AVRDC - The World Vegetable Center in sub-Saharan Africa

Over 15 years of research and development

The African regional program of the Center began in 1992 in Arusha, northern Tanzania. Research and development work has focused on regionally important vegetable crops such as tomato, onion and cabbage, as well as African indigenous vegetables.

Expanding its work into Mali, West Africa in 2004 and into Central and Southern Africa in 2007, the Center has recently opened new offices in Madagascar and Cameroon.

Together with existing offices in Mali and Tanzania, these form the launching pads for reaching sub-Saharan Africa with improved vegetable varieties and production technologies through the Center's major new initiative: "Vegetable Breeding and Seed Systems for Poverty Reduction in Africa" *(vBSS)*. The Center now partners with over 40 national institutions in Africa and many international organizations.

Why vegetables are important to Africa :

- Production has been almost static for more than 45 years despite rising populations.
- Per capita consumption of vegetables is amongst the lowest in the world.
- Most vegetable growers are women and more than 90% of vegetable growers sell produce for cash, providing a major source of family income.
- Vegetables are a good source of income and jobs in production and processing.
- Vegetables are one of the most effective means of overcoming widespread vitamin A deficiencies.
- Production is hampered by reliance on old or imported varieties poorly adapted to local conditions.
- Production suffers because most smallholder farmers cannot afford fertilizers or pesticides.

Strengthening the African vegetable seed sector

Smallholder farmers need access to high quality supplies of indigenous and exotic vegetable seeds at affordable prices, and the local seed sector is their main source of supply. The Center has established hubs in Tanzania, Madagascar, Cameroon, and Mali to train, supply and strengthen the local seed sectors in neighboring countries. In a major project over 100 new indigenous and exotic vegetable varieties suited to African conditions are being developed and released, and small African seed companies strengthened to take over the sustainable supply of seed to farmers across the continent.

Seed production and promotion of indigenous vegetables

One of the major limitations to the adoption of hardy and nutritious African indigenous vegetables is the inadequate amount of seed of high quality lines that is available. Minimal selection or breeding work has been done, and most seed farmers use is home-grown. The Center is selecting improved varieties, seed production sites are being established in Tanzania, Mali, Madagascar and Cameroon and production and seed storage methods are being refined for African eggplant, Jute mallow, Ethiopian mustard, spiderplant, vegetable cowpea, nightshade, okra and amaranth.

Improved varieties are promoted through field days, information leaflets, distribution of seed kits for home gardens, training programs for farmers and workshops for collaborating scientists.

Training

The Center runs training courses to promote the adoption of its vegetable technologies and to strengthen the quality of its science. Over the last seven years more than 2400 people have been trained – through annual 4-5 month-long training courses in vegetable production for staff of African national agricultural research and extension systems (NARES). Shorter courses for up to three weeks are being held in Eastern and Southern Africa on food safety and vegetable breeding. The majority of trainees participate in regular 2-3 day courses mainly targeted at women's groups, small-scale farmers, personnel of non-governmental organizations (NGO), researchers and extensionists. Courses on home garden production and the processing and preservation of vegetables are now being run each month in countries across Africa.

Developing technologies for West African vegetable production

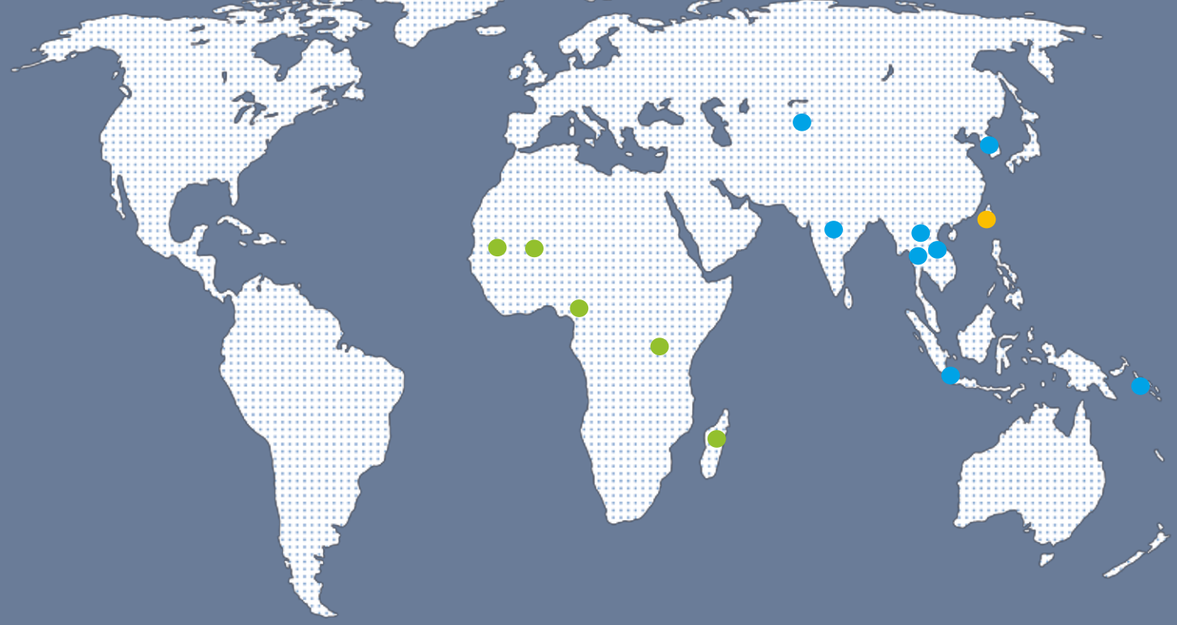
The Sahel contains some of the poorest countries on Earth and there is a major need to provide extra sources of income for farmers and improved options for nutrition. Onion is an important crop in the region – and a valuable export from Niger. Improved varieties with better keeping qualities and higher yields are being selected and seed supplies increased. Africa is the world's leading producer of okra, an important ingredient in many traditional dishes. Okra varieties are being collected, evaluated and improved for regional release. African indigenous vegetables are important sources of nutrition especially for the poor; opportunities for improving their insect resistance and processing are being investigated.

Home garden systems

Vegetable production in Africa is constrained by lack of seeds and promotion packages suitable for home gardens. The Center has developed cultural practices for African indigenous vegetables including spacing, watering, fertilizers and harvesting for home-garden production. Seed packs of African indigenous vegetables and priority exotic vegetables are assembled and distributed directly to farmers and extension agencies, or through collaborating seed companies, for home garden establishment.

Disease resistant, nutritious tomatoes

Tomatoes are an important vegetable crop in Africa providing a good source of income for smallholder farmers and an important source of vitamin A. They are particularly suited to the highlands of Eastern and Southern Africa. New varieties released by the Center in Tanzania have increased national production by 40%, leading to major improvements in the lives of farmers and national self-sufficiency. Crops face many disease problems, particularly when grown in the more humid lowlands. Tomato lines are being screened and tested for resistance to both pests and diseases, including thrips, whitefly and fruitworm, bacterial wilt, phytophthora leaf blight, tospoviruses and geminiviruses. In addition, well-adapted lines of tomato with high levels of beta-carotene and lycopene are being selected to improve the nutritional quality of African tomatoes to help overcome widespread vitamin A deficiencies.



Improved nutritional value of indigenous vegetables

African indigenous vegetables are an important source of nutrition. In Tanzania the Center has shown that they provide more than half the vitamin A and about a quarter of the iron intake of impoverished rural communities. The nutrient contents, consumption patterns, and opportunities for improved processing are being assessed for a variety of African indigenous vegetables.

The nutrients retained in traditional and modified preparation methods are being evaluated and recipes designed to enhance the nutritional value of foods consumed. A demonstration garden of indigenous vegetables has been established at RCA ,and the Center is working with households, women's groups and national partners to promote indigenous crops for their nutritional value.

Supply chains for exotic and indigenous vegetables

Both exotic and indigenous vegetables provide significant income opportunities for smallholder farmers, but their supply chains are poorly understood. Improving the efficiency of marketing can benefit producers and consumers. Supply chains are being characterized for indigenous vegetables produced in rural and peri-urban areas in Malawi, Rwanda, Uganda, Tanzania, Benin, Côte d'Ivoire, Senegal, Kenya, South Africa, Mozambique and Uganda, and the findings disseminated to farmers and traders through workshops. Similar work is being done to assess the knowledge of quality standards for organic vegetables among smallholder farmers, traders and retailers and how international standards impact domestic production of organic vegetables in Africa.

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Sub-Saharan Africa