International Journal of Agricultural Technology 2018 Vol. 14(7): 1315-1326
Available online http://www.ijat-aatsea.com
ISSN: 2630-0613 (Print) 2630-0192 (Online)

The People's participation on the indigenous serrated mud crabfattening practices in La-ngu district, Satun province, Thailand

Kaewploy, N., Aquino, U. M. and Phonpakdee, R.*

Department of Agricultural Education, Faculty of Industrial Education and Technology, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand.

Kaewploy, N., Aquino, U. M. and Phonpakdee, R. (2018). The People's participation on the indigenous serrated mud crabfattening practices in La-ngu district, Satun province, Thailand. International Journal of Agricultural Technology 14(7): 1315-1326.

Abstract The strong participation of the local farmers/fishers on the indigenous practices in the community is a manifestation on the inclusion of cultural beliefs and people's lifestyle and livelihood. The involvement of the local people in enhancing the production and marketing of the indigenous serrated mud crab fattening (ISMCF) practices in La-ngu District, Satun Province was studiued. It utilized qualitative methodology using key informant interviews, observations and cases analysis on the different activities of the farmers-fishers on the (ISMCF) practice over a period of six months. Results showed that utilizing the ISMCF practice starts with the protection and management of the natural vegetation of the mangrove area, adherence of the local cultural practices, increase in the level of awareness and utilization of the ISMCF practice based on local wisdom and marketing of the produce using local materials to increase income and improve the lives of the local people. Strong participation in the dissemination and application of the indigenous fattening practices were observed from the locals. However, there is a declining interest among the youth to engage in the practice. The local people has a strong and well-defined attachment to the indigenous serrated mud crab fattening practices because of cultural beliefs and practices. It supports the daily activities and provides an alternative livelihood for the farmers/fishers engaged as a community effort in making the practice a part of a productive living.

Keywords: indigenous, participation, tradition, farmer, rural

Introduction

People participation in most cases is one of the contested discourses in human relations, integration and dynamism whether it is applied in agriculture, fisheries, health, education and development (Oakley, 1995). Most often, it is the active involvement and organization of the grass roots level of the rural people (FAO, 1997), the question asked is based on the kind of participation, the length of time and or type of activity individuals or groups are engaged.

*Corresponding Author: Phonpakdee, R.; Email: ratchadakorn.ph@kmitl.ac.th

This may take in any level such as planning, implementation, monitoring and evaluation or even teaching and extension. Everything observed includes participation (Oakley, 1995) which makes it a challenging quest or inquiry. Several studies and documentations were done to determine the extent in which participation is observed in actual field work (Chowdhury and Aditee, 1989; Drijver, 1991; Pollnac, 1994; Lise, 2000; Davis and Wagner, 2006; Rahman 2007; Ghai and Vivian, 2014). Notably, these studies provided areas of participation similar to the initial work of Castillo (1983) when she studied how participatory is participatory applied in rural development.

In addition, participation could be done by a single person, institution or collectively by group of individuals. The field of agriculture and fisheries is no exemption in understanding people participation (Maurya *et al.*, 1988; Bergquist, 2007). Especially in rice production, several studies have been conducted to support, argue or even question if such is really the process of participation or merely a tasks.

In the rural areas, people participation depends on what is gained in terms of socio-economic returns the activity (Shrestha and Pant, 2012). To some individuals, it would simply selection which activity best suits or availability of resources. It is a matter of who is there, what is obtained or what to share or even what is gained. It does not matter; it is always placing the value of time in the activity translated as participation value in planning, implementing, monitoring and evaluation, application or even utilizing the specific aspects of work. All of which are considered participation.

Specifically, local agriculture and fisheries activities are the best way to understand what participation is all about. Fishery activities in Thailand particularly in the southern part boost a combination of productivity and profitability. One of the most significant indigenous practices is the fattening of the serrated mud crab thriving in mangroves areas with abundant brackishwater.

Objectives: To identify the different activities of the local people in the indigenous serrated mud crab fattening practices, to assess the involvement of the local people in enhancing the production and marketing of the indigenous serrated mud crab fattening practices, to analyze the ISMCF practice in relation to people's participation and the cultural beliefs and traditions.

Materials and methods

The study was conducted in the mangrove areas of La-ngu District, Satun Province with six (6) local families engaged in the production of the ISMCF practices, 15 local people who are actively involved in the protection and management of the mangrove area including the different activities related to

the production and marketing of fattened serrated mud crabs over a period of six months.

A complete qualitative methodology was used in collecting the narratives and testimonies complemented by key informant interviews, participant observations and case studies. The collected research data were coded to come up with thematic areas which were analyzed and interpreted based on the overall research framework on people participation and cultural relevance on aquaculture lifestyle and livelihood.

Results

There were four major activities the local people participate to ensure that the ISMCF is maintained as an indigenous aquaculture practice in the area. These are dissemination of the indigenous knowledge, production activities in ensuring strong participation, and harvesting and marketing activities.

Dissemination of the Indigenous Serrated Mud Crab Fattening (ISMCF) Practice

The practice of the indigenous serrated mud crab fattening is localized aquaculture activity that was observed for more than four generations in the mangrove areas of La-ngu District, Satun Province in Southern Thailand. It is considered as one of the longest living tradition on the production and culture of serrated mud crab. Although, the practice was efficient through time, it was always a question on how the local people participate in its preservation, utilization and application including the protection and management of its environment. Based on this present study, several worthy observations were gathered through key informant interviews, focus group discussions, participant observations and case studies of families engaged in the ISMCF practice. Most of the narratives shared were personal experiences and actual observations which were recorded to show how the practices engage and encourage the active participation of the local people. Specifically, these were analyzed based on the ideas and collective insights on people participation and management of natural resources necessary in maintaining balance for socio-economic development in the area.

Local families were disseminated by sharing the importance and value of the ISMCF practice during family conversations or some important gatherings. It is normally done at the end of the day or free time by the father; taking the lead in doing the practice; with younger family members who are encouraged to continue the traditional livelihood. Although inevitably shared, younger

members pointed out that they do not like it as full-time job because it is tedious and sometimes dependent on the weather and climatic condition.

In relation to the present study, local youngsters prioritize education that applied the learnings after school to catch some juvenile to be sold to pond owners for fattening or direct to the local traders to support their daily school allowances. Accordingly, they helped to maintain stronger attachment to the ISMCF because the basic skills particularly on the catching techniques of juveniles for fattening are well applied. Strong participation in the dissemination and application of the indigenous fattening practices were observed from the locals. However, there was a declining interest among the youth to engage in the practice.

Moreover, the dissemination of the practices led the local people have a strong and well-defined attachment to the indigenous serrated mud crab fattening activities because of the cultural beliefs which further supports their daily activities by engaging is a sustainable and secured alternative livelihood for the farmer's families through collective community effort in making it a part of a productive living tradition.

Production Activities in Ensuring Strong Participation

Pond Preparation

The utilization of the indigenous knowledge (IK) practices applied in the fattening of serrated mud crab by the locals in the mangroves areas in La-ngu District was found out as a proven and continuous family activity. Results reveal that family members especially the males from the grandfather, fathers/uncles and youngsters, their participation varies and degree. However, they work closely in maintaining a good production activity starting from the preparation of the culture ponds. As observed there are two IK pond practices; one prepared and managed by the family and the other through rented/hired labor. Accordingly, the locals engaged themselves through collective work in preparing and maintaining the culture ponds before the fattening process.

Male family members and locals with free time render free/hired labor by participate in cleaning, draining, fertilizing and set-up of the ponds before serrated mud crab fattening culture. Pond preparation takes at least 5 to 14 days to sanitize in ensuring crab growth. After which, fresh brackishwater is used to fill up the ponds and culture gears are submerged to allow the growth of the crabs.

Furthermore, males prepare bamboo poles cut-split into two, tied in fours and alternately spaced by one meter apart to serve as foot-bridge/stilt structure built placed at least one foot above the pond during the feeding and monitoring

the culture and fattening growth of the crabs. The observations are definitely male-dominated activities but in the fattening culture activities, females and youth participate actively. However, it was known that this activity is done by males because of the strength required in ensuring a sturdy platform built which could last for at least 4 to 6 fattening culture cycles through the test of varying weather conditions.

Protection Management of Mangrove and Culture Area

One of the identified natural resources in relation to the indigenous serrated mud crab fattening practices local participation is the management of the mangrove forest and culture area. The area expands to approximately 3.5 square kilometres wherein the locals established their own or communal ponds. It is surrounded by a combination of nipa (*Nypa fruticans*) and mangrove forest trees (*Rhizophora* mangel, red managrove) and some coconut trees (*Cocos nucifera*) growing intensively for over 20 years. As observed, the local people practice some traditional rituals of giving high respect in protecting the mangrove area especially during the culture season enabling them to seek abundance and blessings from the "so-called spirits/unseen" of natural order. The ritual is done at the start of the production activities, normally the first day by providing some food offerings, burning of incense sticks and lighting a candle until the prayer is uttered in solemnity.

As the La-ngu locals protect the culture areas, they also prune some branches of the tree and clear dry leaves near the pond to avoid any destructions of the structures which they believe might affect the normal growth of the juveniles and crabs. They use local tools to cut and clear branches. The use of improvised basket tied on a long bamboo pole to remove dried leaves is commonly used in cleaning the ponds to avoid pond infestation and structural damage. In addition, the protection and management of the mangrove forest trees and other crops is a community effort that was entrusted by the older generation as natural habitats of living creatures and the application of the ISMCF practices.

In addition, local people in La-ngu District manage the mangrove forest because it is also a source of fuel wood necessary in daily cooking and as alternative livelihood for some small fishing during free time. As an important resource, several studies support the observations on mangrove management related to its protection, conservation and utilization management initiatives.

Preparation and Maintenance of Culture Gears and Paraphernalia. The family members and locals actively engaged in the preparation of their own culture gears and paraphernalia during the grow-out season. They used local materials such as the pruned branches of mangrove trees or old bamboo poles, black

plastic net mesh with fine steel wires and rods, which serve as the growth chambers of the serrated mud crabs until they reach marketable sizes; and bamboo poles to securely tie the serrated mud crab growth chambers to avoid damage during the rising of brackish water during high tides or infestation of pond pest such as snakes, birds and stray animals.

In relation to this, the preparation of the culture gears is a family affair as techniques and knowledge are shared by parents to their children. Most often, they teach by example in order that the youngsters will have an immediate appreciation and application of the techniques in making the culture gears. At the same time, the parent mentioned that by doing the "teach-and-learn" culture gears making, they are ensuring that the ISMCF practices are maintained as part of the family tradition and community livelihood activity. Also, they emphasized that the youngsters have better retention of skills and knowledge acquisition when utilizing the techniques, activities and processes during the ISMCF practices.

Furthermore, there are two modes used in the installing the culture gears. First, the flat suspended open culture gear which is just attached to a bamboo pole at the corners of the pond. The flat suspended open gear is usually tied with a bait allows the brackishwater to freely flow through it. Depending on the water current, crabs are caught in the gear which is checked every rise and fall of sea tides or after three to four hours. The other mode is use of circular culture chamber arranged in two parallel rows of 20 to 35 small attached culture chambers to a 5 to 10 meter long bamboo pole. The culture chambers measure 6-8 inches in diameter with a depth of 8 inches. The measurement was perfected after several evaluation done by the locals through time. These two modes were shared through time by the older generation which was learned and shared by the locals with the new generation. In some intensified ISMCF production cultural practices observed in the area, farmers combine the indigenous methods with modern and innovative techniques which they learned from shared intensive research and development activities by the local and provision of the national government of technical and support services.

Feeding Management

The activity was normally done by family members during the entire culture season. Usually, it is a male dominated activity using small buckets and throws trash fishes or some feeds in the culture chambers. On the other hand, females participate in the preparation of the trash fishes by purchasing the small fishes and fish trashes in the local market or some fishermen, grinding them and mixing them with feeds. These are immediately given to the growing crabs. Feeding is done every day in an increasing manner as the crabs increase in

weight and size. This is to ensure that they grow in desirable and marketable sizes.

The feeding management was practiced for several years already which was shared to the locals by the elders. Based on this, it was believe that ensuring a steady supply of feeds for the crabs is the most important factor in the culture process because it is the basis for maintaining a stable growth and fattening of the crabs during the season. Although, this feeding activity is administered individually, collectively as a community activity, it is believed that people share a lot of time in the preparation which gives a strong involvement of the local fishers most especially the families engaged in the culture and production of the serrated mud crabs.

Harvesting and Marketing Activities

Harvesting is done after three to four months of culture season. This was a practice based on proven experiences of the locals. Normally, people use their bare hands in harvesting. In the process, the culture chambers are lifted and suspended in the air. The crabs are then held by opening the chamber. Immediately, they are tied with local materials like the leaf of nipa or coconut tree. The crabs are tied in an inverted manner with their two big claws clipped to the body to avoid damage during transport to the market. This technique was shared since the early days of capturing and culturing of the serrated mud crabs until this time.

After tying, the crabs are segregated and sorted by sex and size. By practice, female crabs with bigger sizes compared to male crabs demand higher prices. However, uniform sizes are easily marketed because majority of the traders go for export market.

In addition, crabs are sold fresh directly in the local markets or to contact traders. In the local markets, the crabs are sold in retail either as fresh or cooked. This practice has been done over the years because of the tourism activity in the area resulting for people to buy cooked crabs to bring to the beach to save time during a day vacation. For others, the fresh are bought and cooked in homes as steamed, sautéed with chili and garlic or the famous Thai Tom Yum dish.

Furthermore, fresh crabs are packed in bundles of 6 to 8 on an average and placed in plastic crates ready for transportation and or shipment to big markets like Phuket, Hat Yai and Bangkok or even to Malaysia and Singapore. Local people strongly participate in the marketing auction of the crabs in order to avail and demand good price. Unless there is a pre-arranged agreement through a contract, pricing is predetermined in an acceptable party agreement. It

is usually the females who takes the role of selling and price negotiation as practiced by the locals. The males prepare, classify and pack all the harvested crabs ready for the market or transported to traders doing the big exportation business. In the area, there are three exporters and majority of the locals bring their produce to avoid excess labor and transport costs. Other bring their produce directly to the market through motorbikes or trucks.

It is very interesting to note that this system of marketing has evolved and remained the same through time. Although there are observed changes especially in pre-arranged such as contract growing, the locals are challenged to productively continue the culture of the serrated mud crabs. Old and youngsters alike especially the school kids actively learn the trade and understand and apply the operations of the serrated mud crab business.

Discussion

Dissemination of the Indigenous Serrated Mud Crab Fattening (ISMCF) practice in La-ngu similar to Hailu (2013) which posts a lot of concern about engaging youth in agriculture, in many ways, young people are not very much interested in continuing in agriculture because they don't see much prospect in the future of agriculture and do not see it is as an active profession in the long-run.

The indigenous knowledge is also disseminated especially by younger men who have the time to do hired or do extra work with pond owners or their own family ISMCF practice and production activities. Young men participate to augment income to support the family. Accordingly, the ISMCF practice is considered a localized activity because of the availability of resources in the area at the same time considered as one of the main livelihoods of the local community. Ratanawaraha (2013) study showed that the role of self-help organization as instruments for increasing the bargaining power of farmers, generating income and improving their quality of life complements the people's involvement of the ISMCF practice.

The use of the indigenous by the people is slowly incorporating modern technologies such as use of fishing gears but this does not affect much of the practice. By word of mouth, the locals participate and share interventions to budding and co-farmers these technologies but still maintain the utilization of the different indigenous knowledge attached to it especially in cultural production. As noted by DeWalt (1994), it is natural to utilize modern or scientific knowledge combined with indigenous knowledge as long as the will not jeopardize the efficient use of natural resources. Informing the local people to be part of knowledge awareness and dissemination results to better

appreciation, utilization and participation in maintaining the cultural relevance of the ISMCF practices for continued socio-economic livelihood as observed in La-ngu Mangrove areas.

Production activities in ensuring strong participation compared with the study conducted by Rahman and Naoroze (2007), women participation is highly evident in large-scale aquaculture technology demonstration in Bangladesh. Women engage themselves in specific culture activities that empowers them to work efficiently and actively in aquaculture livelihood especially in coastal communities. Also, DeWalt *et al.* (1996) pointed out that the shrimp aquaculture development in the Gulf of Fonseca, Honduras is actively participated in by both male and females with defined roles and responsibilities.

Protection management of mangrove and culture area similar to activities on protection management of protected areas by integrating conservation practices and local participation in Brunei (Ahmad, 2009) and sustainable development through people's participation in resource management (Cruz, 1991) were documented and studied which highlights the importance of proper resource management of natural environment as source of livelihood and community responsibility. These include the works of Iftekhar and Islam (2004); Pollnac and Pomeroy (2005) and Stead (2005) on natural resource management and Ramachandran *et al.* (2005); Davis and Wagner (2006); and Bunting (2010) on fisheries and aquaculture including coastal management by employing extensively proper management with active involvement and people participation.

Preparation and maintenance of culture gears and paraphernalia similar to aquaculture practice especially on shrimps/prawn culture in brackishwater and freshwater in Sri Lanka, Greece, the Philippines and Thailand intensify their cultural production using traditional and modern techniques as documented by Rahman and Naoroze (2007) and Katranidis *et al*. (2003). These documented studies show that aquaculture is an important livelihood on the lives of local people engaged in the cultural practices similar to the fattening practices of serrated mud crab in La-ngu.

It is concluded that the participation of the local people showed a significant and active involvement of all members of the family and community. Based on the above findings, the following are the activities done by the people which made the serrated mud crab fattening practices a part of the local livelihood and living traditions. The protection and management of the natural vegetation of the mangrove area was reported. Adherence of the local cultural practices with some cultural practices and beliefs such as cleaning and pond preparation and catching of juveniles and crabs for fattening was adapted. the level of awareness resulting to the intensification of indigenous knowledge through

exchangewas increased. The ISMCF practice based on local wisdom was utiklized. Marketing of the produce was using local materials to increase income and improve the lives of the local people. Finally, the strong participation in the dissemination and application of the indigenous fattening practices is developed the strong promotion and commercialization of the ISMCF practiced and developed the community through the interest and indigenous practices of the culturing the serrated mud crabs.

It is recommenced that the numerous observations done, several researchable themes were identified. Based on these, the role and responsibility of male vis-à-vis female to support the increasing importance of gender and development in the area, local governance on the mangrove forest area as well as development of the community,m,arketing System and commercialization of the serrated mud crab, c, omparative analysis of other fishery products with similar cultural practices in the area, development of the community through the fishery products, mangrove forest area and community dynamics in aquaculture and fisheries are needed for further studies.

Acknowledgement

The author would like to offer particular thanks to Office the Higher Education Commission for fund.

References

Ahmad, A. (2009). Integrating conservation and community participation in protected-area development in Brunei Darussalam. Biodiversity and Human Livelihoods in Protected Areas. Naviot S. Sodhi, Greg Acciaioli and Alan Khee-Jin Tan. (Eds.). National University of Singapore.

Bergquist, D. A. (2007). Sustainability and local people's participation in coastal aquaculture: regional differences and historical experiences in Sri Lanka and the Philippines. Environmental management. 40:787-802.

Bunting, S. W. (2010). Assessing the stakeholder Delphi for facilitating interactive participation and consensus building for sustainable aquaculture development. Society and Natural Resources. 23:758-775.

Castillo, G. T. (1983). How participatory is participatory development?: a review of the Philippine experience. Philippine Institute for Development Studies, Makati City, Philippines.

Chowdhury, A. N. and Chowdhury-Zilly, A. N. (1989). Let grassroots speak: people's participation, self-help groups, and NGOs in Bangladesh. University Press.

Cruz, A. (1991). Sustainable Development through People's Participation in Resource Management. Journal of Environmental Conservation. 18:274-274.

Davis, A. and Wagner, J. (2006). A right to fish for a living? The case for coastal fishing people's determination of access and participation. Ocean and Coastal Management. 49:476-497.

DeWalt, B. (1994). Using indigenous knowledge to improve agriculture and natural resource management. Human Organization. 53:123-131.

DeWalt, B. R., Vergne, P. and Hardin, M. (1996). Shrimp aquaculture development and the environment: people, mangroves and fisheries on the Gulf of Fonseca, Honduras. World Development. 24:1193-1208.

Drijver, C. A. (1991). People's participation in environmental projects in developing countries. Landscape and urban planning. 20:129-139.

FAO (1997). FAO Technical Guidelines for Responsible Fisheries. No. 5: Aquaculture Development. Rome: Food and Agriculture Organization of the United Nations.

Ghai, D. and Vivian, J. M. (2014). Grassroots environmental action: people's participation in sustainable development. London: Routledge.

Hailu, M. (2013). Engaging youth in agriculture: the key to a food secure future. Farming First 8. Retrieved from: https://farmingfirst.org/2013/08/engaging-youth-in-agriculture-the-key-to-a-food-secure-future/.

Iftekhar, M. S., and Islam, M. R. (2004). Managing mangroves in Bangladesh: A strategy analysis. Journal of Coastal Conservation. 10:139-146.

Katranidis S., Nitsi, E. and Vakrou, A. (2003). Social acceptability of aquaculture development in coastal areas: the case of two greek islands. Journal of Coastal Management. 31:37-53.

Lise, W. (2000). Factors influencing people's participation in forest management in India. Ecological economics. 34:379-392.

Maurya, D. M., Bottrall A. and Farrington, S. (1988). Improved livelihoods, genetic diversity and farmer participation: A strategy for rice breeding in rainfed areas of India. Experimental Agriculture. 24:311-320.

Oakley, P. (1995). People's participation in development projects. V.7. Australia: Intrac.

Pollnac, R. B. (1994). Research directed at developing local organizations for people's participation in fisheries management. Proceeding of the workshop on community management and common property of coastal fisheries and upLand resources in Asia and the Pacific: concepts, methods, and experiences, Silang Cavite, Philippines. pp. 94-106.

Pollnac, R. B. and Pomeroy, R. S. (2005). Factors influencing the sustainability of integrated coastal management projects in the Philippines and Indonesia. Ocean and coastal management. 48:233-251.

Ramachandran, A., Enserink, B. and Balchand, A. N. (2005). Coastal regulation zone rules in coastal panchayats (villages) of Kerala, India vis-à-vis socio-economic impacts from the recently introduced peoples' participatory program for local self-governance and sustainable development. Ocean and coastal management. 48:632-653.

Rahman, M. H. and Naoroze, K. (2007). Women Empowerment through Participation in Aquaculture: Experience of a Large-scale Technology Demonstration Project in Bangladesh. Journal of Social Sciences. 3:164-171.

Shrestha, M. K. and Pant, J. (Eds.) (2012). Small-scale aquaculture for rural livelihoods. Proceedings of the Symposium on 'Small-scale aquaculture for increasing resilience of rural livelihoods in Nepal. Joint publication of Institute of Agriculture and Animal Science, Tribuvan University, Rampur, Chiotwan, Nepal and The WorldFish Center, Penang, Malaysia.

Stead, S. M. (2005). A comparative analysis of two forms of stakeholder participation in European aquaculture governance: self-regulation and integrated coastal zone management. Participation in fisheries governance. 4:179-192.

(Received: 15 September 2018, accepted: 5 September 2018)