

# The impact of Bioversity International's African Leafy Vegetables programme in Kenya

IMPACT ASSESSMENT BRIEF NUMBER 1

*Bioversity International's series of Impact Assessment Briefs aims to inform readers about the major results of evaluations carried out by the centre. The Briefs summarize conclusions and methods of more formal papers published in peer-reviewed journals.*

It has long been recognised that leafy vegetables are important in the diet of many African communities. Green leafy vegetables can be regarded as an important commodity, since they are cheap and thus readily affordable to many people in rural, peri-urban and urban areas. Being accessible to low-income communities, they play a crucial role in food security and in improving the nutritional status of poor families. Despite these beneficial attributes, leafy vegetables have generally been neglected by both researchers and consumers. They are often dismissed by researchers and national agricultural programmes because of the large number of species involved, their very localized use, their wild, semi-wild or weedy nature.

Consumers neglect them because of the association of leafy vegetables with poor rural lifestyles, which means they are often regarded as a low-status food. This neglect is one of the reasons why the diversity of African leafy vegetables (ALV) became threatened in the 80s.

**“ By documenting and creating awareness of the nutritional value of ALV, the programme has influenced people to grow, market and consume them ”**

One of Bioversity International's objectives is to promote biodiversity conservation and use to improve people's livelihoods. Bioversity scientists, in partnership with local research and development organizations, realized the need in the late 90s to develop a strategy for conserving leafy vegetables through use to prevent them from becoming further marginalized and ultimately disappearing. The rationale of Bioversity's intervention was that the enhancement of the use of ALV would create more demand for these nutritious local crops and thereby trigger more production of the resource. This in turn would lead to the conservation of more diversity within the gene pool required for improving the productivity and use of ALV. The approach was to work with producers within existing production and consumption systems, to maintain local knowledge about the crop diversity and the variety of uses, to document the genetic diversity of key priority species and to demonstrate the potential for improvement and competitiveness *vis à vis* introduced commercial vegetable species. In Kenya the ALVs programme began in 1996, was implemented in two phases and concluded in 2004. The major outputs of Phase 1 (1996-99) were related to the collection, prioritization and characterization of ALV, as well as analysis of their nutritional values. Indigenous knowledge of the diversity and use of ALV was also documented. Phase I identified varieties that were easier to prepare and transport, and pinpointed several constraints related to seed quality, availability and supply. The results of Phase I shaped the activities undertaken in Phase II (2001-04), which aimed to exploit



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ALV's potential to improve the nutrition and food security of vulnerable groups, namely women and children.

This brief describes an assessment of the impact of the ALV programme on the livelihoods of farmers in four regions of Kenya, and the role played by Bioversity and its partners 10 years after the first intervention. The analysis showed that although research on, promotion of, and consumption of ALV had occurred in Kenya over many years, Bioversity's activities coordinated and expanded what were previously scattered efforts within a slow and disorganized process. Bioversity acted as leader of the programme and, as a result, five local universities, one national agricultural research institute, several national organizations, nongovernmental organizations and community-based organizations remained active in ALV activities after the programme had ended. As a result of the program's research, more than 37 research papers were presented at national, regional and international conferences and more than 17 were published in refereed journals. Thirteen MSc and MA students and two PhDs were supported, and an MSc course on traditional vegetables was launched at Maseno University. Several staff members of the universities and research institutes received technical training in germplasm characterization, description and mapping. Other scientists gained technical experience as they carried out various projects. Networking among national and international scientists in ALV was fostered through planning meetings, regional workshops and international conferences. Production, consumption and marketing of ALV increased over the programme's 10 years. Overall, the number of cultivated and consumed species also increased. Market demand for ALV also developed over the project period as a result of many factors, including increased awareness sparked by the project itself, as well as a range of the organizations involved. The hitherto negative perception of ALV has changed.

## WHAT WAS THE PROGRAM'S IMPACT ON TARGET COMMUNITIES?

In 2007, three years after the programme ended, its impact was measured by analyzing production, consumption, marketing, and nutritional awareness of ALV in four regions: the Kisii District in Nyanza Province (now Masimba and Kisii Districts), the Tharaka-Nithi District in Eastern Province (now Tharaka and Meru South Districts), the Kilifi District in Coast Province (now Kilifi and Kaloleni Districts) and peri-urban Nairobi. In total 211 randomly-selected households stratified into participant and control households were selected and information from the survey was complemented through focus group discussions.

In the study areas between 1997 and 2007, there have been notable positive changes in production, consumption, marketing, and nutritional awareness of ALV. The major findings can be summarized:

- In 2007, the majority of households interviewed (87%) grow ALVs with the figure going to as high as 98% and 96% in Kisii and Tharaka. The plot sizes are small usually less than an acre. In most cases they are intercropped along the fences with other crops, but in other cases (where

they are grown purely for commercial purposes) they are increasingly being grown in small pure stand plots.

- Over 40 different species are consumed in the regions. A total of 45.2% of the households were found to have increased their consumption of ALV relative to 1997, while 44.3% had retained their consumption at the 1997 level. The main reason for increased consumption was reported to be increased awareness of their nutritive value. When available, ALVs are consumed in the two main meals per day (midday and evening) and are always cooked. In the past, most communities would cook the ALV for long periods, but over the last few years these traditional methods have been abandoned for those that preserve most of the vitamins and other nutrients. To this effect consumers now derive more nutrients from ALV than previously.
- Of those growing ALV, in 2007 only slightly over half of them (52%) participated in marketing. This differed from region to region, with Kilifi and Tharaka having lower figures compared to Kisii and Nairobi. In Kisii almost all households grow ALV (98%) and an equally high percentage also market them (86%) compared to the survey mean of 87% and 45% for growing and marketing respectively. Kilifi and Tharaka regions were relatively poor in terms of marketing of ALV. Lack of awareness, problems in transportation and distance from Nairobi (the epicenter of ALV promotion campaigns) were the main reasons for the low market involvement of the farmers. Compared to 1997, the results showed that only 2.5% of the respondents felt that their monthly net income from ALV had declined. The rest 62.5% and 35% reported that their monthly net income from ALV had increased (62.5%) or remained constant (35%) relative to their 1997 levels. The two main uses of the income were to supplement kitchen budgets and for school expenses, in that order.
- Women have continued to be the main actors in ALV production and marketing. This is a positive aspect that can be capitalised on in terms of the economic empowerment of women. The threats posed by the ensuing commercialisation need to be considered -- this could be through capacity building for the women to take up even more production and marketing of ALV given that they are becoming increasingly marketable.

## BIOVERSITY'S ROLE

The relatively long duration of the ALV programme meant that a large number of organizations, communities and individuals were involved. Many of these collaborated directly with Bioversity, but many others acted independently. To understand who has done what since the programme's inception, a number of questions need to be answered: What

**“ It was not until Bioversity became involved that momentum on African leafy vegetables was built and sustained ”**

role did Bioversity actually play? What role was played by the other partners, both working with Bioversity and acting independently? How did these partnerships contribute to the achievement of the objectives of the programme? Since the end of the programme, answers to these questions have remained undocumented. Understanding how such a partnership or a delegated approach worked was one aim of the study synthesized in this brief.

Representatives from the major Kenyan partners in the ALV programme were interviewed on Bioversity's role. Most of the collaborators (83.9%) came from academia or research centres, with a minority coming from the private sector. The respondents were spread across the country, with collaborating and partner organizations represented in five provinces: Western (19.3%), Eastern (12.9%), Coast (12.9%), Central (6.5%) and Nairobi (45.2%). Nairobi had the highest representation as this is where most of the organizations' headquarters are located.

Most partners (78.2%) acknowledged the positive and important role played by Bioversity in the promotion and use of ALV in Kenya. More than a third (34.5%) of organizations participating in the programme considered Bioversity as the main reason for beginning work on ALV. Organizations that were already working on ALV—including Rural Outreach Program, Kenya Agricultural Research Institute, the Ministries of Agriculture and Health, and universities—were directly influenced by Bioversity through partnerships in funding and information sharing. Most (more than 90%) of the programme partners reported that their work on ALV increased following the commencement of the programme and that Bioversity provided important insights into the diversity, uses and farmer management of ALV germplasm. Genetic diversity was found to be a key factor in improving the competitiveness of African leafy vegetables. These responses

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indicate that Bioversity influenced its partners' work on ALV by both catalyzing and enabling research. Some scattered ALV activity had occurred before the programme began, but it was not until Bioversity became involved that momentum was built and sustained. Prior to that, scientists generally worked in an uncoordinated manner without knowing what others were doing, often leading to duplication of activities and resources with little impact.

As seen in Table 1, not only was Bioversity influential in sparking *research* into ALV, it also played a key role in *promoting* the production, marketing and consumption of ALV. Respondents were asked to name the two most important organizations in performing various promotional tasks. Programme partners regarded Bioversity as most important with respect to many activities, ranking it highest in identification and evaluation, promotion of production, promotion of usage, capacity-building (at the organizational level, but not at the grassroots level), and awareness creation. Bioversity ranked second for genetic conservation.

Overall, Bioversity enabled several ALV researchers to work together cohesively and deliver different outputs under the same overall framework. In the words of one of the respondents, Bioversity played the role of conductor of an orchestra, ensuring the outputs of a range of different actors were harmonious and delivered a concrete result.

**Table 1. Ranking of partners according to roles they are perceived to have played in the ALV programme.**

Activity	n	Rank 1	%	Rank 2	%	Rank 3	%
Identification/ Evaluation	34	Bioversity	32.4	National Museum of Kenya	26.5	Universities	11.8
Promotion of production	41	Bioversity	24.4	KARI stations	14.6	Ministry of Agriculture	14.6
Promotion of usage	44	Bioversity	31.8	Rural Outreach Program	15.9	National Museum of Kenya	13.6
Awareness creation	45	Bioversity	44.4	National Museum of Kenya	20.0	Ministry of Agriculture	8.9
Capacity building at the organizational level	16	Bioversity	43.8	Ministry of Agriculture	18.8	several	
Capacity building at the grassroots level	26	Rural Outreach Program	26.9	Ministry of Agriculture	19.2	Farm Concern	15.4
Genetic conservation	29	KARI GBK	34.5	Bioversity	20.7	National Museum of Kenya	17.2
Marketing/market development	24	Farm Concern	37.5	Rural Outreach Program	16.7	Ministry of Agriculture	16.7

NB: N is the number of responses. For every category, each respondent was supposed to name two of the most important organizations in performing that role. In some case no organizations were mentioned as the respondents said they are not aware/are unsure/ or simply do not know any organization in involved in a particular activity.

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