

Chapter VII

Conclusions and Recommendations

The forgoing discussion consolidates the insights from the study. It is attempted to assess the socioeconomic and institutional factors influencing rice production practices, assess if the study fulfilled the initial objectives and answered the research question. This chapter also briefly proposes further action based on the study.

7.1 Conclusions

Age of the household head has different associations with adoption in relation to different rice production practices. Different age categories had not shown any significant association with different levels of adoption in LPP and SIM. However in UAC, age is negatively related with adoption. The younger farmers are more likely to adopt rice production practices than older farmers in UAC. Younger farmers may have longer planning horizons and, hence, may be more likely to invest in new rice production practices. On the other hand longer farming experience, equated with older farmers, is expected to have positive effect on adoption decision. The net effect on adoption, therefore, might be neutralized in LPP and SIM.

In all three rice production practices, education level of the household head is strongly and positively associated with adoption and partial adoption. It indicates that the schooling period of farm household heads is the most important social factor influencing the adoption of rice production practices as it has significant positive influence on adopted and partial adopted categories over all three production practices. There is no significant association between family labor availability for agricultural activities and level of adoption with regard to all three production practices. Family labor can be considered as a proxy to family size of the farmer. This might be due to the relationship between larger family size and the corresponding

higher demand for food in the household. In a family with a greater number of mouths to feed, competition arises for family labor between off farm activities, like daily labor, and investment in new rice production practices.

Generally in most of the rural farming communities, agricultural management decisions are taken by household heads and they are generally males. It reveals that households in which other members other than household heads involved in agricultural decision-making are more likely to be fall into adopted category in LPP and UAC. But there is no such significant association between decision making nature of households and level of adoption in SIM.

The number of social organizations the household head is involved is positively associated with adopted and partial adopted categories in LPP. There is no such significant relationship between social participation and level of adoption in SIM. Adopted category of UAC shows positive significant relationship with higher social participation. It can be concluded that that higher levels of social participation by household heads is associated with higher levels of adoption in LPP and UAC.

The total extents of lowland area cultivated by the households are positively associated with adopted and partial adopted categories in SIM and UAC. When the total cultivated lowland extent increases, there is higher tendency to be an adopter or partial adopter and lower tendency to be a non-adopter in SIM and UAC. Higher lowland extents could be associated with higher resources endowment and higher ability to bear the risk, which might enhance the ability to invest more on rice production practices. In LPP, total lowland extent is insignificant as a predictor of adoption.

The tenureship of lowland is positively associated with the adopted category of SIM. The owners are more likely to be adopters while part owners and not owners

do not show any significant relationship with tenure status of lowland in SIM. Part owners and not owners may perceive that they may not receive the long-term benefits of adopting new rice production practices. There are no incentives for them to adopt some of the rice farm practices because of the risk involved in harvesting the benefit. Some tenureship arrangements discourage the tenant farmers to invest on farm practices because increased harvest through adoption of new technologies has to be shared with landowners. These reasons may cause the lower level of adoption in part owners and owners of lowland. However, tenureship is insignificant as a predictor of adoption in LPP and UAC, which is in contradiction to expectation.

The distance to the paddy field from home is negatively associated with adoption in SIM. The households, those are in close proximity to the paddy field, are more likely to be adopters. Those who are in far proximity to the paddy field are likely to be non-adopters. Closer proximities enable the farmers to be more attentive and also it encourages the family members to spend more time in paddy fields and thereby increase the adoption of RPPs. In LPP and UAC, proximity to paddy field is not significantly associated with different levels of adoption, which is also contrary to expectation. Distance to extension office from farm house is also insignificant as a predictor in all three rice production practices.

Since the study area is under major irrigation system, 72% farmers of the sample have no irrigation difficulties and only 4% have severe irrigation problem during two cultivated seasons, 2003/04 *maha* and 2004 *yala*. However there is no significant association among levels of adoption and easiness categories of irrigation in all three rice production practices.

Rice production training attended by household head is positively associated with adopted category in LPP. However training is an insignificant predictor in SIM. But number of trainings has positive relationship with adopted and partial adopted category in UAC. Therefore it can be concluded that trained farmers are more likely

to make changes in rice production practices while not trained farmers are more likely to be non-adopters in LPP and UAC.

Number of demonstrations attended by household head is an insignificant predictor in LPP. But number of field demonstrations is positively associated with partial adopted category in SIM and it is not significant with adopted category. Also number of demonstrations is also positively related with adopted and partial adopted categories in UAC. It can be concluded that higher number of demonstrations is associated with higher adoption level in UAC.

Number of extension office visits by household head is not significantly associated with level of adoption in LPP and UAC. But interestingly it is negatively related with partial adopted category and does not show any significant relationship with adopted category in SIM. Number of farm visits by extension officers is positively associated with adoption in all three production practices. Therefore it can be concluded that higher visitation rates by extension personnel has close positive relationship with level of adoption.

Frequency of listening agriculture radio programs by household heads is positively associated with adopted and partial adopted categories in LPP and UAC. Frequency of reading agriculture articles in newspapers by household heads is positively associated with adopted categories but it is not significant with partial adopted categories in LPP and UAC. Frequency of viewing agriculture programs in television by household heads is positively associated with adopted category but it is not significant with partial adopted category in LPP. Frequency of viewing agriculture TV programs by household heads is positively associated with adopted and partial adopted categories in UAC. Frequency of using all three mass media is an insignificant predictor in SIM. However it can be concluded that the more the farmers expose to the mass media agricultural programs or articles the more likely to be adopters in LPP and UAC.

7.1 Recommendations

The analysis of the survey data reveals that these social, economic and institutional circumstances influence differently on the real adoption behavior of rice farmers. These factors need special consideration in designing policies and programs to increase the level of adoption of rice production practices.

In Sri Lankan context rice cultivation is always been a whole family exercise. Approximately half of the households have family based agricultural decision making system. Therefore whole-family extension approach would be an innovative extension strategy in rice technology dissemination and adoption.

In this study social participation is approximated by the household heads involvement in social organizations. The main organization of the study area is the Farmer Organization (*Govi Sanvidhanaya*) in which majority of farmers have obtained membership. The main objectives of these organizations are to coordinate the farmers to share irrigation network and to make market arrangements. However detailed study of these activities of those societies is needed in order to promote their involvement in other productive measures of the sector. In this regard, an active involvement of extension officers in these societies may be useful.

It is revealed that the farmers with small extents were likely to be non-adopters. This may relate to growth of population leading to lowland fragmentation. Also there is no significant association of family labor availability for agricultural activities with level of adoption. The fast rate of population growth in the rural agriculture sector and fragmentation of lowland into economically not feasible plots require policy attention.

Some tenureship arrangements have negative impacts on the tenant farmers to invest on farm practices because increased harvest has to be shared with landowners. These reasons may cause the lower level of adoption in part owners and not owners of lowland. Involvement by extension officers and other related government institutions

could facilitate to correct this activity so as to improve the level of adoption among part owners and not owners.

Fifty seven percent of farmers have not attended any rice production training during last two years. Within those farmers 75%, 63% and 61% are non-adopters in LPP, SIM and UAC respectively. Similarly within the farmers those have not attended any field demonstration 100%, 82% and 97% are non-adopters in LPP, SIM and UAC. More training programs and field demonstrations should be organized to meet the farmers demand. Farmers should be given equal chance to participate in training programs. The time and duration of such programs should be decided so as to convenient to the farmers making least disturbance to their other activities.

Currently most of the participants of rice production extension programs are males. Participation of farmwomen in agricultural extension programs should be encouraged by conducting agricultural trainings and demonstrations at closer proximities to their dwellings. Thereby farm women's agricultural decision-making capacity could be widened. That may ultimately leads to adoption of new technologies through collective decision-making among the family members.

Though the level of adoption is positively related with farmers' usage of mass media, majority of farmers are non-users. It is reported that 50% of farmers do not listen to the agricultural radio programs, 36% of farmers do not read agricultural articles in newspapers and 59% of farmers do not watch agricultural television programs. In view of high literacy among farmers it is suggested that more intensive use of written material could be attempted. Television and radio agricultural programs should be broadcast at convenient hours to the farmers.

Though the average paddy yield of non adopters is statistically different from partial adopters and adopters, there is no yield difference between partial adopters and

adopters in LPP and UAC. In SIM, average yield of non adopter category is statistically different from adopted category but not with partial adopted category. Also adopters and partial adopters comprises together make 52%, 43% and 60% of households in LPP, SIM and UAC respectively. Therefore as far as production is concerned, enhancing adoption level of non adopted category should be given first priority in extension programs.

However there were only 29%, 17% and 31% adopters in LPP, SIM and UAC practices respectively. Majority of farmers were non-adopters in all three-production practices. These results suggest the need for designing and implementing appropriate policies and programs that will influence farmers' behavior towards the introduction of rice production measures to obtain higher yields in sustainable manner.