

## 6. CONCLUSIONS

The problems and prospects of alley cropping systems on the steep land were investigated with a farmer adopter in the village where cultivating areas in the lowland were scarce. Forest land was encroached and cleared for production of food crops as well as cash crops. Food security and permanent agriculture on the steep land were the farmers's objectives. Only two farmers had adopted conservation farming practice by establishing leucaena and/or gliricidia hedgerow intercropping with selective fruit trees and annual cash crops. The adopters were aware that integrating conservation practice into their farming systems on the steep land would make the intensification of land resource more sustainable.

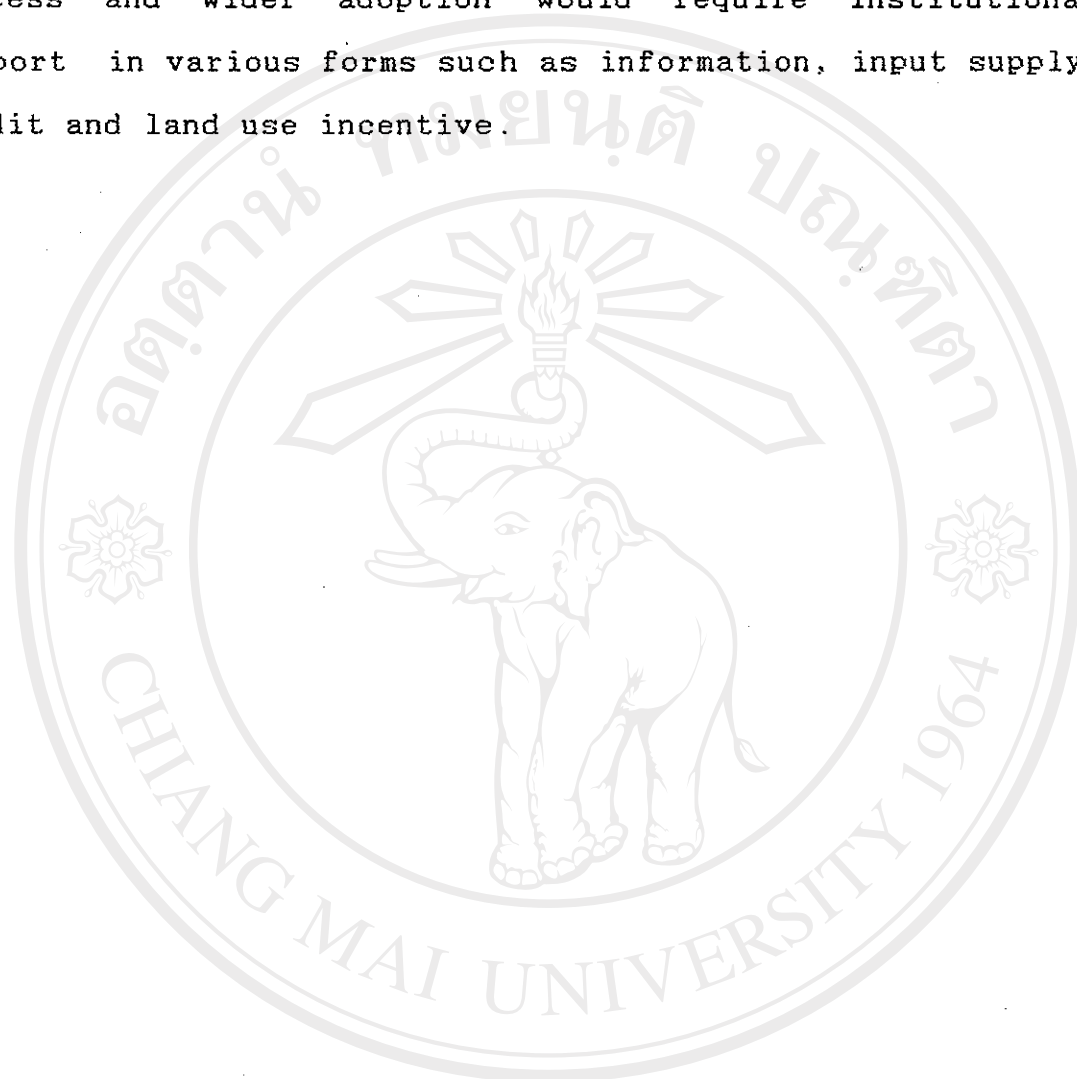
Certain agronomic limitations of the system identified were the shading effect on the intercropped species caused by the leucaena hedgerows. The effect would be less severe with perennial fruit trees than annual crops. The test plot, where leucaena hedgerows had been installed for four years, did not show evidence of fertility enhancement. With the inherent soil nutrient deficiency, external input such as phosphate fertilizer was essential.

The system also reduced the crop area, particularly when annual crops were the only companion crops in the hedgerows. However, it did not affect the crop area of perennial fruit species. The alley cropping system did require additional labor, particularly the first year for land preparation and hedgerow management. The species used for hedgerow such as leucaena and gliricidia did not provide any economic benefit. These economic limitations discouraged the adoption of alley cropping by most farmers in the village.

However, some agronomic prospect was evident. The system provided erosion control and this was also realized by the farmer adopter. The measured surface soil movement could have been lost if there was no hedgerows as barrier. The leucaena leaf mulch could also conserve soil moisture.

Practicing alley cropping would reduce crop area which in turn would seem to reduce total farm income. However, with suitable design of cropping patterns, farmer could receive higher return to labor as compared to traditional pattern, and had opportunity to spend some time in other cash generating activities so that the total farm income might be improved.

Alley cropping system is seen as a conservation farming practice to sustain land use on steep land. Its success and wider adoption would require institutional support in various forms such as information, input supply, credit and land use incentive.



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