ADOPTION OF GOOD AGRICULTURAL PRACTICES FOR BEEF CATTLE FARMING OF BEEF CATTLE – RAISING FARMERS IN TAMBON HINDARD, DAN KHUNTHOD DISTRICT, NAKHON RATCHASIMA PROVINCE, THAILAND

Tawadchai Suppadit[1*], Nittaya Phumkokrak[2] and Pakkapong Poungsuk[3]

[1]School of Social and Environmental Development, National Institute of Development Administration, Bangkapi, Bangkok 10240, Thailand

[2]Quality Assurance Division, Hoya Lens Thailand Ltd., Thanya Buri, Pathumthani 12130, Thailand

[3]Faculty of Industrial Education, King Mongkut's Institute of Technology Ladkrabang, Ladkrabang, Bangkok 10520, Thailand

ABSTRACT

The objectives of this study were to find out the current conditions of beef cattle – raising farmers, the level of good agricultural practices (GAPs) for beef cattle farming, and the factors related to GAPs for beef cattle farming, in order to recommend some ways to improve the practices and develop them. A questionnaire was employed to collect the data from 100 beef cattle – raising farmers in Tambon Hindard, Dan Khunthod District, Nakhon Ratchasima Province, Thailand. These farmers had at least three years of experience in raising beef cattle and owned at least 20 heads of cattle during June – October, 2005. The descriptive statistics, i.e., percentage, mean and standard deviation, were used to describe the data, and the inferential statistics that were used to test the hypothesis were t – test, F – test, and correlation. It was found that most of the beef cattle raisers employed GAPs at a moderate level. Education, household income, income from beef cattle raising, farm size, number of information source that gave advice about beef cattle raising, and opportunity to get advice were the factors found that significantly related to the practice of the beef cattle raisers at 0.05 level. It was recommended that the farmers be supported on the more correct practices of raising beef cattle which is in line with GAPs for beef cattle farming. The agency concerned should set a long – term plan on beef cattle raising extension. It should find markets and impose a standard price for beef cattle. Besides, there should be more coordination between the public and the private sectors and beef cattle – raising farmers.

KEYWORDS: beef cattle, beef cattle farming, cattle – raising farmer, Dankhunthod District, good agricultural practices, Nakhon Ratchasima Province, Tambon Hindard

[*]Corresponding author. Tel: +662 7273117 Fax: +662 3744280
E-mail: tawatc.s@nida.nida.ac.th; stawadchai@yahoo.com

1. INTRODUCTION

At present, the production of beef products in Thailand is increasing and the rate of beef product consumption in Thailand and foreign countries has also increased [1]. However, it was found out that the quality of domestic beef is below the standard [2]. This is due to the problem on the efficiency of production since beef cattle – raising farmers lack knowledge and understanding on correct beef cattle raising. Inadequate technology and extension also result in poor efficiency in beef cattle – raising [3]. These problems and the policy on free trade in the year 2004 prompted Thailand to import more beef with good quality which directly affects domestic marketing and pricing of beef produced in Thailand [4]. Thus, the Department of Livestock Development has accelerated its program to raise its standard on good agricultural practices (GAPs) for beef cattle farming proclaiming on February, 2005 [5].

GAPs for beef cattle farming are used to help farmers increasing their production of beef cattle with good quality beef, worth while for investment, good production process for safety, utmost utilization of existing resources, sustainable beef cattle production, and non – polluted environment [6]. The principles on GAPs for beef cattle – raising are as follows: 1) farm elements – farm location, farm form, and stable form, 2) farm management – management of stable area around stable, herd, feeds, data recording, staff, and farm management manual, 3) beef cattle health management – disease prevention and control and disease healing, and 4) environmental management – garbage disposal, feces management and sewage drainage [6]. GAPs can be used as a guideline for appropriate and standardized beef cattle production by increasing the opportunity of domestic beef cattle – raising farmers in Tambon Hindard, Dan Khunthod District, Nakorn Ratchasima Province since if, has the highest proportion of beef cattle – raising farmers in Thailand [7] to compete with imported beef.

The objectives of the study were to (1) investigate the basic conditions of beef cattle – raising farmers; (2) find the level of adoption of GAPs on beef cattle farming of beef cattle – raising farmers; (3) investigate factors related to the adoption of GAPs on beef cattle farming of beef cattle – raising farmers; and (4) find problems encountered in beef cattle – raising in accordance with GAPs for beef cattle farming. The expected results of the study were to (1) know the basic conditions of beef cattle – raising farmers; (2) learn the level of adoption on GAPs for beef cattle farming; (3) obtain data and information to use for improvement of GAPs for beef cattle farming; and (4) obtain data and information from the study for the related organization to improve practices about problems and prefixes. Hypotheses in this study were tested for relationship of variables between personal, economic and social factors as well as the utilization of beef cattle and the adoption of GAPs for beef cattle farming.

2. MATERIALS AND METHODS

One hundred beef cattle – raising farmers in Tambon Hindard, Dan Khunthod District, Nakorn Ratchasima Province, Thailand with three years experience in above and have 20 beef cattle and above were the respondents in this study. Their names were obtained from the registration of the Nakorn Ratchasima Livestocks Office, Dan Khunthod Branch. Variables used in this study consisted of dependent variable concerning personal characteristics (sex, age, educational attainment, marital status, and experience on beef cattle – raising), economic aspect (household income, income from beef cattle – raising, farm size, type of occupation, selling price of beef cattle, and type of staff employed for raising beef cattle), social aspect (number of information source employed for introducing beef cattle – raising, opportunity in obtaining academic suggestions about GAPs for beef cattle – raising) and benefit utilization of beef cattle (benefit utilization forms of beef cattle).

The questionnaire was used as a tool for collecting data and information in this study in June – October, 2005. It consisted of close and open – ended questions. Prior to the distribution of the questionnaire, the researcher had tested it by using Cronbach's Alpha [8]. Its reliability obtained was equal to 0.87 which means that the questionnaire had high level of

reliability. Data analysis was done through computer using Statistical Package for the Social Sciences: SPSS Version 11.0 [9], t – test, F – test and Pearson's Product Moment Correlation Coefficient, for hypotheses testing.

3. RESULTS AND DISCUSSION

3.1 Personal, economic, and social aspects and benefit utilization of beef cattle

Most beef cattle raisers were male (80%), aged between 56 – 65 years (37%), elementary school graduates (84%), and married (89%). They had not more than 5 years experience (23%) in raising beef cattle. In the same proportion, however, another group of them (23%) had 16 – 20 years of beef cattle raising experience. Most beef cattle raisers had an annual average household income 50,001 – 100,000 baht (33%) and income from beef cattle raising 30,000 baht (40%). They had not more than 30 beef cattle (62%) which they raised for supplementary income (73%). They usually sold one year old bulls the price of 8,001 – 11,000 baht/head (58%). Labor was family members (53%) and most of the beef cattle raisers (36%) were not given suggestions on beef cattle – raising by anybody within an average time of one year. Most of them had no opportunity to get academic suggestions about beef cattle – raising (40%) and many of them exchanged suggestions about it among themselves (41%). They also raised beef cattle to sell and to get sire and dam (91%).

3.2 Adoption of GAPs for beef cattle – raising

It was found that more than half of the beef cattle raisers (55%) had a high level of practices on farm elements in terms of having enough cattle pen and clean water source while most of them (83%) had a moderate level on farm management in terms of farm and equipments cleanliness, feed management and data records. Most of them (82%) had a moderate level on beef cattle health management practices in terms of vaccination and remedy and many of them (72%) also had a moderate level on environmental management in terms of cattle manure, odor and dust management. As a whole, it was found that most beef cattle raisers (76%) had a moderate level of doing GAPs for beef cattle farming.

3.3 Variables relationship analyses

3.3.1 Factors having relationship and effecting GAPs for beef cattle farming

Educational attainment: It was found that beef cattle raisers who had higher educational attainment had higher tendency to accept GAPs for beef cattle farming. This might be due to the fact that different levels of education may affect perceptions and learning ability on correct beef cattle – raising. Also, some practices need high level of knowledge such as disease healing and drug using. This is consistent to the study of Veeranant [10] on influential factors on adoption of commercial beef cattle – raising technology by farmers in Petchabun Province, Thailand. It was found that there is a statistically significant relationship between the adoptions of beef cattle – raising technology and educational attainment.

Household income: Result revealed that beef cattle raisers who had higher income had higher tendency to accept GAPs for beef cattle farming. This might be because they can afford to spend money on some expensive equipment or tools needed for a high standard of beef cattle farming. Thus, difference in family income may cause different capacities to buy expensive equipment and tools. This conforms with the study of Veeranant [10] on influential factors on adoption of commercial beef cattle – raising technology by farmers in Petchabun Province, Thailand. It was found that there is a statistically significant relationship between the adoptions of commercial beef cattle – raising technology and household income.

Income from beef cattle – raising: Result showed that beef cattle raisers who had higher income from beef cattle – raising had high tendency to accept GAPs. This might be due to the fact that those having annual average low income may lack capital or motivation to meet the standard practices on beef cattle – raising. This conforms with the study of Lertmanokoonchai [11] on the farmer's adoption of Charoen Pokphand Company's sow production technology in

Chiang Mai, Thailand that there is a positive relationship between the adoption of farmers of sow production technology and income from sow – raising.

Farm size: It was found that beef cattle raisers who had bigger farm (in terms of number of beef cattle: 1 – 30 small, 31 – 60 medium and more than 61 large) had high tendency to accept GAPs for beef cattle farming. This might be because owners of big beef cattle farms are innovative and they tend to improve or develop their farm practices rather than those having small farms. This conforms with the study of Veeranant [10] on influential factors on adoption of commercial beef cattle – raising technology by farmers in Petchabun Province, Thailand when he found significant relationship between farm size and the adoption of commercial beef cattle – raising technology.

Number of information source that gave advice about beef cattle – raising: Result of the study revealed that beef cattle – raisers who had more information sources and had contact who can give them advice about beef – cattle raising had higher tendency to accept GAPs than those who had lesser information sources. This might be because information source (member of beef cattle raiser group, officer, community leader and volunteer) can give advice using different ways that can make beef cattle raisers perceive the advice easier. This conforms with the study of Sirilerdwimon [12] on the adoptions of vegetable growing technology in the nylon net house of the farmers in Kanchanaburi Province, Thailand that there is a statistically significant relationship between number of information source that the farmers receive and adoption of vegetable growing technology.

Opportunity to get advice about GAPs: Result showed that beef cattle raisers who have more opportunities to get advice also have high tendency to accept the advice. This might be because they have motivation for improvement. This conforms with the study of Kijsomporn [13] on factors affecting farmers' adoption of the strawberry production technology in Mae Rim District, Chiang Mai Province, Thailand that there is a relationship between opportunity to get advice and the adoption on strawberry growing technology.

3.3.2 Factors having no influence and relationship with GAPs for beef cattle farming

Sex: It was found out that sex did not affect the adoption on GAPs. This might be because beef cattle – raising in Tambon Hindard is done by family members who can share opinions or ideas about beef cattle – raising activities. It was also found that most beef cattle raisers in this study were male (80%). Thus, sex does not affect GAPs. This conforms with the study of Ramchaidech [14] on the adoption of ISO 9002 for service improvement: a case study of the Communications Authority of Thailand (CAT), no statistically significant different was found in both male and female staff in the adoption of ISO 9002 for service improvement.

Age: Result showed age did not affect the adoption of GAPs. This might be because there are many factors affecting GAPs for beef cattle – raising such as opportunity to get advice and knowledge acquired as well as the practices of raising from the past to the present are almost the same. Thus age does not affect GAPs about beef cattle – raising. This conforms with the study of U – rungsimawong [15] on factors related to the adoption of Neem extracts used as an insecticide that age had no relationship with the adoption of farmers of the prevention of pests by using Neem extracts.

Marital status: It was found that marital status did not affect the adoption of GAPs for beef cattle – raising. This might be because most of the beef cattle raisers in this study (89%) were married. Hence, there was no difference on their adoptions GAPs about beef cattle – raising. This conforms with the study of Phujamrun [16] on adoption of greenhouse cut flower production promotion of Hmong in the Khun Wang Royal Project Development Center, Chiang Mai Province, Thailand that marital status did not affect the adoption of the extension of cutting – flower growing of Hmong.

Experience on beef cattle – raising: Result revealed that experience on beef cattle – raising did not affect the adoption of GAPs about beef cattle – raising. This might be because there is little change on beef cattle – raising activities from the past to the present that is, beef cattle were left eating grasses in the field. Thus, experience on beef cattle raising did not affect

GAPs. This conforms with the study of Suppadit [17] on the adoption of broiler production technology among independent farmers in Chiang Mai and Lamphun Provinces that farmers having different experiences did not affect their perception of technology.

Type of occupation: It was found out that major occupation or supplementary occupation for beef cattle raising did not affect the adoption of GAPs on beef cattle – raising. Based on the observation of the researcher during the data collecting process, it was found that there is no difference in terms of paying attention on beef cattle – raising among beef cattle raisers and their ways of beef cattle – raising. This conforms with the study of Nantharatana [18] on farmers' adoption of soil and water conservation practices at Khao Hinsorn and Ko Khanun Sub – district, Chachoengsao Province, Thailand that there is no relationship between major occupation/supplementary occupation and the adoption of soil and water conservation practices.

Price of beef cattle: It was found that price of beef cattle did not affect the adoption of GAPs for beef cattle – raising. This might be due to the fact that beef cattle raisers directly negotiate the price of beef cattle with buyers and both of them are satisfied with the negotiation. Hence, different beef cattle prices did not affect the adoption of GAPs. This conforms with the study of Kijsomporn [13] on factors effecting farmers' adoption of the strawberry production technology in Mae Rim District, Chiang Mai Province, Thailand that there is no relationship between price satisfaction and the adoption of strawberry growing technology.

Type of persons raising beef cattle: Result revealed that labor use in raising beef cattle did not affect the adoption of GAPs about beef cattle – raising. This might be because most of the beef cattle raisers in this study were family members (77%) these no difference was found between type of persons raising beef cattle and GAPs about beef cattle – raising. This conforms with the study of Petchprayoon [19] on factors affecting small farmers' adoption of Kamphaeng Saen beef cattle in Kamphaeng Saen District, Nakhon Pathom Province, Thailand that family labor force did not affect the adoption of Kamphaeng Saen beef cattle – raising technology.

Form of benefit utilization from beef cattle: It was found that benefit utilization from beef cattle did not affect the adoption of GAPs for beef cattle – raising. This might be due to the fact that there is similarity in form of occupation performed and benefit utilization from beef cattle of the raisers. Most beef cattle raisers had two aspects of benefit utilization from beef cattle. Almost all beef cattle raisers (91%) raised beef cattle for parental lines and to sell. This conforms with the findings of Tumwasorn [4] that there is little commercial cattle – raising and most of the cattle raisers raised them as supplementary occupation with the percentage of more than 90 in the whole country. This shows that most beef cattle raisers are similar in their ways in beef cattle – raising.

4. CONCLUSIONS

Most of the beef cattle raisers employed GAPs at a moderate level. The factors significantly related to the practice were education, household income, income from beef cattle raising, farm size, number of information source that gave advice about beef cattle raising, and opportunity to get advice. Ways of improving extension of GAPs were recommended as follows: 1) seminars and trainings on correct beef cattle – raising should be conducted for beef cattle raisers particularly on farm elements, farm management, beef cattle healthcare, and environmental management; 2) there should be cooperation between government and private sectors on the one hand and beef cattle raisers on the other hand much more than before, this can be done by arranging seminars and trainings, demonstrations and suggestions on beef cattle – raising; 3) long term plan on beef cattle – raising extension should be arranged, concerned agencies should find markets and determine the price of beef cattle for sustainable development, the price of beef should be base on the weight but does not base on per a cow/ox, normally, the price of beef cattle usually depends on the negotiation between beef cattle raisers and buyers; 4) further studies should be conducted on factors affecting the adoption of GAPs on beef cattle – raising in order to find an appropriate ways of beef cattle –

raising promotion and extension; 5) article about successful beef cattle raisers should be done in order to find factors contributing to affecting the success of beef cattle raisers; and 6) the government sector should invest time and money to increase the efficiency of beef cattle production and support technology development for them, this includes cooperation with private sector on researches in all aspects such as breeding, farm management, animal health care, disease prevention and control standard, farm development, beef cattle processing factories, and feed factories.

5. ACKNOWLEDGEMENTS

Authors wish to thank the graduate students from the Graduate Program in Environmental Management, School of Social and Environmental Development, National Institute of Development Administration for data collection.

REFERENCES

[1] Suppadit, T., Kittikoon, V., Key, J.P., Chaicumpa, W., Jaturasitha, S. and Pongpiachan, P. **2002** Utilization of Broiler Litter as a Source of Crude Protein for Cattle II. Productive Performance Aspects, *Thai Journal of Agricultural Science***,** *35*(4), 437-449.

[2] Ratana, A. **2004** Thai Swine Industrial in Year 2003/2004, *Livestock Inside Magazine***,** *12*(10), 69-72.

[3] Suppadit, T. **2003** The Recycle of Broiler Litter as a Feed Ingredient for Cattle to Reduce Environmental Pollution II. Nutrient Values of Broiler Litter, *Thai Environmental Consultants Journal*, *7*(1), 31-36.

[4] Tumwasorn, S. **2001** *Beef Cattle Raising:Tthe Ways to Thai Farmers' Occupational Development*. 2nd Edition. Bangkok, Aksornsiam Printing.

[5] www. http://www.dld.go.th/ict/data _ict/book_ict.html

[6] National Bureau of Agricultural Commodity and Food Standards, **2005** *Good Agricultural Practices for Beef Cattle Farming*. Bangkok, Ministry of Agriculture and Cooperatives.

[7] www. http://www.dld.go.th/planning/developmemt.htm

[8] Tirakanon, S. **2001** *Methodology on Social Science Research: Guides to Implementation*. Bangkok, Chulalongkorn University.

[9] Reungpraphan, C. **2001** *Data Analysis Program: SPSS for Windows*. Khon Kaen, Khon Kaen University Printing House.

[10] Veeranant, R. **1996** *Influential Factors on Adoption of Commercial Beef Cattle – raising Technology by Farmers in Petchabun Province*. Unpublished M.Sc. thesis. Maejo University, Thailand.

[11] Lertmanokoonchai, C. **1995** *Farmer's Adoption of Charoen Pokphand Company's Sow Production Technology in Chiang Mai*. Unpublished M.Sc. thesis, Chiang Mai University, Thailand.

[12] Sirilerdwimon, R. **2000** *Adoptions of Vegetable Growing Technology in the Nylon Net House of the Farmers in Kanchanaburi Province*. Unpublished M.Sc. thesis, Kasetsart University, Thailand.

[13] Kijsomporn, W. **1998** *Factors Affecting Farmers' Adoption of the Strawberry Production Technology in Mae Rim District, Chiang Mai Province*. Unpublished M.Sc. Independent Study, Chiang Mai University, Thailand.

[14] Ramchaidech, K. **2000** *The Adoption of ISO 9002 for Service Improvement: A C ase Study of the Communications Authority of Thailand (CAT).* Unpublished M.Sc. thesis, Kasetsart University, Thailand.

[15] U – rungsimawong, P. **2000** *Factors Related to the Adoption of Neem Extracts Use as an Insecticide : A Case Study of Farmers in Muang District, Nakhon Pathom Province*. Unpublished M.Sc. Research Paper, National Institute Development Administration, Thailand.

[16] Phujamrun, T. **2002** *Adoption of Greenhouse Cutflower Production Promotion of Hmong in the Khun Wang Royal Project Development Center, Chiang Mai Province*. Unpublished M.Sc. thesis, Chiang Mai University, Thailand.

[17] Suppadit, T. **1999** The Adoption of Broiler Production Technology among Independent Farmers in Chiang Mai and Lamphun Provinces, *Journal of King Mongkut's Institute of Technology Ladkrabang, 7*(2), 52 – 59.

[18] Nantharatana, P. **2003** *Farmers' Adoption in Soil and Water Conservation Practices at Khao Hin – sorn and Ko Khanun Sub – districts, Phanom Sarakham District, Chachoengsao Province*. Unpublished M.Sc. thesis, Kasetsart University, Thailand.

[19] Petchprayoon, P. **2000** *Factors Affecting Small Farmers' Adoption of Kamphaeng Saen Beef Cattle in Kamphaeng Saen District, Nakhon Pathom Province*. Unpublished M.Sc. thesis, Chiang Mai University, Thailand.