



KEY MESSAGES

Consumption of traditional vegetables can improve the health of mothers and reduce child deaths from malnutrition.

Farmers have limited access to only a small pool of quality seed of preferred traditional vegetable varieties, and thus cannot produce sufficient quantities to meet market demand.

More than 80% of all seed in Africa is produced and disseminated through informal seed systems, indicating a need for diverse sources of seed.

Most national seed laws were developed for staple crops, and thus are not suited for the production and distribution of vegetable seed.

To be successful, vegetable seed supply and distribution systems need strong institutional and policy support.



AVRDC
The World Vegetable Center



Canadian International
Development Agency

Agence canadienne de
développement international



THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

PROMOTING PRODUCTION AND CONSUMPTION OF TRADITIONAL AFRICAN VEGETABLES IN WEST AND CENTRAL AFRICA: POLICY LESSONS FROM NATIONAL SEED SYSTEMS

Kamga, T. R., Tenkouano, A., Afari-Sefa, V.,
Fleissner, K., Ndoye, O.

An ideal seed supply and distribution system needs institutional and policy support to ensure the participation of all key entities (Awotide & Tontsa, 2013). This policy brief reviews the extent to which existing policies and laws support traditional African vegetable seed production in West and Central Africa to inform the debate on the conformity of seed production. Suggestions are presented to foster a policy environment to improve existing seed supply and distribution systems.

INTRODUCTION

Traditional vegetables complement staple-based diets and their consumption is crucial to improve the health of mothers and reduce child deaths from malnutrition—both global development targets (Afari-Sefa et al., 2012) included in the new United Nations Sustainable Development Goals. Although demand for traditional African vegetables recently has increased, there has not been a corresponding rise in vegetable production. With limited access to only a small pool of quality seed of preferred varieties, farmers cannot deliver improved produce to consumers (Afari-Sefa et al., 2013). This lack is one of the most serious constraints to producing a successful harvest of traditional African vegetables (Abukutsa-Onyango, 2010); poor seed and the low productivity of available vegetable cultivars and landraces limit the production of traditional crops.

The Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles/West and Central African Council for Agricultural Research and Development (CORAF / WECARD) has sought to address this gap by financing the project “Enhancing the productivity, the competitiveness and the marketing of African traditional vegetables to improve nutrition and income in West and Central Africa.” The project aims to increase production and consumption of traditional African vegetables by overcoming constraints such as low productivity of current cultivars and landraces, lack of good quality seed, limited knowledge of postharvest and processing options and opportunities, poorly developed value chains, and a lack of awareness of the nutritional benefits these vegetables can provide.



TERMS TO KNOW

Certified seed: Seed of a known variety (registered or basic) that has passed field inspection for varietal purity (such as absence of certain weed seeds, other crop seeds, and certain seed-borne diseases), which is sold to farmers for crop production.

Standard seed: A category of seed in some seed quality control schemes that may be tested but is not subject to full certification procedures.

Under the auspices of CORAF/WE CARD, in 2015 AVRDC – The World Vegetable Center facilitated a training of trainers' course for 100 farmers and field supervisors in Burkina Faso, Cameroon, and Ghana. Trainees learned recommended techniques to produce quality seed; the processes of seed certification, policy and regulation; and farm business and entrepreneurship skills for ensuring profitable farmer-led traditional African vegetable seed enterprises. Participants were equipped with up-to-date knowledge and enhanced skills to produce and commercialize quality seed to increase their productivity and incomes, and to provide a steady supply of nutritious vegetables to local markets. The highly interactive training sessions delivered by AVRDC staff with representatives for seed certification, policy and regulation from each country's Ministry of Agriculture were supported by audio-visual presentations. The trainees are now expected to train others in their communities and multiply the knowledge they have gained.

TRAINING CONTENT AND APPROACH

The training was delivered in six modules:

1. Background and General Principles of Seed Production

This module focused on the worldwide importance of seed, emphasizing the special care that must be taken during seed production to ensure quality. The session covered finding reliable sources of seed and the need for specialization of seed producers, as well as useful interactions between farmers, local/informal, and formal seed systems.

2. Good Agronomic Practices for Traditional African Vegetable Seed Production

The process of seed multiplication from site selection to nursery set-up and seedling management, transplanting and maintenance were demonstrated. Harvest and postharvest issues were addressed.

3. Aspects of Seed Quality

Participants learned about the physiological, sanitary, analytical and genetic quality of seed—the four basic aspects of seed quality. The module also introduced participants to specific aspects of seed storage and preservation techniques.

4. Seed Certification, Policy and Regulation

This module underscored the fact that regulations and laws guide seed production activities. The representatives of each government clearly stated that anyone formally involved in seed production must be recognized by the government as a seed producer and must register and comply with certification procedures, which generally consist of a declaration of intention to produce seeds and periodic inspection of seed production plots by officials.

5. Community Based Seed Production

Participants learned how to train farmers in a community to produce high yielding, locally preferred improved traditional African vegetable seed with the objective of providing quality seed to buyers, boosting local seed markets, and opening opportunities for people to venture into seed-trading businesses. The module emphasized the Food and Agriculture Organization's Quality Declared Seed (QDS) system, a light-touch certification approach under which seed producers are responsible for quality control, while government agents check only a small portion of seed lots and seed multiplication fields (FAO, 2007). Seed from QDS systems ideally are sold only within a limited geographical area, mostly dictated by the agroclimatic zone within which the location falls. This is in contrast to a formal seed system, in which all certified seeds must pass national performance trials that encompass all agroclimatic zones in the country.

6. Market-oriented Seed Production: Which Model to Use?

With increasing populations, especially in urban areas, access to quality planting materials and seed will become more important for farmers. Trainers explained the basic requirements to establish a farmer-led seed business, noting that agribusinesses have some specific characteristics such as seasonality and perishability of the product that make these enterprises different from other businesses.

An assessment of trainees' knowledge after the training showed a perceptible increase in knowledge in the areas of seed certification, policy and regulation; community-based seed production; and market-oriented traditional African vegetable seed production. Most participants moved from having no knowledge of the subject before the training to having very good knowledge and skills after the training.

STATUS OF SEED SYSTEMS

In most countries, horticultural seed is mostly available as standard seed. Standard seed is evaluated for conformance to seed laws in the laboratory, and then 'endorsed' as standard seed. In contrast, certified seed is controlled from the farm during actual seed production. This provision, adopted by most European countries, takes into account the large diversity of species produced, hence the high cost of on-farm control measures. The standard seed category is not recognized in West and Central Africa, as only certified seed is permitted for commercial seed supply. For cereals and legumes, it is true that farmers do not yet clearly perceive the difference between seed for planting and grain for consumption (Soumare, 2004). However, this is not the case with traditional African vegetable seed, as the seed is not the part of the plant that is consumed. Most of the time, farmers eat all their produce, neglecting to preserve some for seed, which leads to the loss of biodiversity to some extent.

Less than 10% of seed planted in Africa is obtained through the formal seed system (Rohrbach et al., 2003). More than 80% of all seed is produced and disseminated through informal seed systems (APRODEV, 2014). This shows the need for diverse sources of seed to satisfy growing demand. The seed sector in West and Central Africa is still at a rudimentary stage. Despite the importance of agriculture, use of improved varieties in the region is among the lowest in the world: 2 to 5% for the major food crops (Soumare, 2004).

Most seed of African traditional vegetables is produced locally by farmers. Although seed laws in all the countries are very well formulated and supported by publicly expressed commitments to improve the seed sector and provide good quality seed to farmers, most national seed laws were developed with staple crops in mind, and thus are neither easily nor efficiently applicable for traditional African vegetables or vegetables in general (APRODEV, 2014). Moreover, seed regulations are relatively rigorous, making compliance difficult for the informal seed trade. Certification of

all seed is impossible, strict regulation restrict the development of small-scale seed enterprises and demotivates groups to venture into producing better seed (Almekinders & Louwaars, 1999). A shortage of inspectors and lack of resources to travel to the field means that seed producers risk not having their crops inspected at key stages, which may mean that they cannot be certified.

Currently, no country in West and Central Africa has policies specifically oriented to traditional African vegetable seed production; there are no regulatory frameworks or structured systems for commercial production of improved traditional vegetable seeds. Such seed is usually viewed as simply another crop, and so by default is covered by general seed guidelines and policies. Although the numerous advantages of traditional African vegetables relative to standard vegetables have been communicated (Afari-Sefa et al., 2011; Yang et al., 2013), decision makers may not yet be aware of the extent of these benefits.

Traditional African vegetable are mainly grown by smallholder farmers. These crops are highly nutritious due to the presence of high levels of essential nutrients and phytochemicals. Growing and including traditional African vegetables in the diet not only combats malnutrition, but also generates income for small-scale farmers and improves resilience of their production systems (Ebert, 2014). Greater awareness of the contribution traditional African vegetables can make to human nutrition and health will increase demand and encourage farmers to increase production. The sustainability of this behavioral change can be guaranteed through a sustainable traditional African vegetable seed system. Currently, vegetable seed entrepreneurship is limited, although the market is expanding. Most developing countries depend on agriculture to drive their economies, and the governments of these countries have a big role to play in the development of the seed industry (Pichop & Mndiga, 2007).

ANALYZING SEED PRODUCTION ACTIVITIES

A SWOT analysis carried out for community-based traditional African vegetable seed production activities revealed the following:

Strengths can be preserved by:

- facilitating the registration of improved traditional African vegetable seed varieties into the catalog of crops and species
- updating human resource skills
- dedicating some land to agriculture for long-term land availability

Weaknesses can be overcome by:

- improving extension systems through training, and by using community lead farmers as extension linkages
- promoting community-based seed production to increase demand for traditional vegetable seed
- supporting community-based seed production with storage facilities

Opportunities can be enhanced by:

- building customer demand for seed on the ready market
- using current knowledgeable trainees to build high revenue in vegetable seed businesses

Threats can be isolated by:

- promoting seed production of drought-resistant varieties
- setting up Best Practice Hubs for community-based seed production with boreholes for water supply



OPTIONS FOR POLICY IMPROVEMENT

Through discussions with participants during the training sessions, the following areas were identified as crucial for policy improvement:

- Seed laws should be dynamic and able to adapt to changing situations; the laws should be reviewed to take into account the specific crop characteristics and circumstances of vegetables. Farmers must be well-represented during these reviews.
- In the process of reviewing seed policies, decision makers should be less rigorous in seed regulations governing traditional African vegetables, as there is no risk of confusion “between the seed and the grain” as is the case for cereals and legumes.
- Seed policy should be modified to ensure an enabling environment to promote the development of diverse sources of seed, which will contribute to safeguarding biodiversity.
- The FAO Quality Declared Seed (QDS) model should be adopted and incorporated into the formal seed system, similar to the seed rules, regulations, procedures and guidelines developed in Tanzania to control QDS production.



SEED IN AFRICA *Where does it come from?*

Formal seed system

Less than 10%

Informal seed systems

More than 80%

References

- Abukutsa-Onyango MO. 2010. African Indigenous Vegetables in Kenya: Strategic Repositioning in the Horticultural Sector. Jomo Kenyatta University of Agriculture and Technology. ISBN 9966-923-31-4, 63 p.
- Afari-Sefa V, Tenkouano A, Ojiewo, CO, Keatinge JDH, Hughes J d'A. 2011. Vegetable breeding in Africa: constraints, complexity and contributions toward achieving food and nutritional security. Food Security. doi:10.1007/s12571-011-0158-8.
- Afari-Sefa V, Chagomoka T, Karanja DK, Njeru E, Samali S, Katunzi A, Mtwaenzi H, Kimenyi L. 2013. Private contracting versus community seed production systems: experiences from farmer-led seed enterprise development of indigenous vegetables in Tanzania. Acta Horticulturae 1007(1):671–680.
- Almekinders CJM, Louwaars NP. 1999. Farmers' Seed Production: New Approaches and Practices. Intermediate Technology Publication.
- APRODEV. 2014. SEEDS AND FOOD SECURITY: The impact of EU seed laws on food security in Africa. APRODEV PCD Discussion Paper on Seeds and Food Security. 23 p.
- Awtotide DO, Tontsa HM. 2013. Strategic Options for Small-scale Maize Seed System Development in West and Central Africa. ICBE policy BRIEF. 5 p.
- Ebert AW. 2014. Potential of underutilized traditional vegetables and legume crops to contribute to food and nutritional security, income and more sustainable production systems. Sustainability 6: 319-335. DOI: 10.3390/su6010319
- FAO. 2007. Système des semences de qualité déclarée. Étude FAO Production Végétale et Protection des Plantes 185. ISBN 978-92-5-205510-5.
- Yang R-Y, Fischer S, Hanson PM, Keatinge JDH. 2013. Increasing micronutrient availability from food in sub-Saharan Africa with indigenous vegetables. p. 231-254. In: H. Juliani et al. (eds.), African Natural Plant Products Volume II: Discoveries and Challenges in Chemistry, Health, and Nutrition. ACS Symposium Series; American Chemical Society, Washington, DC.
- Rohrbach DD, Minde IJ, Howard J. 2003. Looking beyond national boundaries: regional harmonization of seed policies, laws and regulations. Food Policy 28(4): 317-333.
- Pichop GN, Mndiga HS. 2007. Essentials of Modern Marketing Management and Supply Chain System for Vegetables Seed Companies. Technical Bulletin no. 39. AVRDC-The World Vegetable Center, Shanhua, Taiwan. AVRDC. 58 p.
- Soumare SM. 2004. Liberalization and Harmonization of Seed Legislation and Regulations in West and Central Africa. In: Rohrbach D, Howard J. (eds.) Proceedings of a Workshop on Seed Trade Liberalization in Sub-Saharan Africa, 5-6 December 2002, Matopos Research Station, Bulawayo, Zimbabwe.

Implementing Agency

AVRDC – The World Vegetable Center
West and Central Africa
Samako Research Station
BP 320 Bamako
Mali

Tel: +223 2070-9200
Email: info-africa@worldveg.org

Coordinating Institution

Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles / West and Central Africa Council for Agricultural Research and Development
7, Avenue Bourguiba
Dakar, BP 48, Dakar RP
Senegal

Tel: (+221) 33 869 96 18
Email: secoraf@coraf.org

Financial/Technical Facilitator
The World Bank

Financial Contributor
Canadian International Development Agency