

CHAPTER VII

CONCSION AND RECOMMENDATIONS

As a concluding part of this thesis, this chapter consolidates insight from the study that attempted to assess the effectiveness of farmer field school approach for Integrated Pest Management practice on cabbage production. This chapter also reviews if the study had fulfilled its set objectives and whether it answered the research questions.

7.1 Conclusion

The intervention of Integrated Pest Management program through the farmer field school approach is important to change farmers' habit on their farming practice. Integrated Pest Management was introduced in the study area as a principal measure to solve the growing pest constraints with fairly impressive success and feedback. Although misperception about pesticide use remained relatively high, farmers have expressed their acceptance and good impression about the principles and usefulness of IPM practice primarily because it helped them to reduce the chemical fertilizer and pesticide use.

Farmers who graduated from the farmer field school for IPM program had better knowledge and awareness on various important ecological aspects in the cabbage field. More importantly, the study result on effectiveness of Integrated Pest Management practice found significant increase not only in average yield (4 t/ha more than average cabbage productivity of non-IPM farmers' groups) among the IPM farmers but also a 40% higher profitability as compared to the average profitability of non-IPM farmers.

However, the values of acceptability index (I_a) of IPM practices were not uniform among the IPM farmers in different technology packages. Seed selection and harvesting received the highest acceptance of 100% among the IPM farmers followed

by 85% in land preparation, 65% in fertilizer application, and 30% in pesticide application. It indicated a good chance of acceptance by IPM farmers after attending farmer field school organized by IPM program. As a result, the IPM practice is significant in terms of increasing the production and the profitability of the farmers without harmful effect to land and human health.

The collective learning promoted by farmer field school approach has turned to be effective as it empowered farmers with analytical skills in term of cabbage production and also provided them with tools, which enabled them to analyze their own production practices and identify possible solutions.

The survey found that all the 60 respondents knew bird and frog as natural enemies of the insects as a whole. Among other natural enemies, 100% of IPM farmer could identify lady beetle, spider, and vespid; while less than 15% of the non-IPM farmer-1 knew lady beetle, spider, and vespid respectively. In contrast none of the non-IPM farmer-2 could identify any other natural enemies. Even within the IPM farmers, only 65-85% of IPM farmers knew the long-horned grasshopper, damselfly, long-horned cricket, ground beetle, carabid beetle, and mirid bug as natural enemies.

The ability to identify insect pest will help farmers in better cabbage production management. Similarly, the result of study showed that 55-100% of IPM farmers could identify most of the insect pests, while only almost 35% of non-IPM farmers were able to identify of the insect pests. Furthermore, the result on knowledge about cabbage diseases indicated that 100% of IPM farmers could identify white mould, soft rot, and leaf rot, while only 15-30% of non-IPM farmer-1 and 15-20% of non-IPM farmer-2 were familiar with these three diseases. As much as 50-70% of IPM farmers and non of non-IPM farmers reported to have knowledge about leaf spot, black leaf mould, black rot, and grey mould. IPM farmers attributed their knowledge about diseases from the farmer field school training organized by IPM program. Usually, both groups of non-IPM farmer seem to have limited knowledge on natural enemies, insect pests and diseases.

The difference in knowledge between the three groups of farmer regarding natural enemies, insect pests and diseases adequately validates the benefit of farmer field school approach in IPM program to help IPM farmers' awareness of beneficial insect, insect pests and diseases. With the acquired knowledge, IPM farmers can make right decision for application of appropriate pesticides judiciously in their cabbage field.

Consequently, a good chance of 14 weeks in farmer field school training by implementation of IPM practice is significant to facilitate farmers in terms of enhancing knowledge in identifying natural enemies, pests and diseases that occur in one cycle of cabbage production. These farmers are also better equipped with proper measures to control these problems and thus increase the yield, reduce the use of chemical inputs and generate a higher return on their investment in cabbage cultivation.

With an increased demand for vegetable, particularly cabbage, most farmers cultivate cabbage as cash crop to generate household income. The study found that the adoption of IPM practices has helped IPM farmers to increase cabbage productivity, profitability and at the same time reduce the use of inputs like fertilizer and pesticide. On the other hand, all non-IPM cabbage growers faced the problem of pests and diseases, which led to lower yield. Yet 90% of them still wanted continue growing cabbage.

Therefore, considering the success of IPM practices adopted by IPM farmers in the study site and the problems and needs of the non-IPM farmers, there is a great potential to expend the IPM program to new areas among non-IPM cabbage growers.

7.2 Recommendations

Based on the results of the study, it is worth making some relevant recommendations, which are as follows:

- Training of Trainer

Training of trainer is vital for the success of farmer field school approach for IPM. As per research finding 70% of IPM farmers explained that in farmer field school training most of the trainers or facilitators are not experienced, lack leadership quality, problem solving skill and do not poses enough technical knowledge.

Sometimes they act themselves as teacher, and not as facilitator or IPM trainer. As such, it is important to enhancing their understanding of their own role as facilitator for the implementation of IPM program as well as upgrade technical knowledge on IPM practices.

- Study tour/farmer to farmer extension

To increase chances of adoption of IPM practice by new farmers, farmer study tours and farmer-to-farmer extension could be organized. Organizing study tour or visits to IPM farmers' field for new farmers would encourage non-IPM farmers to participate in the IPM program.

Further, as a normal behavior, farmer believes more on fellow farmer than the government officer or outsider. As a result it would be more effective to involve successful IPM farmers to talk and explain about the benefits of adopting IPM technology to new farmers. At the same time demonstration field could also be established in new areas to diffuse awareness on IPM program.

- Training material

The finding of this study revealed that training materials used were not appropriate or understandable to the local farmers, which resulted in the failure of farmer field school approach for IPM. Therefore, the National IPM program should develop simple and effective training materials (poster, leaflet of IPM guidelines) in local and simple language and should be made available to all the trained farmers.

- Selection of farmer

This study also found that many farmers within the project were interested to adopt IPM technology but was not able to enroll for the IPM training program. Therefore, National IPM program should consider the interest of all the farmers in the project area and give equal opportunity to attend the training irrespective of their resources and social status.

- Audio/Video program

As most of the farmers in the rural areas of Cambodia are illiterate, they cannot read and understand IPM practices, produced only through posters and leaflets. Therefore, it could be very appropriate and helpful in expanding IPM program by developing Radio/TV programs and broadcasting through national communication network and local radio stations. These will definitely create more awareness about IPM technology and increase the chance of adoption by farmers.

- Program monitoring

The study found out that National IPM program and other projects established many farmer field schools to promote IPM practices. As a result many farmers' club was formed initially but only few exist at the moment. This was mainly due to lack of proper monitoring/follow up by project and absence of adequate refresher's course. Therefore, for the long time sustainability and effectiveness of IPM technology there is a need to regularly organize refresher's training course, update activities of farmer club and provide incentive to farmer club such as award etc.