

REPORT ON A VISIT TO KENYA
from 22 April to 1 May 1996

Domestication of Indigenous Vegetables

Project No. A 0515

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INTRODUCTION

1. Until recently, people in sub-Saharan Africa have depended on their food supplies from the flora and fauna found in their local environment. A gradual change was affected by new food sources brought in by traders over the last 500 years and to some extent, even before that. Major changes started as a result of mass introduction of exotic crops and even more so with the current deforestation and substantial destruction of the remaining natural environment.
2. Concern arose that as a result of prejudice existing against the use of old-fashioned food crops, coupled with a loss of knowledge about them and assumed genetic erosion, there would soon be a dependance on a few main food items only. Potential crops with a high nutritious value, expressed in calories, vitamins, minerals or otherwise could get lost. The same would apply to more minor crops which serve as supplements to either starchy food or protein rich food.
3. Within NRI it was considered necessary to know more about the present status of under-utilised crops and in particular on indigenous and traditional vegetables and to be aware of past and on-going research and other activities concerning these crops. Accordingly, an assessment was required of the current situation, identifying needs, constraints, key researchers or institutes and their sources of funding.
4. Kenya is the first country where investigations will be made in some detail, partly because a lot of information has been collected already and partly because local communities may be interested in changing back from a reliance on exotic crops towards more intensive use of -possibly improved- traditional food crops.
5. The visit made emphasized western Kenya where people continue to value their traditional crops and are used to produce both indigenous and exotic vegetables. Although in eastern and coastal areas of Kenya people also appreciate their local vegetables, they collect them from the wild rather than produce them directly, partly due to cultural patterns, including nomadic lifestyles. The visit started in Kakamega where KARI's regional Research Centre has been mandated to coordinate work on traditional crops, including indigenous vegetables. Kisii was noted to be a key production area where ODA already provides general support even though this is not specifically geared towards indigenous vegetables.

IMPORTANT LEAFY VEGETABLES OF KENYA

6. The long-list below includes the more commonly consumed wild vegetables of Kenya:

Cooked vegetables	Domestication	Marketing ***
* Leaves used fresh only	w = wild only	Areas where produce is
** Used both fresh and cooked.	s = semi-cultivated	frequently offered for
	c = commonly cultivated	sale
<i>Adansonia digitata</i>	w	
<i>Aerva lanata</i>	w	
<i>Amaranthus graecizans</i>	w	

<i>Amaranthus thunbergii</i>	w	
<i>Amaranthus spinosus</i>	w	
<i>Amaranthus lividus</i>	s	Kisii, Nyanza, Western
<i>Amaranthus hybridus</i>	c	Countrywide
<i>Amaranthus dubius</i>	s	Countrywide
<i>Amaranthus sparganiocephalus</i>	w	
<i>Asystasia gangetica</i>	s	Nyanza, Western
<i>Asystasia mysorensis</i>	s	Nairobi, West Pokot, Western, Nyanza
<i>Balanites aegyptiaca</i>	w	
<i>Basella alba</i>	c	Nairobi, Coast, Western
<i>Brassica carinata</i>	c	Countrywide
<i>Cleome monophylla</i>	w	
<i>Cleome hirta</i>	w	
<i>Coccinia grandis</i>	w	
<i>Coccinia trilobata</i>	w	
<i>Commelina africana</i>	w	
<i>Commelina imberbis</i>	w	
<i>Commelina benghalensis</i>	w	
<i>Commelina forskalaei</i>	w	
<i>Commiphora rostrata*</i>	w	
<i>Corchorus tridens</i>	w	
<i>Corchorus trilocularis</i>	s	Countrywide
<i>Corchorus aestuans</i>	w	
<i>Corchorus olitorius</i>	c	Countrywide
<i>Corchorus urticifolius</i>	w	
<i>Crotalaria brevidens</i>	c	Western, Nyanza
<i>Crotalaria ochroleuca</i>	s	Western, Nyanza
<i>Cucumis dipsaceus</i>	w	
<i>Cyphia glandulifera</i>	w	
<i>Digera muricata</i>	s	North R. Valley, Coast
<i>Erucastrum arabicum</i>	w	
<i>Gynandropsis gynandra</i>	c	Countrywide
<i>Ipomoea aquatica</i>	c	Coast
<i>Ipomoea mombassana</i>	w	
<i>Kedrostis pseudogijef</i>	s	Voi
<i>Kedrostis gijef</i>	w	
<i>Lablab purpureus</i>	c	Countrywide
<i>Lamnaea cormita</i>	w	
<i>Leptadenia hastata</i>	w	
<i>Oxygonum salicifolium</i>	w	
<i>Oxygonum sinuatum**</i>	w	
<i>Pentarrhinum insipidum</i>	w	
<i>Portulaca oleracea</i>	s	Nairobi
<i>Portulaca quadrifida</i>	w	
<i>Rhus tenuinervis*</i>	w	
<i>Rhus natalensis *</i>	w	
<i>Rumex abyssinicus*</i>	w	
<i>Rumex bequaetii*</i>	w	

<i>Rumex usambarensis*</i>	w
<i>Sesamum angustifolium</i>	s
<i>Solanum nigrum</i>	c
<i>Tamarindus indica*</i>	w'
<i>Urtica massaica</i>	w̄
<i>Vatovaea pseudolablab</i>	w
<i>Vernonia cinerea</i>	s
<i>Vigna frutescens</i>	w
<i>Vigna membranacea</i>	w
<i>Vigna unguiculata</i>	c̄

***Most of the species listed are marketed in specific areas and seasons.

7 The above list includes most of the commonly used wild vegetables of which some are now in the process of domestication. It also shows several less known species and subspecies with a very localised distribution. The latter require more urgent attention as their potential as food and their status in the wild are still largely unknown. During a recent survey carried out by the National Museum it was found that when these species are subjected to ranking by the communities, some of them occupy a higher position than the more known cultivated species.

8. The more prominent species which are much sought after by people living in the drier parts of the country but which are presently not cultivated in any form include:

(i) *Vatovaea pseudolablab*. This legume which is related to the cowpea, is only found in hot, arid areas and is resistant to drought. The entire plant can be consumed, which includes the leaves, fresh green pods, seeds and tubers. Roots resemble those of cassava, are long and fibrous and contain much juice. They are consumed fresh and are much appreciated in roasted form. The species' distribution ranges from North Tanzania to South Somalia and can be found in the west up to Karamoja in East Uganda and probably in the border area with the Sudan. Their wide distribution plus the fact that people treasure it as high quality food, offers scope for a diversified germplasm which will need to be collected, grown out and studied.

(ii) *Digera muricata*. This leafy vegetable, belonging to the Amarantaceae is especially popular amongst the Giriama and other coastal tribes. It has two distinct subspecies which are equally appreciated by people although the large leafed ssp. *patentipilosa* takes less work to collect and to prepare. It has definite potential for further development. However, since people can still find them in the wild, there is little incentive for cultivation although its distribution is limited to a small area along the coast. Once seeds have been collected, they could be grown in other areas or in off-seasons under irrigation. Its full potential should be evaluated when comparisons could be made with other leafy vegetables grown in e.g. western Kenya.

(iii) *Cyphia glandulifera* (Lobeliaceae). A potential crop with large succulent leaves which is commonly found and consumed in the Kitui area. It is also found, even though less frequently used, in other dry areas. It is one of the few crops which grow well on black cotton soils. Both leaves and tubers are eaten but little is known about them apart from the fact that Kitui people consider them as a delicacy.

(iv) *Kelrostis pseudogijef* (Cucurbitaceae). In the east and especially northeastern Kenya this species can be found on hedges and fences around houses. Its leaves and young shoots are eaten together with starchy food. It can be a fast growing climber which is highly drought tolerant and remains green. Cultivation is limited to sticking a piece of stem in the ground at the start of the rains. It takes root within a short time and grows vigorously during the rains. According to Patrick Maunda from the National Museum who compiled most of the data for the Indigenous Food Plants Programme, sponsored by the Ford Foundation, no agronomic research has been carried out with regard to this interesting home garden crop.

EMERGING NEW CROPS:

9. Currently most attention given to development of new vegetable crops is geared towards demand in West Kenya because of its tradition to cultivate crops when compared with people in drier areas where this is either uncommon or against their culture. In west Kenya there are four main contenders:

- (a) the jute mallow, *Corchorus olitorius*/*C. trilocularis*,
- (b) black nightshade, belonging to the *Solanum nigrum*/*S. americanum* complex,
- (c) the spider flower *Gynandropsis gynandra* and
- (d) the local Amaranth species *Amaranthus lividus*.

10. By far the most common indigenous vegetable species grown in Kenya is the cowpea, *Vigna unguiculata*, a well established crop, primarily grown for its leaves and not for its seeds. Cowpeas, which are found wild in several parts of Africa, including Kenya, could arguably be considered as already well developed, thereby falling outside the scope of the present study.

11. Apart from the four main emerging species mentioned above, there are a further three which are frequently seen on Western Kenyan markets: sunhemp *Crotalaria brevidens*/*C. ochroleuca*, the Ethiopian kale *Brassica carinata* and the Indian spinach *Basella alba*.

Corchorus spp. (Tiliaceae)

12. After cowpea leaves, this is the most frequently seen indigenous vegetable in Kenya. The most commonly grown *Corchorus olitorius*, originated in South China but has now become a pan-tropical weed, which is eaten by people in South America, Africa and Asia. It is one of those crops which is very widely grown throughout Africa but has not received much attention from local researchers. Studies have been carried out in neighbouring Sudan and several more in especially Nigeria and some other African countries. There appear to be virtually no disease problems with this crop and the main pest is *Meloidogyne* nematodes. Yields are already high from (semi-) wild populations. A main production centre is found around Homa Bay from where large quantities are transported to regional centres during the rainy season.

13. In Kenya, people eat the leaves or young shoots and though fruits may be found on the shoot, fruits are not specifically harvested as in West Africa where these fruits are called bush okra. The local name for jute mallow (as a species complex) in

Kakamega is butere and its Kiswahili name is mlenda. Next to the true jute mallow, *Corchorus olitorius*, there are four more species found in Kenya, which are consumed by people of which *Corchorus trilocularis* is the most important.

14. **Specific research needs:** Further evaluations on the potential of local relatives of the jute mallow will need to be carried out, describing and comparing their characteristics and ethno botanical value, including palatability or possible undesirable elements.

Solanum nigrum. (Solanaceae)

15. This species or possibly, complex of species, is rapidly gaining in popularity especially amongst the Kisii people and in South Nyanza. Although collection from weedy, wild populations are still common, this crop is now also sown in home gardens, cultivated and harvested for use in the kitchen. Since the prices fetched on local markets are distinctly higher than those for e.g. cabbages, due to high demand, there is now also a tendency to commercialise this crop as pure stand plots. During our visit to Kisii market, one bag of kale was priced at Ksh 200/- whereas a bag of sutsa, as black nightshade is called locally or mnavu in Kiswahili, fetched 400/- to 700/-, depending upon the quality (whole plants or young shoot and tops only).

16. Black nightshade requires large amounts of Nitrogen and flourish when adequate quantities of compost or manure have been incorporated into the soil. It was found that germination is very much lower when the crop is sown on non-fertilised land. Generally, this crop is much affected by aphids, especially during the dry season. Black nightshade can be ready for harvesting in about six weeks, which means that when the rain factor is taken into consideration, there will be 4 crops per year, compared to only two crops of cabbages or collards per year. Consequently, the yield per area unit per year are said to be higher. Well recorded yield data are however scarce.

17. General averages given for black nightshade by the extension services amount to 3 tons per acre or 7.5 tons/ha. Experiments on small plots yielded from 30-50 tons per acre with an exceptional 80 tons per acre for *Solanum eldoretii*, one of the close relatives or possibly variety of *Solanum nigrum*, simply distinguished by its greenish as opposed to black berries. This 'eldoretii' type can grow up to 80 cm high and sometimes more. People don't like it because the cooking water is black in colour. This cooking water will be discarded after which there is no difference in taste but people don't trust this type. In addition, 'eldoretii' was found to be highly susceptible to bacterial blight (*Pseudomonas solanacearum*?). Incidentally, there is no black cooking water found with young plants, offering scope for breeders to try to remove this undesirable character from an otherwise high yielding variety.

18. In Kenya there are at least 6 distinctly different varieties or species as they are referred to by some authorities. In addition to the above mentioned, these include *Solanum pseudonigrum* with orange or red berries. There are two distinct types, one with serrated leaves and the other with smooth leaf edges. The main types of the *S. nigrum* complex differ in colour (orange, red, dark blue, pitch black or green) and size of the berries. Cluster size and location on the plant are further characters to distinguish the various types as are leaf size and shape and general plant architecture

and size. Some authors consider the East African populations of *Solanum nigrum* as belonging to *Solanum americanum* and further research is much needed to establish its proper name or names.

19. The *Solanum nigrum* complex has been subject to a number of studies in Kenya, including Msc and PhD thesis. Most of these studies emphasized nutritional issues and relatively limited work has been carried out on agronomic or post-harvest topics. Prof. J A Chweya is currently working on a monograph on black nightshade, which is expected to be out by mid-June.

20. **Specific research needs:** The species complex will need to be unraveled, indicating possibilities for crossing and genetic enhancement, combined with elimination or reduction of less desirable traits, including anti-nutrients such as excessive nitrates.

Gynandropsis gynandra (= *Cleome gynandra*, Capparidaceae).

21. Together with black nightshade, the spider flower is rapidly becoming more popular, especially in western Kenya. It is probably more common here than in any other part of the world known to me even though it has become a pan-tropical weed or vegetable of home gardens.

Prof. J A Chweya of University of Nairobi's crop science department, is keen to further promote this crop and he is currently preparing an overview of information available to date on a world-wide basis. This overview in the form of a monograph will become available as from mid-June.

22. Saga, the local name for this crop which is called mnangani in Kiswahili, was found in all the four markets visited: Kisii, Luanda, Kakamega and Kisumu. It was however nowhere really common. The main pest on spider flower appears to be beetle flies, which chew away at the margins of leaves, making the product less attractive for human consumption.

23. Cooked spider flower is customarily used by Kisii women just before and again after giving birth. It is known to help against stomach ailments. It contains very high levels of calcium and iron.

24. **Specific research needs:** This could better be assessed after Prof. Chweya's monograph has become available.

Amaranthus spp. (Amaranthaceae)

25. Out of the seven species of Amaranth found and consumed in Kenya, *Amaranthus lividus* is the most popular in western Kenya. It is commonly found on compost heaps and similarly disturbed places nearby houses or in places with livestock. This local spinach is in the early stages of domestication, unlike other amaranth species like *A. cruentus* or *A. hybridus*. Most people still collect it from fields in their immediate neighbourhood and only few people have collected seeds and are actually cultivating it. However, it is being done and seeds were offered for sale at local markets (at 2/- for a beer cap measure). Produce offered at local markets were found to be quite diverse with sometimes two or more different amaranth species in one bundle. The *A. lividus* is clearly preferred by people due

to its distinct, soft taste. Most other amaranths taste more sharp and are often more fibrous.

26. **Specific research needs:** Development of a clear key to local amaranth species, describing their specific characters; selection of a uniform variety with desirable traits and production/dissemination of seeds.

MAJOR CONSTRAINTS IN DEVELOPMENT OF LOCAL CROPS:

27. (a) People perceive local vegetables as crops for backward people and there is a prejudice by 'rural elite' against traditional food crops. Interestingly though, the 'urban elite' are the main buyers of indigenous vegetables when found on city markets, where they are too expensive for the 'urban poor' to buy.

(b) There is very little information available on specific cultivation practices, yield potential and performance when compared with 'exotic crops'. The extension service of the Ministry of Agriculture is thus not able to provide guidelines when so requested.

(c) In arid and semi-arid zones, conditions do not favour establishment of nurseries, besides, cultural factors such as nomadism hamper crop production in general.

(d) If seeds could be found at all, they are often very expensive

GENERAL RESEARCH NEEDS AND OTHER ACTION PRIORITIES FOR EMERGING NEW CROPS:

28 (a). Germplasm collection and evaluation, leading to varietal selections, followed by seed production and distribution. Seed is currently hard to find, expensive and gives rise to a pluriform crop.

(b). Establish basic agronomic guidelines, study cost aspects related to production and marketing.

(c). Post-harvest treatment (e.g. pre-packing in poly-ethylene bags), raising quality awareness, long-distance marketing and general promotion. The status of a crop is linked to its commercialisation: recognised palatability leading to profitable production.

(d). Presentation of a status paper, reflecting the current relative importance of IV in the total food package of the rural and urban population; a write-up of the present knowledge on e.g. the ten most important IV's, together with a needs assessment.

THE NEED FOR MORE DATA ON MARKETS

29. Many assumptions have been made indicating that especially major cities now mainly offer exotic vegetables rather than local vegetables. To what extent this is true will need to be established further since there are several indications that indigenous crops are no longer just produced for home use but are now being traded for commercial purposes as seen on markets in western Kenya. Similar stories mentioned that produce is now collected in Kisii and surrounding areas for markets in Nakuru, Nairobi and other larger towns. Data are however lacking.

30. In order to have some firm data, Mr Otukho, jointly with other Kakamega based RRC staff has been requested to make a market survey of Kakamega municipal market for a one-week period. In this 24-hour survey all food stuffs will be recorded with a note on their origin and questions will be asked whether produce will come from a single farmer or whether the produce has been collected from many individuals and brought to the market by intermediaries. A report on this survey is expected by mid-June.

KENYA BASED ORGANISATIONS INVOLVED IN RESEARCH ON LOCAL VEGETABLES:

31. The Kenya Resource Centre for Indigenous Knowledge (KENRIK) based at the National Museums of Kenya has been conducting research on indigenous and traditional food plants since 1989. First during the Indigenous Food Plants Programme (IFPP) and later in the on-going Indigenous Agricultural Knowledge Systems project as below.

32. The following picture emerged during the research:

- All communities in Kenya use indigenous leafy vegetables.
- The culture of consuming vegetables is more developed in some communities than in others. While only 13 species of vegetables were recorded in Kajiado district, 78 were recorded amongst the Giriama at the coast.
- Variation within a single species is common for species with a wide distribution.
- Some species have the potential for further development.
- From experience it was found that communities prefer growing vegetables to fruit trees and shrubs as these take a shorter time to grow (especially considering the insecure land tenure of many areas), seeds are more easily available and they are considered more of food than fruits.

33. **Indigenous Food Plants Programme.** (see also Annex 1.)

This programme was initiated in 1989 to carry out research on indigenous food plants, document them and their uses, promote their utilization and conservation and to improve community welfare. Until the end of 1992, the National Museums of Kenya (NMK) was collaborating with the World View International Foundation (WIF) and the Kenya Freedom From Hunger Council (KFFHC). Community groups, such as Women groups, as well as Extension workers of the Ministry of Agriculture, were the key implementing groups. The programme's largest funding came from the Ford Foundation with additional funding from the Canadian Organisation for Development

through Education (CODE) and two Dutch organisations: the Columbine Foundation and 'Nog Meer Binding' Foundation.

34. The Indigenous Food Plants Database with at the moment 854 records of edible plant species with descriptions, local names, various uses etc, is being expanded to cover all known plant uses. Publication of these data is now being considered. A database of local plant names in all the 60 languages of Kenya is being developed. A bibliography of ethnobotanical books has been made. Agronomic research of over 50 species was carried out, covering mainly methods of propagation. In this area there are a lot of information gaps which need to be investigated further.

35. By the end of the programme in 1992, the programme had done intensive research and extension in nine Districts. These were Kajiado, Baringo, Turkana, Kilifi, Nyandarua, Siaya, Kitui, Machakos and Makeni. The emphasis was on dry areas and only a few wetter regions were covered. The project covered a wide range of species and cultures.

36. **Indigenous Agricultural Knowledge Systems (INDAKS) Project**
The centre is collaborating with the Leiden Ethnosystems and Development Programme (LEAD) of Netherlands and the Indonesian Resource Centre for Indigenous Knowledge (INRIK) to investigate the existing indigenous agricultural knowledge systems in some selected areas of the country. A pilot study was conducted in Kitui Central Division of Kitui district. A workshop to review this work and to usher the main study was held in Leiden, The Netherlands in October, 1995.

37. Closely related to these is the **Centre for Indigenous Knowledge Systems Project (Ciksap)** which is on-going. Ciksap has recently collaborated in collecting data on vegetable crops grown by Nairobi's urban and peri-urban low income groups. One of the interesting conclusions from this survey, carried out by Monica Opole, was that the big city acts as a magnet for crops. People from all over Kenya who have migrated to the city have taken their indigenous vegetable crops with them. Consequently, there is a great diversity in germplasm found within a small area.

38. The National Museum's **East African Herbarium (EAH)** is currently a depository of more than 700,000 plant specimens collected in eastern Africa and beyond, over the last 90 years, thus providing a wealth of information concerning the flora of this region. In the Indigenous Food Plant Programme, the Herbarium was largely involved in the botanical (identification) and ethnobotanical aspects as well as agronomic research and nutritional analysis.

39. **The International Plant Genetic Resources Institute** has its sub-Saharan office in Nairobi. IPGRI receives its core funding from the UN, being one of the CGIAR centres. It is active in promoting a network of researchers and NGO's involved in the study and advancement of less well known and under-utilised local vegetables as well as other crops including rootcrops, fruits, medicinal crops, cereals etc. Their funding for direct involvement in germplasm collections or other direct research is limited. However, during our visit news came in that the Dutch government had agreed to provide US \$ 150,000 for a 2-year project on the biodiversity of neglected leafy green vegetable crops in Africa. This project will focus

on indigenous knowledge, gender and nutritional topics and document information available. It will therefore deal more with ethno-botanical issues than with genetic enhancement, agronomy or post-harvest issues.

40. IDRC of Canada is involved to a limited extent by promoting a network of researchers dealing with indigenous vegetables and supporting local NGO's working with these crops in both Kenya and Zimbabwe.

41. The University of Nairobi and the Jomo Kenyatta University of Agriculture and Technology have a number of key staff members who are now working on indigenous and traditional crops. Students are encouraged to take up topics related to indigenous African crops, both at the department of horticulture of Jomo Kenyatta University and at the department of crop science as well as the department of food technology and nutrition of Nairobi University.

LITERATURE USED:

- [ANONYMOUS] (1994) Safeguarding the genetic basis of Africa's traditional crops: proceedings of a CTA/IPGRI/KARI/UNEP seminar, October 1992, Nairobi
- [ANONYMOUS] (1996) IPGRI Project proposal to study neglected leafy green vegetable crops in Africa.
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- GUARINO L (1996): References on Leafy Green Vegetables in Africa (selected from various sources)
- ONYANGO M A (1993): Effect of Plant Density and Harvesting Frequency on the Yield and Vegetable Quality of Four Variants of Black Nightshade, a Msc thesis, University of Nairobi.
- MAUNDU P M (1993): IFPP/World Neighbours Collaboration Reports Ethnobotanist IFPP, National Museums of Kenya
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APPENDIX 1.

THE INDIGENOUS FOOD PLANTS PROGRAMME

The Indigenous Food Plants Programme (IFPP) started its operation at the beginning of 1989. Until the end of 1992, the National Museums of Kenya (NMK) was collaborating with the World View International Foundation (WIF) and the Kenya Freedom From Hunger Council (KFFHC).

Objectives

- i. Increasing the utilization of indigenous food plants.
- ii. Conservation of indigenous food plants and the indigenous knowledge surrounding them.
- iii. Documentation of ethnobotanical information and maintenance of cultural diversity.
- iv. Improvement of the nutritional status of communities and their general well-being.
- v. Improvement of the environment.

The programme was thus involved in conservation campaigns of indigenous food plants and their culture, re-introduction of the species where they have been lost as well as incorporating the most useful ones in existing farming systems, both at the home and village level.

Role of the Museums

The Museum's East African Herbarium (EAH) is currently a depository of more than 700,000 plant specimens collected in eastern Africa and beyond, over the last 90 years, this providing a wealth of information concerning the flora of this region. In the programme, the Herbarium was largely involved in the botanical, ethnobotanical, agronomic research and nutritional analysis.

Community groups, such as Women groups, as well as Extension workers of the ministry of Agriculture, were the key implementing groups.

Scope

By the end of the programme in 1992, the programme had done intensive research and extension in nine Districts. These were Kajiado, Baringo, Turkana, Kilifi, Nyandarua, Siaya, Kitui, Machakos and Makueni- all with varying climates and so with a wide range of species and cultures.

The future of IFPP

In a workshop held in 1993, the National Museums of Kenya was unanimously chosen to coordinate the implementation process of the recommendations pertaining to policy, research, Indigenous knowledge, promotion. The IFPP in the Museum will also be involved in:-

Conservation of IFPs as part of the Biodiversity programmes of the NMK.

Conservation education of IFPs (through the Education dept. of the Museums.)

Preservation of the cultural aspects and Indigenous knowledge pertaining to IFPs.

IFPP research and extension methodology

An introductory workshop bringing together governmental as well as non-governmental experts, women and men group leaders marked the beginning of IFPP's activities in each district.

Ethnobotanical, nutritional and food analysis research followed almost immediately after this workshop. Plant samples were collected and identified at the East African Herbarium. Food materials were analyzed at the Food Science Department of the University of Nairobi.

Training

Once Research was over, IFPP would hold a series of training workshops at the community level assisted by a collaborating agent already operating in the district. In this training workshop, participants would be introduced to the most important food species, referred to as 'focal species'. These were the species that were actively promoted by the programme. Their nutritional value and points of note when cooking were discussed. Also discussed were the advantages of preserving and utilizing the food species such as, their value in raising the nutritional status of the community, maintaining biodiversity, preventing loss of knowledge, and their use in agroforestry. Basic methods of collecting seeds, planting techniques and maintenance of plants were taught. The fact that local vegetables are generally of a higher nutritional value than introduced ones came only as a surprise to the communities.

Achievements

It is difficult to say what the programme achieved especially in the communities and the Districts. Generally:-

- The programme has sensitised over an estimated 100,000 people and educated them on the need to utilize more, conserve and where possible plant indigenous food plants.
- More people respect and are using these food plants than before.
- Some areas have taken up the cultivation of these crops. This will benefit these communities as explained earlier.
- Indigenous Knowledge was documented.
- Agronomic research of over 50 species was carried out and many aspects of their cultivation are now known.
- Nutritional analysis of many of the important foods was done.
- Experience gained by staff was tremendous.

Outputs:

- Educational materials
- A guidebook to the IFPs
- Seeds
- Five Databases (General Species database, nutritional DB, collecting localities DB, Species distribution DB, Literature DB)

Database

Ethnobotanical information, data on nutritional analysis as well as site information of food species were all fed into a species database that was set up at the East African Herbarium. The database is currently holding about 850 records of indigenous food species with information such as species synonyms, local names, other known uses,

distribution (in Kenya and rest of the world), habitats (including vegetation and soils), rainfall and altitude ranges. Any combination of these items depending on ones needs can be retrieved. Museum visitors with particular interest in any of the plants can get the information they need in a matter of seconds.

The communities have realised that those wild vegetables, fruits and tubers normally said to be 'god planted' can actually be consciously planted and domesticated. The programme maintains a vegetable garden at the Nairobi Museum. A few fruit tree species have also been planted here. Museum visitors, school children as well as adults will now have a chance to view their indigenous food species here.

Collaboration:

While much has been done in educating the communities the value of preserving, utilising and even planting indigenous food plants, there is need for the programme, to expand their activities not only to other areas of the Districts covered but also to the rest of the country. And it is important for both the Government and non-governmental organizations involved in research and development to join hands in this important task.