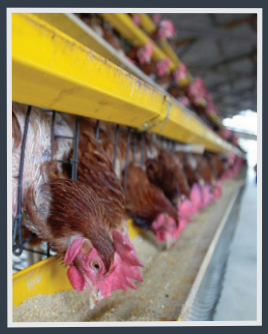
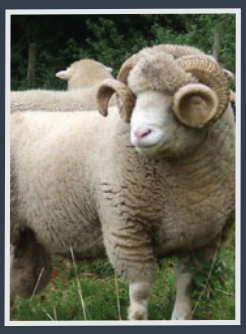
The 7th INTERNATIONAL SEMINAR ON TROPICAL ANIMAL PRODUCTION

"Contribution of Livestock Production on Food Sovereignty in Tropical Countries"

PROCEEDINGS





September 12 – 14, 2017
Yogyakarta,Indonesia

ISBN: 978-979-1215-29-9

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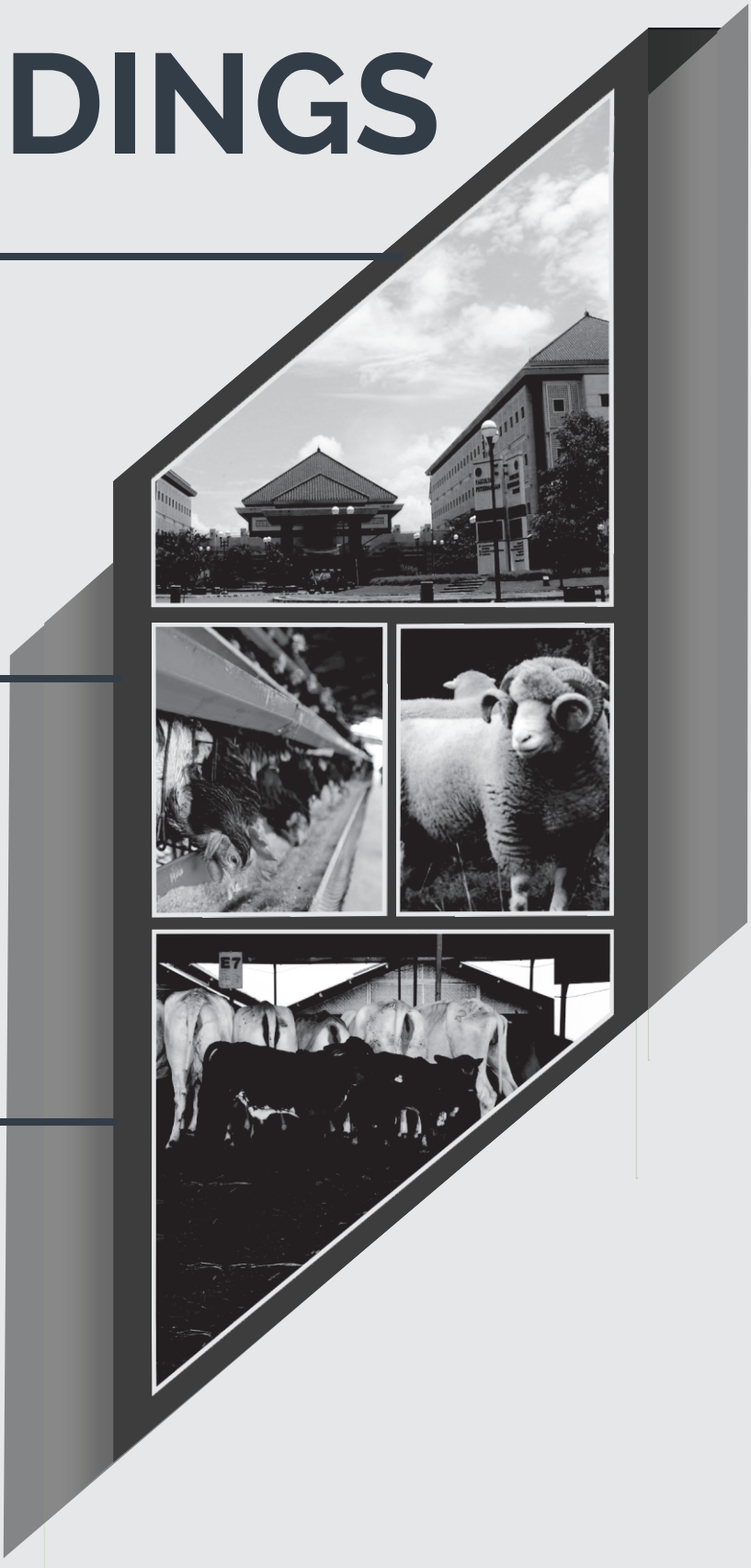

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PREFACE

On behalf of Faculty of Animal Science, Universitas Gadjah Mada, I am pleased to present you the 7th International Seminar on Tropical Animal Production (ISTAP) which is held on September 12-14, 2017 at Auditorium Drh. R. Soepardjo, Faculty of Animal Science UGM, Yogyakarta. Under the main theme "Contribution of Livestock Production on Food Sovereignty in Tropical Countries", 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 200 animal scientists, researchers, students, and producers from more than 10 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 Noviandi

Editor in Chief

REPORT FROM ORGANIZING COMMITTEE

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

Praise to The Almighty for His Merciful and Beneficent to gather us in this memorable moment of scientists and delegates from all over the world who are interested in Tropical Animal Production field can meet up together.

On behalf of the Board of Committee, it is my great pleasure and honor to welcome all participants to attend the 7th ISTAP in Yogyakarta, the city where nature, culture and people live in harmony.

As a chair in this seminar, let me report that, today, we have distinguished participants from all over the continents in the world to present their paper with the theme of "Contribution of Livestock Production on Food Sovereignty in Tropical Countries". There are around 250 scientists, delegates, and graduate students from 11 countries attending the seminar; and more than 170 research papers will be presented during these three days seminar. The great enthusiasm of all participants to share their research-based valuable information and knowledge on livestock production development in tropical areas as well as to contribute on developing human prosperity all over the world is expressed.

The 7th ISTAP programs are rich of scientific programs as well as social and cultural activities. The scientific programs offer six plenary sessions, eight parallel sessions (both oral and poster presentation) each day, and rural field trip. The social and cultural programs of the 7th ISTAP are also important as the scientific programs since the scientists' interaction, intercultural exchange, friendship and future scientific or research collaboration are also central to this seminar. In the evening, participants will attend a warm invitation from the Dean of Faculty of Animal Science UGM in a Welcome Dinner that will give you the most impressive moment to attend. Rural field trip activity offers a wonderful experience to the rural livelihood surrounded by the spectacular natural landmark, Ancient Volcano in Yogyakarta where many smallholder farmers live in harmony. We will also accompany all participants to experience the ancient civilization by enjoying the beautiful of Prambanan temple. We do hope that participants will take part of these wonderful opportunities.

During the seminar, the 7th ISTAP committee also creates a competitive atmosphere among all participants by granting awards for those who have outstanding paper and poster. Participants are encouraged to share their precious works in research and knowledge dissemination in an attractive way. The awards will be given to the outstanding participants immediately after the last session of parallel presentations where the closing ceremony will also be held on September 13th, 2017 afternoon. I wish all of the participants enjoying activities that we have organized.

Finally, on behalf of 7th ISTAP Committee, let me express the high appreciation and acknowledgement to the Rector of Universitas Gadjah Mada and Dean of Faculty of Animal Science UGM for the advice and suggestion in organizing this international seminar. Recognition should go to the Steering Committee, Scientific Committee, Reviewers and Editorial Boards and All Technical Committee members who have worked extremely hard for the details of important aspects of the seminar programs.

Terima kasih (Thank you).

Sincerely Yours,

R. Ahmad Romadhoni Surya Putra, Ph.D
Chairman
The Organizing Committee of the 7th ISTAP

WELCOME ADDRESS

Selamat pagi, Good morning, and *Assalamu'alaikum Wr. Wb.*

The honorable Rector Universitas Gadjah Mada, Invited Speakers, all of delegates, distinguished guests, participants, ladies and gentlemen.

First of all, it is our great pleasure and honor to extend a warm welcome to all of you at The 7th International Seminar on Tropical Animal Production (ISTAP), which be held on September 12 - 14, 2017 at Auditorium Drh. R. Soepardjo, Universitas Gadjah Mada, Yogyakarta, Indonesia. This seminar is proudly organized by Faculty of Animal Science Universitas Gadjah Mada, every 4 years since 1994. But, since last two years (2017) ISTAP has been conducting for every two years in collaboration with the Indonesian Society for Sustainable Tropical Animal Production (ISSTAP). We consider due to the rapid development of science and technology in animal production and also the need for exchange knowledge and experiences among the stakeholders, this scientific event is conducted for every two years.

The contribution of this seminar to the development of national food security is truly significant for introducing of new scientific knowledge and equipment that is much needed in Indonesia to maintain a safe and secure environment and to look at more effective ways to meet and anticipate the future challenges. We can see great enthusiasm of the entire participant to present their latest research finding 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 important distinguished speakers for the plenary session and invited papers relevant to the animal production challenges for sharing their valuable information and knowledge. Other participants from over 11 different countries and from research institute and/or universities can deliver their precious research through oral and poster presentations at concurrent sessions.

At this opportunity, we would like to express our special thank you to 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. We are really indebt to your valuable time, effort and sacrifice to the success of this seminar.

To all of the participants, I do hope this seminar will enrich you with the new perspective of recent knowledge and of course with new friends for possible future partnership and collaboration in fostering the advancement of animal science. Also, I wish to all of the participants having a great achievement of success and fulfill the expectation as well as enjoying the interaction with all participants. Surely, with all of our hospitality, we have been trying our best to make your brief visit to our country become a wonderful and memorable moments. We are looking forward to meeting you in the future event.

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

Thank you very much for your attention, *Terima kasih, Wassalamu'alaikum Wr. Wb*.

Yogyakarta, 12 September 2017

Sincerely yours,

Prof. Dr. Ali Agus
Dean Faculty of Animal Science UGM

OPENING REMARKS

Dear Excellencies, Distinguished Delegates, Ladies and Gentlemen,

It gives me great pleasure to extend you all a very warm welcome on behalf of Universitas Gadjah Mada. We highly appreciate your participation in joining the 7th International Seminar on Tropical Animal Production hosted by the Faculty of Animal Science Universitas Gadjah Mada in Yogyakarta from 12-14 September 2017.

The theme of this conference is Contribution of Livestock Production on Food Sovereignty in Tropical Countries. We hope that this seminar will provide a perspective and insight into tropical livestock production systems and sustainable local resources management contribution in food sovereignty, also give a forum in order to exchange information and ideas on livestock production systems in the tropics and its related problems.

Food Sovereignty is a comprehensive concept which involves not only guaranteed access to food, but also to define their own food compatible with local resource potentials which may ensure food appropriateness and sufficiency. In the Livestock Production, Indonesia and other tropical countries have a variety number of livestock genetic resources and animal biodiversity. Those can be potential assets and capital to gain advantages in domestic and global market. However, achieving food sovereignty need a synergy to work together among government, people, farmer, researcher, and academia. These three days seminar denote those synergy among stakeholders in food sovereignty. We believe that challenges to realize the food sovereignty in tropical countries 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 appreciate 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 very fruitful, dynamic and constructive seminar also great discussion and interaction with other scientists participating in the seminar as well as enjoying your time in Yogyakarta.

Thank you

Rector of Universitas Gadjah Mada
Prof. Ir. Panut Mulyono, M.Eng.,D.Eng

Comparison of Calving Rates with Two Oestrus Synchronization Protocols in Doro Ncanga Buffalo Cows Raised Extensively In Tambora Savannah

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ABSTRACT

This study was undertaken to compare two estrus synchronization protocols in Doro Ncanga buffaloes. Twenty four cows were divided into two groups of 12 cows. Animals in Group 1 were treated with two injections of $PGF_{2\alpha}$ (Estron; Dinoprost thromithamine) 25 mg each intramuscularly at 11 days apart. Animals in Group 2 received 100 μg GnRH (Fertagyl; Gonadorelin acetate) on Day 0 and $PGF_{2\alpha}$ on Day 7. Each animal in the two gropus received one timed artificial insemination 72 h after the last $PGF_{2\alpha}$ administration. In Group 1 and Group 2, calving rates to the first service were 50% and 33%, respectively. Though the percentages of calving rate per synchronization were numerically higher in Group 1 than Group2, the difference was not significant ($p>0.05$). The findings indicated that synchronization of estrus with $PGF_{2\alpha}$ alone resulted in a higher calving rate compared with synchronization of estrus using a combination of $PGF_{2\alpha}$ and GnRh.

Keywords: Buffalo, Oestrus Synchronization, Fixed-Time AI, Calving

INTRODUCTION

Doro Ncanga swamp buffalo plays an important role in the agricultural economy of Dompu Regency. This local buffalo raised in primarily for meat, while milk being of secondary importance. The breed well adapted on the native savanna of mountainous Tambora in Sumbawa island, thus the areas become its permanent habitat for most of the year. Efforts to increase meat production of Doro Ncanga swamp buffalo might be achieved by producing live calves. This in turn can be obtained by increasing dam productivity through regular calving rate.

One of the most important constraints in improving the productivity of Doro Ncanga swamp buffalo is an inheritent problem of improper detection of oestrus and improper time of insemination. Poor estrus expression and a prolonged intercalving interval compromise the reproductive efficiency of female buffaloes. These limitations are exacerbated during the hot season, when fertility decreases dramatically. Pregnancy rate decrease further because difficulties in detecting estrus (De Rensis and López-Gatius, 2007). Synchronization of oestrus is a technique by which most of the female population or herd can be brought into oestrus at a predetermined time. Synchronization of estrus have been developed to help farmers manage reproduction more efficiently (Larson and Ball, 1992). There are two basic types of treatments for oestrus synchronization: (1) shortening of the luteal phase of the cycle by the exogenous administration of luteolytic agent i.e. $PGF_{2\alpha}$ and (2) porlongation of the luteal phase of the cycle by the administration of progestagen. $PGF_{2\alpha}$ has been accepted as a luteolytic agent that ends the life span of the bovine cyclic corpus luteum at the end of

diestrus (Morrow, 1986). For increasing conception rate in $PGF_{2\alpha}$ induced oestrus cow, gonadotrophin releasing hormone (GnRH) was administered (Tandle *et al.,* 2000).

This study was undertaken to compare calving rates following two estrus synchronization protocols, first $PGF2_{\alpha}$+$PGF2_{\alpha}$ and second GnRH+$PGF2_{\alpha}$ in Doro Ncanga swamp buffalo cows raised extensively in Tambora savannah.

MATERIALS AND METHODS

Twenty four cows were divided into two groups of 12 cows. Animals in Group 1 were treated with two injections of $PGF_{2\alpha}$ (Estron; Dinoprost thromithamine) 25 mg each intramuscularly at 11 days apart. Animals in Group 2 received 100 µg GnRH (Fertagyl; Gonadorelin acetate) on Day 0 and $PGF_{2\alpha}$ on Day 7. Each animal in the two gropus received one timed artificial insemination 72 h after the last $PGF_{2\alpha}$ administration. The calving rates obtained in the experimental groups were compared using Chi square test.

RESULTS AND DISCUSSION

In Group 1 and Group 2, calving rates to the first service were 50% (6/12) and 33% (4/12), respectively. The overall calving rate was found to be 41.67% (10/24) (Table 1). Though the percentages of calving rate per synchronization were numerically higher in Group 1 than Group 2, the difference was not significant ($p>0.05$). The calving rate of Doro Ncanga swamp buffaloes following double intramuscular injection of prostagalndin $PGF_{2\alpha}$ recorded in this study was higher than that of Perera *et al*. (1977) who reported fertility rate of 33% in swamp buffalo following single or double injection regimes, with natural service and fixed time inseminations at induced oestrus.

Tabel 1. Calving rates of Doro Ncanga swamp buffaloes following oestrus synchronization using two different protocols and single fixed-time artificial insemination (n=24)

Protocol of Oestrus Synchronization	Reproductive Status		Total
	Calving	Not Calving	
1. $PGF2_{\alpha}$ + $PGF2_{\alpha}$	6	6	12
2. GnRH + $PGF2_{\alpha}$	4	8	12
Total	10	14	24

The lower calving rate observed with protocol 2 (GnRH on day 0 and $PGF2_{\alpha}$ on day7) in Doro Ncanga swamp buffaloes warrant further investigation by implicating large numbers of cows in order to elucidate the constrains and to obtain high calving rates in this domestic spesies.

CONCLUSIONS

The findings of this study indicated that synchronization of estrus with a double injection of $PGF_{2\alpha}$ alone resulted in a higher calving rate compared with synchronization of estrus using a combination of $PGF_{2\alpha}$ and GnRH.

ACKNOWLEDGEMENTS

The authors express their sincere gratitude to all Livestock Services Office Dompu Regency staff especially to Mr. Jakaria, who has assisted to carry out the research work and artificial insemination in the field.

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