



INTERNATIONAL CONFERENCE ON TROPICAL
ANIMAL SCIENCE AND PRODUCTION 2016

Certificate of Appreciation

Presented to

B. Rosadi

As

Presenter

in the 1st International Conference on

Tropical Animal Science and Production (TASP 2016)

July 26-29, 2016

Ambassador Hotel, Bangkok, Thailand

Assoc. Prof. Dr. Pramote Paengkoum

TASP 2016 Conference Chairman



Jointly organized by



Volume II

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1st International Conference on

Tropical Animal Science and Production (TASP 2016)

“Integrated Approach in Advanced Animal Science and Innovation Technology”

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**1st International Conference on
Tropical Animal Science and Production
(TASP 2016)**

**“Integrated Approach in Advanced Animal Science
and Innovation Technology”**

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Suranaree University of Technology



Rajamangala University of Technology Isan



Nakhon Ratchasima Rajabhat University



Thailand Research Fund

Welcome Letter from the Rector of SUT

Dear Participants,

I would like to welcome all of you who have come to Bangkok, Thailand, from all over the world. We are proud and honored to host the 1st International Conference on Tropical Animal Science and Production (TASP 2016). This year, Suranaree University of Technology is celebrating its 26th Anniversary. Over the past 26 years, we are proud to be consistently ranked as one of Thailand's leading universities, with a strong reputation for research excellence and impact. This Conference is certainly a wonderful addition to our calendar of 26th anniversary celebration activities.



The theme of this conference “Integrated Approach in Advanced Animal Science and Innovation Technology” is appropriate in view of the orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations.

If you take a look at the conference program, you will agree that this conference is going to be busy and productive. There is a lot to offer for a four-day event. I would like to take this opportunity to thank the Conference Organizing Committee for their diligent work. I would also like to thank participants, especially those of you coming from abroad, for joining us and sharing your valuable experience and ideas. I hope this conference provides you with a forum to exchange scientific ideas, inspire new research, and new contacts for closer co-operation, so that we can, together, envision the future of a promising development of the animal science and production in the Tropic and all over the world.

Last but not least, I sincerely thank our co-hosts, namely, Rajamangala University of Technology Isan (RMUTI), Nakhon Ratchasima Rajabhat University (NRRU) and The Thailand Research Fund (TRF), and our sponsors for their immense support in making this conference successful. In closing, I wish you many splendid ideas, new partnerships and the best of success, and I wish our visitors from abroad will have a very pleasant stay in the beautiful city of Bangkok.

Sincerely,

P. Suebka.

Prof. Dr. Prasart Suebka
Rector

Message from the Chairman of TASP 2016

Dear Participants,

On behalf of the Organizing Committee, I would like to welcome you to The 1st International Conference on Tropical Animal Science and Production 2016 (TASP 2016) in Bangkok, Thailand, from 26th to 29th July 2016. The theme of this conference is “Integrated Approach in Advanced Animal Science and Innovation Technology” to appropriate in view of the orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. The purpose of the conference is to provide an opportunity for animal scientists, animal agriculture-crop scientists and those from related disciplines to discuss and debate research issues relating to aquaculture, animal behavior and welfare, animal genetics and breeding, animal physiology and reproduction, animal biotechnology, epigenetics, feed science and technology, livestock farming system, livestock management, meat science, non-ruminant nutrition, nutrigenomics, pasture, pet, ruminant nutrition, veterinary and others.



The 1st TASP 2016 is organized by 4 institutes; Suranaree University of Technology (SUT), Nakhon Ratchasima Rajabhat University (NRRU), Rajamangala University of Technology Isan (RMUTI) and The Thailand Research Fund (TRF).

I sincerely hope that the papers presented in the 1st TASP 2016 would cover all major areas animal science and production and yield meaningful information leading to further strengthening of animal science and production in the tropical areas.

I would like to thank all authors for submitting their works and all members of Local and International Organizing Committee, reviewers, all co-host institutions, sponsors without the support of whom a conference of this scale would not have possible, and all individuals who have contributed greatly to the success of this conference.

Sincerely,

A handwritten signature in black ink, which appears to read "Pramote Paengkoum". The signature is fluid and cursive.

Assoc. Prof. Dr. Pramote Paengkoum
Chairman,
Organizing Committee TASP 2016

Message from the Chairman of Academic Committee

Dear Participants,

On behalf of Academic Committee, it is my great pleasure to welcome you to the 1st International Conference on Tropical Animal Science and Production (TASP 2016) in Bangkok, Thailand.

The conference has been designed to provide an opportunity for animal scientists, researchers and research scholars to exchange and to share their experiences, and to promote awareness of the ongoing research achievements. It also provides the premier interdisciplinary forum for animal scientists to present their latest research results, ideas, developments, and applications in all areas of Animal Science and Production. The conference will feature a program of keynote and plenary speakers, invited speaker and oral sessions, posters, and workshops.



I would like to express my sincere thanks for all keynote speaker, plenary speakers, invited speakers and all participants for their contribution to make this scientific meeting a great success and fruitfulness. It is our great honour to have Prof. Dr. Charan Chantalakhana from Thailand, Prof. Dr. Metha Wanapat from Thailand, Prof. Dr. Liang Chou Hsia from Taiwan, Assoc. Prof. Dr. Jowaman Khajarerern from Thailand, Prof. Dr. Junichi Takahashi from Japan, Assoc. Prof. Dr. Pongchan Na-Lampang from Thailand, Dr. Pascal Mermillod from France, Dr. John Moran from Australia, Prof. Dr. Yang Sheng Lin from China, Prof. Dr. Mongkol Techakumphu from Thailand, Prof. Dr. Thomas J. Schonenwille from the Netherlands and Prof. Dr. Nguyen Van Thu from Vietnam, who are the esteemed speakers and specialists on their own fields to joint us in this conference. I also deepy appreciate the scientific committee, reviewer and editorial boards for their great contribution to make this conference efficacious.

I hope that you will enjoy the conference and your interaction with your colleagues from many different countries. Also, I wish that this conference will stimulate a creative exchange of ideas and opportunity for networking, collaboration, sharing of technical information and the building of trust relationship internationally. Last but not least, I am confident that you will enjoy your visit in Bangkok and find a harmonious blend of culture, cuisine, arts, and nice sightseeing along excellent shopping opportunities.

Yours sincerely,

Sutisa Khempaka

Asst. Prof. Dr. Sutisa Khempaka
Chairman of Academic Committee

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- FO0241 -

Pregnancy and full-term development of embryos derived from natural mating and AI following estrous synchronization in swamp buffalo

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Abstract

This study was designed to evaluate the fertility of swamp buffalo synchronized by prostaglandin administration prior to both natural mating and artificial insemination (AI). Twenty-five multiparous swamp buffaloes, 4 - 7 years of age, were intramuscularly injected by 35 mg prostaglandin (Lutalyse™, Pfizer, Puurs, Belgium) twice in eleven consecutive days. Natural mating was performed in fourteen buffaloes 72 h after second prostaglandin administration, the remaining buffaloes were artificially inseminated twice, 72 h and 84 h following second prostaglandin administration. The pregnancy was determined on Day 60 days by per rectum palpation. Eleven of naturally mated buffaloes were pregnant (78.6%) significantly higher than AI result (6 of 11, 54.5%). Both natural mating and AI resulted 100% fetus survival rate, all embryo derived could perform full-term development. In conclusion, estrous synchronization by prostaglandin administration induced estrous and produced viable embryos following natural mating and AI in swamp buffalo.

Keywords: pregnancy, embryo development, estrous synchronization, swamp buffalo

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Introduction

The swamp buffalo (*Bubalus bubalis*) has a significant role in many developing countries by providing meat and draught power. They are well-adapted to harsh environments and are capable of utilizing low quality roughages especially agricultural crop-residues and by-products (Wanapat and Cantakhoun, 2015). However, they suffer from low fertility and production. Reproductive efficiency is the primary factor affecting productivity and is hampered in female buffalo by inherent late maturity, poor estrous expression, distinct seasonal reproductive patterns, and prolonged intercalving intervals (Singh et al., 2000; De Rensis and Lopez-Gatius, 2007).

To improve the poorly reproductive efficiency of the water buffalo, several techniques such as artificial insemination (AI), superovulation, ovum pick-up, in vitro maturation, in vitro fertilization and embryo transfer have been applied with various achievements (Nam et al., 2010). The success of AI depend on appropriate estrous detection that less effective in female buffalo due to poor estrous expression. Overcoming this problem, estrous synchronization involves the use of one or more hormones to bring female buffalo into heat within a short time period (36 to 96 hours). The used of prostaglandin as luteolytic agent that bring the females into estrous were widely implemented. The research was undertaken to determine fertility of swamp buffalo synchronized by prostaglandin administration prior to both natural mating and AI.

Materials and Methods

Twenty-five multiparous swamp buffalo cows (4-7 y of age) were used for experiment. All animal were intramuscularly injected by 35 mg prostaglandin (LutalyseTM, Pfizer, Puurs, Belgium) twice in eleven consecutive days. Natural mating was performed in fourteen buffaloes 72 h after second prostaglandin administration, the remaining buffaloes were artificially inseminated twice, 72 h and 84 h following second prostaglandin administration. The pregnancy was determined on D 60 after AI, embryo marked as full-term developed when female cow had normal parturition.

The number of pregnant cows and the number of full-term developed embryos were assessed using chi-square test. A probability of $p < 0.05$ was considered significance. The SPSS program was used for all statistical analyses.

Results and Discussion

Pregnancy Rate

Fourteen buffalo females synchronized and conducted to natural mating, and eleven ones were artificially inseminated. The pregnancy rate resulted from natural mating was higher ($p < 0.05$) than AI (Table 1).

Table 1. Pregnancy rate of buffalo female following estrous synchronization

No	Treatment	Number of cow (head)	Number of pregnant cows (head (%))
1	Synchronization + natural mating	14	11 (78.6) ^b
2	Synchronization + AI	11	6 (54.5) ^a

The values in same column with different letters as superscripts were significant different ($p < 0.05$).

Prostaglandin administration was effective to commence estrous signs on all female. The pregnancy rate obtained by AI was 54.5%, lower than the result from Sianturi et al., (2012) that got 77.8%. The difference came from different farm condition and feeding management. But, the result was equal compared to previous studies with pregnancy rate 40-60% (Baruseli et al., 2001; Berber et al., 2002; Barile, 2005).

Higher pregnancy rate derived from natural mating was proposed to caused by semen quality not by oocyte quality. High motility and dense sperms of fresh semen in natural mating directly ejaculated into vaginal lumen compared to, in AI, frozen-thawed semen with lower quality. The buffalo fresh semen had 70-80% motility, whereas frozen-thawed buffalo semen had 40-50% motility (Rosadi et al., 2015)

Fetus Survival Rate

The good quality of embryos derived from estrous synchronization in this study confirmed by 100% fetus survival rate (Table 2). All embryo could performed full-term development.

It was previously found about buffalo embryo development-related pathology cases in West Java Province (Indonesia) were 10% abortus and 2% dystocia (Martindah et al 1989). We did not find any embryo-related pathologic cases in this study. The embryos could pass all step of embryo development until birth. This indicated that the developmental competence of these embryos was independent to the way its inseminated that regarded to sperm quality.

Tabel 2. Full-term development of embryos derived from natural mating and AI

No	Treatment	Number of pregnant cows (head)	Number of calves born (head, %)	Number of miscarriage (head, %)
1	Natural mating	11	11 (100)	0 (0)
2	AI	6	6 (100)	0 (0)

Conclusion

It could be concluded that both natural mating and AI resulted in pregnancy in prostaglandin synchronized buffalo cows with natural mating got higher rate. The embryos derived from natural mating and AI performed equal full-term development.

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