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Indigenous African vegetables can contribute to food and nutritional security

Abe Shegro Gerrano

ARC – Vegetables, Industrial and Medicinal Plants

Several reasons are advanced for the neglect of these commodities despite their higher nutrients content compared to the conventional. They are also known to be well adapted to the climatic and natural resource condition of the native environment. They play a leading role in the socio-cultural life of the people. Bringing these commodities to the fore through improved research and innovation attention is thought to be the way to ensure their contribution to food and nutritional security. This is most important in Africa where hunger and malnutrition has attained a threshold for great attention.

The South African government has embarked on various efforts to increase the ability of women and children living in rural areas to meet their minimum daily requirements for adequate nutrition. Health workers often advise people in rural areas to increase vegetable consumption, but many people cannot afford to buy commercial vegetables, or the inputs required to grow their own vegetables. Whereas the role of wild leafy vegetables in food security is recognised in other African countries, their use in South Africa has diminished and consumption is associated with poverty and low self-esteem among rural people. Despite the abundance of



Amaranth



Groundnut

wild indigenous vegetables and their beneficial nutritional value, these vegetables are marginalized in current agricultural research, though few studies and publications are available on the agronomic optimization, and improvement for these crop species.

The South African government encourages the people to make extensive use of this natural resource to improve health and food security. To address this problem, the ARC established the Indigenous Food Crops Program to develop selected indigenous food species into commercial crops. The most important research and development areas currently requiring attention in the ARC is developing new cultivars, modern agronomic practices to enhance the production of these crops, developing improved propagation material, develop and optimize processing, and value adding research activities.

Underutilized African vegetable commodities refer collectively to all vegetable crops (leafy, fruit, root, and tuber) that form part of the traditional African diet. Indigenous vegetables include amaranth, cowpea, Bambara groundnut, okra, cleome, corchorus, nightshade, and amadumbe and others. Crops that are collected from the wild and as “weeds” in-cultivated fields, grown on small-scale, less researched and underutilized, characterize the indigenous crop sector. Indigenous African vegetable species are highly nutritious and can contribute significantly to food, nutritional, health and income security.



Intercropping of cowpea with maize

The research includes all aspects of the full indigenous African vegetable value chain and include activities on collection, conservation, pre breeding, cultivation practices, water use efficiency, commercialization, and development of enterprises.

The indigenous African vegetable crops often excel in terms of environmental adaptability (abiotic and biotic factors), have low input requirements, and fit to specific cropping systems, readily producing seed and convenient harvest and traditional post-harvest technologies. Many of them provide excellent sources of nutrients and vitamins to alleviate hidden hunger of micronutrient malnutrition. These crops also boost the body immune system towards fighting against the current pandemic, COVID-19.

The consideration of indigenous crops as healthy food provides additional advantage for mainstreaming them as economically and socially important commodities in the South Africa. Local and foreign marketing of these crops could assist in terms of linking small-scale farmers with traders and growing urban markets, which provides income generation opportunity at global level.

Rural agro-processing has large potential for growth and socio economic impact specifically on job creation and income generation. Developing the rural agro-processing in South Africa will make a significant impact on supply and marketing of wide range of processed

plant products. Indigenous and indigenized underutilized crops have the potential to play a significant role in health, food security, nutrition security, poverty alleviation and job creation in the rural and urban communities. Unlocking the economic benefit and value adding potential of indigenous African vegetables will contribute to the reduction of poverty, creation of jobs and enhancement of food and nutrition security in the country.

Further, identification of candidate and potential indigenous African vegetables, research and development and delivery of these high yield micro- and macronutrient-rich vegetables can potentially reduce hidden hunger, especially in rural populations whose diets rely on staple food crops such as cereal-based food including the current COVID-19 pandemic. There is currently no idea of the size of the potential market for indigenous vegetables, which is supported by the statistics. Little produce is marketed formally; the bulk is either traded informally or wild harvested by consumers themselves. There is, however, a market potential especially in urban areas.

South Africa has an enormous plant genetic resources and diversity of indigenous food crops, which includes grains, leafy vegetables, legumes, root, and fruit. These crops are mostly found only in areas where are being grown or wild harvested by the community.

Their production is on small scale within the rural farming communities on small plots and is for subsistence as the other arable land is

used for cereal based production. Legumes are still being boiled and used as relish. Leafy vegetables are also boiled or dried and used as relish. The dried leaves are being preserved and used during the winter season when these leaves are not available. They can be also used during the dry season when the fresh vegetables are not available in the farm and local market. The surplus of the produce is traded informally within communities as an additional income for the farmers. Good quality seeds are selected and preserved for the next planting season. In South Africa, statistics (production trends and market information) regarding indigenous food crops are not available as the crops were neglected in terms of research, development, and documentation.

Indigenous African vegetables play a significant role as the source of food, nutritional and health security as well as income generating high value crops. However, they have not been given sufficient emphasis in national agricultural policies and strategies, and the untapped potential in these neglected and underutilized crops species has not been sufficiently and fully exploited. The funds for research and development for these crops is highly limited despite their use and value additions. Breeding indigenous African vegetable crops for agro-processing is currently important for agro-processing industries in South Africa towards full-fledged value chain in the breeding programme. They are considered as forgotten food crops, but they are native, indigenous, and ancestral African foods.



Amadumbe/ taro plant



Amadumbe corms



Okra plant and fruits

Plant genetic resources have been defined as the genetic material of plants, which is of value as a resource for present and future generations of people. Traditionally, this definition focused on crop plants and their wild relatives, but it is increasingly considered that all plant species are a potential resource for humanity. The goal of genetic resources and conservation is to ensure that the maximum possible genetic diversity of a taxon is maintained and available for utilization. Genetic resources are the base in any breeding programmes. Therefore, germplasm acquisition, collection, and characterization are a pre breeding for the development of breeding population.

Most countries in southern Africa have national Gene Banks and most crops, crop relatives and wild useful plants have been collected and conserved. On-farm conservation activities linked to ecological farming systems are practiced. Some countries, including South Africa, have Community Seed Banks for the provision of planting material at the earliest convenient time to farmers. Information about what farmers are maintaining on their farms and what is conserved in Gene banks are available and this information can be sourced in the country. What is lacking is the development of policies that will support commercialization of farmer varieties. There is a need to characterize crops with preferred traits, sell them as they are and improve those that require genetic enhancement.

Currently, there is a larger war on seed ownership globally. Almost 60% of vegetable and other seeds are owned by big seed companies. Indigenous and rural people are being prevented from growing their own seeds. Therefore, in documenting and preserving indigenous foods and their uses, we will also have to collect and preserve native seeds of the foods. We are losing many native seeds and organic native seeds are being contaminated with GMO seeds.

Hence, we should begin to moot some strategic intervention and actionable activities for these forgotten foods. It is important to begin by creating directories of the foods, sorting and classification of these foods according to their dietary configurations, suggesting their value chain development activities and then designing their promotion platforms and strategies in South Africa. Therefore, it is important to collect all these diverse underutilized African vegetable foods and conserve them in an agro-museum, or Gene Bank. Then the research scientist can describe and characterize them with a view to improving them for use in later years and generations. The Gene Bank should be established centralized with duplicates in case of risks featuring unique forgotten foods of South Africa.

Photos: Abe Shegro Gerrano

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