



## ASSESSING THE PRODUCTIVITY, RESILIENCE AND SUSTAINABILITY OF DIVERSIFIED FARMING SYSTEM AS AN AGROECOLOGICAL APPROACH TO UPLAND RESOURCE MANAGEMENT

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**ABSTRACT** – This study investigated the critical link between agricultural production and natural resource management in the practice of diversified farming system (DFS) in Bgy. Casile, Cabuyao, Laguna. It evaluated the stock and flow of ecological goods and services in DFS by assessing its productivity, resilience and sustainability using data source triangulation. A total of 40 DFS practitioners in various degrees of crop diversification and integration were selected for structured in-depth interviews, focused-group discussions and farm visits analysis. All of them are cultivating various combinations of annual crops such as green beans (*Paseolus vulgaris*); string beans (*Vigna unguiculata*); cabbage (*Brassica oleracea*); chili pepper (*Capsicum annuum*); cowpea (*Vigna sinensis*); cucumber (*Cucumis sativus*); eggplant (*Solanum melongena*); bitter melon (*Momordica charantia*); bottle gourd (*Lagenaria siceraria*); sponge gourd (*Luffa cylindrica*); lettuce (*Lactuca sativa*); mustard greens (*Brassica juncea*); okra (*Abelmoschus esculentus*); peanut (*Arachis hypogaea*); pechay (*Brassica rapa*); squash (*Cucurbita maxima*); sweet potato (*Ipomoea batatas*) and tomato (*Solanum lycopersicum*); perennial crops such as mango (*Mangifera indica*); banana (*Musa x paradisiaca*); coffee (*Coffea liberica*); jackfruit (*Artocarpus heterophyllus*); papaya (*Carica papaya*); pineapple (*Ananas comosus*) and rambutan (*Nephelium lappaceum*); insect-repellant crops such as cillantro (*Coriandrum sativum*); oregano (*Origanum vulgare*) and marigold (*Tagetes patula*); and multi-purpose trees such as ipil-ipil (*Leucaena leucocephala*); madre de cacao (*Gliricidia sepium*); napier grass (*Pennisetum purpureum*) and vetiver grass (*Chrysopogon zizanioides*).

Results indicated that farmers who cultivate more annual crops tend to be more productive than those growing more perennial crops. Those whose systems grow more perennial crops and cover grasses tended to be more resilient to climatic disturbance, stress and variability. Farmers whose systems grow more multipurpose trees and perennial crops tended to be more sustainable. However, it was the combination of annual and perennial crops with multipurpose trees and grasses that tended to have the highest productivity, resilience and sustainability regardless of the size of farmland. Farm diversification results in higher productivity because it allows farmers to maximise farm space to cultivate a range of crops and plants that serve different purpose and usage. This optimises the interactions between farm components and widens the range of available ecological services. The generation and regeneration of ecological goods and services become its own incentives to maintain DFS thereby increasing its ability to provision such goods and services sustainably.

**Key words:** agroecosystem, Bgy. Casile, diversified farming system, ecological goods and services, upland resource management.

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