, and global networks that are required to increase animal production. The increase of animal production as one source of food is crucial to feed the world given that the population is expected to increase from 6 billion to about 8.3 billion in 2030. According to FAO (2008, 2009), the consumption of animal food increased from 10 kg/per annum in 1960, 26 kg/per annum in 200, and it is expected to be 37 kg/per annum. Animal production is an integral part of food production and contributing for the quality of human food supply. Animal and agricultural production is an important component in the integrated farming systems in developing countries as this produces high quality foods, provides job opportunities in rural areas, as well as enriching livelihood.

As a tropical country with high animal biodiversity, Indonesia and other tropical countries, have a variety number of indigenous and local animal genetic resources and germ plasm. This variety of animal germ plasm could be explored and developed not only for animal and food production but also for animal conservation. Apart from being exploited as food resources, it is therefore important to consider animal conservation. Conservation will protect the genetic potency of local bred and their family, and the domesticated animal bred, and this would secure our future food resources.

In these 3 days of seminar, we believe those aforementioned issues will be discussed, and technical solution as well as recommendation will be provided to solve the existing problems in tropical animal production.

Finally, on behalf of Universitas Gadjah Mada, we would like to congratulate and thanks to the Faculty of Animal Science UGM as the organizer for their great efforts to make the seminar successfully organized. To all of participants, I wish all of you have a great discussion and interaction with other scientists participating in the seminar as well as enjoying your time in Yogyakarta.

Thank you

Prof. Ir. Dwikorita Karnawati, M.Sc., Ph.D.
Rector of Universitas Gadjah Mada
LIST OF CONTENTS

PREFACE ....................................................................................................................................iii
REPORT FROM ORGANIZING COMMITTEE.................................................................iv
WELCOME ADDRESS .................................................................................................v
OPENING REMARKS .................................................................................................vi
LIST OF CONTENTS ......................................................................................................vii

PLENARY SESSION

1. Strategies to Increase the Domestic Production of Raw Milk in Indonesia and Other South East Asian Countries
   John Moran and Phillip Morey .................................................................................1-11

2. Nutritional Challenges of Lactating Dairy Cattle in a Tropical Climate
   J. K. Bernard ..............................................................................................................12-17

3. Feed, Land, and Landscape for Sustainable Animal Production
   Shaukat A. Abdulrazak a and Isaac M. Osugab .........................................................18-18

4. Food Safety Regulation and Halal Food Issues in Indonesia
   Roy Sparringa ...........................................................................................................19-19

5. Extension System for Livestock Development in Developing Countries:
   Knowledge Management Application
   Budi Guntoro ...........................................................................................................20-27

6. Structural Development of Livestock Farms in a Global Perspective
   Henning Otte Hansen ..............................................................................................28-50

7. Whole Farm Problems with Heat Stress – It’s Not Just for Lactating Dairy Cows
   Allen Young .............................................................................................................51-57

LEAD PAPER

1. Antimicrobial Peptides Expression for Defense System in Chicken Gastrointestinal and Reproductive Organs
   Yukinori Yoshimura, Bambang Ariyadi, and Naoki Isobe ........................................58-60

2. Improving Technology Adoption and Sustainability of Programs to Increase Bali Cattle Productivity in West Nusa Tenggara Province, Indonesia
   Yusuf A. Sutaryono, T. Panjaitan, and Dahanuddin .............................................61-66

3. The Role of Family Poultry Systems in Tropical Countries
   Yusuf L. Henuk, Monchai Duangjinda, and Chris A. Bailey ....................................67-71
SUPPORTING PAPERS

Part I

Animal Feed and Nutrition

1. NM-03-P The Marl and Kaolin in Broiler Diet: Effects on the Bone Weight and the Cutting Yield
   D. Ouachem, A. Meredef, and N. Kaboul..............................................72-75

2. NM-04-P The Effect of Liquid Nanocapsule Level on Broiler Fat Quality
   Andri Kusmayadi, Zuprizal, Supadmo, Nanung Danar Dono, Tri Yuwanta, Ari Kusuma Wati, Ronny Martien, Sundari..................76-79

3. NM-05-O Production and Egg Quality of Quail Layer Given Diets Containing Different Levels of Crab (Portunus pelagicus) by-Product Meal
   K.G. Wiryawan, Syamsuhaidi, D.K. Purnamasari, and T.S. Binetra.................................................................80-84

4. NM-08-P A Preliminary Study on the Use of Enzyme and Organic Acids in Rice Bran-containing Diet at Two Levels of Dietary Protein for Rabbit
   Tuti Haryati and Yono C. Raharjo..............................................................85-89

5. NM-09-O Efficacy of Toxin Binder in Reducing Induced Aflatoxin B and Ochratoxin A in Broiler Feed
   Anjum Khalique, Muhammad Umer Zahid, Jibran Hussain, Zahid Rasool.................................................................90-93

6. NM-10-O Evaluation of Local Feed in Broiler Diets in Small Scale Farm in Palu Central Sulawesi

7. NM-11-O Digestibility and Nutritional Value of Gedi (Abelmoschus manihot (L.) Medik) Leaves Meal in the Diet of Broilers
   Jet Saartje Mandey, Hendrawan Soetanto, Osfar Sjofjan, Bernat Tulung.................................................................100-104

8. NM-12-O Utilization of Skipjack Tuna (Katsuwowus pelamis L.) Gill in Diet as a Source of Protein on Carcass Quality of Broiler Chickens
   Jein Rinny Leke, Jet S. Mandey, Meity Sompie, Fenny R. Wolayan.................................................................105-109

9. NM-13-O The Dynamics of Indigenous Probiotics Lactic Acid Bacteria on Growth Performance, Total Adherence Bacteria, and Short-Chain Fatty Acids Production in the Ileum of Male Quail
   Sri Harimurti, Sri Sudaryati and Bambang Ariyadi..........................110-110
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Selection of Human-origin Lactobacillus Strains as Probiotics with Capability in Synthesizing Conjugated Linoleic Acid and Alleviating Hyperglycemia in Rats (Rattus norvegicus) in Vivo</td>
<td>Widodo, Pradipta Ayu Harsita, Samuel Aditya, Nosa Septiana Anindita, Tutik Dwi Wahyuningsih and Arief Nurrochmad</td>
<td>111-116</td>
</tr>
<tr>
<td>13.</td>
<td>The Influence of Vitamin D3 Levels on Diets with Phytase on Production Performance of Layer Quail (Coturnix coturnix japonica)</td>
<td>Adi Magna Patriadi Nuhriawangsa, Adi Ratriyanto, Winny Swastike, Rysca Indreswari, Ahmad Pramono and Try Haryanto</td>
<td>123-126</td>
</tr>
<tr>
<td>15.</td>
<td>The Effect of Dietary Calcium and Phosphorus Level on Serum Mineral Contents of the Bantul Local Duck within a Day</td>
<td>H. Sasongko, T. Yuwanta, Zuprizal, Supadmo, and I. Widiyono</td>
<td>132-132</td>
</tr>
<tr>
<td>16.</td>
<td>Suplementation Local Feed Urea Gula Air Multinutrient Block and Different Levels of Sulphur for Increase Lactation Productivity Doe Also Decrease Kid Mortality Bligon Goat Grazed at Timor Savannah</td>
<td>Arnold E. Manu, Yusuf L. Henuk, H.L.L.Belli, M.M. Kleden</td>
<td>133-137</td>
</tr>
<tr>
<td>18.</td>
<td>Body Weight Gain Response of Sumba Ongole Cattle to the Improvement of Feed Quality in East Sumba District, East Nusa Tenggara, Indonesia</td>
<td>Debora Kana Hau and Jacob Nulik</td>
<td>143-146</td>
</tr>
</tbody>
</table>
19. NR-05-O Daily Body Weight Gain of Bali Cattle Fed with Leucaena Leucocephala as the Main Ration in West Timor, East Nusa Tenggara, Indonesia
Jacob Nulik and Debora Kana Hau..............................................................147-150

20. NR-06-O Tannin Anthelmintic Doses, Metabolizable Energy and Undegraded Protein Contents of Rubber Leaves (Hevea brasiliensis) as Herbal Nutrition for Goats
Sri Wigati, Maksudi Maksudi, Abdul Latief and Eko Wiyanto ..151-155

21. NR-07-P Consumption and Digestibility of Nutrients in Bali Cattle at the Last Period of Pregnancy Kept under Semi Intensive System Supplemented with Nutritive Rich Feed Contained Lemuru Oil and Zinc
Erna Hartati, E.D. Sulistijo, A. Saleh..........................................................156-160

22. NR-08-P Preliminary Screening for Anthelmintic Potential of Sesbania grandiflora Leaves for Parasitic Infected Goats in Short-Term Trial
Mohd Azrul Lokman, Kanokporn Phetdee, Sathaporn Jittapalapong and Somkiert Prasanpanich.........................................................161-165

23. NR-09-O The Effect of Urea Treated Straws and Urea-Molasses Feed Blocks (UMB) on Reproductive Performance of Libyan Barbary Sheep
Mabruk, H.S., H. A. Salim, A. E. Benshaban, A.E. Ahtash, H.E.Daeky and Z.N. Elmeshabic.........................................................166-172


25. NR-11-O Chemical Composition, Antioxidant Compounds and Antioxidant Capacity of Ensiled Coffee Pulp

26. NR-12-O Influence of Starch Type as Substrate Material in Dry Lactic Acid Bacteria Inoculant Preparation on Fermentation Quality and Nutrient Digestibility of King Grass Silage
B. Santoso, B. Tj. Hariadi and Jeni.........................................................182-186

27. NR-13-O Responses of Growing-Female Crossbred Ettawa Goats Fed Concentrates Containing by product of Traditional Fried Snack Industry with Different Levels of Urea
A.R. S. Asih, K G. Wiryawan, I. N. Sadia, and Kertanegara........187-190
<table>
<thead>
<tr>
<th>No.</th>
<th>NR</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.</td>
<td>NR-14-O</td>
<td>Restriction Feed and Refeeding Evaluation for Consumption, Feed Cost, Income Over Feed Cost, Percentage of Carcass and Meat Quality Kacang Goat</td>
<td>Bambang Suwignyo, Miftahush Shirothul Haq, Setiyono, and Edi Suryanto</td>
<td>191-197</td>
</tr>
<tr>
<td>31.</td>
<td>NR-17-P</td>
<td>Effect of Choline Chloride Supplementation on Productive Performance of Ettawa Crossbred Goats</td>
<td>Supriyati Kompiang, I Gusti Made Budiarsana, Rantan Krisnan, Lisa Praharani</td>
<td>208-212</td>
</tr>
<tr>
<td>32.</td>
<td>NR-18-O</td>
<td>Body Weight Gain of Donggala Bull Given Supplement Feed on Basis of Cocoa Pod Husks Fermentation</td>
<td>F.F. Munier, Mardiana Dewi, and Soeharsono</td>
<td>213-217</td>
</tr>
<tr>
<td>33.</td>
<td>NR-19-O</td>
<td>Influence of Cellulolytic Bacteria from Rumen Fluid on In Vitro Gas Production of Robusta Coffee Pulp (Coffea canephora Sp.) Fermented</td>
<td>Chusnul Hanim, Lies Mira Yusiatyi, and Fahriza Anjaya Jazim</td>
<td>218-222</td>
</tr>
<tr>
<td>34.</td>
<td>NR-20-P</td>
<td>Growth and Productivity of Brachiaria brizantha cv MG 5 under the effect of different dose of NPK fertilization</td>
<td>Nafiatul Umami, Meita Puspa Dewi, Bambang Suhartanto, Cuk Tri Noviandi, Bambang Suwignyo, Nilo Suseno, Genki Ishigaki, Ryo Akashi</td>
<td>223-227</td>
</tr>
<tr>
<td>35.</td>
<td>NR-21-O</td>
<td>Indigofera Sp as a Source of Protein in Forages for Kacang Goat in Lactation and Weaning Period</td>
<td>A. Nurhayu and Andi Baso Lompengeng Ishak</td>
<td>228-232</td>
</tr>
<tr>
<td>36.</td>
<td>NR-22-O</td>
<td>Supplementing Energy and Protein at Different Degradability to Basal Diet on Total Protozoa and Microbial Biomass Protein Content of Ongole Grades Cattle</td>
<td>Dicky Pamungkas, R. Utomo, dan M. Winugroho</td>
<td>233-237</td>
</tr>
<tr>
<td>37.</td>
<td>NR-24-O</td>
<td>Nutritive Evaluation of Pineapple Peel Fermented by Cellulolytic Microbe and Lactic Acid Bacteria by In Vitro Gas Production Technique</td>
<td>Lies Mira Yusiatyi, Chusnul Hanim and Caecilia Siska Setyawati</td>
<td>238-242</td>
</tr>
</tbody>
</table>
38. NR-25-O The Supplementation of ZnSO₄ and Zn-Cu Isoleusinate in the Local Feed Based at Last Gestation Period on Dry Matter Consumption and Digestibility and Calf Birth Weight of Bali Cattle
   FMS Telupere, E Hartati, and A. Saleh.................................243-247

39. NR-26-P Local Micro Organisms (LOM) as an Activator to Enhance the Quality of Various Plant Waste as Feed
   Andi Ella, A. Nurhayu and A. B. Lompengeng Ishak...................248-251

40. NR-27-O Organic Acid and Inhibition of Complete Silage Ration on the Growth of Salmonella enteritiidis
   Allaily, Nahrowi, M. Ridla, M. Aman Yaman............................252-256

41. NR-28-O The utilization of some feed supplement by using or without molasses on local male sheep on fermentation results in rumen liquid, daily live weight gain, production, C/N ratio and water content of feces
   Suharyono, Teguh Wahyono, C. Ellen. K and Asih Kurniawati..............................257-260

42. NR-29-O Evaluation of Albizia chinensis as Tannins Source for in Vitro Methane Production Inhibitor Agents Sheep Rumen Liquor
   Anas, M. A., Yusati, L. M., Kurniawati, A., Hanim, C.............261-265

43. NR-30-O Growth and Productivity of Sorghum Bicolor (L.) Moench in Merapi Eruption Soil with Organic Fertilizer Addition
   Suwignyo, B, B. Suhartanto, G. Pawening, B.W.Pratomo...........266-270

44. NR-31-P Quality and Storability of Pelleted Cassava (Manihot utilisima) Leaves var. Bitter
   Ristianto Utomo, Subur Priyono Sasmito Budhi, Cuk Tri Noviandi, Ali Agus, and Fidrais Hanafi.................................271-274

45. NR-32-O Biomass Production of Pueraria javanica Using Rhizobium Inoculant and Urine Bali Cattle in East Borneo
   Ida Ketut Mudhita, Nafialatul Umami, Subur Priyono Sasmito Budhi and Endang Baliarti................................................275-280

46. NR-33-P The Effect of Using Different Sources of Carbohydrates to Feed Efficiency on Indigenous Thin Tailed Male Lamb
   Muktiani, A, A. Purnomoadi, E. Prayitno..............................281-285

47. NR-35-O Substitution of Concentrate by Protein Source Forage for Growing Heifer of Friesian Holstein (FH)
   Y. Widiawati and M. Winugroho...........................................286-290

48. NR-38-O The Use of Tricoderma sp. as a Starter of Fermentation Dry Teak Leaves (Tectona grandis) as Animal Feed
   Yunianta and Hartatik.........................................................291-295
49. NR-39-P  Nutritive Values of Rice Straw Fermentation Used Carbon Sources on Different Level With Various of Inoculant Levels *Aspergillus niger* and *Lactobacillus plantarum*  
R. Agus Tri Widodo Saputro, Nono Ngadiyono, Lies Mira Yusiati, I Gede Suparta Budisatria ............................................................... 296-300

50. NR-40-O  The Fat Protective Effect of Fish Oil, Sunflower Seed Oil and Corn Oil on Fluid Rumen Fermentation Parameters  
Agustinah Setyaningrum, Soeparno, Lies Mira Yusiati and Kustantinah .................................................................................. 301-305

51. NR-41-O  The Effect of Supplementation of Gliricidia or Rice Bran on Liveweight Gain, Feed Intake and Digestibility of Kacang Goat Fed Mulato Grass  
Marsetyo, Damry and Mustaring .................................................. 306-310

52. NR-42-P  In Sacco Feeding Value of Multi-Stage Ammoniated Palm Press Fiber  
Armina Fariani, Arfan Abrar and Gatot Muslim .................................... 311-311

53. NR-43-O  Alternative Rations to Maintain High Growth Rate of Bali Bulls Fattened with *Leucaena* Based Diet in Sumbawa, Eastern Indonesia  
T. S. Panjaitan .................................................................................. 312-315

54. NR-44-O  The Use of Ramie By-Product (*Boehmeria nivea*) Materials as Complete Feed on the Growth and Hematology of Weaning Ettawa Cross Breed Goat  
Emmy Susanti, Ali Agus, Y. Y. Suranindyah, and F. M. Suhartati .................................................................................. 316-320

55. NR-45-O  Study on Complete Feed Fermentation of Agricultural By-Product on Performance Etawah Goat  
Yusdar Zakaria, Yurliasm, Cut Intan Novita ........................................ 321-325

56. NR-46-P  Carcass Production and Component of Lamb Provided Metanogenic Inhibitor Feed  

### Small Ruminant, Beef Cattle, Animal Draught and Companion Animal

57. PPO-01-O  Correlation between the Slaughter Weight, Carcass Weight, with Body Measurements of Cattle in Kebumen, Central Java  
Setiyono, Suharjono Triatmojo, Trisakti Haryadi, Dino Eka Putra  .................................................................................. 331-334

58. PPO-02-O  Production of Stingless Bees (*Trigona sp.*) Propolis in Various Bee Hives Design  
Agus salim, Nafiatul Umami, Erwan ............................................... 335-338
<table>
<thead>
<tr>
<th>59.</th>
<th>PPO-03-P</th>
<th>Morphological Characteristics and Performance Boerawa Goat in Tanggamus District Lampung Province</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Kusuma Adhianto and M. Dima Iqbal Hamdani</strong>........................................................................</td>
</tr>
<tr>
<td>60.</td>
<td>PPO-04-P</td>
<td>Growth, Carcass Production and Meat Quality of Ongole Grade Cattle, Simmental Ongole Crossbred Cattle and Brahman Cross</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>N. Ngadiyono, Soeparno, Panjono, Setiyono and I. Akhmadi</strong>..................................................</td>
</tr>
<tr>
<td>61.</td>
<td>PPO-06-O</td>
<td>Growth and Rumen Environment of Pre-weaning Bali Calves Offered Different Forage Based Calf Supplements</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>IGN Jelantik, ML Mullik, TT Nikolaus, T Dami Dato, IG Mahardika, NP Suwiti, C Leo Penu, J. Jeremias, A. Tabun</strong></td>
</tr>
<tr>
<td>62.</td>
<td>PPO-07-P</td>
<td>Waste Utilization to Increase Productivity Growth Bali Cattle and Coffee Plants</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>I Nyoman Suyasa and IAP Parwati</strong>..........................................................................................</td>
</tr>
<tr>
<td>63.</td>
<td>PPO-08-O</td>
<td>Effect of Different Lands on Heat Tolerance Coefficient and Body Weight Gain of Ram Fat Tailed Sheep</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rachmawati, A., H. Nugroho and E. Y. Wanto</strong>.........................................................................</td>
</tr>
<tr>
<td>64.</td>
<td>PPO-09-O</td>
<td>The Effects of Hair Colors Differences on the Performance of Etawah Grade Doe</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>I Gede Suparta Budisatria, Panjono, Dyah Maharani</strong>..............................................................</td>
</tr>
<tr>
<td>65.</td>
<td>PPO-10-P</td>
<td>Age and Body Weight at Puberty and Service per Conception of Ongole Crossbred Heifer on Smallholder Farming System</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Endang Baliarti, Bayu Andri Atmoko, Febri Aryanti, Nono Ngadiyono, I Gede Suparta Budisatria, Panjono, Tri Satya Mastuti Widi, M. Danang Eko Yulianto, Sigit Bintara</strong></td>
</tr>
<tr>
<td>66.</td>
<td>PPO-11-O</td>
<td>Performance of Three Breeds of Sudanese Cattle</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Hassan Ishag Hassan Haren and Hatim Idris</strong>...........................................................................</td>
</tr>
</tbody>
</table>

**Poultry Science**

| 67. | PU-01-P | Biosecurity Measurements in Poultry Farming System in Kuwait |
|      |         | **A.A. Alsaffar**.......................................................................................................................| 374-376 |
| 68. | PU-03-O | Effect of Mating and Polymorphism Insulin Like Growth Factor Binding Protein 2 Gene on Body Weight and Heritability of Kampung Chicken |
|      |         | **Sri Sudaryati, J.H.P. Sidadolog, Wihandoyo, W.T. Artama**.................................................| 377-381 |
| 69. | PU-05-O | The Residue Profile of Ciprofloxacin in Broiler Muscle and Liver |
|      |         | **Agustina Dwi Wijayanti, Ambarwati, Wa Ode Sitti Falah Ramli**............................................| 382-386 |
70. PU-06-O  Selection for 10 Weeks Old Body-Weight on Sentul Chicken  
**Sofjan Iskandar and Tike Sartika** .................................................................387-390

71. PU-07-O  Analysis of Reproductive Potential and Hatchability of Naked Neck and Normal Hens  
**Jafendi H.P. Sidadolog, Tri Yuwanta, Wihandoyo, Sri Harimurti, Sri Sudaryati, Heru Sasongko and Bambang Ariyadi** ........................................391-396

72. PU-08-O  Localization and Molecular Size of Mucin2 Glycoproteins Forming the Gut Mucosal Barrier in the Indonesian Indigenous Naked Neck and Normal Feathered Chickens  
**B. Ariyadi, J. H.P. Sidadolog, S. Harimurti, S. Sudaryati, and Wihandoyo** ...........................................................................................................397-400

**Dairy Science and Industry**

73. PPP-01-P  Milk Quality Of Anglo Nubian X Etawah Grade Goats And Saanen X Etawah Grade Goats At First Kidding Period  
**Lisa Praharani, Supryati, and Rantan Krisnan** ........................................401-405

74. PPP-02-O  Performance of Dairy Cattle with Supplementation of Rumensin, Garlic Husk (*Allium sativum*) and Organic Minerals in Ration  
**Caribu Hadi Prayitno, Suwarno, and Afifah Noor Hidayah** ............406-409

75. PPP-04-O  Trends of Dairy Population and Milk Production in Boyolali, Central Java, Indonesia  
**N. Hidayah, B. Guntoro, E. Sulastri, Y. Y. Suranindyah** ..................410-414

76. PPP-05-O  Changes in Pathogen Number during Preservation of Milk Derived from Mastitic Dairy Cows  
**N. Isobe, K. Hisaeda, T. Koshiishi, M. Watanabe, H. Miyake, Y. Yoshimura** ..........................................................415-417

77. PPP-06-P  Diacylglycerol Acyltransferase1 (DGAT1) Gene Polymorphism in New Zealand Holstein Friesian Cattle under Dairy Breeding Station and Its Correlation with Milk Quality  
**SA. Asmarasari, C. Sumantri, IW Mathius, A. Anggraeni** ..............418-422

8. PPP-07-O  Reaction of Cathelicidin-2 secreted from goats milk leukocytes to lipopolysaccharide  
**Moemi Nishikawa, Yukinori Yoshimura, and Naoki Isobe** ..........423-425
## PART II

### Animal Breeding and Reproduction

<table>
<thead>
<tr>
<th>No.</th>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>79.</td>
<td>PPE-01-P</td>
<td>Identification of Pure Breed Bali Cattle by Using Molecular Approach</td>
<td>Endang Tri Margawati, Indriawati, Slamet Diah Volkandari and Muhammad Ridwan</td>
<td>426-431</td>
</tr>
<tr>
<td>80.</td>
<td>PPE-02-P</td>
<td>Milk Transmitting Ability of Saanen Bucks under Intensive Management</td>
<td>Anneke Anggraeni</td>
<td>432-436</td>
</tr>
<tr>
<td>81.</td>
<td>PPE-03-O</td>
<td>Genetic Markers of Twinning Births of Local Beef Cattle and Its Crossbreds in Indonesian</td>
<td>A. Anggraeni, S. A. Asmarasari, H. Hasinah, C. Talib and B. Tiesnamurti</td>
<td>437-441</td>
</tr>
<tr>
<td>82.</td>
<td>PPE-04-P</td>
<td>Association of Prolactin Gene with Egg Production in PMp Ducks</td>
<td>T. Susanti and I. P. Sari</td>
<td>442-446</td>
</tr>
<tr>
<td>84.</td>
<td>PPE-08-P</td>
<td>Genotypic Profile of Ettawa Grade Goat with Different Head and Neck Color Based on MC1R Gene</td>
<td>Dyah Maharani, I Gede Suparta Budisatria, Panjono, Tety Hartatik and Slamet Diah Volkandari</td>
<td>448-451</td>
</tr>
<tr>
<td>85.</td>
<td>PPE-09-O</td>
<td>Polymorphism of Promoter Prolactine Gene and Its Association with Egg Production of Selected Indonesian Kampung Chicken (KUB)</td>
<td>Tike Sartika</td>
<td>452-452</td>
</tr>
<tr>
<td>86.</td>
<td>PPE-10-O</td>
<td>Qualitative And Quantitative Traits of Kokok Balenggek Chicken, the Rare Indigenous Chicken in West Sumatera</td>
<td>Firda Arlina, Hafil Abbas, Sarbaini Anwar, Jamsari</td>
<td>453-457</td>
</tr>
<tr>
<td>87.</td>
<td>PPE-11-O</td>
<td>Phenotype Measurements of Bali Cattle Combined with Interviews of Farmers from Multiple Locations in Indonesia as a Resource for Development of Breeding Programs</td>
<td>Ann Eriksson, Endang Tri Margawati, Indriawati, Ronny Rachman Noor, Goran Andersson, Emma M Svensson</td>
<td>458-462</td>
</tr>
<tr>
<td>88.</td>
<td>PPE-12-O</td>
<td>Investigating the genetic status of Bali cattle in Indonesia using large scale genotyping</td>
<td>Emma Svensson, Ann Eriksson, Ida Clemensson Lindell, Endang Tri Margawati, Rere Indriawati, Ronny Rachman Noor and Göran Andersson</td>
<td>463-463</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
| 89. | PPE-14-P | Genetic Variation and Phylogenetic Tree of Indonesian domestic Goat  
Tety Hartatik, Kustantinah, Ristianto Utomo and Lies Mira Yusiati | 464-469 |
| 90. | PRP-01-O | Identification of GH|Alu-I Gene Polymorphisms in Indonesian Simeulue Buffalo  
| 91. | PRP-02-O | Reproduction Performance of Bali Cow at Three Areas of Bali Province  
Andoyo Supriyantono | 475-479 |
| 92. | PRP-03-O | Blood Lipid Profile of Hypercholesterolemia Rattus norvegicus L. Fed with Sausages Containing Omega 3 and Omega 6 Fatty Acids  
Rio Olympias Sujarwanta, Edi Suryanto, Setiyono, Supadmo, Rusman, Jamhari, Yuny Erwanto | 480-484 |
| 93. | PRP-04-O | The Effect of Kayu Akway (Drymis sp) Extract on The Number of Leukocyte of The Male Mice (Mus musculus L)  
Purwaningsih, Angelina N. Tethool | 485-488 |
| 94. | PRP-05-O | In Vitro Maturation Rate of Bligon Goat Oocytes Supplemented with Gonadotrophin  
Diah Tri Widayati and Mulyoto Pangestu | 489-493 |
| 95. | PRP-06-P | A Preliminary Study of the Use of Hormones on the Reproductive Performance of some Breeds of Rabbits  
Bayu D. P. Soewandi and Yono C. Raharjo | 494-497 |
| 96. | PRP-08-P | The use of vaginal smear method based on the morphology of the vaginal mucosa epithelial cells for the dairy cows cycle estrus detection  
Riyanto, J., Sunarto, S. D. Widyawati and Lutojo | 498-501 |
| 97. | PRP-09-P | Optimization of Bovine Sperm Sexing: Modification of Column Length and Separation Time  
Riasari Gail Sianturi and D.A. Kusumaningrum | 502-506 |
| 98. | PRP-10-O | The Detailed Motility and Velocity Characteristics of Rams Spermatozoa as Assessed by Computer-Aided Semen Analysis  
Ismaya | 507-511 |
| 99. | PRP-11-O | The Effect of Trehalose Level In Tris-based Medium On Sperm Membrane Integrity of Boer Goat Semen After Cooling  
Nurul Isnaini, Trinil Susilawati and Luqman Hakim | 512-514 |
<table>
<thead>
<tr>
<th>No.</th>
<th>PRP</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.</td>
<td>PRP-12-O</td>
<td>Reproductive Efficiency Of Filial Ongole (Po), Limousin And Simmental Crossbred Cattle At Situbondo District</td>
<td>Kuswati, Doni sonta, Sri Wahyuningsih, Trinil Susilawati and Aulia Puspita Anugra Yekti</td>
<td>515-520</td>
</tr>
<tr>
<td>101.</td>
<td>PRP-13-O</td>
<td>Reproductive Performances of Ongole Crossbred Cattle Using Artificial Insemination Sexed Semen with Different Methods</td>
<td>Trinil Susilawati, Lieyo Wahyudi, Nurul Isnaini and Aulia</td>
<td>521-525</td>
</tr>
<tr>
<td>102.</td>
<td>PRP-14-P</td>
<td>Physiology and Reproduction Responses of Crossing Beef Cows</td>
<td>Aryogi and Y. Adinata</td>
<td>526-531</td>
</tr>
<tr>
<td>103.</td>
<td>PRP-16-O</td>
<td>Supplementation of Cysteine on Plasma Membrane Integrity of Buck Spermatozoa</td>
<td>Sri Wahjuningsih, Nuryadi and Achadiah Rachmawati</td>
<td>532-535</td>
</tr>
<tr>
<td>104.</td>
<td>PRP-17-P</td>
<td>Estrous Behavior in the Thoroughbred-Indonesian Local Crossbred Mares</td>
<td>Muhammad Danang Eko Yulianto, Bambang Purwantara, Amrozi</td>
<td>536-540</td>
</tr>
<tr>
<td>106.</td>
<td>PRP-21-P</td>
<td>Sperm Quality of Gembrong Goat In Bali, East Java and North Sumatera After Extended With Citrate-egg Yolk, Tris-egg Yolk and Andromed®</td>
<td>Sigit Bintara, Dyah Maharani, I Gede Suparta, Jafendi H, Sumadi, Simon Eleuser, Aron Batubara</td>
<td>546-549</td>
</tr>
<tr>
<td>109.</td>
<td>PRP-24-P</td>
<td>Effect of Doe Blood Serum Supplementation to Buck Semen on the Head to Head Agglutination Test</td>
<td>Hassan Ishag Haren, Mohamed Abd Elmoneim Salih, Abdel Aziz Makkawi and Hatim Idris</td>
<td>557-561</td>
</tr>
</tbody>
</table>
# Agribusiness and Livestock Socioeconomics

<table>
<thead>
<tr>
<th>No.</th>
<th>Code</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>SA-02-P</td>
<td>The Sustainability of Community Development in Area Pig Farming with Serasah System Based on Spiritual and Cultural Aspect</td>
<td>Suci Paramitasari Syahlani, F. Trisakti Haryadi, and Yans Pangerungan</td>
<td>566-570</td>
</tr>
<tr>
<td>12</td>
<td>SA-03-O</td>
<td>Exploration of Potential Regional Resources for Beef Cattle Farming Development in Java, Indonesia</td>
<td>Rini Widiati, Tri Anggraeni Kusumastuti, Mujtahidah Anggriani Ummul Muzayanah</td>
<td>571-576</td>
</tr>
<tr>
<td>15</td>
<td>SA-06-P</td>
<td>Economic Analysis of the Effects of Conservation Land to Provide Feed in Dry Land Farming on the Island East</td>
<td>Helena Dasilva and Sophia Ratnawaty</td>
<td>586-595</td>
</tr>
<tr>
<td>16</td>
<td>SA-08-O</td>
<td>Analysis of Champion of Milk Cluster Industry in The Province of Central Java-Indonesia</td>
<td>Tridjoko W. Murti, Adiarto, Soedjatmogo, B. Purbaya and R. Kawuri</td>
<td>596-600</td>
</tr>
<tr>
<td>17</td>
<td>SA-10-O</td>
<td>Small Scale Livestock Farmers’ Disincentives for Animal Disease Prevention and How Incentives Can Be Improved: A Case of Uganda</td>
<td>Juliet Biira</td>
<td>601-605</td>
</tr>
<tr>
<td>18</td>
<td>SA-11-O</td>
<td>Production Cost Evaluation and Effect of Lactic Acid Bacteria ((Lactobacillus Plantarum)) as Starter with Different Molasses Addition</td>
<td>Zaenal Bachruddin, Mujtahidah Anggriani and Afif Fakhruddin</td>
<td>606-609</td>
</tr>
<tr>
<td>19</td>
<td>SA-12-P</td>
<td>Livestock Commodities Income Contribution of Farming in the Village of Catur, Kintamani, Bangli</td>
<td>Ida Ayu Putu Parvati and Nyoman Suyasa</td>
<td>610-614</td>
</tr>
</tbody>
</table>
120. **SA-13-O**
Assessment of the Calorie-Protein Consumption Pattern among Rural and Low-Income Urban Households in Indonesia

*Mujtahidah Anggriani Ummul Muzayyanah, Sudi Nurtini, Suci Paramitasari Syahlani* .......................... 615-618

121. **SA-14-O**
Constraints of Value Chain in Dairy Industry in Central Java

*Budi Guntoro, Rochijan, Budi Prasetyo Widyobroto, Indratiningsih, Nafiatul Umami, Sudi Nurtini, and Ambar Pertiwiningrum* .......................................................... 619-623

122. **SK-02-O**
The Agricultural Technology Transfer Agencies Role on Transferring the Biogas Technology to Farmers: A Study Case of Dairy Farmer’s Network Analysis in Umbulharjo Village, Yogyakarta Province, Indonesia

*R. Ahmad Romadhoni Surva Putra* .......................................................................................... 624-628

123. **SK-03-O**
Combined Effect of Message Framing and Endorser Credibility to Buying Interest of Yoghurt Product

*Tian Jihadhan, Suci Paramitasari Syahlani, F. Trisakti H* .............................................. 629-633

124. **SK-04-O**
The Alternative Livestock and Sustainability of Farmers in Mexico

*Ricardo E. Caicedo Rivas, A. Moreno Oceguera, A. de M. Parra Gallegos and M. Paz Calderón Nieto* .......................................................... 634-637

125. **SK-05-P**
Farmers’ Perception of Etawah Grade Goat Productivity Based on the Hair Color Differences

*I Gede Suparta Budisatria, Panjono, Dyah Maharani* .................................................. 638-642

126. **SK-06-O**
Regional Development for Beef Cattle Farming based on Agricultural by Product in Serdang Bedagai District, North Sumatra Province, Indonesia

*Tri Hesti Wahyuni, Sya’ad Afifuddin, Ma’ruf Tafsin and Rahmanta Ginting* .................................................. 643-650

127. **SK-07-O**
Farmers Motivation in Exerting Dairy Goats at the Slope Area of Merapi Volcano

*Trisakti Haryadi F., Kustantinah, Tommy Andjar C.K* .............................................. 651-654

128. **SK-08-O**
Enhancing Farmer’s Creativity in Dairy Goat Farming (A Case Study in Banyumas District)

*Moch. Sugiarito* ........................................................................................................ 655-658

129. **SK-10-O**
Utilization of Communication Media in the Process of Extension to Develop Farm Business at Minahasa District North Sulawesi Province

*Anneke K. Rintjap, Jolanda K.J. Kalangi, Maasye T. Massie* .............................................. 659-663

130. **SK-11-O**
The Influence of Dairy Farming Motivation on Dairy Cows Productivity in Different Disaster Prone Areas of Merapi Volcano

*S. Andarwati, F. Trisakti Haryadi, B. Guntoro, E. Sulastrî* .............................................. 664-667
131. SK-12-P Potential and Opportunities of Livestock Development in 24 Locations
PSDSK Assistance of BPTP Support for Food Security
Titim Rahmawati and Yoshi Tri Sulistyaningsih......................... 668-672

132. SK-13-O Cattle Farmer’s Characteristics In West Timor (Case Study on Nekmese Farmers Group, Usapinonot, North Central Timor, Nusa Tenggara Timur)
Paulus Klau Tahuk., Endang Baliarti., Subur Priyono Sasmito Budhi and Panjono.................................................. 673-677

133. SK-15-P Estimation of the Peranakan Ongole Cattle Output in Klirong, Kebumen, Central of Java

Animal Products Technology

134. TD-01-O Effects of Hibiscus sabdariffa and Schleichera oleosa Liquid Smoke on Lipid Content, Lipid Oxidation and Residual Nitrite in Se‘i (Rotenese Smoked Beef)
Gemini E.M. Malelak, I.G.N. Jelantik, Maria R. Denoratu, Geertruida M Sipahelut, I.G.N. Jelantik................................. 683-687

135. TD-02-O Chemical Composition and Antioxidative Potential of Chicken Sausage with Substitution of Tempe Jamhari, Yuny Erwanto, Listia Kusumasari Nurhanifah......... 688-692

136. TD-04-O In Vitro Antioxidant Activity of Beef Lung Protein Hydrolysates
Khothibul Umam Al Awwaly, Suharjono Triatmojo, Wayan T. Artama, Yuny Erwanto.......................................................... 693-693

137. TD-05-O Carcass Production and Chevon Quality of Kacang Buck Reared Traditionally in Grobogan, Central Java, Indonesia
Retno Adiwinarti, I Gede Suparta Budisatria, Kustantinah, Rusman......................................................... 694-698

138. TD-06-O Fraud Identification in Meatballs Product Using Porcine Detection KIT and Multiplex Polymerase Chain Reaction Methods
Tridjoko Murti, Christina Admantin, Umar Santoso, Dyah Widiasih, Aris Haryanto...................................................... 699-703

139. TD-07-O Identification of Dog Meat Species by Polymerase Chain Reaction (PCR)
Dyah Ayu Widiasih, Cynthia Debbi Ratnasari, Yatri Drastini, Tridjoko Wisnu Murti.............................................................. 704-708

140. TD-08-O Study on the Physico-Chemical Characteristics and Microstructure of Meat from Goat Given Ration Papaya Leaves (Carica papaya L.)
Muh. Ichsan Haris, Soeparno, Umar Santoso, Rusman........... 709-713
141. **TD-09-O** The Effect of Acetic Acid Concentration and Curing Time on the Characteristics of Native Chicken Legs Skin Gelatin
   **Meity Sompie, S. E. Siswosubroto and J. H. W Pontoh**..................714-718

142. **TST-02-O** Antibacterial Activity of Fermented Milk Cultured with Yeast-LAB and Added Sweet Corn Against Pathogenic Bacteria
   **Yurliasni, Yusdar Zakaria, Zuraida Hanum and Sitti Wajizah**......719-723

143. **TST-03-P** Effect of Storage Period Eggs on Egg Quality Characteristics Naked Neck Chicken
   **Tatan Kostaman and Soni Sopiyana**.............................................724-728

144. **TST-04-O** Study The Quality of Multi Probiotic Fermented Milk Made from Cow’s Milk and Goat’s Milk
   **Eni Robiyati, Tridjoko Wisnu Murti, Harisuddin Lutfan Jundi, Fajar Ramadhan**.................................................................729-732

145. **TST-05-O** Development of Halal Goat Cheese using Rennet Like from Vegetable Source as Replace to Those of Commercial Rennet Source
   **Widiya Tri Nugraha, Tridjoko Wisnu Murti, Irma Sri Novitasari, Tri Kartika Sari, Gangga Murcita, Gregorius Riswan Timur Wijakangka**.................................................................................................733-737

146. **TST-06-O** The Characteristics of Salted Chicken and Duck Egg by using Traditional Roasting
   **Nurliyani, Anggi Hartawan, Yulianto Adi Nugroho, Indratiningsih**.................................................................738-742

147. **TST-07-O** Capability of Isolates Probiotic Bacteria, Isolated From Spontaneous Fermented goat Milk as Starter In milk Fermentation
   **Afriza Yelnetty, Purwadi, Arie Mirah**........................................... 743-743

148. **TST-09-O** Changes in physico-chemical and sensory characteristics of concentrated yogurt made from goat milk during storage
   **Juni Sumarmono, Mardiati Sulistyowati, and Triana**...............744-748

**Waste and Environmental Issues**

149. **TLL-01-O** Development of New Biostarter Medium Using Local Raw Materials for Composting of Elephant Feces
   **Nanung Agus Fitriyanto, Suharjono Triatmojo, Tri Sunu Dane Wibawa**.................................................................749-753

150. **TLL-02-P** Implementation of Good Manufacturing Practices System in Halal Certified Chicken Slaughterhouses in Daerah Istimewa Yogyakarta
   **Edi Suryanto, Tridjoko Wisnu Murti, Yatri Drastini, Rusman, Bastoni, Umar Al Faruqi and Ismatullah Salim**.........................754-760
151. TLL-03-O  The Influence of Tanning Material Difference on the Physical Quality of the Skin of Puffer Fish (Arothon reticularis)  
RLM. Satrio Ari Wibowo, Titik Anggraini, Ambar Pertiwiningrum .......................................................... 761-765

152. TLL-04-P  The Effect of Composting Liquid Organic Fertilizer Processing Residues on Compost Quality  
Eulis Tanti Marlina, Yuli Astuti Hidayati, Tb. Benito A. Kurnani .......................................................... 766-769

153. TLL-08-O  Utilization of Bee Nest Waste as a Natural Disinfectant on Hatching Eggs Poultry  
Ellin Harlia, Andriyanto, Eulis Tanti Marlina, Denny Suryanto .......................................................... 770-773

154. TLL-09-O  The Application of Secang Natural Dye on Sheep Leather Crust Suede Using Ikat Jumputan Method  
Entin Darmawati, Suharjono Triatmojo and Diana Ross Arief .......................................................... 778-784

155. TLL-10-O  New Technique to Detect Pig Hair by Immunochromatographic Rapid Test  
Yatri Drastini, Sumantri, Christina Yuni Admantin, Tridjoko Wisnu Murti .......................................................... 785-788

156. TLL-11-O  Isoptericola sp. A10-1, Chitinase Producing Actinobacterium Isolated from Indonesian Tropical Shrimp Pond Waste Water  
Amrih Prasetyo, Lies Mira Yusiati, Yuny Erwanto, Wihandoyo, Nanung Agus Fitriyanto, Tomoyuki Nakagawa and Takashi Hayakawa .......................................................... 789-792

157. TLL-12-O  Production and Application of Keratinase Enzyme of Bacillus spp. Isolate by Using Raw Feather as Substrate  
Theresia Galuh Wandita, Nanung Agus Fitriyanto, Suharjono Triatmojo .......................................................... 793-797

158. TLL-13-O  Different Effect on the Quality of Organic Fertilizer Fermentor of Ongole Crossbred Cattle’s Feces  
Dedes Amertaningtyas, Trinil Susilawati and Lilik Eka Radiati .......................................................... 798-802

159. TLL-14-O  Implementation of Good Manufacturing Practices System in Halal Certified Cattle Slaughterhouses in Daerah Istimewa Yogyakarta  
Bastoni, Nasrul Hidayat, Edi Suryanto, Rusman, Tridjoko Wisnu Murti, Yatri Drastini .......................................................... 803-809
Genotypic Profile of Ettawa Grade Goat with Different Head and Neck Color Based on MC1R Gene

Dyah Maharani¹, I Gede Suparta Budisatria¹, Panjono¹, Tety Hartatik¹ and Slamet Diah Volkandari²

¹) Faculty of Animal Science, University of Gadjah Mada, Jalan Fauna No 3, Bulaksumur, Yogyakarta 55281, Indonesia
²) Research Center for Biotechnology, Jalan Raya Jakarta-Bogor Km 46, Cibinong, Bogor, Jawa Barat 16911, Indonesia
Corresponding email: d.maharani@ugm.ac.id

ABSTRACT: The exterior characteristic is the main reason for the most farmers in Indonesia to select and keep Ettawa grade goat. The farmers prefer keep the goats with black head color instead of brown or mixed colors due to the price of black head color is more expensive. In order to indicate the genetic molecular basis of different head and neck color of Ettawa grade goats, a comparative analysis of MC1R gene polymorphism was conducted. The Melanocortin-1-receptor (MC1R) gene is known as an important candidate gene for the coat color trait. Total thirty Ettawa grade goats were divided in three group: CP (brown head and neck color with white body color), RP (brown or black head and neck color with various body color), HP (black head and neck color with white body color) were used in this study. The blood samples from all groups were collected for DNA isolation. The single nucleotide polymorphisms (SNP 676A<G) in exon 1 which located at 676 bp in MC1R gene were obtained by PCR-RFLP methods for genotyping of the goats by using earI restriction enzyme. The results showed all of the goats in CP and RP groups were heterozygote (AG Genotype) which indicated 1.00 for their genotype frequencies. In HP group only had one goat with homozygote animal (GG genotype). Interestingly, none AA genotype found in this study. The A and G allele frequencies were similar 0.5 in both CP and RP group. However, the A allele frequency (0.55) was slightly higher than G allele (0.50) in HP group. These results indicated the spread of both alleles were equal in all groups and seems less genetic variability in the goat population study. In conclusion, the SNP 676A<G of MC1R gene may be regulated genetically in Ettawa grade goat with different head color. Further study need to be conducted in detecting the association of the gene that may affect production traits.

Key words: Genotypic, Phenotypic, Ettawa grade goat, Head and neck color

INTRODUCTION

Ettawa Grade goats are one of potential animals in Indonesia which are widely raised in small farmers. To increase the income, the farmers prefer keep the goat with black head and neck color due to the high price compare to other goats color. Those specific goats are also kept by farmers for goat competition purpose. However, the farmer’s perception believed that color differences will not have impact on the productivity of goats. Initially, this perception needs to be confirmed based on genetic molecular basis which can describe genetic variability of the goat with different head color. In order to detect the genetic variability of goats, a comparative analysis of MC1R gene polymorphism was conducted.

The Melanocortin-1-receptor (MC1R) gene plays a central role in regulation of animal coat color formation. The gene has been widely used to identify the coat color in various ruminants.
such as in sheep, cattle, goat and rabbit. The haplotype AATGT in MC1R was uniquely associated with black coat color in Minxian Black-fur breed (Yang et al., 2013). The coat color extension gene (E) which encoded the transmembrane domain MC1R have been indicated affecting the coat color in French cattle breed (Rouzaud et al., 2000). In goat, the p.267W missence mutation located in coding region of MC1R was present in all Murciano-Granadina black goats, whereas it was never identified in the brown ones (Fontanesi et al., 2009). The c.[124A;125_130del6] was suggested responsible for a MC1R variant determining eumelanin production in the black area of the rabbit (Fontanesi et al., 2010). Moreover, the mutation at the position 676 bp of MC1R gene had been detected in Boer Goat with red head and neck color (Wu et al., 2006). Therefore, the objective of this study was to identify the genetic profile of Ettawa grade goat with different head color based on MC1R gene.

MATERIALS AND METHODS

Animal and sampling. Thirty Ettawa grade goats which divided in three groups: CP (brown head and neck color with white body color), RP (brown or black head and neck color with various body color), HP (black head and neck color with white body color) were reared in the field laboratory in Faculty of Animal Science, Universitas Gadjah Mada (FAS UGM) with the same environments condition. The blood samples were collected for genomic DNA isolation using SDS/ProteinaseK modified method (Sambrook et al., 1989).

Polymerase Chain Reaction (PCR). The primer sequences (according to Wu et al., 2006), annealing temperature for PCR amplification and the restriction enzyme for PCR-RFLP are shown in Table 1.

Table 1. Primers for PCR amplification and restriction enzyme information for genotyping of MC1R gene

<table>
<thead>
<tr>
<th>GenBank Acc. No</th>
<th>Primer</th>
<th>PCR product size</th>
<th>Restriction enzyme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y13958</td>
<td>E1-F : 5' gtggacgctacatctccat 3'</td>
<td>416 bp</td>
<td>EarI</td>
</tr>
<tr>
<td></td>
<td>E1-R : 5' ttgaagatgcagccacagg 3'</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amplifications were performed at 10 min at 94°C, 35 cycles of 30 s at 94°C, 30 s at the annealing temperature (64°C), and 30 s at 72°C, and a final extension of 10 min at 72°C. The PCR products were visualized in 1.5% standard agarose gels stained with ethidium bromide.

PCR-RFLP and Genotyping Determination. PCR products were sequenced using the same primers for PCR by PT Genetics Science Indonesia. The DNA sequences were analyzed with the BioEdit program ver. 7.00 (Tom Hall, Ibis Therapeutics, California, USA) and the SNP676A>G was confirmed based on the electrophoregram results. The SNP G.676A>G was genotyped by the PCR-restriction fragment length polymorphism (PCR-RFLP) method. The restriction enzyme digestion was performed in 20 µl reaction volumes with approximately 5 µl of PCR products and 2 units of each restriction enzyme. The digested products were run on 3% agarose gels.

Statistical Analysis. A chi-square test was performed to test the allele and genotype frequencies for Hardy Weinberg equilibrium. The following mathematical model was:
RESULTS AND DISCUSSION

SNP g.676A>G in MC1R gene was initially identified by direct sequencing using PCR product pool. The SNP was confirmed by BioEdit program and used for genotyping the goats (Fig.1a). Homozygote AA and GG were defined when the fragments size being recognized at 162 and 254 bp, and 416 bp, respectively. The heterozygote AG existed by PCR-RFLP method at the same position of the homologous chromosome with 162, 254 and 416 bp of fragments size (Fig.1b). As the results, most of animals in three groups have heterozygote (AG) genotype. Only one animal have GG genotype in HP group and no AA genotype detected in the study. The allele and genotype frequencies are shown at Table 2.

<table>
<thead>
<tr>
<th>Group</th>
<th>Allele Frequency</th>
<th>Genotype Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>G</td>
</tr>
<tr>
<td>CP</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>RP</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>HP</td>
<td>0.55</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Based on Table 2, the results indicated the spread of both alleles A and G were equal in all groups. The A and G allele frequencies were similar 0.5 in both CP and RP group. However, the A allele frequency (0.55) was slightly higher than G allele (0.50) in HP group. The AG genotype frequencies were similar 1.00 in both CP and RP group. However, no AA genotype was identified in the study. The results of Pearson ‘s Chi-square test indicated that the genotypes of the goats were deviated from the Hardy-Weinberg equilibrium (HWE). The deviation may due to variation of causes. Mutation, gene flow, non-random mating (assortative mating), genetic drift and selection...
may lead to deviate from HWE (Falcorner and Mackay, 1996). In case of this study, non-random mating and small sample size may due to the deviation.

CONCLUSIONS

In conclusion, the Ettawa Grade goats with different head and neck color have same AG genotypes based on MC1R gene. Our results suggest that the SNP 676A<G of MC1R gene may associate with hair color and can be used to determine the genotype profile of Ettawa Grade goats.

REFERENCES

Genotypic Profile of Oita Grade Goat with Different Head and Neck Color Based on MC1R Gene

Dyah Maharani, I Gede Suparta Budisatria, Panjono, Tety Hartati and Slamet Diah Volkandari

1 Faculty of Animal Science, Universitas Gadjah Mada, Jalan Fauna No 3, Bulaksumur, Yogyakarta 55281, Indonesia
2 Research Center for Biotechnology, Jalan Raya Jakarta-Bogor Km 48, Cibinong, Bogor, Jawa Barat 16911, Indonesia

Corresponding email: d.maharani@ugm.ac.id

Background
- The external characteristics is the main reason for the most farmers in Indonesia to select and keep Oita grade goats. The farmers prefer to keep the goats with black head color instead of brown or mixed colors due to the poor quality of black head color is more expensive.
- The Melanocortin-1-Receptor (MC1R) gene is known as an important candidate gene for the coat color trait.
- The MC1R gene was first detected having association with coat color in Minotard Black-tailed breed (Yoshida et al., 2005), and in Ovarienea breed (Yoshida et al., 2006). In order to identify the genetic molecular basis of different head and neck color of Oita grade goats, a comparative analysis of MC1R gene polymorphism was conducted.

MC1R Gene Pathway

Results and Discussion
- Figure (a): Electrophoresis result for the identification SNP p.G674A-G in MC1R gene with G & A alleles. (b) PCR-RFLP pattern of SNP p.G674A-G digested with XbaI restriction enzyme.

Frequencies allele and genotype of three groups Oita grade Goats based on PCR-RFLP results using SNP p.G674A-G

<table>
<thead>
<tr>
<th>Group</th>
<th>Allele Frequency</th>
<th>Genotype Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>0.50</td>
<td>0.00</td>
</tr>
<tr>
<td>RP</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>HP</td>
<td>0.55</td>
<td>0.90</td>
</tr>
</tbody>
</table>

The results indicated the spread of both alleles A and G were equal in all groups.

Materials and Methods

Conclusions
- In conclusion, the Oita Grade goats with different head and neck color have a similar genotype based on MC1R gene. Our results suggest that the SNP 674(A-G) of MC1R gene may associate with hair color and can be used to determine the genotype profile of Oita grade goats.

Acknowledgement
- This research was supported by a grant from the Indonesian Directorate General of Higher Education (DIKTI) with Contract No. 202/SP2H/2013.

References