Chapter 6

CONCLUSION

Results of the this study reveal that agriculture in the Northern-mountainous region of Viet Nam is driven toward self-sufficiency. The farmers focussed more on lowland rice to upland farming. Prevailing cultivation on the upland area is monoculture with simple traditional practices. Soil erosion and soil degradation are serious which lead to decreasing of crop yield, while very few of farmers have applied soil conservation measures.

Promising alley cropping system with hedgerows of *Tephrosia candida* is associated with increasing productivity and economic efficiency. Alley cropping also shows close association with soil conservation by providing the higher canopy cover during peak of rainfall. *T. candida* grown in the hedgerows has played a significant role in soil conservation by contributing considerable amount of green matter, and improving *in situ* mulches (both lived and death mulches) to upland farming systems. Especially, during changing from the first to the second crops which is normally the same period of rainfall peak. Its canopy combined with canopy of crops shows significant differences of canopy cover from those without T. candida hedgerow. Consequently, these differences contribute to significant differences in soil loss.

The peanut-cassava intercropping system reveals the advantages of almost all aspects of productivity, soil conservation and

feasibility. In terms of productivity, it generates the highest biomass and food yield. In terms of economics, it boosts efficient investment by increase return and gross margin, return to material cost as well as return to labor cost. On soil conservation, it provides higher canopy cover throughout rainy season which in turn result in lowest amount of soil loss compared to other treatments. Moreover, the advantages of this cropping system become more realized when it was combined with the hedgerows of *T. candida*. The results of economic analysis and survey of farmers' willingness to adopt the system from field survey indicate that this is a promising system for the area.

The peanut-corn system (including sequential and relay cropping) needs further evaluation because there was drought period during the experiment which effected corn yield. This system, however, fits farmers' requirements of food security, easy management and good nutritive food. Upland rice shows poor performance in productivity, soil conservation, and vulnerable to weather stress. Hence, the growing area should be reduced. However, if necessary it should be grown in alley cropping in upland farming.

The techniques of alley cropping and multiple cropping are new to the farmers. However, the results of field survey indicate that once having the supports of seeds and a proper extension program farmers might adopt the practices.