



THE AGRICULTURAL AND TREE PRODUCTS PROGRAM IN CAMEROON



Location: West and Northwest Cameroon

Launched in West and Northwest Cameroon in 1999, the Agricultural and Tree Products Program is now working with over 10,000 farmers and 50 entrepreneurs in 485 communities. In addition to establishing more than 40 nurseries where tree propagation techniques are studied and disseminated among farmers, the program improves farmers' incomes, the environment, and entrepreneurial opportunities.

CHALLENGE

Since the 1990s, Cameroon has implemented the World Bank and International Monetary Fund's economic policy recommendations, including undertaking structural reforms, privatizing public corporations, and developing an export-oriented economy. At the end of the last decade, Green Revolution packages of improved seed, chemical fertilizers, and pesticides were introduced and tropical forests were cleared to expand the production of export crops.

Despite efforts to modernize agriculture and boost economic growth, nearly half of the country's population lives in poverty,¹ and a 2011 World Food Programme assessment estimated slightly more than 30 percent of households vulnerable to food insecurity.² Although 70 percent of Cameroon's population is employed in agriculture, local food shortages are common. Coffee and cocoa crop earnings commonly provide farmers with income only during the three-month harvest period, with profits subject to fluctuating prices in the global market.³

In West and Northwest Cameroon, widespread deforestation accompanying the country's conversion to a cash crop economy contributed to the loss of traditionally important foods, medicines and other useful forest products. Land degradation, declining soil fertility, and declines in nutrient, water availability and pollination, facilitate agroecosystem failures.⁴ Unable to secure sufficient income from cash crops, farmers focus on intensively farming staple food crops—maize, cassava and yams. These crops meet food needs but result in a low-nutrient, starch-based diet. The region also faces additional social and environmental challenges from overgrazing, poaching, decreasing health and educational standards, loss of traditional social networks and culture, and continued poverty.

RESPONSE

The World Agroforestry Center initiated an agroforestry program in 1997 by conducting interviews and surveys to determine which trees were most valued by local farmers. Instead of commercially relevant timber species, farmers preferred undomesticated native fruit and fertilizer trees unfamiliar to the research center's western-trained botanists. By 1999, the Center's scientists developed a cooperative learning program. Funded by the International Fund for Agricultural Development, the program integrated local knowledge with modern genetic selection techniques to domesticate preferred wild trees for local consumption and sale.

The program trained farmers to collect germplasm, i.e. living tissue from which new plants can be grown, from individual trees that exhibited desirable traits. Tree locations were carefully recorded and labeled with GPS, enabling farmers to return to those with superior stock. Scientists also trained farmers in rooting, grafting, and marcotting to propagate identical copies of the desired trees, both in nurseries and on farms. Marcotting—a process that involves peeling back bark from a branch of a selected tree so it sprouts roots and can then be re-planted—speeds up the process of tree maturation, thus shortening the time between planting and harvesting the first fruits. Marcotting has proven particularly effective for growing the African plum (*Dacryodes edulis*) and some *Cola* tree species. Maturity in *Cola* trees may take upwards of 20 years before fruits can be harvested. In contrast, *Cola* marcots fruit after only four years. In addition, marcots usually result in dwarf varieties that make it easier for farmers to harvest the fruits, significantly reducing fatalities caused by falling from tall trees.⁵

Despite new skills in domesticating and producing a wide range of indigenous crops, farmers still faced challenges in processing, storing, and marketing their products. For example, they received low prices for *Ricinodendron heudelotii*, often called African Ground Nut tree in English—indigenous African nuts popular in local cooking—because the tree had never been widely domesticated or farmed, complicating the processing practice. Three processes enabled farmers to overcome these challenges.⁶ First farmers learned to organize collectively and established groups to strengthen their bargaining power. Farmers were also able to take out small loans through the Farmer Enterprise Development Initiative; with money for daily needs, they could wait for the market to improve before selling their nuts. Finally, nut processing became more efficient: local engineers working with the Agroforestry Center developed a new method that reduced the processing time for a 50-kg bag of kernels from 25 days to just 2.

Between 1999 and 2006, the World Agroforestry Center also worked with farmers to establish over 40 nurseries where propagation techniques could be honed and spread to other farmers. To increase its reach, the organization partnered with the local farmers' group, the Twantoh Mixed Farming Common Initiative Group, to establish a Rural Resource Center (RRC) in the town of Njinikejem.

The pilot center was so successful in disseminating agroforestry techniques that four other RRCs in western Cameroon were established, in Kumbo, Bayangam, Bangangte and Bafang. Together, they have provided farmers with training to improve soil fertility and crop yield. The RRCs also offer lessons in food processing, group dynamics and community project management, marketing, business, and microfinance, enabling farmers to expand their skills and profits beyond the farm gate.⁷

“My cocoa crop yielded an income for just three months a year and even with the extra cash I earned as a part-time teacher, we struggled to make ends meet. [...] As soon as I'd completed the training, I realized that it would help me to transform my farm.”

—Christophe Missé, farmer



A community being taught in the use of small short-term loans.
© Roger Leakey

“With the money I've made I've built a new house and I can now pay for two of my children to go to private school.”

—Christophe Missé, farmer



A water point developed by a community committee. © Roger Leakey

During the second phase of the project, two more RRCs were established in Fouban and Batibo. By 2010, seven RRCs were working with 150 satellite tree nurseries in neighboring communities, supported by relay organizations run by local NGOs or community-based groups.

RESULTS

In 2011, the agroforestry network involved over 10,000 farmers from more than 200 communities, supervised by 15 relay organizations.⁸

Increased income

Farmers who buy trees from the program's nurseries have obtained higher incomes through production diversification. Growing cash crops like coffee and cocoa in the same plot with nitrogen-fixing trees and shrubs has improved soil fertility and doubled or tripled cash crop yields. When the cash crops are grown together with fruit trees, farmers'

incomes can increase by \$500 per hectare from the additional sale of fruits. The increased and steady stream of income has the potential to improve local food security and provide a more balanced and nutritious diet. Increased income also enables farmers to pay school and hospital fees, improve their housing conditions, and purchase mobile phones and other consumer goods.⁹

Building organizational capacity

By mid-2009, the Njinikejem RRC, in partnership with MIFACIG farmer association, supported 35 satellite nurseries that served between 2,500 and 3,000 farmers. In 2009, the RRC sold plants valued at \$21,000, while each of its 35 satellite nurseries achieved sales approximately 20-50 percent of that amount. The Bayangam RRC generated \$1,750 in 2007 from fertilizer trees but shifted its focus to improved fruit trees plants and made about \$40,000 in 2009.¹⁰



Farmers of Riba “cheering agroforestry.” © Roger Leakey

Benefits for farmers, women, youth and the community¹¹

The new agriculture system and provision of business and banking concepts created new jobs for community growers, processors, and entrepreneurs, especially women. Over \$78,000 in loans were provided to over 900 farmers, 70 percent of whom were women from 82 different communities.

Newly established cassava processing mills—all run by women’s groups—have also been successful in generating income. The largest group run by ten women employs eight workers and processes sixty-six 180 kg-bags of dried cassava each day. Average profit was \$2.70 per bag—or \$3,000 to \$4,000 per woman in 2009.

Individuals are also investing profits back into the community. Local people have formed committees to oversee the construction of roads, bridges, storage crop warehouses, irrigation systems that supply clean water, and other infrastructure. The increased supply of indigenous fruits and nuts also provides important nutritional benefits.

An unexpected outcome has been youth retention in the villages, with some young people even returning home after migrating to larger towns. In one area, ten percent of the 295 farmers participating in nurseries projects were young people who realized life in the village could be even better than in an urban area.

Biodiversity conservation and environmental benefits

Nurseries have focused on domesticating the bush mango (*Irvingia gabonensis*), African plum (*Dacryodes edulis*) and white star apple (*Chrysophyllum albidum*) for food; African nut (*Ricinodendron heudelotii*), bitter kola (*Garcinia kola*), Red Stinkwood (*Prunus africana*), Yohimbe (*Pausinystalia johimbe*) and several *Cola* species for their medicinal properties; and three species of fertilizer trees (*Calliandra*, *Sesbania*, and *Tephrosia*).¹² These formerly wild species—and germplasm—are also conserved and protected from the rampant deforestation in surrounding areas. As local cultivars become established and recognized, the RRCs name them, identifying the farmer and nursery, thereby cultivating a sense of local ownership, pride and responsibility for the resource.

Finally, agroforestry has also improved soil conditions, relaxed pressures on wild trees and forests and created wildlife corridors. Land that was once completely denuded now supports small forests, networks of dense hedges, tree nurseries and diverse crops. Agroforestry sequesters carbon better than other farming systems, creating both local and global environmental benefits, with implications for climate change mitigation.¹³ As evidence of its success, the Kumbo RRC won a 2010 Equator Prize for its efforts to reduce poverty through conservation and sustainable biodiversity usage.¹⁴

FOR MORE INFORMATION

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This case study was produced by the Oakland Institute. It is copublished by the Oakland Institute and the Alliance for Food Sovereignty in Africa (AFSA). A full set of case studies can be found at www.oaklandinstitute.org and www.afsafrica.org.

ENDNOTES

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- 2 *Cameroon, Comprehensive Food Security and Vulnerability Analysis*. World Food Programme, 2011. <http://documents.wfp.org/stellent/groups/public/documents/ena/wfp250166.pdf> (accessed November 17, 2014).
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- 5 Pye-Smith, Charlie. *The Fruits of Success: A programme to domesticate West and Central Africa's wild fruit trees is raising incomes, improving health and stimulating the rural economy*. World Agroforestry Centre, 2010. <http://www.worldagroforestry.org/downloads/publications/pdfs/b16554.pdf> (accessed October 10, 2014).
- 6 *Ibid.*
- 7 Leakey, Roger. "Win:Win Landuse Strategies for Africa: Matching Economic Development with Environmental Benefits Through Agroforestry." *International Forestry Review*, 3 (2001): 11-18.
- 8 Ebenezar K. Assah *et al.* *Op. Cit.*
- 9 Pye-Smith, Charlie. *The Fruits of Success: A programme to domesticate West and Central Africa's wild fruit trees is raising incomes, improving health and stimulating the rural economy*. *Op. Cit.*
- 10 Ebenezar, K. Assah *et al.* *Op. Cit.*
- 11 Information on "Benefits for farmers, women, youth and the community" all come from Leakey, Roger. *A Pathway Out of Poverty: Good News From Africa*. Network of International Development Organizations in Scotland (NIDOS), 2010.
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Village nursery in Batibo. © Roger Leakey