

Situation of Buffalo Production of Farmers in Chat Trakan, Bang Rakam and Phrom Phiram Districts, Phitsanulok Province

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ABSTRACT: The current study aimed to understand the buffalo production in Chat Trakan, Bang Rakam, and Phrom Phiram districts, Phitsanulok Province. A total of 106 buffalo farmers were selected for individual interview. Data were analyzed for percentage, and arithmetic means such as minimum, maximum, mean, and standard deviation. The results in this study showed that the average age of interviewed farmers was 52.34 years old. Most of farmers had finished primary school level (71.70%). They stated that agriculture was the main career of 77.36% farmers which contributed for 81.13% total income. Most of farmers used their own land and fund to invest to their buffalo farms (96.23% and 64.29% respectively). In order to manage their farm, family members were the major labor sources (94.34%). In average, each farm raised about 10.11 ± 9.45 heads and fed almost no concentrate to buffalo (88.68%). In addition, about 61.40% of farmers used roughage from natural grassland for their buffalo. They preferred to feed their buffalo fresh grasses (64.24%) with supplemental minerals (52.83%) than other forms. Most of farmers (90.00%) did not record any information about their farm's activities. Many of them did not interest in selection of buffalo (83.02%). However, they preferred to breed their buffalo by natural mating (75.47%). Moreover, farmers did not calling dam (92.73%). Almost all buffaloes got vaccination (99.06%) and all of them were treated against parasites. Therefore, 97.17% of farmers reported that diseases of buffalo were not problematic. The biggest obstacle of buffalo production in this region was feed and feeding (36.00%) which was also the major requirement from farmers to be improved. These results implied that farmers in the region were in need of more appropriate support and systematic training from government and private organization in order to enhance production, conservation as well as sustainable utilization in the future.

Keywords: Buffalo, Farmers, Phitsanulok Province

Introduction

Buffaloes play an important role in Thai culture and Thai people since long time ago. This animal brings many advantages, such as, power for transportation and agricultural cultivation, organic fertilizer for plant as well as meat for human consumption. They can be raised from many kinds of agricultural by-products. However, nowadays, the importance of buffaloes in social of Thailand is changing (Skunmun, 2016). Buffaloes are produced mainly for food rather than power source because of development of mod-

ernization in machinery. Thus, it can lead to less attention of farmers to their buffaloes, especially on breeding and health care which resulted in decrease of productivity as well as number of buffalo. According to data from Department of Livestock Development (2016) and Phitsanulok Provincial Livestock Office (2015), number of buffaloes in Phitsanulok decreased dramatically from 16,368 heads (2005) to 10,030 heads (2015). Therefore, understanding about the production system may help to drive the agriculture in the region sustainably and support to farmer's livelihood as well as socio-economic outputs farmers

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in the area. Thus, the survey on the situation of buffalo production in Phitsanulok province was urgently needed.

Materials and Methods

The study was conducted by individual interviews to 106 buffalo farmers in Chat Trakan (21 farmers), Bang Rakam (33 farmers) and Phrom Phiram (52 farmers) districts, Phitsanulok province. The populations were collected by questionnaire from September 2015 to December 2015. A questionnaire covering the areas of buffalo farming was created and separated into three sets. The first set was related to the farmers' background (education background, career, and facility of the farms). The second set was focused to the farm production and management (farmers' dairy herd, production, decision making, feed and feeding, managements, sanitation and diseases, and marketing). And the third set was related attitude and opinions of the farmers. All sets of the questionnaire contained multiple choices, fill in the blank, and choose all were used. The questionnaires were randomly distributed by purposive samples to the farmers. The answers from individual farms were numberization for data analyses by computer. Descriptive statistics (e.g., percentage, mean, standard deviation, minimum, and maximum) were used to reveal situation of the production. The data were analyzed using by Microsoft Excel 2010.

Results and Discussion

Farmers' background

Average age of buffalo farmers in this study were 54.27 ± 9.61 years old (range from 26 to 77

years old). Most farmers (71.70%) had finished primary school level, 26.41% of them had educated for high school, and 1.89% of them had no education. The main career of farmers was agriculture (77.36%), livestock production (12.26%), own business (6.60%), and self-employed (3.78%). Farmers in the region received revenue mainly from agriculture (81.13%), livestock production (10.38%), and other sources (8.49%). The majority of farmers raised buffaloes as the second career (87.74%) more than the first career (12.26%). The land for raising buffalo was their own land (96.23%) and leased land (3.77%). Moreover, the main labor working for the farm is family members (94.34%). Only 5.66% of farmers had to hire labor to raise their buffaloes. The major source of investment fund for produce buffalo was from their own fund (64.29%), followed by loan (25.71%) and other source funds (10.00%), respectively.

The average age of buffalo farmers, educational level, careers, and labor in this study were similar to those reported in previous studies (Pookduang and Pinyoteppratan, 2008; Lambertz et al., 2012; Sadkrathok et al., 2012; Suhachavalit et al., 2012; Jumrasboonhirun and Akkrajun, 2015; Sarakul, et al., 2016). These values were close to those of the buffalo farmers in Thailand. It indicated that average age of buffalo farmers was rather old since the younger groups and those who were busy in education or moved to another place to work. There was another younger group who moved to the city and suburban for their jobs in industrial services and others. This made it necessary to support these young people to come back home and make buffaloes raising as their jobs. Therefore, the government has been working

on the project of the buffalo curriculum production in schools in order to teach children about the benefit of rearing the buffaloes. However, farmers with lower education level was no problems and obstacles for rearing the buffaloes, the important things were the experiences and the knowledge passing from earlier generation (Sadkrathok et al., 2012; Suhachavalit et al., 2012). The main career of the farmers was agriculture such as rice crop which could be counted as the main source of income. The labor was mainly from workers in the family. Because labors outside were costly and hard to find them. From this reason, farmers reared the buffaloes by themselves since the rearing needed less technique and take care. It was not so hard as dairy cattle or laying and broiler chicken etc. Farmers used own fund for buffalo production more than loan because buffaloes' feed was available in the field and the housing was easy to build so that buffalo production needed only little money.

Farm production and management

The average number of buffalo in each farm was 10.11 ± 9.45 heads (range from 1 to 68 heads per farm). These buffaloes were classified in to male (27.36%) and female (72.64%). Most farmers did not use any concentrate (88.68%) and only 11.32% of farmers sometimes used concentrate to feed their buffaloes. Source of roughage was diversified, such as from natural grassland (61.40%), grow by themselves (26.90%) or purchasing (11.70%). Farmers preferred to use fresh grasses (64.24%), rice straw (29.70%), and hay (6.06%). The primarily farmers raised buffalo by natural pasture (58.86%), pasture for grazing (24.00%), and cut and carried grass to their buf-

falo (17.14%). About 52.83% of farmers gave supplemental minerals to their buffaloes, whereas 47.17% of farmers did not supply any mineral. Farmers did not prefer to record any information (90.00%), more than keeping record (10.00%). Most of farmers were not interest in selection (83.02%) whereas the remains preferred to select sire and dam buffalo (16.98%). Some farmers preferred to breed their buffaloes by natural mating (75.47%), much more than artificial insemination (24.53%). However, farmers preferred to breed their buffalo by artificial insemination from government (96.15%) more than private organization (3.85%). Many buffalo farmers were not willing to pay for artificial insemination (95.28%). Moreover, farmers in this study did not calling dam (92.73%). The reasons for calling dam buffaloes were low fertility rate (50.00%), over age (37.50%), and low grow (12.50%). Almost all buffaloes got vaccination (99.06%) which resulted in little observation of disease occurs (2.83%). All of buffaloes were treated against parasites.

The study indicated that it was popular among farmers to produce female buffaloes since they gave economic return production better than male buffaloes even though male buffaloes could be sold easily when they were grown up. Farmers used the natural grass growing around the field as buffalo feed and rice straw which was a by-product of the rice trunks left after the harvest. Some farmers saved some area of his farm growing grass using as buffalo feed during the rice growing season. A few farmers used by-product from agriculture such as sugar cane leaves, corn cob, and corn husk. Main roughage for the buffaloes in rainy season was natural grass and when in dry season the feed was rice straw. Moreover,

there was no supplement concentrate feed. Considering, the phenotype of the buffaloes was not thin but they did not look healthy enough because they did not get proper nutrition. This affected the production of buffaloes. The effect was the farmers' overlooking for the importance and benefit of supplement concentrates since they thought rice straw was the only feed in dry season, a method of raising the buffaloes inherited from their ancestors. If the farmers gave the supplement concentrates for their buffaloes in dry seasons, after the delivery of the buffaloes, buffalo weaning, and sire buffalo production that there was going to be more efficient. Thus, it was beneficial to give the farmers knowledge of supplement concentrates and to demonstrate how to mix concentrates by using their own raw materials available and by product from agriculture in their farms. However, most farmers added mineral supplementation for their farms because there was offered mineral blocks from department of livestock development (Phothong et al., 2013).

Ninety percent of all farms did not keep records in this study because farmers thought about that it was a waste of time and cumbersome for them. However, farmers did not realize that it was important to record for farm. They should record income and expense accounts of their farms in order to know about cost and return buffalo production to control unnecessary payment or wasteful expenditure. Moreover, farmers did not prefer to selection sire and dam buffalo for mating. This was different in the study of Phothong et al. (2013) who reported that 89.33% of farmers selected male and female buffaloes for mating. This shown that the farmers had knowledge to development of breeding. It was revealed that 77.67% of farm-

ers used to be trained in buffaloes raising for selection and mating. And they did not prefer to breed their buffalo by artificial insemination. The result was in agreement with that reported by Changindra and Nongman (2003); Punsawat et al. (2007); Pookduang and Pinyotepratan (2008); Subanan et al. (2012) they found that most farmers used natural mating in the areas. However, Thomas (2008) reported that in most cases at the village level and in the home tracts of buffalo there is no information on the buffalo bull or on the dam and this information is seldom considered while breeding. This has been one of the major reasons for the diversity in both the productive and reproductive traits of buffalo.

In this study, farmers who used artificial insemination method preferred to service from the government official rather than private organization. They usually also requested for vaccination and treated against parasites with their buffalo. This confirms with the study of Sadkrathok et al. (2012) who claimed that the services from the volunteers of the department of livestock development were popular among the farmers. These volunteers were selected under the department of livestock development and played the important roles to help and support the tasks of the officials of the department of livestock development. The suggestion is firstly; the volunteers should be selected for every area where the buffaloes raised. Secondly; the volunteers should be attended in terms of salary and services that should be deserved for their efficient works. Moreover, the department of livestock development should train farmers to be experienced buffalo with useful knowledge to improve and develop better buffalo raising in the future.

Attitude and opinions of the farmers

Most problem and obstacle in this study were feed and feeding (36.00%), followed by marketing (25.00%), knowledge and technology (17.00%), disease and disease prevention (12.00%), and breed and breeding (10.00%), respectively. Moreover, most farmers reported that they needed to practice about feed and feeding (46.23%), followed by disease and disease prevention (29.25%), breed and breeding (14.15%), and other (10.37%), respectively.

The problem and obstacle of the buffalo production mainly focused on feed and feeding. This result was similar to that reported by Pookduang and Pinyotepratan (2008); Phothong et al. (2013). They found that the first problem was a lack and inadequate of roughages. And The second one was a lack of labors in buffalo raising and the third problem was the lack of knowledge in buffalo raising that caused the death or losing weight of buffaloes, unhealthy and giving small production of young buffaloes and finally, the lack of officials for their advices. These results suggest that farmers should change their attitude in that 'rice straw is for buffaloes' as it was in the past and turn to focus on animal feed by saving the area for growing roughage or grasses for animals. The officials from the department of livestock development should give advices for the roughage, how to grow, and harvesting and maintenance methods. The responsible department should support and promote the growing of grasses for buffaloes as well as increasing the areas of grass land including the new technology of animal feed should be suggested and offered to farmers so that most of them can reach the good grasses.

Moreover, the strategies to carry on the project were important such as how to create the satisfaction in the farmers and how to make the farmers accept the technologies the officials offered. This depended on both the officials and the technologies whether they are suitable manner with economic and social situations of farmer. It was the duty of the officials to adapt or adopt technologies and their work to be suitable for the farmers and to make them successful (Sadkrathok et al., 2012). However, in this study focused in only three districts, Phitsanulok province. These results are limited for the sample groups and are portrayed only one aspect. It might not be suitable to bring the finding to apply to every area. The advice is that the finding should be used in the area that is similar to the sample groups and further study should be carried on to find more problems and obstacles in buffalo production and suitable problem solving. This needs to be supported by an extension program conducted in a suitable manner to implement the strategies at the village level for conservation and sustainable utilization in the future.

Conclusions

In conclusions, this study was confirmed that most farmers had primary school level. The main career of farmers was agriculture and also received revenue from agriculture. The area for raising buffalo was own land and used family members to raise their buffaloes. Mainly source of investment funds for producing buffalo was from their own fund. Most farmers did not use concentrate and source of roughage was from

natural grassland. Farmers preferred to use fresh grasses and gave mineral supplementation. Most farms did not keep records and did not selection buffaloes breed. However, farmers preferred to breed their buffalo by natural mating. Moreover, farmers did not calling dam. Almost all buffaloes were vaccinated, and treated against parasites. The most important problem and obstacle of buffalo farmers in this study was feed and feeding and also needed to practice about feed and feeding to their buffaloes.

References

- Changindra, C., and S. Nongman. 2003. A study on buffalo raising condition and participation in activity of Nongbaudong livestock raising farmer group in Sisaket province. Surin Provincial Livestock Office. 1-2 pp. Available: <https://goo.gl/no4tVa>. Accessed Oct. 25, 2016.
- Department of Livestock Development. 2016. Number of buffalo in 2005-2015. Bureau of Livestock Standards and Certification, Bangkok.
- Jumrasboonhirun, I., and A.Akkrajun. 2015. A Study on Situation in Buffalo Raising of Farmers in Mukdahan Province. Mukdahan Provincial Livestock Office. 32 pages. Available: <https://goo.gl/W4mwvD>. Accessed Oct. 25, 2016.
- Lambertz, C., C. Chaikong, J. Maxa, E. Schlechtb, and M. Gauly. 2012. Characteristics, socioeconomic benefits and household livelihoods of beef buffalo and beef cattle farming in Northeast Thailand. *J. Agr. Rural Develop Trop. Subtrop.* 113 (2): 155-164.
- Phitsanulok Provincial Livestock Office. 2015. Number of Native Chicken and farmers in each of Districts at Phitsanulok Province. Available: <https://goo.gl/AH8ivz>. Accessed Oct. 25, 2016.
- Phothong, T., A. Thanadet, and S. Boonprong. 2013. A Study on Situation in Raising Buffaloes and Satisfaction of Farmers in Srakaew Province. Office of Regional Livestock. 33 pages. Available: <https://goo.gl/NPSL0n>. Accessed Oct. 25, 2016.
- Pookduang, J., and C. Pinyotepratan. 2008. Factors of Effecting on Sustainable Density of Swamp Buffalo Raising in Surin Province. Surin Provincial Livestock Office. 26 pages. Available: <https://goo.gl/nvSmm4>. Accessed Oct. 25, 2016.
- Punsawat, N., S. Kloybanmai, and P. laowthon. 2007. Situation of Swamp Buffalo Production by Farmers in Nakornsritammarat Province. *E journal academic of Bureau of Animal Husbandry and Genetic Improvement.* 32 p. Available: <https://goo.gl/G48Tqw>. Accessed Oct. 25, 2016.
- Sadrathok, P., S. vongkhan, and C. Chumcheen. 2012. Situation of Buffaloes Production and Farmer Satisfaction on forage Extensions under Research and distribution Buffalo network farm. *E journal academic of Bureau of Animal Husbandry and Genetic Improvement.* 1: 90-110.
- Sarakul, M., S. Yaemkong, P. Rodchoom, P. Sirisom, T. Suranarakul, and P. Jaipong. 2016. Situation and factor affecting on swamp buffalo production for conservation and genetic develop swamp buffalo of farmers in Songkhram wet land, NakhonPhanom Province. *Khon Kaen Agr. J.* 44 (Suppl.2): 841-849.
- Skunmun, P. 2012. Sustainability of Smallholder Ruminant System. *Khon Kaen Agr. J.* 40 (Suppl.2): 33-36.
- Subanan, S., P. Satkatok, P. Chusen, N. Sanghuaphai, and S.Booprong. 2012. Situation in Raising Buffaloes and Satisfaction of Local Farmers in Saraburi Province. *E journal of academic Bureau of Animal Husbandry and Genetic Improvement.* 1: 33-51. Available: <https://goo.gl/YhBCNr>. Accessed Oct. 25, 2016.
- Suhachavalit, S., P.Sricharoen, and T.Luesopa. 2012. The Effect of Factors on Buffalo Conservation for Draught Power of Farmer in UbonRatchathani Province. Division of Livestock Extension and Development. Department of Livestock Development. 43 pages. Available: <https://goo.gl/rD3Lla>. Accessed Oct. 25, 2016.
- Thomas C.S. 2008. Efficient dairy buffalo production. DeLaval International AB, Tumba, Sweden. 79 pages.