

## CHAPTER VI

### CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

In the present study, intercropping sweet potato with either corn and/or soybean was found to reduce the SPW population, rate of colonization by SPW, and the associated level of damage to the sweet potato tubers. Number of tubers and yield were higher, however, in the sweet potato monoculture.

Intercropping with corn was most effective from a pest management point of view, probably because it provided a more significant physical barrier to the movement of the SPW than did the soybean plants. Moreover, by delaying tuber formation, it may have made the sweet potato plants less attractive to the SPW.

Unfortunately, however, this retardation of tuber formation also significantly reduced sweet potato yield, making it unlikely to be accepted as an acceptable agronomic practice by sweet potato farmers in Irian Jaya.

Sweet potato intercropped with soybean yielded the second highest income after the sweet potato monoculture, even though colonization and number of SPW's were higher than in the corn mixtures. Thus, further work with soybean may be warranted to find an appropriate crop ratio and spacing that is both effective in controlling the SPW and economically acceptable to the sweet potato farmers. Such development should take into account the indigenous knowledge and traditional methods of the sweet potato farmers.

More insect and spider families, and therefore possibly a greater diversity of species, occurred in intercropped sweet potato than in sweet potato monoculture. Populations of the phytophagous spotted tortoise beetle , Aspidomorpha sp., were lower in the

intercropped systems than in the monoculture, but the opposite was found with the predacious spider, Lycosa sp. The lower population of Aspidomorpha sp. may be associated with a higher number of parasites and predators found in the intercropped systems. If Aspidomorpha sp. is a threat to sweet potato, it may be controlled by planting sweet potato with another crop that is not taxonomically related, and is a non-host plant for this insect. The larger population of the generalist spider may be related to the larger number of prey species found in intercropped systems.

The present study is a first attempt to investigate intercropping as a potential cultural control strategy for SPW, or for any other insect pest in Irian Jaya. Although the results are preliminary, they indicate important directions for further research. Four topics, in particular, are suggested for further investigation.

1. Evaluation of the contribution of the different mechanisms by which corn reduces damage by the SPW, e.g., physical barrier, chemical repellent, retardation of tuber formation, and provision of a suitable habitat for natural control organisms. This might lead to further intercropping experiments with shorter cultivars of corn, shade tolerant sweet potato cultivars, and different spacing between rows and times of planting.
2. Effects of the sweet potato crop on the productivity of the intercrop(s). Again, experimentation with different cultivars is called for to identify compatibility, and to avoid

competition and antagonism.

3. Such studies should also take into account both the nutritional and economic implications of intercropping systems for local farmers.
4. To increase the chances of adoption by the indigenous people, it will also be necessary to find cropping patterns that build on their indigenous knowledge and customs, and that are compatible with their traditional methods of production.