Villagers Learn to Propagate High-Quality Exotic and Indigenous Fruit Trees

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Erika Styger demostrates grafting techniques to farmers at the center for propagation in Ranomafana. Villagers even stood in the rain to learn as much as they could about grafting.

Oranges, mandarins, grapefruits, lychees, avocados and peaches are the most common exotic fruit trees found in the Ranomafana area. *Annona* sp., jack fruit and mango are found to a lesser extent. The number of species per village is still fairly modest.

Villagers approached CIIFAD for support in planting more fruit trees, with the goal of both selling some of the harvest and increasing their consumption of fruits.

The most important constraints are lack of improved genetic material and lack of knowledge about propagation techniques. Tree propagation and tree planting are new to farmers in the Ranomafana area. Commercialization can only be successful if the quality of the fruits is high. This is not only because of competition, but because products must be carried to commercial centers on people's backs for very long distances.

CIIFAD responded through its center for propagation in Ranomafana. At the center, high-quality germplasm is acquired and multiplied, and farmers from the area receive training on plant establishment and nursery management. With these new skills, farmers are able to produce their nursery stock independently in their own villages.

During my visit to Madagascar in January 1998, I participated in establishing several associated village propagation centers. CIIFAD and Tefy Saina organized training sessions in nursery installation and plant propagation for project staff and farmers in three villages—Ambatovaky, Ambodikimba and Tortosy.

About 20 villagers and extension agents attended each training session; a third to one-half were women. The village elders, the *ray aman-dreny*, as well as the head of each village, the *ampanjaka*, did not want to miss the occasion. Lively discussions arose about the nursery establishment, the optimal layout, procedures in construction, material use, and considerations for future development.

Building on previous training on seed propagation, air layering and cutting techniques conducted by Ken Mudge (Floriculture and Ornamental Horticulture), I focused on grafting. In grafting, two complementary plant parts from two individual trees are joined to become a single plant. The rootstock is usually a locally adapted variety, and the scion is from a highly productive, high-quality variety. Grafting can reduce the time until first flowering and fruit setting by several years, which makes the investment in fruit-tree planting much more lucrative.

After demonstrating a top-wedge graft and the chip-bud graft on citrus, avocados and peach seedlings, farmers tried it out themselves. These techniques require no more sophisticated equipment than a sharp knife, some rubberbands (or similar material) for tying the two plant parts together, and a little plastic bag to protect the plant from drying out the first week.

These practical exercises fascinated the farmers, and the hours passed by unnoticed. Even rainstorms did not keep participants from trying out the techniques. Finally, only the approaching night brought the session to an end.

As farmers acquire knowledge and skills in seed and vegetative propagation techniques, they will be able to produce their own high-quality seedlings. They can also start to experiment on desired local indigenous species from the surrounding forest vegetation.

Madagascar is known for its high species diversity, which exceeds 12,000 plant species. More than 80 percent are endemic. In an ethnobotanical study for the National Tree Seed Center and Intercooperation in 1996, I identified together with villagers in the Ranomafana area 72 indigenous tree species with edible fruits. Wild fruits are collected for direct consumption, for their oil, are cooked as vegetables, and used as spices and for medicinal purposes.

The use of valued primary forest species is restricted due to their low species density in the forest. Harvesting is time-consuming and difficult due to the height of the trees. Often the fruits are eaten by lemurs and other animals before they can be picked. Furthermore, there are legal restrictions on forest access and use.

By mastering nursery and propagation techniques farmers will have the ability to experiment in reproducing rare and favored primary forest species and integrating them in their agricultural systems. In this way, indigenous species can complement exotic species, diversify the plant resources in the the farming system, and provide farmers with culturally appreciated products and benefits.

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