

AGROFORESTRY: A PRACTICAL OPTION FOR UPLAND DEVELOPMENT¹

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The upland situation

By their very nature, the uplands are considered as the most vulnerable areas for soil degradation. Particularly in the tropics, soil degradation has been identified as the primary root cause of poverty among upland communities who depend largely on the soil for survival and livelihood. The very diverse characteristics of uplands in terms of soil resources, slope and temperature present a big challenge for upland development and Natural Resource Management.

Of the 29.81 M- hectare total land area of the Philippines, more than half, or 16.3 M hectares are considered as uplands. Over 5 M hectares of these uplands are found in Mindanao. This makes the island a big opportunity for agroforestry.

Agroforestry as a practice

Agroforestry, or growing trees on farm, has been practiced thousands of years ago. It is therefore not a new practice. But in the late 70s, R&D efforts have started making improvements in the old practice. The World Agroforestry Centre (ICRAF) has been taking the lead in R&D efforts to develop and improve agroforestry systems specifically in the tropical regions, namely South Africa, Latin America and South-Southeast Asia.

Benefits from agroforestry

ICRAF promotes agroforestry as a response to poverty, food insecurity and environmental degradation. It focuses on poor farmers who live especially in areas where soils have been degraded due to erosion and other destructive activities. Through agroforestry R&D, ICRAF was able to identify and develop more suitable tree species, develop more appropriate agroforestry technologies, and enhance the capability of its partners to carry out R&D activities on agroforestry.

When farmers plant trees in their farms, they are not only responding to the economic and other needs of their families. They are actually doing a big contribution to society. By

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their functions, trees contribute to biodiversity, protect watersheds, add beauty to landscapes and sequester and store carbon.

Promising agroforestry systems in Mindanao

Particularly for the sloping uplands of Mindanao, agroforestry systems with soil conservation components are widely promoted by ICRAF and the Mindanao Baptist Rural Life Center (MBRLC). ICRAF promotes Natural Vegetative Filter Strips (NVS) along the contour line as the basic soil and water conservation component. The MBRLC Sloping Agricultural Land Technology promotes the planting of leguminous hedgerows. Both the NVS and the leguminous hedgerow are a way of ensuring sustainability of agroforestry systems.

The NVS-based agroforestry systems promoted by ICRAF takes various forms, depending on the situation of the farm and the farming household. Timber and/or fruit trees are planted as enrichments of the NVS to further increase the soil conservation function of the latter among other beneficial purposes. Or they are planted along the farm perimeter or in a block in the farm.

In Northern Mindanao, particularly in Claveria, Misamis Oriental and Lantapan, Bukidnon, over a thousand upland farmers have organized themselves to promote soil and water conservation and agroforestry. Called Landcare groups, they were trained by ICRAF and its partners on practical soil and water conservation practices and on agroforestry. The groups in Claveria later on organized the Claveria Landcare Association (CLCA) in 1996. The groups in Lantapan followed in 1998 with the Lantapan Landcare Association (LLCA). Landcare became a project of ICRAF in partnerships with the Australian Centre for International Agricultural Research (ACIAR) and the Spanish Agency for International Cooperation (AECI).

Prior to the organization of the LLCA, a group of Lantapan farmers organized themselves into the Agroforestry Tree Seed Association of Lantapan (ATSAL) after receiving training from ICRAF and the USAID-funded Sustainable Agriculture and Natural Resources Management – Collaborative Research Support Project (SANREM-CRSP) on seed selection, collection, storage and distribution. The Landcare groups and ATSAL have shared their knowledge and skills to farmers from different regions of Mindanao and the Visayas who have been to ICRAF in Lantapan for cross visit or training.

Following are some of the general types of agroforestry systems practiced by Claveria and Lantapan farmers:

1. Trees (either timber, fruit or both) + cash crops (corn, rice or vegetables)+ NVS enriched with gabi/pineapple/cutflowers

The crops that are used to enrich the NVS are actually increasing the erosion control capacity of the strips. These are planted just above the NVS, thus, they get the benefit from the nutrients coming from the upper portion of the alley.

When trees are planted above the NVS, the spacing between trees mainly depends on the shading characteristics of the tree and the shade-tolerance ability of the cash crops that will be in association with the former when these are already spreading their canopies.

2. Trees + cash crops + NVS enriched with nitrogen fixing shrubs

Nitrogen fixing shrubs, such as *Calliandra*, are planted above the NVS. Aside from adding nitrogen into the soil, *Calliandra* is also a source of forage for livestock. The tree component can also have a nitrogen fixer, such as *Acacia mangium*.

3. Trees + cash crops + NVS enriched with forage grasses + livestock (goat, cattle)

Forage grasses, such as *Setaria* and *Napier*, are planted closely above the NVS. The leaves are cut and fed to cattle and goats in the pen (cut-and-carry). Manure from the animals are collected and used as fertilizer for the trees and crops in the agroforestry farm.

Farmers have a lot of options in planting trees on farm. The basic considerations include their goals and objectives, available resources and support services, agro-climatic conditions of their farms, compatibility and complementation of components and markets.

Promotion and adoption of agroforestry

Agroforestry is one of the strategies adopted by the 20 municipalities and two cities in Bukidnon for their respective municipal/city watershed management plans. The provincial government through the Bukidnon Environment and Natural Resources Office (BENRO) coordinates the planning and implementation of the plans. BENRO works closely with the multi-sectoral Bukidnon Watershed Protection and Development Council (BWPDC), which gives the general direction of the watershed management plans.

Other LGUs, such as the municipality of Bunawan, Agusan del Sur, are also adopting agroforestry as one of the strategies to carry out their comprehensive development plans. Many LGUs and Barangay Councils are also formulating and enforcing policies that promote and support the planting of trees on farms.

A number of development projects are also promoting agroforestry in their respective areas of coverage. In Southern Mindanao, the European Union-funded Upland Development Programme (UDP) of the Department of Agriculture launched a capacity building programme for its 149 Barangay Extension Workers (BEWs) in partnership with the Agricultural Training Institute (ATI) and ICRAF. The BEWs are now promoting agroforestry as one of the strategies for micro-watershed protection and livelihood

enhancement in the provinces of Davao Oriental, Compostela Province, Davao del Sur, South Cotabato, Sarangani Province and Davao del Norte.

In the Western Mindanao, the Department of Agrarian Reform (DAR) is implementing the Western Mindanao Community Initiatives Project (WMCIP). The Project is funded by the International Fund for Agricultural Development (IFAD) and is implemented in the provinces of Zamboanga del Sur, Zamboanga del Norte, Sibugay and Basilan. After obtaining training at ICRAF in Lantapan, the farmer leaders and facilitators of WMCIP are already promoting and supporting the adoption of agroforestry.

Just recently, the Northern Mindanao Community Initiatives and Resources Management Project (NMCIREMP) was launched. This IFAD-DAR project is implemented in selected municipalities of Agusan del Norte, Agusan del Sur, Surigao del Norte, Surigao del Sur, Misamis Oriental and Bukidnon. Particularly for upland communities, agroforestry has been identified as one of the strategies that the Project is adopting.

The promotion and adoption of agroforestry in the buffer zone of the Mt. Kitanglad Range Natural Park (MKRNP) in Bukidnon is also expanding as facilitated by the Food and Agriculture Organization-supported Farm Income Diversification and Market Development Project (FIDMDP). The Project is implemented by the DA-Region 10 in partnership with the Protected Area Management Board (PAMB) of the MKRNP and other organizations like ICRAF, the Heifer Project International (HPI), to name a few. The gains of the Project are expected to trigger a bigger project that may be funded by the World Bank.

Potentials of agroforestry

The Agriculture and Fisheries Management Agenda (AFMA) as operationalized by the present government's Ginintuang Masaganang Ani (GMA) Program is opening a big potential for agroforestry. The immediate concern of GMA is to address direct investments in support of protection and development of watersheds, proper management of agricultural land and resources, among others. Particularly those that are sources of water for existing and potential irrigable areas and recharge areas of major aquifers, watersheds can also be planted with appropriate fruit trees.

LGUs can strengthen their strategies for Natural Resources Management by promoting agroforestry especially in sloping lands. In so doing, they increase the impact of their function of environmental protection.

Providing a supportive environment

Promoting agroforestry as a strategy for food security, income improvement and environmental protection needs more supportive policy environments and enhanced governance especially at the local level. It also needs functional linkages that enable farmers to gain efficient access to markets and market information, input suppliers, service providers, project assistance, credit institutions and R&D organizations.

The degree of expansion of agroforestry can be enhanced if the environmental services that upland farmers, especially those who are resource-poor, do provide are rewarded. A number of reward mechanisms, though in limited extent, already exist. One such mechanism is the National Transmission Corporation's distribution of grafted fruit tree seedlings to the farming communities in the municipalities surrounding the protected area of the Mt. Kitanglad Range Natural Park (MKRNP). ICRAF's Programme for Asia on Rewarding the Upland Poor for the Environmental Services they Provide (RUPES) is addressing this issue with partners and fund support from IFAD. Through RUPES, the most efficient reward mechanisms are expected to be developed or identified, and eventually adopted for the benefit of both the environmental service providers and the buyers (or users) of the services. Two sites in Mindanao have been identified as potential initial areas for RUPES action research. One of these sites is the bufferzone of the MKRNP.

Indeed, there are a lot of potentials for agroforestry as a practical option for sustainable upland development. To aid the attainment of these potentials, a more meaningful documentation and quantification of the benefits it can give in terms of food security, livelihood enhancement and environmental protection is needed.