Improving Smallholder and Industrial Livestock Production for Enhancing Food Security, Environment and Human Welfare

Proceedings
Full Papers


The 15th AAAP Animal Science Congress
26-30 November 2012, Thailand
Scope of AAAP: AAAP is established to devote for the efficient animal production in the Asian-Australasian region through national, regional, international cooperation and academic conferences.


Organization of AAAP:
- President: Recommended by the national society hosting the next biennial AAAP Animal Science Congress and approved by Council meeting and serve 2 years.
- Two Vice Presidents: One represents the present host society and the other represents next host society of the very next AAAP Animal Science Congress.
- Secretary General: All managerial works for AAAP with 6 years term by approval by the council.
- Council Members: AAAP president, vice presidents, secretary general and each presidents or representative of each member society are members of the council. The council decides congress venue and many important agenda of AAAP.

Office of AAAP: Decided by the council to have the permanent office of AAAP in Korea. Currently # 909 Korea Sci &Tech Center Seoul 135-703, Korea.


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Improving Smallholder and Industrial Livestock Production for Enhancing Food Security, Environment and Human Welfare
15 AAAP PRESIDENT’S REPORT

Sawatdee krup!

Greetings to all 15 AAAP attendants:

It’s our great honor and pleasure to welcome you to the 15 AAAP Animal Science Congress, being held during 26-30 November 2012 at the Rangsit campus of Thammasat University, Bangkok, Thailand. The AHAT (Animal Husbandry Association of Thailand under the Royal Patronage of H.R.H. Princess Maha Chakri Sirindhorn), as the official host of the 15 AAAP Congress, has collaborated with the other three significant government agencies as the co-hosts of this Congress, these are the Department of Livestock Development (Ministry of Agriculture and Agricultural Cooperatives), Kasetsart University (KU), and Thammasat University (TU). The Rangsit campus of TU, situated in the northern outskirt of Bangkok, which is under the jurisdiction of Pathum Thani province, is the beautiful venue of this Congress.

The 15 AAAP animal Science Congress programs consist of scientific and technical programs and social and cultural activities. The scientific and technical programs offer 4 enlightening plenary sessions, 9 significant symposia, one-day mid-Congress study tours, and numerous scientific sessions (both oral and poster presentations), as well as other scientific meetings. The most significant symposium is “The Human-Chicken Multi-relationships Based on H.I.H Prince Akishino Research Project under the Royal Patronage of H.R.H. Princess Maha Chakri Sirindhorn”.

It is expected that around 1,200 scientists, livestock producers, development personnel, as well as graduate and undergraduate students from 38 countries will attend 15 AAAP Congress; and more than 700 research papers in all fields of animal production and related fields will be presented and discussed at the Congress. Very interesting and exciting one-day mid-Congress tours on 28 November 2012, consisting 7 alternative routes at your preferred choice, are offered for learning experiences which could be useful for future technical understandings.

The social and cultural programs of the 15 AAAP Congress are as important as the scientific and technical programs since the promotion of friendship and future scientific cooperation are also central to this AAAP Congress. Reception party and opening ceremony will offer selected exciting Thai cultural shows from all regions of the Kingdom. On 28 November 2012, immediately after the mid-Congress tour, the Loy Kratong Festival, a very significant annual festivity of Thailand as being organized by TU, will allow all participants to join this Thai traditional activity, which is full of fun and excitement.

The fantastic farewell party will be offered on the night of 29 November 2012. Participants from each and every country will have a chance to enjoy traditional and cultural exchange in order to strengthen friendship and future cooperation. We do hope that you will not miss this opportunity.
Beside all these colorful programs, spouse programs and other recreational and sports activities are made available for your pleasure at your own convenience.

You can be assured that, in our hospitable Thai way, we will try our best to make your brief visit to our country a very pleasant and memorable one.

Wish you all a very happy and most enjoyable stay in Thailand.

Sawatdee krup,

Chayanon Kittayachaweng
President
Asian-Australasian Association of Animal Production Societies
Dear Distinguished Scientists and Ladies and Gentlemen,

It is overwhelmingly heart-felt impressive to receive all attention and high interest from all scientists and friends from all over the world to participate in this important the 15th AAAP Congress being organized in Bangkok, Thailand. This is a good indication of the great concern and interest of the animal scientists to share and learn experiences among each others to help solve the problems in animal production as well as for future research and development collaborations.

You can also agree with me that the Congress is accommodating with high quality of the invited plenary papers, invited lead-papers as well as all short oral and poster presentations. Furthermore, the many Symposia encompassing very important and hot issues dealing with animal production and development are being held by a number of organizations who have been experiencing in the respective fields and by the eminent scientists around the world. It is the great forum for all participants to learn and enrich as well as to interact among one another.

One high-light is to observe the high attendance of the participants especially by the young scientists which is the imperative for them to interact and to link-up for the future research collaborations.

The Congress is not to avail all participants to enrich the high standard of research merits, but also open up the scenario for all to enjoy the social and cultural environment during the Congress. The highly successful and fruitful outcomes of the programs are of concerted efforts contributed by all parts and organizations including from the government, private sector, all participants and with the continuous hard work of the Scientific Committee Members. The special contributions from the Symposia Organizers and their supporters are highly acknowledged and appreciated.

Finally, may I on behalf of the Scientific Committee Members and all associates, wish all the participants to highly achieve the participation expectations and successful in your deliberations as well as to mutually enjoy and interact with all scientist fellows during the Congress.

The great support from all sectors especially from the Congress site host, the Thammasat University, Rangsit Campus, is gratefully acknowledged for their concern, close cooperation and for the available facilities for the Congress.

Special thanks to my Scientific Committee and the Advisory Board Members especially the Vice Chairs and the Secretary of the NOC-TEP of the 15th AAAP Congress are sincerely thankful for their great contribution to make the program the high-caliber one.

Looking forward to meeting all participants in the future Congresses to continue.

With best wishes and warm regards,

Professor Dr. Metha Wanapat
Chairman, National Organizing Committee for Technical Programs (NOC-TEP)
The 15th AAAP Animal Science Congress
PREFACE

This is the full paper volume proceedings of the 15th AAAP Animal Science Congress, which held during 26-30 November 2012 at Thammasat University, Rangsit Campus, Thailand. This volume contains the full paper of 344 oral and 540 poster presentations from various disciplines (i.e., Nutrition and Feed Technology; Breeding and Genetics; Physiology and Health Care; Management, Welfare and Environmental Concern; Education and Extension; Food Science and Technology; and Others) and species (i.e., Swine, Poultry, Cattle, Buffalo, Small Ruminants, and Others) that related to research done in more than 38 countries.

The Scientific Programs Committee of the National Organizing Committee for Technical Programs (NOC-TEP) is very grateful to all reviewers who kindly gave their valuable time to review a large number of those scientifically interesting abstracts and full papers. We have to thank all volunteers and graduate students of Kasetsart University, who supported and helped in all preparation processes of the current proceedings. There were 1,038 articles submitted for presentation in the Congress. However, we do have limited time and space for presentation programs. We are sorry for the authors that finally their articles could not be accepted within the deadlines. During the preparation process of the proceedings, even though we do believe that we had been doing best for all requests related to the articles and presentation, but we do apologize if there are still mistakes. However, it is the authors’ responsibility with the context of the full paper that presented in the 15th AAAP Animal Science Congress and all related proceedings.

Our appreciations go to the 15 AAAP Honorary President (Emeritus Professor Dr. Charan Chantalakhana), the Secretary General (Associate Professor Dr. Supapron Isariyodom), and the Chairman of NOC-TEP (Professor Dr. Metha Wanapat), who suggested and gave us guidances for appropriate preparation of the this full papers proceedings.

Finally, we would like to thank all of the authors for their willing to share their research results and making the Congress valuable, colorful and lively.

The Editorial Group:

Skorn Koonavootrittriron
Thanathip Suwanasopee
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Reproductive Performance of Kacang, Kejobong and Ettawa Grade Goats Does

Panjono, I. G. S. Budisatria, G. Murdjito, N. Ngadiyono and E. Baliarti
Faculty of Animal Science, Universitas Gadjah Mada, Yogyakarta 55281, Indonesia

This study was conducted to observe the reproductive performance of Kacang, Kejobong and Ettawa Grade goats does which were raised in the same condition. Five heads of Kacang goats does, five heads of Kejobong goats does and fives heads of Ettawa Grade goats does were used in this study. Each group of does was raised in the group pen with one head of buck from the same breed. Just before parturition, the does were moved to individual pen and raised together with their kids. At three months age of their kids, the kids were weaned and the does were sent back to their group until their next parturition. Animals were fed as ad libitum with King Grass and commercial concentrate. The data collected was analyzed using one way analysis of variance and continued using Duncan’s New Multiple Range Test. Kidding interval of Kacang, Kejobong and Ettawa Grade does were 275.00 ± 28.63, 379.20 ± 105.31 and 330.20 ± 109.88 days, respectively. Litter size of Kacang, Kejobong and Ettawa Grade does were 1.20 ± 0.44, 1.40 ± 0.92 and 2.94 ± 0.93 heads, respectively. Birth weight of Kacang, Kejobong and Ettawa Grade kids were 2.34 ± 1.06, 3.15 ± 0.92 and 2.94 ± 0.93 kg, respectively. There were no significant differences of kidding interval, litter size, and birth weight among groups. Kids’ mortality of Kacang, Kejobong and Ettawa Grade kids were 0.00 ± 0.00, 70.00 ± 44.72 and 30.00 ± 44.72%, respectively. Kids’ mortality of Kacang kids were lower (p<0.05) than that of Kejobong and Ettawa Grade kids. Reproductivity of Kacang, Kejobong and Ettawa Grade does were 1.59 ± 0.52, 0.40 ± 0.58 and 1.00 ± 0.73 heads/ year, respectively. Reproductivity of Kacang does were higher (p<0.05) than that of Kejobong and Ettawa Grade does. Weaning weight of Kacang, Kejobong and Ettawa Grade kids were 6.35 ± 2.61, 3.26 ± 5.23 and 4.72 ± 2.69 kg, respectively. Productivity of Kacang, Kejobong and Ettawa Grade does were 10.05 ± 4.85, 2.81 ± 4.01 and 5.85 ± 4.31 kg/ year, respectively. There were no significant differences of weaning weight and productivity among groups. It is concluded that performance of Kacang, Kejobong and Ettawa Grade are similar.

Key Words: Reproductive Performance, Kacang Goat, Kejobong Goat, Ettawa Grade Goat

INTRODUCTION

Goat has been being part of Indonesian farmer’s household for long time. The number of goat in Indonesia was increase year by year. The number of goat in 2000 and 2010 were 12.566 and 16.821 heads, respectively (Anonymous, 2012). The breed of goat raised by farmer is vary depend on the farmers preference and government program. Some of the breeds which are common raised in Indonesia are Kacang, Kejobong and Ettawa Grade goats. Kacang is the native goat breed in South East Asia, including Indonesia. This goat is very prolific. However, this goat is small in size so that their productivity is low. In order to improve their
productivity, the government imported Ettawa goat from India. This breed used for grading up the Kacang goat. Kejobong goat is the result crossbreeding between Kacang and Ettawa goat which were selected for their specific color, i.e. black. These Black goats are raised by farmers in Kejobong District, Purbalingga Regency, Central Java Province. Ettawa grade goat is the result of further grading up the Kacang goat. Their exterior characteristics are similar to Ettawa goat.

Several studies have done to observe the performance of Kacang, Kejobong and Ettawa grade goat. However, there is little information about their performance which was raised in the same condition. This study was conducted to observe the reproductive performance of Kacang, Kejobong and Ettawa Grade goats does which were raised in the same condition.

MATERIALS AND METHODS

Five heads of Kacang does, five heads of Kejobong does and fives heads of Ettawa Grade does were used in this study. The samples of breed were chosen based on their breed exterior characteristics. The exterior characteristics of Kacang goat were small in body size, sword shape of horn and small and erect ears. The exterior characteristics of Kejobong goat were medium in body size, convex forehead and long and hang down ears. The exterior characteristics of Ettawa grade goat were large in body size, convex forehead, long and hang down ears and mane in the thigh (Budisatria et al., 2009).

Each group of does was raised in the group pen with one head of buck from the same breed. Just before parturition, the does were moved to individual pen and raised together with their kids. At three months age of their kids, the kids were weaned and the does were sent back to their group until their next parturition. Animals were fed as ad libitum with King Grass and commercial concentrate.

The variables observed were kidding interval, litter size, birth weight, kids’ mortality, reproductivity, weaning weight and productivity. Kidding interval was the duration between one parturition and next parturition of doe. Litter size was the number of kid at one delivery of doe. Birth weight was weighed just after birth of kid. Kids’ mortality was the rate of kid death before weaning. Reproductivity was the number of kid could be produced by a doe in one year. Weaning weight was weighed at 90 days old of kid. Birth and weaning weight was adjusted for single and male kid. Productivity was the total weight of kid could be produced by a doe in one year. The data collected was analyzed using one way analysis of variance and continued using Duncan’s New Multiple Range Test.

RESULTS AND DISCUSSION

Reproductive performance of Kacang, Kejobong and Ettawa Grade goats does is presented in Table 1. There were no significant differences of kidding interval, litter size, and birth weight
among groups. This was due to the big values of standard deviation, especially on kidding interval. This indicated that the genetic variation in every group was high.

**Table 1. Reproductive performance of Kacang, Kejobong and Ettawa Grade goats does**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kacang</th>
<th>Kejobong</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidding interval (day)</td>
<td>275.00±28.63</td>
<td>379.20±105.31</td>
<td>330.20±109.88</td>
</tr>
<tr>
<td>Birth weight(^1) (kg)</td>
<td>2.34±1.06</td>
<td>3.15±0.92</td>
<td>2.94±0.93</td>
</tr>
<tr>
<td>Litter size (head)</td>
<td>1.20±0.44</td>
<td>1.40±0.55</td>
<td>1.20±0.45</td>
</tr>
<tr>
<td>Kids’ mortality (%)</td>
<td>0.00±0.00(^a)</td>
<td>70.00±44.72(^b)</td>
<td>30.00±44.72(^b)</td>
</tr>
<tr>
<td>Reproductivity (head/year)</td>
<td>1.59±0.52(^a)</td>
<td>0.40±0.58(^b)</td>
<td>1.00±0.73(^b)</td>
</tr>
<tr>
<td>Weaning weight(^1) (kg)</td>
<td>6.35±2.61</td>
<td>3.26±5.23</td>
<td>4.72±2.69</td>
</tr>
<tr>
<td>Productivity (kg/year)</td>
<td>10.05±4.85</td>
<td>2.81±4.01</td>
<td>5.85±4.31</td>
</tr>
</tbody>
</table>

\(^a,b\) Different superscript in the same row indicates significant difference (p<0.05).

\(^1\) Values were adjusted for single and male of kid.

Kidding interval found in this study was relatively long, especially for Kejobong and Ettawa Grade goats. Adubote (1996) reported that the overall mean of kidding interval of West African Dwarf goat was 275.68 days. Many efforts are needed to short the kidding interval of Kejobong and Ettawa Grade goats.

Kids’ mortality of Kacang kids were lower (p<0.05) than that of Kejobong and Ettawa Grade kids (Table 1). This indicated that mothering ability of Kacang does were better than that of Kejobong and Ettawa Grade does.

Kids’ mortality of kids at every month of age is presented at Table 2. The majority of mortality was excise at first month. This indicated that the first month of age was critical period for kids. They totally depend on their mother ability. In this study, it was seem that Kejobong Goat Does had the lowest mothering ability so that the kids’ mortality was highest among groups.

The kids mortality of Kejobong and Ettawa Grade does were much higher than that found in other research. Husain et al. (1995) reported that the survival rate of Black Bengal kids at first month of age was 84.4%. Many efforts are needed to decrease the kids’ mortality of Kejobong and Ettawa Grade does.

Reproductivity of Kacang does were higher (p<0.05) than that of Kejobong and Ettawa Grade does (Table 1). This was due to the lower kids’ mortality of Kacang does. However, there were no significant differences of weaning weight and productivity among groups (Table 1). The significant difference of kids’ mortality didn’t cause the significant difference on does’ productivity. This was due to the variation among does in the group was high so that the different mean among groups didn’t cause the significant difference values. It is concluded that performance of Kacang, Kejobong and Ettawa Grade are similar. The variation of
reproductive performance of goat does in the group is high. Selection is needed to increase the productivity.

**Table 2.** Kids’ mortality (%) of Kacang, Kejobong and Ettawa Grade kids based on age of kids

<table>
<thead>
<tr>
<th>Age of kids (month)</th>
<th>Kacang</th>
<th>Kejobong</th>
<th>Ettawa grade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>26,3</td>
<td>10,5</td>
<td>36,8</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>5,3</td>
<td>5,3</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>26,3</td>
<td>15,8</td>
<td>42,1</td>
</tr>
</tbody>
</table>

**REFERENCES**


Certificate of Attendance

Oral Presentation

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