Traditional Pacific Island Agroforestry Systems

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Abstract

Agroforestry was traditionally practiced in many parts of the tropics. Most traditional agroforestry species and techniques have not yet been subject to institutional scientific experiments. However, they have been well-tested by local farmers, often over many generations. These traditional systems and species can provide a strong, locally-based framework for future agroforestry development. Indigenous knowledge systems are now being regarded as an invaluable resource. This paper highlights some traditional agroforestry systems from two Pacific Islands.

1. Introduction

Trees have always been important to Pacific Island societies. Pacific Island peoples planted and protected trees as a part of their multi-species and multipurpose agroforestry and land use systems. They have also been willing to accept new trees that can make their life and their island environments better. Traditional Pacific Island agricultural and land use systems were agroforestry systems, built on a foundation of protecting and planting trees. These systems make Pacific Islanders to be self-sufficient and also contribute to their well-being.

Future agroforestry development in the Pacific Islands would do well based on the conservation, strengthening, and expansion of the many multipurpose agroforestry species and systems that already exist in the Pacific Islands. The emphasis on the protection, as well as the planting, of these species is of utmost importance. Experience has shown that it is far more difficult to replace forests, agroforests, trees, and rare cultivars of trees (e.g., breadfruit, coconut, pandanus and banana cultivars), than it is to protect what already exists. Minimizing the loss of knowledge about these systems and species is also essential.

Pacific Island agroforests were developed and managed to meet not only people's needs for food and other products, but also the needs of the system as a whole for fertilizer, mulch, animal food and shade. The trees in the system also provide protection from erosion, wind, and salt spray.

2. Kiribati Atoll Agroforestry Example

Coconut palms, usually of a number of different varieties, are planted as a major cash and multipurpose crop. Sometimes they are planted in rows and sometimes allowed to grow in irregular patterns. Other multipurpose trees, such as pandanus are protected, or sometimes planted to provide soil improvement and leaves or mulch (fertilizer) for the swamp taro (*Cyrtosperma chamissonis*) pits that have been excavated down to the water table. The pandanus is also a very important staple food plant on the atolls, as well as being the source of timber for house building, thatch, fibre for mat and basket making, medicines, and many other products. Breadfruit, papaya, and sometimes bananas and taro (*Colocasia esculenta*) are also planted in or around the taro pit. The coastal forests on both the ocean and lagoon sides of the garden area, and the mangroves on the lagoon side, are protected to shelter the inland plantation from salt spray, high waves, extremely high tides, and from coastal erosion. The protection of these forests and the protection of the other trees also ensure that the wood, medicine, and many other products provided by the trees and forests are still available. This practice also ensures the continued availability the fish, shellfish, crabs, birds, and other animals and small plants that depend on these forests and trees will be

protected for future generations.

3. Fijian Agroforestry Example

In Fiji the multispecies agroforestry system is a mixture of trees, shrubs, and short-term ground crops. It is usually practiced as a short-term shifting agriculture system on pieces of land. When the land is prepared for a new garden, some of the fast-growing pioneer tree species, most shrubs, and grasses are cut and allowed to dry. The dried material is then placed in piles for burning. Other valuable trees that are present in the fallow, such as breadfruit, mangoes, avocado, citrus trees, and, of course, coconut palms (*coco nucifera*), are protected. Other culturally important trees, like sandalwood (*Santallum yasi*), dawa, mulberry, and pandanus are often left to grow in the gardens. Other trees are pruned by cutting almost all of the branches off. This practice does not kill the tree, and accomplishes a number of objectives. It allows the entry of sunlight needed by the first crop to be planted, which are usually yams or kava *(piper methysticum*). It also allows the leaves to fall providing organic material to the soil, and allows for fresh new branches to grow as the garden matures. The larger branches that have been cut from the trees are often used as stakes over each yam mound. Yams growing for this system often have higher yields, are more disease free, and are more easily weeded. When the yams are harvested, after 12 months, the branches make perfect firewood.

In the garden, the yams are not usually intercropped as compared to taro (*Colocasia esculenta*) which is sometimes intercropped with kava, cassava. Along the borders, banana often planted, and pandanus for weaving, sugarcane or leafy vegetables (bele)), a very important leafy green vegetable often planted along the borders or fence lines of the garden. Other short-term crops such cabbages, chillies, pumpkin and water cress are often planted and tree ferns protected in the garden.

After the yams are harvested, taro is planted as the next crop in the soft soil left over after the yam harvest. When this taro crop is harvested, cassava is then planted, which completes the two to three year shifting agricultural cycle. Sometimes, the cycle is extended for a further three to five years by planting kava (*Piper methysticum*), the important social beverage plant, or paper mulberry so important for the making of tapa cloth used in Fijian ceremonies and to sell to tourists and for export. As the garden is allowed to slowly return to fallow for four to up to ten years, the plantains continue to bear fruit, the fruit trees and other multipurpose trees continue to provide food, medicines, and other products.

4. Conclusion

A traditional agroforestry system represents a long-term investment of time,

knowledge, and effort. If protected and improved, traditional agroforestry builds foundation for future development. It can help to ensure that the needs of future generations of Pacific Islanders will be satisfied.