

Factsheet final findings Applied Research Fund Call 1



Systemic approach to overcoming constraints of production and marketing of indigenous vegetables in Western Kenya

Summary

The main objective of the project was to increase the market access of African indigenous vegetables (AIVs). The project addressed problems along the AIVs value chain to increase production and market access of *Gynandropisgynandra* (Spider plant), *Solanum nigrum* (Black nightshade), *Amaranthus retroflexus* (Amaranth) and *Capsicum sp.* (African Birds Eye (ABE)) that are traditionally produced for home consumption with incidental surplus offered to markets. At the production level, the project developed a new variety of ABE (a chili) that took into consideration the market need for a standardized product and the farmer needs of a disease and drought resistant, easy-to-harvest variety. The project studied the influence of soil nutrients on the chemical composition of the AIVs and their yields. Markets were analyzed to assess the potential of targeting the different AIVs to different marketing segments based on their nutrient needs.

Research Findings

The problems of low production and low quality of AIVs that led to low economic viability of supply chains was found to be innate in available varieties. Chili varieties were screened via market surveys, after which the varieties with the best traits were selected and bred until pure lines of ABE chili (*Capsicum sp.*) were developed. The project also bulked, packed and promoted Black nightshade, Amaranth and Spider plant (leafy AIVs) seeds.

The project carried out studies to determine the link between soil fertility management, the yield and the physical and chemical product composition of the three leafy AIVs. The content of zinc and magnesium (Mg) increased in AIVs when organic manure was applied. Varying fertilizers application rates was important in meeting the needs of different market segments. The physical and chemical characteristics in AIVs achieved through manipulating fertilizer rates and varieties was important in developing products targeting different market segments. Strengthening farmer associations provided an opportunity for ensuring continuous training of farmers and achieving economies of scale in marketing. The project developed an internet-based information sharing platform during the first and second year of the project. A telephone based communication dubbed 'connected farmer', with call in and SMS capability, was adopted by the Kenyan telephone service provider Safaricom. The one-stop information platform was effective for communication between farmers and Mace Foods and provided a means for tracking farmers' production details and marketing. The project participated in two regional and two international trade fairs to promote AIVs, display project products and recruit farmers.

Outcomes achieved

Due to the project, indigenous vegetable products have become available in Kenyan supermarkets. For the first time, marketing of AIV is done in a vertically integrated marketing chain with product quality being central to marketing. A survey carried out in Elgeiyo Marakwet county revealed that 47.6% of farmers take the market into consideration in farming household decision making, with the quality of the product desired by the market as main factor. During the first season, farmers who considered AIV in farm plan decision making contributed 53% more land to AIV production and achieved significantly higher total farm revenues (43.7%) compared to their counterparts who produced AIVs in slack land or other incidental surplus resources. It was concluded that it was beneficial to carry out AIV production as a priority farm business. Analysis of market and household

data showed that market access was the main factor influencing production and consumption of AIVs. The project built the capacity of farmer associations to sustainably support their members to produce and market AIVs. For the fresh market, the physical characteristics of AIVs were critical for improving market access. Fertilization of vegetable fields led to higher quality produce for the fresh markets. The physical characteristics (relative size and freshness of leaves compared to those of other vendors) was inversely correlated to the amount of time required to clear a vendor's stock in fresh AIVs markets. New products of dried AIVs were packed in air-tight sachets and promoted in major supermarket outlets in Kenya. At macro level, the activities of the project raised the profile of AIV at policy level. Counties like Turkana and Trans-Nzoia started to allocate funds to support farmers to produce AIVs for markets.

Project messages to	<p>A) Actors from private sector:</p> <ul style="list-style-type: none"> Seed production and marketing can be a viable business venture for small-scale entrepreneurs and seed merchants through development of another product line. Most of the seeds planted by farmers (>90%) was recycled. At household level, seed production was considered costly. <p>B) Civil society and practitioners organizations:</p> <ul style="list-style-type: none"> AIVs have the capacity to increase household incomes, eliminate food and nutrition insecurity, and contribute to the economic welfare of their people. Therefore, it is beneficial to sensitize farmers to target particular markets during AIVs production. AIVs consumption can help solve the problem of nutrition insecurity particularly for vulnerable populations that require boosting of their immunity. <p>C) Policy makers:</p> <p>The main impediment to AIVs production and marketing is the absent legislation that is targeted to the crops. AIVs are produced and marketed using slack resources in spite of its significant contribution to household income and food security. There is need to:</p> <ul style="list-style-type: none"> Consider promoting the crop through recognizing its importance for income and food security through, for example, developing an AIVs strategy paper at national or at county government levels. Develop an AIV development fund where farmers can be supported to access certified seeds and extension services for production and marketing of AIVs.
Knowledge products	<ul style="list-style-type: none"> Importance of AIVs as nutrition security product, interview with Margaret Komen. YouTube, 2018 African indigenous vegetable enterprises and market access for small-scale farmers in East Africa. <i>International Journal of Agricultural Sustainability</i>, 2011.
Knowledge networks	<p>Knowledge generated in the project was disseminated directly through meetings, short bullets, brochures, workshops, field days, farmer field schools and demonstrations. Because of the project, Mace Foods has become a reference point in vegetable production and marketing, and is being consulted by farmers and local governments. Mace Foods have partnered with other institutions such as University of Eldoret and Moi University, and farmers' associations of Bungoma Small-scale Farmer Association for developing extension information on AIVs production and marketing and developing innovations in a knowledge co-creation platform.</p>
Knowledge co-creation	<p>Co-creation in the project was achieved through:</p> <ul style="list-style-type: none"> Involving farmers in project activity design and execution leading to development of a locally adapted and easier to harvest ABE chili variety. Developing dried AIV products that took into consideration consumer needs and improved market access. Promoting production and marketing of AIVs involved adopting a common course and sharing roles among major stakeholders, such as farmers, Farmer Associations, Mace Foods, County Governments' leaders and extension staff. Mace Foods is building its capacity to produce market driven and farmer friendly ABE variety.
Consortium partners	<ul style="list-style-type: none"> Mace Foods Limited University of Eldoret Regional Universities Forum for Capacity Building in Agriculture (RUFORUM)
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