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The Participatory Irrigation Management in Mae Taeng Irrigation Water User of Association Member, Chiang Mai Province

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Abstract This research studied on the participatory irrigation management of the Mae Taeng irrigation water user association member located in Chiang Mai province. It was to study the problem that members of the Mae Taeng irrigation water user association which did not receive water volume to meet their requirements for cultivation. The member participation was therefore studied in many aspects, including consulting, planning, decision making, coordinating, benefit sharing, and water management. Those evaluation affected the member's water receiving. This research aimed to study the participation of the member of Mae Taeng irrigation water user association in the participation of irrigation management. The sample group was included 312 members of Mae Taeng irrigation water user association by using simple random method. The research instrument for data collection was attitude questionnaire. Results were analyzed by using percentage, mean, and standard deviation. The reliability test of the research instrument is based on the Cronbach alpha that is 0.794.Results revealed that overall members participated in all process showing high level of average 3.44. Considering in each aspect showed that members participated in consulting, planning, decision making and benefit sharing revealed the high level but they participated in coordinating and water management evaluating at the moderate level. It was due to the members did not realize their duties to participate in water management. The result indicated that members must pay more attention to coordinate with the committee and officer on water operation schedule, maintenance of ditch and canal before allocating water. There must be evaluated after water allocation to analyze and solve problems. It would be an important part to provide the member with sufficient water for cultivation.

Keywords: Participatory irrigation management, Water User Association, Mae Taengirrigation Project

Introduction

The development of irrigation management is a main factor for development of social and economy in Thailand as an agriculture-based country.

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The irrigation relates to agriculture due to it is water source for cultivation. It provides water sufficiently for cultivations when water is required. Previously, agriculture mainly depended on rain water. Agricultural outputs are greatly affected by raining especially when raining is delayed and inconsistent. The reservoir is used for delivering and supporting water when it is shortage of rain water. The irrigation system becomes importance to retain rain water in the natural water source, i.e. river and canal. The irrigation system retains exceed rain water volumes when the volume is greater than the requirement and the retained water would be used when it is shortage of rain water. In general, raining in each year is inconsistent and it does not cover all areas. Rain water is not sufficient for agriculture when raining is often delayed. Agricultural outputs would not be affected if sufficient water is provided for cultivation (Suthi, 1994). In the meantime, the exceed water volume can be used during the dry season. Thus, the development of irrigation system is going along with the development of agriculture, especially the irrigation system at a micro level: on-farm irrigation system. This system is concerned about the water allocation for agricultural cultivation. It allows the agriculture to be done all year round or various crops are cultivated. It resulted to increase productivity. In addition, the irrigation system is an important foundation to develop industry because agricultural products are required as material for industry. Therefore, its development of irrigation water management is essential to meet the increasing water requirement and expanded agricultural areas.

Previously, the irrigation water management for agriculture was governed by the State. Agriculturists did not receive sufficient water as they required, inducing disputes about water usage between the government and agriculturists. It affected the change in agricultural productivity and income. The agriculturist did not feel that the irrigation system belongs to them. Therefore, they ignored to maintain the system that was against the government policy. The government expected that the agriculturalist had water usage plan for their own community (Sangah, 1979). The Mae Taeng water allocation and maintenance project was one of projects facing the same problem. Sujin (2008) suggested that the irrigation office had attempted to strengthen the water user by using different mechanism continuously. However, it was not successful because it was lack of the community participation. The irrigation project was changed the approach of water management by letting water users to solve problems with themselves. If they could not handle the problem, relating organizations or irrigation office would be asked to take action.

Thus, the Mae Taeng water allocation and maintenance project is managed irrigation water by using the participatory water management. Previously, the agricultural water management was handled by water user groups but it was not successful. It was due to the fact that four water user groups in the Mae Taeng project managed the use of water from the project.

Thus, there were disputed among groups as they consumed water from the same water source. Another problem concerned the government did not realize the existing community tradition. To mitigate disputes, the government must learn the community tradition and allow people to participate in solving problems. It must not concern only form participatory water management but also it is lack of the community actual participation (Montri, 2005). The existing water user group was small, lacking negotiation power for water management, administration or water fee collection. Therefore, to manage water as required by all four groups, they were merged to raise more power for negotiating with the government about water management.

By these reasons, the irrigation office focuses on the participation of water user organizations and water management for cultivation at the on-farming level. Previously, the establishment of each water user organization was based on the water user groups in each water allocation tube. It covers 200-300 Rais. There are about 20-30 farmers to be membership in one group. Each group assigns a representative as a group head. The water user groups living in the same or different canal, running their own activities firmly and having participations from the group members would combine as one larger group known as irrigation water usage administrative group (Chutiwan, 2003). The four irrigation water usage administrative groups are combined to be the Mae Taeng irrigation water user association, a legally registered association. The association has rules and regulations for the member to join water management and to meet members' requirements.

The association is juristic person that the agriculturalist can manage water. The government does not have sufficient budget for activities and cannot handle problems in time. The association, therefore, has to run those activities on its own. The association collects fees from members for running activities under the supervision of the government. The villager organization is realized and accepted for joining water management. The association member can join planning and decision making from the policy to practice levels. The association can check the government project proposal affecting the community. The government has to amend its policy to fit the community context and has academicians to provide knowledge about the participatory agricultural water management to the agriculturist. It is to improve efficiency of water management with the participation of the water user association.

Background and the importance of study

After the Mae Taeng water user association allowed the member to participate in water allocation, the member still had problem of using water. The problem included that the member did not receive sufficient water as they required for cultivation. The problem was caused by the participation level of

members in different aspects of water management with the association. From a previous study, Prateep (1998) suggested that the problem of participatory water management was caused by the lack of group meeting and the inefficiency of water user organization in terms of water management. Chutiwan (2003) suggested the problem solving for water management that the water user must participate in the water management with the officer in every process beginning with planning, maintaining, water allocating, and problem and dispute solving during water allocation period. By these reasons, this research aimed to study the participatory irrigation management of the Mae Taeng irrigation water user association located in Chiang Mai Province. It was to know the participation level of members in each aspect of irrigation water management. The lower participation level would be supported to improve the water management effectively.

Objectives

It was to study the participation level of the Mae Taeng irrigation water user association member in the irrigation management.

Materials and methods

Population and samples included the member of Mae Taeng irrigation water user association in the Mae Taeng water allocation and maintenance project, Chiang Mai province. It covered five areas including Mae Taeng, Mae Rim, Muang, Hang Dong, and San Pa Tong districts. Samples were selected by multistage sampling method. The studied location was selected by simple random method and obtained fifty percent of the total areas. Location included 2 districts, Mae Rim and San Pa Tong districts with the 1,425 members in total. The author used those members as sampling frame. Taro Yamane as described in Pwoungrat (1997) is applied for sample selections, resulting in 312 sampling members that were representatives for the study.

Questionnaire was employed that samples chose their answers from five scales. The reliability test of the questionnaire was 0.782. The data collection was from May to July 2012. The descriptive statistics are provided and analyzed including percentage, frequency, mean, arithmetic mean, and standard deviations. The score range is separated into five scales from the high to low level of participation in the water management. Based on Suchart (1997), the five scales of participation levels included as follows: 4.21 – 5.00 was highest participate, 3.41 – 4.20 was highly participate, 2.61 – 3.40 moderately participate, 1.81 – 2.60 less participation, and 1.00 – 1.80 least participation. The SPSS was calculated mean, frequency, percentage and the average score.

Results

The study is separated into five aspects, including consulting, planning and decision making, coordinating, benefit sharing, and evaluating. For consulting, The Results revealed that overall members participated in consulting at the high level averaged 3.53. Considering in each aspect results showed that most members participate in the discussion among members about water usagefor cultivation as scheduled averaged 3.80. In addition, most members consulted the rice field inspectors (41.67 percent) more than the association committee (33.33 percent) about water management and cultivation irrigation water usage problem. The member provides suggestion about the improvement of water management. The member is provided suggestion from the association committee and rice field inspectorsat the high level averaged 3.49. Besides, the members proposing in the meeting about the rule and regulation for the irrigation water management at the moderate level of average 3.17 was noted (Table 1).

For planning and decision making, the results revealed that overall members participated in planning and decision making at the high level averaged 3.43. Considering in each aspect results showed that the member maintenance activity plans were set by among members. In addition, the member votes for water allocation schedule and mapping also the member allowed the association committee to handle those. Considering each issue found that that the member participated in selecting activities and water management rules and regulationsin their own areas at the moderate level averaged 3.37and planning of water operation schedule with members in the same areas at the moderate level averaged 3.56. Moreover, it was found that the member made agreement about the water operation schedule with the member in the same area at the high level averaged 3.52 and the member also meeting with the association committee to determination the rules and regulations of agricultural water management at the moderate level averaged 3.28 (Table 2).

For coordinating, the results revealed that overall members participated in coordinating at the moderate level averaged 3.20. Considering in each aspect the results showed that some members participate in coordination because the member allowed the association committee to coordinate on behalf of the member. The coordination included providing information, contacting the Subdistrict Administrative Organization (SAO), and the irrigation project. The coordination was mainly about budgeting for maintenance. Considering each issue found that members participated in coordinating at the moderate level all of issue including: Contacting of the member with the association committee and irrigation officer to obtained knowledge and information about how to save use of irrigation water and the water appropriately for plants averaged 3.39, contacting of member with other Institution, i.e. SAO to ask for supporting the project or performing activity about agricultural water management in their

own areas and budget to repair irrigation canal in their own areas averaged 3.02, contacting the irrigation officer for budgeting support or equipment averaged 3.11, contacting the association committee and members for performing irrigation water management activities averaged 3.33, also the member donating money to repair irrigation canal in the cultivation area in their own area averaged 3.02 and donating material and equipment to repair irrigation canal in their own areas averaged 2.93. The most member supporting labor to repair irrigation canal in the member's cultivation areas was at the high level averaged 3.57 (Table 3).

For benefit sharing from the water management, The results revealed that overall members participated in benefit sharing at the high level averaged 3.92. Considering in each aspect, the results showed that most members participate in benefit sharing from water management because the member obtains water from the participatory water management with the association. The member received knowledge about water management from the association and the Mae Taeng irrigation project. The member, thus, received sufficient water for cultivation as they required. It was found that members participated in coordinating at the high level all of issue including the supporting to the member from the association about the agricultural water management averaged 4.02, and gained knowledge from the Mae Taeng irrigation water user association about irrigation water usage for appropriate planting was averaged 3.86. It was also found that the member gain knowledge about water using properly averaged 3.85 and getting appropriate water volume for cultivation from the irrigation canalon averaged 3.93 from theMae Taeng water allocation and maintenance project (Table 4).

For water management evaluation, the results revealed that overall members participated in evaluation at the moderate level averaged 3.16. The member receiveed water for their benefits. The association committee is responsible for water allocation to members. The association committee would evaluate the water management at the association level and rice field inspectors to help the committee to evaluate water management in their responsible areas and to submit reports to the committee. It was to evaluate if the member to receive sufficient water. The member participates informed the rice field inspector about water usage in season and evaluated the maintenance and repaird of irrigation canals. It was also found that members participated in evaluation at the moderate levelall of issue including the evaluation of member insuccessful performance of association water management each year averaged 3.09. The evaluation of member about water operation scheduled in their own areas for each water allocation period averaged 3.34 and the evaluation of member about repair and maintenance the irrigation building in their own areas averaged 3.06 (Table 5).

Table 1. The participation of the member in the Mae Taeng irrigation water user association in water management as consulatant

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
A. The participation in consulting						3.53 0.89	High
1. The consulting with the association committee about irrigation water management	42 13.46	71 22.76	138 44.23	39 12.50	22 7.05	3.23 1.06	Moderate
2. Consulting with members about the water usage for cultivation as scheduled	92 29.49	102 32.69	92 29.49	17 5.45	9 2.88	3.80 1.02	High
3. Consulting with the association committee about water management and cultivation irrigation water usage problem	56 17.95	98 31.41	104 33.33	39 12.50	15 4.81	3.45 1.07	High
4. Consulting with the rice field inspector about water management and cultivation irrigation water usage problems	130 41.67	96 30.77	65 20.83	8 2.56	13 4.17	4.03 1.05	High
5. The suggestions to the committee and rice field inspector about irrigation water management	58 18.59	99 31.73	106 33.97	36 11.54	13 4.17	3.49 1.05	High
6. Proposing in the meeting about the rule and regulation for the irrigation water management	46 14.74	82 26.28	91 29.17	66 21.15	27 8.65	3.17 1.18	Moderate

Table 2. The participation of the member in the Mae Taeng irrigation water user association in water management as planning and decision maker

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
B. The participation in planning and decision making						3.43 0.98	High
1. The decision making of selecting activity about water management	33 10.58	115 36.86	109 34.94	45 14.42	10 3.21	3.37 0.96	Moderate
2. The planning of advanced activities about agricultural water management	49 15.71	112 35.90	86 27.56	54 17.31	11 3.53	3.43 1.06	High
3. The planning of water operation schedule with members in the same areas	77 24.68	98 31.41	76 24.36	46 14.74	15 4.81	3.56 1.15	High
4. The decision making to make agreement about the water operation schedule with the member in the same area	81 25.96	80 25.64	86 27.56	51 16.35	14 4.49	3.52 1.17	High
5. The determination of rules and regulations of agricultural water management by meeting the association committee	56 17.95	82 26.28	90 8.85	62 19.87	22 7.05	3.28 1.18	Moderate

Table 3. The participation of the member in the Mae Taeng irrigation water user association in water management as coordinating and performing

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
C. The participation in coordinating and performing						3.20 0.89	Moderate
1. Contacting the association committee and irrigation officer to obtain knowledge and information about how to save use of irrigation water and the water appropriately for plants	53 16.99	93 29.81	108 34.62	40 12.82	18 5.77	3.39 1.09	Moderate
2. Contacting other units, i.e. SAO to ask for supporting the project or performing activity about agricultural water management in their own areas and budget to repair irrigation canal in their own areas	29 9.29	73 23.40	114 36.54	68 21.79	28 8.97	3.02 1.09	Moderate
3. Contacting the irrigation officer for budgeting support or equipment	43 13.78	70 22.44	103 33.01	69 22.12	27 8.65	3.11 1.16	Moderate
4. Contacting the association committee and members for performing irrigation water management activities	41 13.14	110 35.26	91 29.17	52 16.67	18 5.77	3.33 1.08	Moderate
5. Donating money to repair irrigation canal in the cultivation area in their own area	24 7.69	100 32.05	92 29.49	50 16.03	46 14.74	3.02 1.18	Moderate
6. Donating material and equipment to repair irrigation canal in their own areas	15 4.81	111 35.58	76 24.36	57 18.27	53 16.99	2.93 1.19	Moderate
7.Labor supporting to repair irrigation canal in the member's cultivation areas	83 26.60	101 32.37	69 22.12	28 8.97	31 9.94	3.57 1.25	High

Table 4. The participation of the member in the Mae Taeng irrigation water user association in water management as benefit sharing

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
D. The participation in benefit sharing						3.92 0.85	High
1. The supporting from the association about the agricultural water management	102 32.69	127 40.71	72 23.08	10 3.21	1 0.32	4.02 0.85	High
2. Getting knowledge about irrigation water usage from the Mae Taeng irrigation water user association	95 30.45	113 36.22	77 24.68	20 6.41	7 2.24	3.86 1.00	High

Table 4. (continue)

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
3. Getting knowledge about the use of irrigation water from the Mae Taeng water allocation and maintenance project	93 29.81	112 35.90	82 26.28	16 5.13	9 2.88	3.85 1.00	High
4. Getting appropriate water volume for cultivation from the irrigation canal of the Mae Taeng water allocation and maintenance project	97 31.09	120 38.46	76 24.36	14 4.49	5 1.60	3.93 0.94	High

Table 5. The participation of the member in the Mae Taeng irrigation water user association in water management as evaluation

N=312

Contents	Participation levels					$\bar{X}$ S.D.	Level
	Highest	High	Moderate	Low	Lowest		
	%	%	%	%	%		
E. The participation of Evaluating						3.16 0.94	Moderate
1.The evaluation of successful performance of association water management each year	28 8.97	78 25.00	120 38.46	66 21.15	20 6.41	3.09 1.04	Moderate
2. The evaluation of water operation schedule in their own areas for each water allocation period	42 13.46	108 34.62	96 30.77	45 14.42	21 6.73	3.34 1.09	Moderate
3. The evaluation of repair and maintenance of the irrigation building in their own areas	21 6.73	91 29.17	116 37.18	55 17.63	29 9.29	3.06 1.05	Moderate

Discussion

Even though the water user member realized the importance and benefits from being a member of the water user organization to facilitate about water, most water user members did not have participation in group activities especially the muang and canal clearing activity and annual meeting. It showed that the member was not alert to join the group activity. The member did not get used to being a part of an official group with legal rules and regulations of water management (Wirayut, 1999). The participation in consulting or brain storming improved water management and reduced misunderstanding or gap among members and organization. The member came to the association committee or rice field inspector when there was problem and there was a meeting for the member to provide suggestions and comments before and after the cultivation period.

Figure 1. The membersand rice field inspector consultedwith agent of association committee about water management

The participation in planning and decision making is important for water management. The member joins to set water allocation schedule, i.e. date, time, and the order of water receiving areas. The agreement has been made and strictly followed by all members to reduce disputes as the member must follow the rule and regulation. This result is consistent with the finding of Supakorn (2002) suggested that the association should allow the water users to participate in setting procedures and reviewed problems as well as to solve problems by themselves.

The participation in coordination was between the member and rice field inspectors. The rice field inspector would be a coordinator for their members when contacting other parties, i.e. the irrigation project or the subdistrict administrative organization. This was to help the member or when there was maintenance activity. These parties were responsible to support water management activity. The rice field inspector would send proposal and the irrigation project or the subdistrict administrative organization arrange a project for obtaining budget.

Figure 2. The membersand rice field inspector coordinatedwith agent of subdistrict administrative organization to explored the demand in maintenance activity of them

The participation in benefit sharing was that the member fully takes benefits when the member strictly joins and followed all water management processes and rules. From the result, the member mostly joins all aspects resulting that the member obtained benefits from receiving water for cultivation. Weeraporn (1998) suggested that the water user realized that water must be used for the highest benefit and the water user must follow the water usage rule. The member would receive knowledge from the meeting and continuing helps from the irrigation project and Subdistrict Administrative Organization. The participation in evaluation was that the member joins with the association committee to evaluate water allocation resulted in the season. It was to evaluate if the member received sufficient water as required. The cause of insufficient water receiving is explored to improve water allocation to meet the requirement.

Conclusion

The encouraging of participatory irrigation water management for the water user member is essential to improve water management efficiency. It is because the member has roles to operate the agricultural irrigation water. The participation makes the member to know the management process. It raises the member's understanding, mindset and attention about water management and lets the member to learn and practice by themselves. Previously, the irrigation project operated water management and set rules for the member to follow. The sufficient water is depended on the government. Presently, the irrigation project transfers authority to the water user member that the member group is self-administration to meet actual members' requirements. If the member participates in all water management processes, the member takes benefits that are sufficient water that they require.

Recommendations

The association is allowed the member to participate in coordination and operation of the association by supporting the member to repair lateral and canal. This activity raises the ownership attitude to the member. After water management activities, i.e. irrigation canal maintenance or water operation to the member, the member should be asked to evaluate what aspects would the member like the association to support about the lateral and canal repair or if the member receives sufficient water as required. These evaluations will be used for further improvement.

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