Interactions between agro-tourism and Local Agricultural Resources Management: A Case Study of Agro-tourism Destinations in Chang klang District, Southern Thailand

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Abstract: In developing countries, promoting agro-tourism is a policy of rural development, by increasing farmers’ incomes and encouraging their awareness of agricultural value. However, some agro-tourism studies have indicated the negative impacts on local agricultural resources management. This study describes the interactions between agro-tourism and local agricultural resources management, in order to suggest the forms of agro-tourism activity towards sustainable local agricultural resource use in tourism. Investigating seven agro-tourism destinations in Chang Klang District by in-depth interviewing the tourist farms and related organizations found that agro-tourism destinations operated agro-tourism activities to demonstrate agricultural processing, agricultural practice, farm products distribution, and agri-business guidance. More than ten years in such activities had encouraged increasingly the conservation of agricultural resources, value adding of local agricultural resources, and development of agricultural technologies. At the same time, these solutions had supported tourism business within Chang Klang District in terms of agro-tourism attraction. This complementary interaction was constructed in the early stage of agro-tourism promotion. At present, in the face of unstable tourism market, tourist farms tend to adapt a certain part of agricultural production processes for visitation in order to make a source of agricultural income from existing agro-tourism market without interference with the farms’ objective in agriculture. Such adaptation continually maintains Chang Klang District as an agro-tourism destination and should be a form of agro-tourism activity towards sustainable local agricultural resource use in tourism.

Key Words: Interaction, Agro-tourism, Agricultural Resources Management

INTRODUCTION

Agro-tourism is a part of tourism activities. It allows visitors to gain the knowledge of agriculture and appreciate the unique rural landscapes (Hall and Jenkins, 1998), and can be occasionally enjoyed as rural or farm tourism (Fleischer and Tchetchik, 2006). At present, agro-tourism is promoted widely in terms of a strategy for the conservation of agricultural resources (Ceballos-Lascurain, 1996), and the allocation of economic and social benefits (Hron and Smec, 2004). For example, agro-tourism in Italy conducting the agricultural and environmental education activities has served the protected areas from agricultural expansion (Scialabba and Williamson, 2004). In short, the concept of agro-tourism promotion covers the expectations on tourists’ increase of knowledge and realization on environmental conservation and agricultural residents’ quality of life improvement especially in developing countries which agriculture is still an important strategy in rural development (Akpinar et al., 2005).

However, in sense of interaction, agriculture and agro-tourism may also compete against one another in terms of the
use of agricultural resources of the farm, that is land, labour and capital. For example, a farmer growing commodity crops who intends to develop agro-tourism must allocate and convert part of his or her farming land to be used for agro-tourism (Sznajder et al; 2009). Besides, even though agro-tourism is associated closely with the rural context, but agro-tourism farms also require accommodations and other facilities in a similar manner to other types of tourism business in addition to the existing agricultural resources (Halfacree, 1993). Development of agro-tourism activities also does not have a significant influence on increasing agricultural production within the household operating agro-tourism, neither is the increase in the number of agricultural producers directly related with the development of agro-tourism (Brscic, 2006).

Thailand is a developing country with rich history and tradition in agriculture. The agricultural sector has played an important role in contributing to the economy throughout history. However, as the non-agricultural sector has been growing at a rapid rate during the past few decades, agriculture has gradually declined in its importance in terms of its share in economic growth (Thuvachote, 2007). Furthermore, local agricultural sector is facing the problem of price fluctuation amidst climate change, application of modern agricultural technologies, and the cost of machineries and chemicals. These factors resulted in the decline in the number of Thai agriculturists. Therefore, the combination of agricultural activities with tourism services, known as agro-tourism, is one of the key approaches to rural development (Tanupol et al., 2000).

Promotion of agro-tourism in Thailand officially started in 1995. The existing agro-tourism activities within communities are mainly categorized as short-term activity participation and typically involves visiting the farm with participatory harvesting, overnight stay in the village to experience the villagers’ way-of-life, observing both modern and traditional agriculture, and distribution of agricultural products (Bureau of Farmer Development, 2005). As Thailand enters the boom in agro-tourism promotion, there are visiting farms located throughout the country (DAE, 2005).

Currently, more than 400 agricultural villages throughout regions of Thailand have been officially promoted as agro-tourism destinations, and a number of potential communities are being developed for agro-tourism. However, agro-tourism is a relatively new activity for Thai farmers and the impact on local agricultural resource management has not yet been studied. Review of the relevant literature found that all of the existing studies on agro-tourism in Thailand are focused primarily on promotional activity and feasibility for agro-tourism in various regions of the country (Boonlum et al., 2004; Chamsnirsi et al., 2006; Kong-in, 2002; Peimnivat, 2001; Leachatit, 2002).

In the practice of agro-tourism promotion in Thailand, while many agricultural communities have been promoted as agro-tourism destinations for years, and usually discussed only by way of agricultural incomes increase, it found that many developers have presented their concerns of its impacts on local agricultural resources use. So, the explanation of how agro-tourism and local agricultural resources management are interacted under the context of multifunctional agriculture can suggest the form of agro-tourism activity and the use of local agricultural resources in tourism towards sustainable local agricultural resources use in tourism.

To understand interactions between agro-tourism and local agricultural resources management, Chang Klang District located in southern Thailand, a well-known of agro-tourism destination which operated by local agriculturists since 1997 is an appropriate case study. Historically, Chang Klang District possesses rich natural resources of great diversity, a mountainous terrain with various plantations, and a lowland area with rice paddies, animal husbandry, vegetable gardens and fruit orchards, which provides a wide range of agricultural occupations. Most of the residents are farmers whose farmland generates a wide range of agricultural products. In 1997, due to the Asian economic crisis and its existing fame for agriculture, agro-tourism began to be promoted in the district to improve the local agriculture.

For years of agro-tourism promotion in this district, this research investigated the forms of agro-tourism activity and the features of interaction between agro-tourism and local agricultural resources management. This understanding can be inferred to the form of agro-tourism activity towards sustainable local agricultural resources use in tourism.

### Features of local agricultural resources management

Generally, agriculture means the cultivation of animals, plants, fungi, and other life forms for food, fiber, bio-fuel and other products used to sustain life (International Labor office, 1999), or agriculture is the science, art, and business of cultivating soil, producing crops, and raising livestock farming. As this sense, agricultural production depend on the management of knowledge, production technologies, skills, and natural resources, including land, water, and genetic material. Focusing on this research, these are agricultural resources depending on the decision made by the operators of farms. Additionally, agricultural resources use is also complied by the conditions of public policies, market, and the specific characteristics of individual farms and households.

In terms of local agricultural resources management, a term of local in this study refers to small scale agriculture operating by household or agriculturist group, generally in rural area. Local agriculture in this sense is a complex process of plants, animals, soil, labour, knowledge, and technologies management, as well as environmental influence. Attempt of residents to produce agricultural productions relies on the existing agricultural resources in relation to the
cultural, historical, regional, and ecosystem conditions. In other words, local agricultural resources management is interactions between human and natural resources which traditionally resulted from beliefs, values, and knowledge of technologies (Shaner et al., 1982).

Pragmatically in local agricultural resources management, each agricultural household or farm occupies specific agricultural system in term of the difference of land, water, geographies, animals, etc. The components in such agricultural system are intervened in order to properly adjust agricultural resources use. This adjustment is expected to generate desired productions such as plants and animals. However, at present some part of local agricultural production processes seem to depend on external inputs such as chemicals and information (Duckham and Masefield, 1970). Regarding this study, agro-tourism is mentioned as a kind of external inputs in the process of local farming which affects the local agricultural resources management.

Additionally, local agricultural resources management can be focused on the aspect of farmers’ decision making in farming. In this sense, local agricultural resources management is a behavioral decision making which depended on a wide range of aforementioned conditions.

In case of this study, in condition of agricultural resources management within farm is generally related to the conditions of stability of production, and value of agricultural resources use (Atipnan, 1999) it is possible that agro-tourism activity becomes such conditions. Besides, agricultural decisions making of farmers also depend on the purposes of farming, the types of production, and the main activities in farming (Thungwa, 1998). As this concept, the condition of farms are developed as agro-tourism sites, the objectives of farming, the types of production, and the main activities in farming may be changed.

**Agro-tourism definitions and policy application**

Most agro-tourism definitions are generally accepted in term of tourism business operating within farm by way of entertaining and educating the visitors by farm owners themselves (Reynolds, 2005). Other accepted definition of agro-tourism is that agro-tourism is a part of rural tourism (WTO, 2003). However, tourists and farm owners’ expectations in agro-tourism are different. The visitors expect that agro-tourism makes them to accustom and participate with agricultural culture, production, environment, and recreation, while farm owners expect that agro-tourism is activity generating a source of agricultural income. Nowadays, the term of agro-tourism is used in combination with other word such as agritainment (Blevins, 2003).

Regarding the mentioned concept, agro-tourism is also included as a means in rural development. In this process many agricultural sources within farm such as accommodation, meal, water, labour, space, etc which unapplied in the process of agricultural production are offered in varying activities of agro-tourism in order to generate extra income to farmers. Therefore, this advantage raises the policy of agro-tourism promotion especially in developing countries (Jenkins et al., 1998; Kaminasi, 1995).

Policies of agro-tourism promotion cover expectations of tourists’ increase of knowledge and realization on environmental conservation, farmers’ quality of life improvement by means of adding values of community agricultural activities, and improving natural resource management. From this sense, agricultural resource management is targeted substantially on the conservation of biodiversity which uses agro-tourism as a means together with other methods of agricultural resource management. At the same time, income from agro-tourism will be used partially for agricultural resource conservation. Additionally, emergence of livelihood alternatives and increase in income among community members help in reducing the problem of expanding agricultural land (Gaworecki, 2006).

**Functions of agro-tourism in local agricultural resources use**

Generally, agro-tourism provides income, employment, utilization of existing facilities, agricultural activity areas, natural conservation, and recreation and education of the population in urban and rural areas. However, related literatures scope functions of agro-tourism in three respects: social, economic, and environmental role (Iakovidou et al., 2000).

Focusing on functions of agro-tourism in local agricultural resources it also covers the mentioned functions. The socio-psychological function covers gaining new skills, meeting new people, reviving rural tradition, and education. The economic function covers extension of accommodation facilities, additional workplaces, additional sources of income, income for communes, overcoming economic recession, and promotion of socio-economic development. And the spatial and environmental function covers enhanced environmental and natural protection, development of local infrastructure, improved value of houses, resource utilization, and stopping mass migration from rural areas. In this study, such multifunctional agro-tourism in a wide range of agricultural resources use can be described as an aspect of interaction between agro-tourism and local agricultural resources management.
Agricultural resources management in tourist farm

Sznajder et al., (2009) describes the differences of agricultural resource use between agricultural and agro-tourism farm. In case of agricultural farm, it maximizes the use of agricultural resource (such as land, labor, intuition, material, etc), for agricultural production, whereas tourist farm excludes a part of agricultural use for agro-tourism purposes such as buildings, car parks, etc. It can be said that the principles of agricultural farm and tourist farm are reversed.

Focusing on agricultural production, agricultural farm engages only in breeding and possibly processing activities, specialization of production, and increasing the scale of production, whereas tourist farm take agriculture in various proportions, the structure of agricultural activities are subordinated to agro-tourism.

The use of agricultural resources, agricultural farm uses modern technologies, especially fertilizers and pesticides in order to maximize the profit from agricultural productions, whereas agro-tourism emphasizes on extensive production, environmental protection, and moderate use of fertilizers and pesticides.

Interactions between agro-tourism and agricultural resource management

What is interaction, many dictionaries indicate that the word “interaction” means a mutual or reciprocal action. In this sense, interaction is a kind of action that occurs as two or more objects have an effect upon one another. The idea of a two-way effect is also essential in the concept of interaction. However, interaction has different tailored meanings in various sciences. Regarding this study, interaction means interdependent or mutual or reciprocal action or two-way effect between agro-tourism and agricultural resource management.

The concept of local agricultural resources management as remarked above is the choosing of agricultural activity patterns or the creating of agricultural productions which is associated with agricultural resources management. These agricultural resources are operated in terms of procurement, preservation, and utilization, and managed in different conditions (e.g. landscape, climate, local institutional context, etc.). Review of the relevant literature, bellowing concepts describe the term interaction as mentioned above.

Sznajder et al., (2009) claims that patterns of interaction between agro-tourism and agriculture can be found in various types: complementary, supplementary, and competitive interaction. This consists of the fact that both activities constitute a deliberate structural entity and an increase in the important of the agro-tourism activity cause an increase of agricultural activity. However, agro-tourism may be competitive in relation to certain agricultural activities. Competition may concern the use of all resources of the farm such as land, labour and capital.

In view of complementary or interdependent interaction, Ceballos-Lascurain (1996) proposes the concept of interdependence between tropical agricultural resource and agro-tourism management. This concept claims that when local agriculture depending on some of inputs from the outside (e.g. fertilizers, pesticides, etc.) needs to generate incomes by agro-tourism, at this purpose farmers tend to reduce agricultural inputs from the outside by means of organic farming or natural farming development as well as agro-tourism promotion. In contrast, in case of traditional farming relying on agricultural inputs within community needs to generate incomes from agro-tourism, farmers tend to reduce the use of agricultural inputs within community especially the rich of local natural resources. In this sense local agricultural resources are maintained for farmers’ incomes. Local agricultural resources are served towards tourism instead of too much using in agriculture.

However, in practice, interaction in this regard may be competitive according to the previous studies. Brscic (2006) points out that development of agro-tourism activity is not an increasing factor in agricultural productivity. Fleischer and Tchetchik (2006) asks that relationships between rural amenities of tourism development and agriculture are of mutual benefit, in the sense that while agro-tourism provides the farmer with auxiliary funding to continue his/her farming activity, the latter is an important component of agro-tourism. And do tourists’ farms enjoy economies to scope and run their businesses more efficiently than farms with only a single activity? They found that on the production side, farmers seem to benefit from the existence of an active farm. A farm producing agricultural goods and tourism services appears to use its production factors in producing tourism firms managed by non-farmers. Busby and Rendle (2000) claims that the link between agro-tourism and agriculture is getting weaker. In this view, farms engaged in tourism on their farms as an alternative source of income to agriculture slowly divorce themselves from agricultural activities.

Forms of local agro-tourism activity: a solution of compromising between tourism business and functions of agriculture

Regarding this study, interaction is focused on the term of interdependent or mutual or reciprocal action between agro-tourism and agricultural resources management. In this sense, according to review of the relevant literature as
mentioned above it can be noted that the characteristic of local agro-tourism activity in each agro-tourism destinations is the solution of the compromise between tourism business objective and agricultural production function within farm. Therefore, existing forms of local agro-tourism activity in studied area can be described as the phenomena of interdependence between tourism business and agricultural production function.

In Thailand, agro-tourism promotion is a strategy for rural development. It was promoted officially throughout regions of Thailand since 1995. Presently, existing agro-tourism activities within communities are categorized in a wide range: short-term activity participation (such as farm visiting with participatory harvesting), overnight in the village to experience villagers’ living, agricultural study both modern and traditional agriculture (such as the study of beneficial insects, local edible vegetable), distribution of agricultural products (such as fresh flowers and seed), and agri-business (Bureau of Farmer Development, 2005). Additionally, Department of Agricultural Extension has been promoting agro-tourism activities throughout Thailand in the form of farmers’ farm visitation with successful operation, and seasonal traveling to festivals such as world durian and sun flower bloom festival.

**Research procedures**

Findings of interactions between agro-tourism and local agricultural resources management were investigated from local agro-tourism destinations in Chang Klang District which had been promoted for more than ten years. Methods of qualitative data collection and analysis were designed under the conditions of agricultural and tourism activity in the studied area. To meet the objectives of this study, a wide range of research activities were conducted in sequence, that is surveying local agro-tourism destinations from related organizations’ databases, interviewing related officers in order to choose a case study, visiting selected agro-tourism destination in order to design data collection, collecting data and informants, analysing data, and checking the findings with key informants.

**Studied area selection**

Studied area selection was conducted considering the status of agro-tourism destinations by searching from related organizations’ databases. Then, agro-tourism destinations in the list were explored more detailed by interviewing the related organization and visiting agro-tourism destinations. Regarding the objectives of this study, agro-tourism in Chang Klang District, southern Thailand was chosen due to agro-tourism activities were promoted continuously more than 10 years, gaining the Thai Tourism Industry Award in 2002, expanding a number of tourism activities and tourists, and conducting by villagers.

To investigate the interactions between agro-tourism and local agricultural resources management, during this study, existing seven agro-tourism destinations were studied. Figure 1, shows the location of the studied area. And Table 1 shows the existing agro-tourism farms in Chang Klang District.

From table 1, existing agro-tourism farms in Chang Klang District are operated by agriculturist groups. The leaders of each agro-tourism destination are usually the owner of farms. Practically, all of agro-tourism destinations in Chang Klang District construct connection among them in order to suit tourism business and agricultural production. The members of each agro-tourism destination are agriculturist in Chank Klang District who are similar in cultivation or agricultural production.

**Data collection**

Secondary data relating the background of agricultural and agro-tourism promotion in studied area was collected from local government and agricultural extension officials. Primary data was collected from key informants who in-depth interviewed about the changes in local agricultural resources management, and villagers who interviewed about the roles of agro-tourism.

The questionnaire survey was designed to collect the features and the background of agro-tourism activities and agricultural resource use. The semi-structured interview was performed to interview key informants. This in-depth interview mainly aimed to investigate the evident describing interactions between agro-tourism and agricultural resources management.

**Key informants and samplings selection**

Key informants include the leaders of seven agro-tourism destinations, villagers who have been initialed agro-tourism promotion, formal leaders of community, local government officials responding the agricultural and tourism extension,
Figure 1. The studied area of Chank Klang District

Table 1. Existing agro-tourism destinations in Chang Klang District

<table>
<thead>
<tr>
<th>S/N</th>
<th>Names of existing agro-tourism destinations</th>
<th>Agricultural productions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mushroom lover group</td>
<td>Mushroom cultivation</td>
</tr>
<tr>
<td>2</td>
<td>Group of occupational promotion and centre of Mushroom cultivation training</td>
<td>Mushroom cultivation</td>
</tr>
<tr>
<td>3</td>
<td>Efficiency economic and organic farming</td>
<td>Bio-fertilizer, Lime tree planting, Agricultural products processing, and Mixed farm</td>
</tr>
<tr>
<td>4</td>
<td>Apis cerana apiculture of Klongpeeknue group</td>
<td>Apiculture</td>
</tr>
<tr>
<td>5</td>
<td>Apis cerana apiculture of Mr. Rai Pomchart</td>
<td>Apiculture</td>
</tr>
<tr>
<td>6</td>
<td>Apiculture of Baanlumnaihin group</td>
<td>Apiculture</td>
</tr>
<tr>
<td>7</td>
<td>Apis cerana apiculture centre</td>
<td>Apiculture</td>
</tr>
</tbody>
</table>

and agricultural extension official of Chang Klang District. Samplings are stakeholders which can be classified into two groups, that is, residents relating in agro-tourism activity and residents without relating in agro-tourism activity. Such samplings compose of three members from each agro-tourism destinations, and twenty others agriculturists in Chang Klang District. These samplings were chosen cheaply.

Data analysis

Data and information from interviewing and secondary sources were analyzed in order to indicate the features of agro-tourism activities, the use of agricultural resources in tourist farms, the evident of local agricultural resources
management which significantly resulted from tourism promotions, and the situation of agro-tourism promotion effected from agricultural resources management. These findings were considered the interaction between agro-tourism and local agricultural management. Then, all findings were discussed among the researcher and key informants in order to confirm and suggest the findings.

FINDINGS

Features of agro-tourism activity

Agricultural production and use of agricultural resources within farms are the element of the features of agro-tourism activity. Agro-tourism farms in Chang Klang District were involved in mushroom cultivation, apiculture, and organic farming. Such farming offered activities to visitors with processing demonstration, agricultural study, distribution of local products, and guiding local agri-business. The features of such agro-tourism activities are showed in Figure 2. From Figure 2, all tourist farms or agro-tourism destinations engaged in varying agricultural production activities, which were designed to generate income from visitors. All agro-tourism farms offered visitors the basic knowledge about farming, while other activities included agricultural process demonstration, agricultural product distribution and providing guidance for agri-business. However, the main activity of each farm depended on the type of agricultural product. Apicultural farms focused on demonstration because apiculture was a complicated process involving many intricate details. Mushroom cultivation farms were involved in production, distribution as well as advising mushroom business, as mushroom cultivation could be replicated by the visitors in a relatively easy manner. Agro-tourism farms involved in organic farming concentrated on agricultural study due to the boom in green agriculture. Therefore, it should be noted that there was a link between the type of agricultural product in a tourism farm and the offered agro-tourism activity.

Agricultural resources use in tourism activities

According to agro-tourism activity classification, forms of agro-tourism activity were classified by the criteria of tourism activity within farms, and tourism products and services that farms offered to visitors, thus, forms of agro-tourism activity classified as mentioned above. In term of agricultural resources use in tourism activities, all forms of agro-tourism activity use agricultural resources in the same manner especially agricultural labour, agricultural productions, and agricultural knowledge.

In addition, each form of agro-tourism activities also used agricultural resources in different to the condition of the type of agriculture of each farm. Tourism activity in agricultural product distribution needed agricultural resources of agricultural labours, and distinction of yield, plants, and products which available within farm. Tourism activity in giving agricultural knowledge and agricultural process demonstration needed agricultural resources of agricultural knowledge and production inputs of apicultural farms and mushroom cultivation farms. Tourism activity in agri-business guidance needed agricultural business information and materials of apicultural farming and mushroom cultivation.
From Figure 3, all local agricultural resources used in a wide range of agro-tourism activity forms can be classified into three categories: agricultural labours and knowledge which have been usually used in agricultural productions within tourist farms were used for tourism activities, production and productivity improvement which have been developed for agricultural meaning were developed for tourism activities, and various local agricultural resources which available in community especially the diversity of local flora and fruit were applied as local products selling to visitors.

**Features of local agricultural resources management resulted from agro-tourism promotion**

Regarding the use of agricultural resources in agro-tourism activities, it was found that the residence of agriculturalists, agricultural products, and agricultural knowledge were used mainly on agro-tourism activities. Agro-tourism farms used such agricultural resources differently. Shortly, features of local agricultural resources management resulted from agro-tourism promotion are presented in Figure 4.
From Figure 4, the features of agro-tourism activity within the farms and the use of agricultural resources on agro-tourism activities were the changing factors of features of local agricultural resources management. This research considered the changes of local agricultural use during the past 12 years of agro-tourism promotion. This study found that there were three main observable domains of change: conservation of agricultural resources, expansion of agricultural career, and value-addition of agricultural resources.

In term of agricultural resource conservation, agricultural study activities especially in the areas of mixed farming or diversified farming had influenced more than 20 farms in Chang Klang District to switch from their monoculture, that is, single-crop farming of produce such as durian, mangosteen, and rambutan, to fixed farming. In addition, after studying organic farming for five years, it was found that the amount of chemical fertilizers used in Chang Klang District had decreased significantly. After the movement in agricultural resource conservation had expanded, residents of Chang Klang District continued their previous agricultural activity, but most residents tried to operate on a smaller scale (less than 1 ha) with the idea of producing green (organic) agricultural products for their own consumption and generating the main income from agro-tourism activities and rubber plantation.

In terms of agricultural activities expansion, activities of agri-business guidance of mushroom cultivation has encouraged the new farms of such business due to its low investment, low space requirement, and adequate availability of materials in the local area. At the time of this study, about 90 farmers in Chang Klang District were cultivating mushroom in their farm.

Organic farming study also had influenced more than 70 local farmers to adopt organic farming in order to reduce farming costs. Apiculture study had also caused many orchards to become involved in apiculture. At the time of study, at least 10 orchards in Chang Klang District were producing honey. In other words, mushroom cultivation and
apiculture had become the basic agricultural activity at most farms. Finally, in term of value-addition of agricultural resources, distribution of local products via agro-tourism had resulted in the addition of value to a number of local agricultural products, such as the traditional rice strains, and a number of local plants had been modified into a wide range of local products. Therefore, agricultural resources management within the district involved a wide range of plants and products, while the scale of the activity of each household itself seemed to be relatively small.

In short, regarding the change in the structure of local agricultural resources management, a wide range of agricultural services had been initiated in Chang Klang District, particularly agricultural extension centers for demonstration purposes. Within agro-tourism farms, such agricultural services were also combined with income from providing accommodation to tourists and local production of agricultural goods as the new income-generating activities.

Interactions between agro-tourism and agricultural resources management

All findings as cited above: forms of agro-tourism activity, agricultural resource uses in tourism activities, and local agricultural resources management were linked to explaining the interactions between agro-tourism and agricultural resources management. In this view, agro-tourism and agricultural resources management were interacted in two patterns: interdependence between agro-tourism and agriculture or complementary interaction, and adaptation of agricultural production processes to tourism market. The complementary interaction had appeared at the beginning of agro-tourism promotion to its fame of agro-tourism destination. And then adapting interaction appeared.

1. Complementary interaction

The complementary interaction can be described that mentioned activities of agro-tourism had supported the improvement of agriculture in terms of local agricultural technologies development, and certain types of agricultural activities expansion, meantime, where as such management of agricultural resources also became to agro-tourism attractions.

An interaction as mentioned above can be noted that it is the intent interaction. At the beginning of agro-tourism promotion in Chang Klang District, an important objective was agreed among an agriculturist that is to create cooperation among agriculturists in Chang Klang District and other areas in order to exchange agricultural knowledge and experiences in farming. Hence, agro-tourism activities in Chang Klang have been underlining the activities of demonstration, and giving knowledge in order to support both tourism business and agricultural resources improvement. In short, this is a pattern of interaction between promoted agro-tourism activities and agricultural improvement within farms. This complementary interaction had appeared during the boom in agro-tourism in Chang Klang. Figure 5, shows...
the complementary interaction.

From figure 5, agro-tourism activities relied on agricultural entity in Chang Klang District: local agricultural technologies improvement, existing of conserved agricultural resources, organic farming development, and agricultural resources value-addition, meanwhile, these agricultural entities supported the improvement of agricultural resources use by means contributing the good point of Chank Klang District in term of an agricultural inspection destination.

2. Adapting interaction

In this view, former agro-tourism farms tended to return to farm focusing on agricultural production. These farms adapted certain part of agricultural production processes for making the income from existing agro-tourism market. It differs from the interaction as mentioned above, that is, the interdependence interaction between promoted agro-tourism activities and agricultural improvement within farms. In this sense, it is interaction between external agro-tourism tourism market and agricultural production processes within farm.

To describe the phenomenon of adapting interaction, during the continuation of agro-tourism promotion in Chang Klang District for about 12 years it was found that the use of agricultural resources in tourism, and the households’ income from agro-tourism were relied on the number of visitors basing on conditions of the instability of tourism market and economy. Consequently, at present many tourist farms need to become agricultural production farming by adapting a certain part of agricultural production processes for visitation without interference to agricultural objectives. Such adaptation, many farms called agro-tourism destination depend on agricultural production in term of the main income. Meanwhile, this adaptation can be served Chang Klang District as agro-tourism destination due to some part of agricultural production processes in farming was prepared for visitors. Table 2, showed the patterns of interaction between agro-tourism and agricultural resources management in different periods.

DISCUSSION

The findings of the patterns of interaction can be understood how local agricultural resources are improved by means of agro-tourism activity. In term of policy application, this understanding can be suggested to the use of local agricultural resources and the forms of agro-tourism activity towards sustainable local agricultural resources use in tourism.

Form of agro-tourism activity generates the interaction between agro-tourism promotion and agricultural resources improvement

As the findings, form of agro-tourism activity is directly associated with existing agricultural resources use within farm. When implementing such form, it had improved local agricultural resources use in terms of conservation of agricultural resources, agricultural extension, and value-addition of agricultural resources. At the same time, such use had become the potential in agro-tourism marketing. Explaining the form of agro-tourism activity generates the interaction between agro-tourism promotion and agricultural resources use as shown in Figure 6.

Figure 6. showed that agro-tourism activities (study/demonstration, distribution, and agri-business guidance) are conducted through a wide range of agricultural resource uses: developing farmers’ skill as the trainers, developing farms as inspection sites, agricultural labours produce and distribute local products, agricultural resources are developed as local products, and agricultural groups and official centers in community are applied to agro-tourism activities. These uses of agricultural resources generate improvement to the local agricultural resources use, and supporting the agro-tourism promotion. In this process, the improvement of local agricultural resources use had become the background of local agricultural resources use within farms, and this background also determined the feature of agro-tourism activity within farms. In short, why it is needed, such form of agro-tourism activity can be explained that generating the

<table>
<thead>
<tr>
<th>Periods</th>
<th>Tourists (per year)</th>
<th>Status of agro-tourism</th>
<th>Patterns of interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997 – 1999</td>
<td>12,000</td>
<td>Beginning of promotion</td>
<td>Complementary</td>
</tr>
<tr>
<td>2000 - 2003</td>
<td>30,000</td>
<td>Popular destination</td>
<td>Complementary</td>
</tr>
<tr>
<td>2004 – Present</td>
<td>23,500</td>
<td>Instability in tourism market</td>
<td>Adaptation of farming</td>
</tr>
</tbody>
</table>

Source: Agricultural extension office of Chang Klang District, 2009
complementary interaction between tourism and agriculture is depended on the design of agro-tourism activity form.

The findings in this study are comparable with those of the previous research. Ciani (1999) showed that the size of a farm was closely related with the development of agro-tourism activity, that is, there was a link between the size of the agro-tourism farm and the type of activity offered to visitors at the farm. In term of agricultural resources use in this study, size of farm is referred to as a type of tangible agricultural resources.

**Agro-tourism plays a role in decision - making in farming**

Regarding the role of agro-tourism in the farm management decision-making process, Ceballos (1996) implied that environmental and natural resources were maintained by farmers due to their potentials to generate income from agro-tourism instead of using all of such resources in agricultural production. The case study of Chang Klang showed that agro-tourism promotion was not a stabilizing factor for agricultural production and a curtaining factor for product distribution, but it was clear that agricultural demonstration/study and agricultural products distribution associated with
agro-tourism were the value-adding factors for agricultural resources within the farms, which influenced the farmers’ decision-making process. Some of the notable examples included the change from monoculture cultivation to mixed farming and changing the objective of the farm from agricultural production to tourism.

The adaptation of local agricultural resources use under the condition of unstable tourism market

The findings in Chang Klang District also confirmed the notion from previous studies that the link between agro-tourism and agriculture is becoming weaker. In this view, farmers who engaged in tourism on their farm as an alternative source of income to agriculture are slowly divorcing themselves from agricultural activities (Busby and Rendle, 2000). Amidst the present boom in agro-tourism in Chang Klang District, local agricultural resources use tends to support tourism activities. In most cases, value-addition of agricultural resources was undertaken for the purpose of supporting the tourism business. The increase in apiculture and mushroom cultivation was mainly due to agro-tourism activities expansion rather than agricultural resources improvement. At present, many accommodations for visitors can be found in Chang Klang District, and it could be said that the farmers tend to rely heavily on tourism for their incomes. A study by Brscic (2006) also showed that the development of agro-tourism activities was not a factor for increasing agricultural productivity. The findings in Chang Klang District concurred with this observation, i.e. agro-tourism promotion caused agro-tourism farms to reduce their production scale in order to suit the tourism business, thus reducing the overall agricultural outputs. Consequently, as well as the condition of unstable tourism market, agriculturists in Chang Klang District are likely to switch their agro-tourism farms to agricultural production farming as well as adapting a certain part of agricultural production processes for visitation without effecting the agricultural objectives. At the same time, such adaptation still maintains Chang Klang District as an agro-tourism destination in order to gain income from tourism market. At present, this is the existing pattern of interaction between agro-tourism and local agricultural resources management in Chang Klang District.

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