

IK Notes

No. 23
August 2000



Seeds of Life: Women and Agricultural Biodiversity in Africa

Agricultural development worldwide has caused, as one of its down-sides, the replacement of native plant species by marketable crops and a parallel reduction in the diversity of the seed stock. The disappearance of plants with potential medicinal uses, particularly in areas of high biodiversity like tropical rain forests, has been headlined in recent years; but crowding out of the natural diversity of edible species by standard, and sometimes genetically altered, cash crops — and the replacement of “landraces” (indigenous plant types) by commercial farming — constitute an equally serious problem.

Efforts are now being made to constitute reserves and pools of threatened varieties of food crops. Indigenous knowledge of edible plants is one key “pool” of biodiversity in Africa — and one in which women play a vital role.

Bean farming in Kenya

Bean farming among the Kikuyu in Kenya provides a case in point. Available evidence indicates that in precolonial times a large variety of different bean species was cultivated in the Kenyan uplands. Beans moreover constituted a critical element of the diet of rural people, furnishing a rich source of protein to complement maize consumption and other available food-stuffs. In particular, the varieties of indigenous black beans termed “njahe” in Kikuyu (largely *Lablab niger* and

Dolichos lablab by their scientific names, and “lablab beans” in English), which were cultivated by women, constituted a good proportion of the harvest. Njahe had, moreover, special meaning for women, as the bean was considered to increase fertility and to have curative virtues for post-partum mothers. It was at the same time a quasi-sacred food. It grew on the Ol Donyo Sabuk mountain, the second most important dwelling place of the Creator in Kikuyu religion, and it was widely used in divination ceremonies.

Beans in Kenya are predominantly a small landholder crop, largely farmed by women to feed their families. Traditionally, women tended to grow multiple varieties on the same field — and to conserve multiple seed stocks — as a hedge against disease and unpredictable climate. Local dishes, like “githeri” and “irio,” also were based on multiple types of beans.

IK Notes reports periodically on Indigenous Knowledge (IK) initiatives in Sub-Saharan Africa. It is published by the Africa Region's Knowledge and Learning Center as part of an evolving IK partnership between the World Bank, communities, NGOs, development institutions and multilateral organizations. The views expressed in this article are those of the authors and should not be attributed to the World Bank Group or its partners in this initiative. A webpage on IK is available at <http://www.worldbank.org/aftdr/ik/default.htm>

These patterns began to change in colonial times. The British administration was principally interested in increasing maize production, which provided the least expensive supply of food to feed railroad construction workers, and in introducing other cash crops like cotton and sisal to ensure tax payments. The strategy developed for advancing this agenda included providing financial incentives and favorable pricing for maize cultivation, on the one hand; and, on the other, introducing new varieties of white and red beans with export potential (to Europe in particular) in order to replace the njaha and other "native" species. Though a considerable variety of bean species was experimented with over the years by the colonial agricultural extension service, few proved adapted to Kenyan conditions or acceptable in local diets. Those that did — Canadian kidney, rose coco and *Phaseolus vulgaris*, in particular — gradually took over the market and began pushing njaha out of production. The colonial agricultural extension service also carried out purification campaigns to eliminate multicropping of mixed beans and to en-

sure a practice of "one variety per location" — generally an exportable variety. Pure or sorted beans were priced at two or three times above mixed crops.

The costs of monocropping

The phenomenon had real consequences for nutrition, for agricultural biodiversity in the Kenyan highlands, for soil fertility, and for women farmers themselves. Replacement of beans by maize in local diets began a downward spiral in the food intake of the rural population which, while scarcely attributable only to this factor, has continued unabated. At the same time, elimination of many of the multiple varieties of beans cultivated in precolonial times had, for parallel effect, impoverishment of the agricultural genetic stock, developed over thousands of years of human agriculture in East Africa. Intensive "maize mining" and neglect of the nitrogen-fixing properties of legumes like njaha resulted in the progressive impoverishment of soils. Bean monocropping led in turn to higher susceptibility of these crop stands to disease. Finally, since bean cultivation constituted an important element in the economic activity of women and their capacity to nourish their families, the pressure to produce income and abandon beans inevitably contributed to the increasing out-migration of women to urban areas.

Colonial policies were in effect extended into the period of Kenyan independence, by default if not by design. Continued preoccupation with cash crop and export production, monopoly of these activities by men, and economic pressures from taxes and the need to pay school fees all kept attention away from women's roles in bean production and the conservation of seed diversity. Not until the 1970s did the prejudice against traditional bean species begin to relax, as Kenyan agricultural policy underwent gradual re-Africanization.

Examples across Africa

The situation described in Kenya is scarcely an isolated phenomenon. Across Africa, similar stories could be evoked — stories of the gradual impoverishment of seed stocks under the pressure of cash cropping and of the parallel negligence of women's roles in agriculture and their key

IK Notes

would be of interest to:

Name _____

Institution _____

Address _____

Letters, comments, and requests for publications should be addressed to:

Editor: IK Notes
Knowledge and Learning Center
Africa Region, World Bank
1818 H Street, N.W., Room J5-055
Washington, D.C. 20433
E-mail: pmohan@worldbank.org

function as guardians of biodiversity. In fact, Africa is one of the world's regions with the lowest quotient of original to imported seed stock – a characteristic typical elsewhere of zones of settler implantation, like North America and Australia. Seed stocks and germ plasm constitute a kind of botanical repository of indigenous knowledge. Because of their responsibility for family subsistence, women have for millenia been central to the breeding of food crop species, the preservation of seeds and the domestication and use of wild edible plants. Concerns with susceptibility to disease and insurance against crop failure under climatic stress and unpredictability have led them to diversify these stocks and cultivation patterns.

- In Burkina Faso and throughout the West African Sahel, for example, rural women carefully collect the fruit, leaves and roots of native plants like the baobab tree (*Adansonia digitata*), red sorrel leaves (*Hibiscus sabbdarifa*), kapok leaves (*Ceiba pentandra*) and tigernut tubers (*Cyperus esculentus* L) for use in the diet of their families, supplementing the agricultural grains (millet, sorghum) that provide only one part of the nutritional spectrum and may fail in any given year. More than 800 species of edible wild plants have been catalogued across the Sahel.

- In southern Sudan, women are directly responsible for the selection of all sorghum seeds saved for planting each year. They cull seeds and preserve a spread of varieties that will ensure resistance to the variety of conditions that may arise in any given growing season.

The role of women farmers worldwide

Equivalent stories can be recounted about gender and agricultural biodiversity in other regions of the world as well. In agricultural societies around the globe, women have tended to be the custodians of biodiversity.

- Researchers from the Wageningen Agricultural University of the Netherlands have found that women in the Kalasin region of northern Thailand play a critical role in managing the interface between wild and domesticated species of

edible plants. They have both brought new species of wild plants under cultivation in recent years and spurred their communities to carefully regulate collection rights in the face of increasing commercialization.

- Women in the Dalwangan and Mammbong communities, Bukidnon province, Mindanao (the Philippines) have played an active role in constituting a "memory bank" of indigenous germplasm with agricultural researchers, because they share the concern for diversity. "I cultivate different kinds [of sweet potatoes], as many as I can get cuttings of," one farmer commented, "because each has its use and none is proof to all disasters."

- In northern India, an elderly woman farmer puts the matter succinctly as she selects seeds for storage: "It takes a sharp eye, a sensitive hand and a lot of patience to tell the difference between these seeds. But these are not the things that are honored any more."

- In the United States, genetic modification of tomatoes by agro industry has led to species that have a long "shelf life" — i.e., ability to ripen in transit or in grocery stores after being harvested green — and even a square form that facilitates packing in crates. These characteristics make tomato-farming a more profitable activity and one easier to carry out on a large scale, but have had for parallel consequence poorer taste and loss of genetic diversity. A minor market has sprung up in "heirloom tomatoes" — species preserved in many cases by women gardeners and now conserved and reproduced for the organic customer.

Turning the tide

Is there still time in countries such as Kenya? Yes, but not to waste. The diminishing diversity of seed stocks puts food security at risk, because of the greater vulnerability of a narrow band of species to climate change and other environmental events. And it seems unlikely that the situation can be turned around without paying much closer attention to the means by which traditional farmers have nurtured seed stocks and indigenous species, and the key role that women have played in this enterprise.

The njaha bean itself has nonetheless recouped a part of the terrain lost over the last century. With the abandonment of export ambitions for white beans, African tastes for red and black varieties have begun to reassert themselves. But dried beans — and the female labor that traditionally ensured their volume and diversity — remain subsidiary in the Kenyan economy.

Increased sensitivity to issues of biodiversity — triggered by the rain forest and the example of disappearing species with medical significance — has sown new seeds of hope in this realm, however, both for Africa and for other developing regions. The International Center for Tropical Agriculture (CIAT) in Cali, Colombia is coordinating a multiyear participatory research program on gender roles in agriculture and participatory plant breeding (Participatory Research and Gender Analysis: "PRGA" , on the web at <http://www.prgaprogram.org>). One branch office has been established in Uganda for the African Highlands Initiative, an exploitation of participatory gender research in East Africa. At the same time, the West African Rice Development Association (WARDA), headquartered in Bouaké, Ivory Coast, has given increasing attention to the preservation of biodiversity among rice farmers of the Sahel and has sponsored research into related practices in southwestern Mali. (See <http://www.cgiar.org/warda/>)

This article was written by co-authored by Peter Easton and Margaret Ronald, Florida State University. The research was carried out under the joint aegis of the Club du Sahel/OECD, the Interstate Committee for Combating Drought in the Sahel/Comité Inter-état Contre la Sécheresse (CILSS) and the Association for the Development of Education in Africa.