Research Articles

Factors Affecting Problem and Obstacle of Beef Cattle Production in Phitsanulok Province, Thailand

Suphawadee Yaemkong[1*] Tuan Nguyen Ngoc[1,2] Sirikanda Yaemkong[3]

[1]Faculty of Food and Agricultural Technology, Pibulsongkram Rajabhat University, Phitsanulok, Thailand
[2]Faculty of Fisheries, Vietnam National University of Agriculture, Ha Noi, Viet Nam
[3]Faculty of Management, Uttaradit Rajabhat University, Uttaradit, Thailand

[*]Corresponding author, E-mail address: suphayaku@hotmail.com

Abstract

The purpose of this research was to analyze the problem and obstacle of beef cattle production based on the factors of age of farmers, educational background, and farm size. The purposive samples used by a questionnaire were 120 farmers in Ban Dong subdistrict, Chat Trakan district, Phitsanulok province, Thailand. The considering factors were statistically tested. Least square means were calculated and used to compare the studied traits. The results revealed that age and educational background of farmers did not have a statistical effect on the problem and obstacle in breed and breeding, feed and feeding, disease and disease prevention, marketing, and knowledge and technology of beef cattle production (P>0.05). On the other hand, farm size did have an effect. Disease and disease prevention, and marketing of beef cattle production were varied across the farm size (P<0.05). However, considering the farm sizes, it was found that the medium and large farms had different (P<0.05) problems and obstacles in disease and disease prevention and marketing of beef cattle production from the small farms, but no difference between medium and large farms. These results implied that to improve efficiency of beef cattle production at different farm size requires the different strategies.

Keywords: Problem and obstacle, Beef cattle production, Farmers

ปัจจัยที่มีผลต่อปัญหาและอุปสรรคในการเลี้ยงโคเนื้อในจังหวัดพิษณุโลก ประเทศไทย

สุภาวดี แหยมคง[1*] Tuan Nguyen Ngoc[1,2] ศิริกานดา แหยมคง[3]

[1]คณะเทคโนโลยีการเกษตรและอาหาร มหาวิทยาลัยราชภัฏพิบูลสงคราม จังหวัดพิษณุโลก
[2]Faculty of Fisheries, Vietnam National University of Agriculture, Ha Noi, Viet Nam
[3]คณะวิทยาการจัดการ มหาวิทยาลัยราชภัฏอุตรดิตถ์ จังหวัดอุตรดิตถ์

[*]ผู้รับผิดชอบบทความ E-mail address: suphayaku@hotmail.com

บทคัดย่อ

การศึกษาวิจัยครั้งนี้มีวัตถุประสงค์เพื่อวิเคราะห์ปัญหาและอุปสรรคในการเลี้ยงโคเนื้อโดยมีปัจจัยที่เกี่ยวข้อง ได้แก่ อายุของเกษตรกร ระดับการศึกษา และขนาดฟาร์ม ทำการสุ่มแบบเฉพาะเจาะจงโดยใช้แบบสอบถามกับเกษตรกรรายย่อยในตำบลบ้านดง อำเภอชาติตระการ จังหวัดพิษณุโลก จำนวน 120 ครัวเรือน อิทธิพลของปัจจัยที่พิจารณาถูกนำมาทดสอบความมีนัยสำคัญทางสถิติ ค่าเฉลี่ยแบบลีสแควร์ถูกคำนวณค่าและนำมาใช้ในการเปรียบเทียบลักษณะที่ศึกษา ผลการศึกษาพบว่า ปัจจัยอายุและระดับการศึกษาของเกษตรกรไม่มีอิทธิพลต่อพันธุ์และการปรับปรุงพันธุ์ อาหารและการให้อาหาร โรคและการป้องกันโรค การตลาดโคเนื้อ และความรู้และเทคโนโลยีในการผลิตโคเนื้ออย่างไม่มีนัยสำคัญทางสถิติ (P>0.05) ตรงกันข้ามกับปัจจัยของขนาดฟาร์ม พบว่ามีอิทธิพลต่อโรคและการป้องกันโรค และการตลาดโคเนื้ออย่างมีนัยสำคัญทางสถิติ (P<0.05) อย่างไรก็ตาม เมื่อทำการวิเคราะห์แยกตามขนาดฟาร์มของเกษตรกร พบว่าฟาร์มขนาดกลางมีปัญหาและอุปสรรคต่างจากฟาร์มขนาดเล็ก (P<0.05) แต่ไม่แตกต่างจากฟาร์มขนาดใหญ่ ผลการศึกษาครั้งนี้บอกเป็นนัยว่า ในการปรับปรุงประสิทธิภาพในการผลิตโคเนื้อในแต่ละฟาร์มที่มีขนาดแตกต่างกันนั้นจำเป็นต้องใช้กลวิธีในการป้องกันและแก้ไขปัญหาที่แตกต่างกัน

คำสำคัญ : ปัญหาและอุปสรรค การเลี้ยงโคเนื้อ เกษตรกร

Introduction

Beef cattle production in Thailand has long been developed and promoted. Totally, Thailand has nearly 800,000 labors working in this sector and currently has 5 million cattle (Department of Livestock Development, 2017). However, recently, the situation of economic and social competence of beef cattle production has faced insecurity with many problems. First of all; attention has not been paid in beef cattle breeding. It was found that 32.50% of beef cattle is purebred and the remainder is crossbred (67.50%) and focused on native cattle and crossbred native cattle. Moreover, artificial insemination from good sire for dam supported by the government was not sufficient for the farmers. This led to the problem of the lack of good sire and dam to improve the quality and quantity of beef cattle production. Secondly; limitation of roughage and amount of animal feed are problematic. Water shortage for growing roughage as well as farmers' lack of knowledge to store animal feed for dry seasons make it become one of the biggest constrain for development beef cattle. Finally, the higher mortality rate of beef cattle caused by diseases, especially in small size farms indicated that animals were not kept in good condition of management (Laorodphan, 2007; Kankaew et al., 2012; Khemsawat et al., 2014). According to the Department of Livestock Development (2017), effectiveness of government in preventing and controlling of epidemic in beef cattle is caused by less amount of vaccine for epidemic.

In the same context, Phitsanulok is not an exception. This is a province located in Central Thailand and beef cattle production plays an important role for the economic. Phitsanulok currently has proximately 3,000 labors relying on this career and contributes about 30,000 heads of cattle (Phitsanulok Provincial Livestock Office, 2017). Yaemkong (2016a) conducted a research in Wat Bot and Phrom Phiram districts and pointed out that production cost and return from raising cows to produce calves and fattening cattle of small scale farmers. In another study, Yaemkong (2016b) stated the current status of beef cattle production and to study the approaches and evaluate the effectiveness of process on beef cattle production.

Ban Dong sub-district, Chat Trakan district is one of the biggest district in term of cattle production with contributing about 6,500 cattle annually. Farmers in this district tend to produce calf for selling more than fattening cattle (Phitsanulok Provincial Livestock Office, 2017). This orientation has some advantages, such as less dependent on feed availability in dry season, shorter productive cycle etc. However, it contains more security for keeping dams and more sensitive calves. This research was to analyze the problem and obstacle of beef cattle production in order to help farmers, policy makers find out solution to develop cattle production in the region.

Materials and Methods

Study area of dataset

The dataset records were collected from 120 farms in Ban Dong subdistrict, Chat Trakan district, Phitsanulok province (16° 31' 23" to 17° 44' 31" north latitude and 99° 52' 27" to 101° 04' 34" east longitude; Figure 1), Thailand by the purposive samples. A questionnaire covering the areas of farmer was created and tested using a group of beef cattle farmers.

Traits and data preparation

The studied traits composed of the problem and obstacle of beef cattle production i.e. 1) breed and breeding, 2) feed and feeding, 3) disease and disease prevention, 4) marketing, and 5) knowledge and technology on beef cattle production. For factors data analysis, age of the farmers, which were the number of farmer years since birth, were classified as 1) less than 30 years of age, 2) 30 to 60 years of age, and 3) more than 60 years of age. According to the distribution of the dataset, education of the farmers, which were the highest degree of education of the farmers, were classified as 1) no education, 2) primary school, and 3) high school or higher degree. Farm size, which were defined based on the number of beef cattle, were classified as 1) small = less than 10 cattle, 2) medium = between 10 and 19 cattle, and 3) large = 20 or more cattle.

Statistical analysis

All considered factors (e.g. age of the farmers, education background of the farmers, and farm size) were tested for their effect on the variation of the studied traits [i.e., 1) breed and breeding, 2) feed and feeding, 3) disease and disease prevention, 4) marketing, and 5) knowledge and technology on beef cattle production] using procedures in SAS software (SAS, 2004). The factors model included the fixed effects of age of the farmers, education background of the farmers, farm size, and residual. Residual effects were assumed to have mean zero and a common variance ($\acute{O}_f^2$). Least square means (LSM) of the studied traits were estimated according subclasses of the considered factors, and then they were compared using Duncanís multiple range tests. The significance level for comparisons was set to $\alpha = 0.05$.

Results and Discussions

The comparison among problems and obstacles of beef cattle production has been classified by the age of the farmers, their education background of the farmers and the farmís size at Ban Dong subdistrict, Chat Trakan district, Phitsanulok province, Thailand

Age of farmers

Age of farmers were classified into 3 levels: less than 30, from 30 to 60 and above 60 years of age. There was no significant effect of age on the problems and obstacles of beef cattle production (breed and breeding, feed and feeding, disease and disease prevention, marketing, and knowledge and technology). The results indicated that the average problems and obstacles of beef cattle within farmers less than 30 years of age (2.90±0.14) were the highest, followed by farmers with 30 to 60 years of age (2.78±0.24) and farmers with more than 60 years of age (2.74±0.22), respectively (Table 1).

Most farmers in this study (68%) had 30 to 60 years of age, 21% had less than 30 years of age, and 11% had more than 60 years of age, respectively. This result agreed with several investigators (Laorodphan, 2007; Lambertz et al., 2012; Yaemkong, 2016b) who reported that the age of most farmers was above 31 years old. However, the result from age of farmers factor in this study revealed that older farmers had better knowledge, understanding and know how to appropriately manage their cattle under the economic situations and tropical conditions that is normally difficult for younger farmers. Beef cattle in those farms then were in a better environment and management, which could support them grow better and be healthier. The older farmers were able to provide cows with better management

(e.g. selection of good breeders), better nutrition (e.g. cheaper roughage source alternatives of high nutritional value in difficult economic times such as fresh grass, cassava leaves, leucaena leaves, corn silage, and grass silage), and better health care because of their experience and knowledge of how to prevent diseases and manage to cure some symptoms on their own (e.g. foot and mouth disease, brucellosis, hemorrhagic septicemia and etc.) without having to call veterinarians, thus keeping costs low in the farm.

Education of farmers

Educational levels of farmers in this study were classified into three levels: no education, primary school, and high school or higher degree level. In fact, there was no owner having graduated level and higher. The average problems and obstacles of beef cattle production showed that farmers with no education were the highest (2.84±0.17), followed by farmers with a primary school education (2.74±0.23) and farmers with high school or a higher degree level (2.73±0.22), respectively (Table 1). Results showed no significant differences for problems and obstacles included the aspects of breed and breeding, feed and feeding, disease and disease prevention, marketing, and knowledge and technology of beef cattle production.

As indicated in other literatures (Kankaew et al., 2012; Motiang and Webb, 2016), farmers with a higher level of education showed a better level of capability to adjust themselves to technology and management as well as the ability to reach the information faster than those with lower education. Thus, higher education farmers produced beef cattle production better and also resulting in less problems and obstacles of beef cattle production than those with a lower education. The distribution of the farmers in this study had primary school (75%), 15% of them were those who had high school or higher degree, and 10% of them had no education level. Similarly, this value of farmers was also found by Suppadit et al. (2006); Motiang and Webb (2016). These farmers were representatives of all the farmers who needed the governmentsí support in new technology and knowledge to promote productions and incomes (Koonawootrittriron et al., 2015; Sansala and Wongsamun, 2013). This suggestion was that systematic training should have been offered to them as well as the information.

Farm size

Farm sizes were classified into three group: small, medium, and large size. The average problems and obstacles of beef cattle production reported that farmers with a medium sized farm were (2.78±0.20) the highest, follow by farmers with a large size farm (2.77±0.23) and farmers with a small size farm (2.69±0.23), respectively (Table 1). However, no significant effect was found on breed and breeding, feed and feeding, and knowledge and technology of beef cattle production ($P>0.05$). On the other hands, the results showed significant differences among farm sizes in the aspects of disease and disease prevention and marketing of beef cattle production ($P<0.05$). It is interesting to find that small size farms were different statistically ($P<0.05$) from medium and large size farms for problem and obstacle in disease and disease prevention while and marketing of beef cattle production but there was no difference between medium and large size farms for this aspect. The average problems and obstacles in disease and disease prevention of beef cattle production reported that farmers with medium size were (3.00±0.00) the highest, follow by

farmers with large size (2.95±0.22) and farmers with small size farm (2.79±0.43), respectively. Considering the problems and obstacles in marketing of beef cattle production, the large size were the highest (3.00±0.00), follow by farmers with medium size (2.95±0.21) and farmers with small size farm (2.71±0.47). It meant that the medium and large size farms got more problems and obstacles than small size farms (P<0.05).

According to this finding, the result revealed that small size farm had less number of beef cattle so that farmers were more flexible to sell cattle than medium and large size farms. Moreover, the problems and obstacles were related to the numbers of the beef cattle and quality management in the farms. Owners of large farms were not able to do everything by themselves but hired workers. Insufficient time was paid to take care for each beef cattle than was needed more in large size farms than small size farms. This result was similar with those of the beef cattle, dairy cattle and buffalo farms reported in literatures (Yeamkong et al., 2010, Kankaew et al., 2012; Lambertz et al., 2012; Koonawootrittriron et al., 2012; Khemsawat et al., 2014). Moreover, since the disease and disease prevention became problem for large farm more than small farm, the investment on veterinary service needs more care. To enlarge the farm, owner should consider more about feed, housing, labor as well as budget for disease prevention. Efficiency management of the farm depends much on attitude of workers, especially on the aspect of feeding and hygiene management. In this point, it was necessary that the large and medium size farms need to consider administration system and qualitative workers as well as the duration of efficient estimation in the farms.

In order to solve problems and obstacles of beef cattle production, increasing ability to understand new technology and knowledge, and opportunity for improving beef cattle production and profitability in their farms of the farmers themselves should be considered together with the improving of breed and breeding, feed and feeding, disease and disease prevention and also marketing of beef cattle production (Kankaew et al., 2012; Khemsawat et al., 2015; Yaemkong, 2016b). Since intensification and modernization are the orientation for development of agriculture, policy maker should be aware that more large farms may appear in future instead of small ones. Government should have more policy to support this kind of farm reduce risk from disease, marketing, production chain as well. Training on farm management, especially disease prevention are needed more urgently for farmers in the region.

Conclusion

In conclusion, this study confirmed that farm size had a statistical effect on problems and obstacles in disease and disease prevention, and marketing (P<0.05), but age and the educational background of farmers did not statistically effect all problems and obstacles. Medium and large farms had different (P<0.05) problems and obstacles in disease and disease prevention, and marketing of beef cattle production from the small farms, but no difference between medium and large farms. These findings suggest that farmers of beef cattle need systematic training and support information from the government and private organizations.

Table 1. Least squares means and standard errors for the problem and obstacle of beef cattle production by age of farmers, education of the farmers, and farm size.

Factors	Problem and obstacle					
	Breed and breeding	Feed and feeding	Disease and disease prevention	Marketing	Knowledge and technology	Overall average
Age of farmers						
Less than 30 years	3.00 ±0.00	2.50 ±0.71	3.00 ±0.00	3.00 ±0.00	3.00 ±0.00	2.90 ±0.14
30 to 60 years	2.70 ±0.48	2.50 ±0.70	3.00 ±0.00	2.90 ±0.32	2.80 ±0.42	2.78 ±0.24
More than 60 years	2.73 ±0.45	2.60 ±0.54	2.91 ±0.29	2.91 ±0.29	2.56 ±0.50	2.74 ±0.22
Education of the farmers						
No education	2.78 ±0.44	2.67 ±0.50	3.00 ±0.00	3.00 ±0.00	2.78 ±0.44	2.84 ±0.17
Primary school	2.73 ±0.45	2.59 ±0.59	2.90 ±0.30	2.88 ±0.33	2.59 ±0.50	2.74 ±0.23
High school or higher degree	2.71 ±0.48	2.43 ±0.54	3.00 ±0.00	3.00 ±0.00	2.57 ±0.54	2.73 ±0.22
Farm size						
Small size	2.79 ±0.43	2.64 ±0.63	2.79 ±0.43^{c}	2.71 ±0.47^{c}	2.50 ±0.52	2.69 ±0.23
Medium size	2.77 ±0.43	2.50 ±0.60	3.00 ±0.00^{a}	2.95 ±0.21^{ab}	2.68 ±0.48	2.78 ±0.20
Large size	2.67 ±0.48	2.62 ±0.50	2.95 ±0.22^{ab}	3.00 ±0.00^{a}	2.62 ±0.50	2.77 ±0.23

^{a,ab,c}Different superscripts within each column are significantly different (P<0.05)

Remarks: 2.34-3.00 = High level, 1.67-2.33 = Moderate level, 1.00-1.66 = Low level

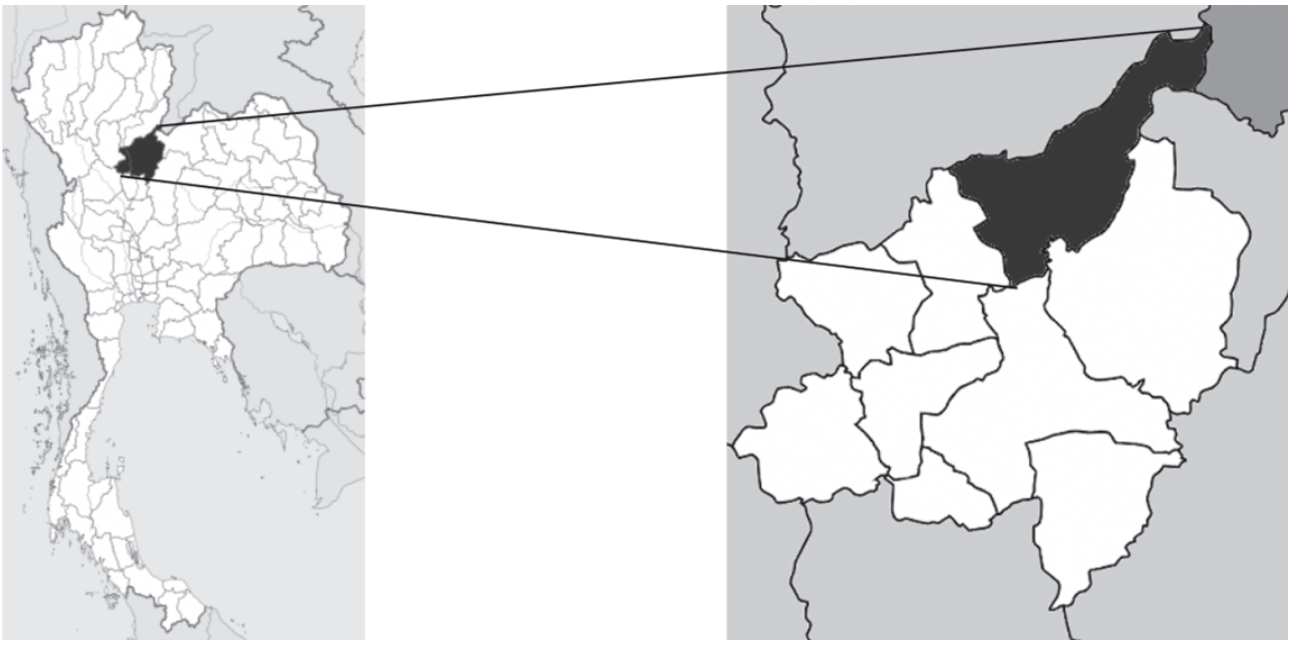

Figure 1. Map of Thailand showing located in Chat Trakan district, Phitsanulok province

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