CERTIFICATE OF STEWARDSHIP CONTRACT AND WATERSHED MANAGEMENT: A COMPARATIVE STUDY BETWEEN PARTICIPANTS AND NON-PARTICIPANTS OF INTEGRATED SOCIAL FORESTRY PROGRAM

หนังสือรับรองการครอบครองที่ดินและการจัดการพื้นที่ลุ่มน้ำ : ศึกษาเปรียบเทียบระหว่างผู้ที่มีส่วนร่วมและผู้ที่ไม่มีส่วนร่วมในโครงการวนศาสตร์สังคมแบบผสมผสาน

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Management of the watersheds is vital for the community. In the Philippines, issuance of Certificate of Stewardship Contract (CSC) had been a tool to motivate upland dwellers to efficiently use the watersheds through conservation farming that follows agroforestry principles. The study explored the systems of land-use and cropping patterns, and soil and water conservation practices of farmers with CSC and without CSC inside a watershed area. Household survey, focus group discussions, in-depth interview and site visits were conducted for information gathering. The study findings revealed that farmers with CSC had more types of crops and practice more non-conservation practices such as utilization of non-timber forest products from the forests, and use of chemicals in the farms. The study findings also revealed that CSC did not influence the existing farming systems of the upland dwellers. Both groups of farmers generally believed that people should actively participate in watershed management and Integrated Social Forestry Program (ISFP), but they do not practice conservation farming in reality. Thus, the study recommended that People's Organization should be re-organized towards attainment of watershed protection and management, and community development. Merging ISFP with CBFM Programme of the government is a good approach but there should be strict monitoring of upland dwellers' activities inside the watershed area. Without strict government monitoring, issuance of CSC is not recommended.

Keywords : Land tenure / ISFP / CSC / Upland Dwellers / Agroforestry / Watershed Management

การจัดการพื้นที่ลุ่มน้ำเป็นสิ่งที่จำเป็นมากต่อชุมชน ในฟิลิปปินส์มีการนำหนังสือรับรองการครอบครองที่ดินและการจัดการพื้นที่ลุ่มน้ำมาใช้เป็นแรงดลใจให้กับผู้ที่อาศัยอยู่บนพื้นที่สูง ซึ่งส่งผลต่อการใช้ประโยชน์และการอนุรักษ์พื้นที่ลุ่มน้ำอันนำมาสู่หลักแนวคิดของเกษตรกรในเรื่องของวนเกษตร จากการศึกษาหลักแนวคิดเกี่ยวกับระบบการใช้ที่ดิน การเพาะปลูก การอนุรักษ์ดินและน้ำระหว่างกลุ่มเกษตรกรที่เข้าร่วมในโครงการวนศาสตร์สังคมแบบผสมผสาน โดยการสำรวจจากกลุ่มคนที่อาศัยภายในบริเวณพื้นที่ลุ่มน้ำ มุ่งเน้นที่การอภิปราย การสัมภาษณ์เชิงลึก การเข้าศึกษาในพื้นที่อย่างมีส่วนร่วม ผลสำรวจพบว่าเกษตรกรผู้ที่มีส่วนร่วมในโครงการวนศาสตร์สังคมแบบผสมผสาน จะมีชนิดของพืชผลที่เพาะปลูกและรูปแบบการเพาะปลูกที่หลากหลายกว่ากลุ่มผู้ที่ไม่มีส่วนร่วมในโครงการวนศาสตร์สังคมแบบผสมผสาน ที่มีการนำสารเคมีเข้ามาใช้ในการเกษตร และจากการศึกษาดังกล่าวแสดงให้เห็นว่าโครงการวนศาสตร์สังคมแบบผสมผสาน ไม่ได้เข้ามามีอิทธิพลต่อ

ระบบการดำรงชีวิตของเกษตรกรผู้ที่อาศัยอยู่บนพื้นที่สูงมากนัก เกษตรกรทั้งสองกลุ่มที่มีความแตกต่างกันทั้งความเชื่อและกิจกรรมในการจัดการพื้นที่ลุ่มน้ำ และการนำโครงการวนศาสตร์สังคมแบบผสมผสานเข้ามาใช้ ด้วยเหตุนี้ผู้วิจัยเห็นว่าควรมีการศึกษาเกี่ยวกับองค์กรของประชาชนในการพัฒนา ป้องกันและจัดการพื้นที่ลุ่มน้ำของชุมชน โดยรัฐบาลจะต้องเข้ามามีส่วนสำคัญในการฟื้นฟูและเข้มงวดต่อการทำกิจกรรมของเกษตรกรผู้ที่มีส่วนร่วมกับโครงการวนศาสตร์สังคมแบบผสมผสาน และของผู้ที่อาศัยอยู่บนพื้นที่สูงบริเวณพื้นที่ลุ่มน้ำต่อไป

คำสำคัญ : สิทธิการครอบครองที่ดิน / ISFP / CSC / ผู้ที่อาศัยอยู่บนพื้นที่สูง

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1. INTRODUCTION

Watershed management is considered vital because it provides direct and indirect benefits to the society. Watershed areas are sources of reliable water supply, primary and non-timber forest products, and protect the environment from drastic conditions such as flooding and soil erosion. Proper management and protection of the watersheds lead to good ecological balance.

Watershed areas nowadays are facing serious threats due to over exploitation of the uplands. Rapid increase in human population has lessened the space in the lowlands which eventually resulted to continuous and uncontrolled migration of people to upland areas. Over utilization of forest products and unwise systems of farming have been the major causes of forest clearing and degradation of upland watersheds.

The improper practices of people like too much application of chemicals in upland farms threatened the health of the watersheds, affected the biodiversity and gave high risks to human health. According to Annan (2001), large scale deforestation resulted to high sedimentation of bodies of water and unfavorable economic loss for the society.

Because problems in watershed areas are due to human activities, people are then considered partners in watershed management, and are not treated as culprits of the forests. Involving them in the protection and conservation of the upland areas has been an effective approach towards participatory watershed management. According to Fernandez (2003), people's participation is very essential in management of surface runoff and increases the effectiveness, efficiency and transparency in watershed management.

In the Philippines, upland dwellers were allowed to legally utilize the upland areas through issuance of land tenure security. Under the Integrated Social Forestry Program (ISFP) of the government which was launched in 1992, upland dwellers could legally till the uplands through Certificate of Stewardship Contract (CSC) which is valid for 25 years and can be renewable for another 25 years. Under CSC provisions, farmers must follow agroforestry principles in farming which are basically technologies towards soil and water conservation. But then, not all upland dwellers in the country

have CSC. Many are still considered illegal cultivators of the uplands. It has been presumed however that upland dwellers with CSC are practicing better systems of farming in the upland areas than upland dwellers without CSC.

The villages of Marayos and Sabang inside Pola Watershed are among the villages in Municipality of Pinamalayan, Oriental Mindoro Province in the Philippines with high numbers of ISFP participants. However, there are also upland cultivators in the area without land tenure security. Since people's participation is essential in watershed management, the conducted research was a comparative study on the level of participation in watershed management between upland dwellers with CSC and without CSC by looking at their systems of land-use, cropping patterns, and soil and water conservation practices. It was analyzed if CSC somehow motivated upland dwellers for effective management of the watershed area.

2. METHODS

The target groups of the study were the upland dwellers, both with CSC and without CSC inside Pola Watershed, Marayos and Sabang Villages, Municipality of Pinamalayan, Province of Oriental Mindoro, Philippines. The respondents were household heads of both groups of farmers. The sample size was calculated using the formula of Yamane (1967). The number of ISFP participants included in the sample were 68 (66% of all CSC holders), while 33 for the non-ISFP participants (100% of non-CSC holders). A well designed questionnaire was used for each household in the collection of relevant information for the research. The information asked in each household included the following:

1. Household information
2. Land-use systems and cropping patterns
3. Soil and water conservation practices
4. Perception and attitude towards watershed management, CSC and ISFP

Farm visit was undertaken to see the actual conditions of the farm lots of each upland dweller. In depth interview was conducted and focus group discussions were organized and systematically facilitated.

The acquired information was properly consolidated using Microsoft Excel 2003 software, and analyzed using T-test and Chi-square test through application of SPSS version 13 software with CSC as the independent variable and upland dwellers' farm practices as the dependent variables. Statistics for data analysis was consisted of descriptive statistics which included percentage value, mean value, standard deviation, and maximum and minimum value obtained from each variable in the study. Upland dwellers' perception and attitude were measured using the 5-point scale measurement of the Likert scales' system.

3. RESULTS AND DISCUSSION

3.1 Systems of land-use and cropping patterns

Generally, both groups of upland dwellers inside the watershed were utilizing their respective lands purposely for agriculture. But then, some farmers were maintaining forest trees or portion of the forests in their farm lots for protection and as source of forest products; 37% of farmers with CSC and 39% of farmers without CSC. Figures 1 and 2 provided a comparison on the distribution of farmers for both groups with respect to maintenance of forest trees inside their farms. The study findings revealed that there was not much difference in the systems of land-use between the two groups of farmers.

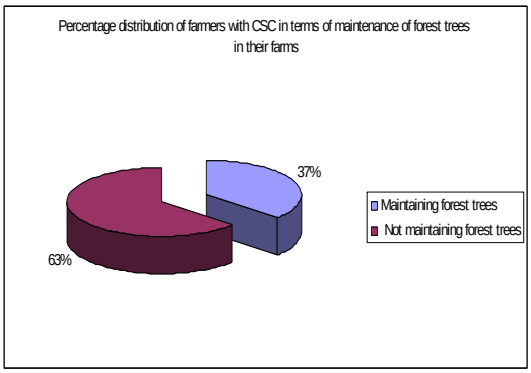

Figure 1: Farmers with CSC maintaining forest trees in their farms

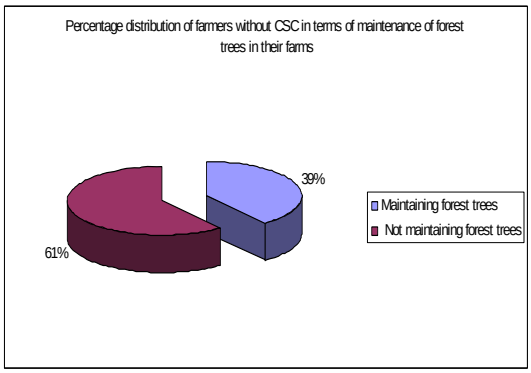

Figure 2: Farmers without CSC maintaining forest trees in their farms

With respect to farm size, farmers with CSC had an average farm size of 2.87 hectares, while farmers without CSC had an average farm size of 2.65. Both groups of upland dwellers turned out to be cultivating the same kinds of major perennial crops such as fruit bearing trees of different species or types, coconuts and bananas. Most farmers for both groups of upland dwellers were cultivating 3-4 crops; with an average of 3.85 for farmers with CSC and 3.54 for farmers without CSC. Generally, both groups had the same yearly management system for their primary crops. Farmers did intensive management of fruit bearing trees during the months of January and July. Bananas were being managed throughout the year, while coconuts were being managed during the end-month of every quarter.

The results of the T-test presented in Table 1 suggested that the means number of agronomic crops for were similar at significance level of 0.610. The over-all result of the test further revealed that the number of agronomic crops for both groups of farmers did not differ significantly and generally not influenced by land tenure or Certificate of Stewardship Contract.

Table 1: Results of T-test analysis

Relationship	Levene's Test for Equality of Variance	T-test for Equality of Means
	F	t
Number of Agronomic crops and CSC	.262	1.104

Note: P value is greater than 0.05

The study findings revealed that there was not much difference on the systems of land-use between the two groups of farmers except for the number of crop types and their systems of management. Farmers with CSC had more types of crops in their farms than farmers without CSC.

3.2 Soil and water conservation practices

The result of the chi-square test presented in Table 2 revealed that practices such as cutting of trees from the forests, maintenance of forest trees at the farm, practice of cover cropping, maintenance of fruit orchard and organic matter application in the farm of the two groups of upland dwellers inside the watershed area did not differ significantly since all the derived level of significance are greater than 0.05. The derived Phi Values; lowest value of -0.024 to highest value of -0.192, supported that CSC had no association/relationship with upland dwellers' farming and forest protection practices. Therefore, land tenure or CSC did not have any influence on said existing practices of both groups of farmers inside the watershed.

Table 2: Results of Chi-square test analysis of CSC and upland dwellers' farming and forest protection practices

Relationship	Phi Value	Pearson Chi-Square
Cutting of trees in the forests and CSC	- 0.027	0.075
Maintenance of forest trees in the farm and CSC	- 0.025	0.065
Practice of cover cropping in the farm and CSC	- 0.192	3.740
Maintenance of fruit orchard and CSC	-0.024	0.058
Organic matter application and CSC	-0.005	0.003

Note: P values are all greater than 0.05

For other practices however, there was difference between the two groups of farmers as explained by the big difference in percentage values. Table 3 showed that farmers with CSC practiced more non-conservation practices than farmers without CSC such as utilization of NTFPs from the forests and use of chemicals in the farm which included inorganic fertilizers, pesticides and herbicides.

Table 3: Comparison on some non-conservation practices of farmers

Practices	With CSC	Percentage	No CSC	Percentage
Use of Chem. Fertilizer	8	11.76 %	2	6.06%
Use of Pesticides	10	14.71 %	2	6.06%
Use of Herbicides	8	11.76 %	1	3.03%
Utilization of NTFP from the forests	9	13.24%	1	3.03%

3.3 Causes of uplancd dwellers' existing land-use systems, cropping patterns and soil and water conservation practices

The results of the statistical analysis proved that CSC did not have influence on upland dwellers' land-use systems, cropping patterns, and soil and water conservation practices. The study revealed that market, site conditions and upland dwellers' attitude towards farming and conservation naturally were the causes of farmers' systems of farming. No factor influencing upland dwellers' land-use systems, cropping patterns and soil and water conservation was identified.

3.4 Existing problems

The problems upland dwellers were facing inside the watershed area included absence of land tenure security in their lands for non-CSC holders, limitation of area for cultivation, poor leadership and personal interests, farmers' attitude towards conservation, natural calamities, presence of plant diseases, insurgency and lack of government monitoring.

3.5 Perception and attitude towards watershed management, CSC and ISFP

Generally, both groups of upland dwellers had the same perception towards protection and management of the watershed area as illustrated in Figure 3. Majority of the farmers for both groups had an opinion level of 5 which exhibited that upland dwellers themselves highly believed that they had to actively participate in watershed protection and management.

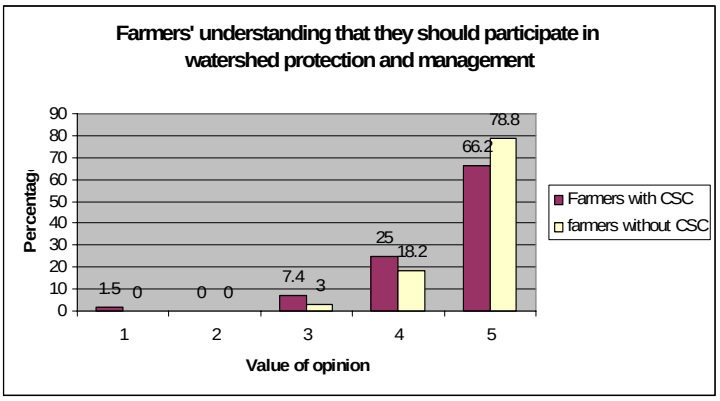

Figure 3: Farmers' perception in the protection and management of the watershed area

Towards CSC and ISFP Program of the government, both groups of upland dwellers similarly had the same perception that upland cultivators should have CSC. Farmers believed that CSC made their settlement inside the watershed legal and that they could practice better system of farming if they had security of tenure in their lands. For the upland dwellers, implementation of ISFP was an effective participatory watershed management scheme.

4. CONCLUSION

The need for proper and effective management of watersheds was deemed necessary. Upland dwellers as components of watershed areas had significant roles to perform towards its attainment. Treating people as partners in management and not destructors of the upland areas was considered a humane approach. Providing upland cultivators legal means of settlement and rights to till the uplands as in the case of issuance of land tenure security for upland dwellers in the Philippines had been a tool towards participatory watershed management. The pre-assumption however that farmers with CSC practice better systems of farming than farmers without CSC was not satisfied. The findings of the study revealed that the only difference on the systems of land-use and cropping patterns between the two groups of farmers was that farmers with CSC had more types of crops than farmers without CSC. With respect to soil and water conservation practices, farmers with CSC practiced more non-conservation practices such as utilization of NTFP from the forests and use of chemicals in the farm which included inorganic fertilizers, pesticides and herbicides than farmers without CSC. It was also proven that CSC did not have influence on upland dwellers systems of farming.

Though upland dwellers admitted that they were naturally aware of the importance of watershed protection and management, and that ISFP was a good participatory watershed management program of the government, in reality farmers did not properly practice conservation farming but utilized the upland areas to the extent resulting to fast degradation of the watershed area. Thus, it was recommended that People's Organizations should be re-organized and strengthened to encourage and improve participation towards effective watershed protection and management and community development. Government should strictly monitor the activities of upland dwellers inside the watershed for a better and much effective implementation of the program. Furthermore, there should be strict assessment whether upland dwellers were practicing conservation farming prior to the renewal of stewardship contracts by merging ISFP with the CBFM Program of the government. The government must also focus on the existing problems of the watershed area. And without strict government monitoring, issuance of new CSC was not recommended. For further research, more study on factors influencing upland dwellers' farming systems is recommended. Similar study on another watershed could provide clear comparisons between the groups of upland dwellers.

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