PERI-URBAN INDIGENOUS VEGETABLE PRODUCTION IN MANICALAND

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1.SOURCES OF TRADITIONAL VEGETABLES.

Introduction

Mutare vegetable markets receive considerable quantities of traditional vegetables from producers who are located up to about 100 km from the city. Farmers transport traditional in addition to other vegetables, as well as fruit.

OBJECTIVE

The objective of the process was to obtain information on the sources of traditional vegetables that are sold on the different markets in Mutare.

METHOD

*An open- ended questionnaire was used so as to identify some of the main geographical sources of traditional vegetables that are sold on markets in Mutare.

*Wholesale traders at Sakubva market where most of the produce from production areas seemed to be delivered were interviewed.

*Traders at smaller markets such as in Dangamvura suburb were also interviewed.

*Visits and interviews of wholesalers and producers in Nyanyadzi, Dora, Chitakatira and Honde Valley were carried out.

OBSERVATIONS & DISCUSSION

Traders on the markets in Mutare that were visited were as follows

Sakubva wholesale market	11
Sakubva Retail market	5
Green market	5
City Vendor 'C' avenue	2
Dangamvura (Complex) market	4
Total	**27**

A total of 27 traders were interviewed so as to establish the major sources of tradition vegetables that were found on the markets in Mutare. Ninety percent (90%) of those traders visited were women mostly in the middle –age group. The remaining ten percent was mainly men who had been in the trade for a long time (more than twenty years), in some cases.

Most of the traders were dealing with indigenous vegetables as part of a wide range of wares that they traded in. Eighty eight percent (88%) reported that traditional vegetables were an important part of their trade.

Among the most important vegetables that were traded were the following, in order of importance.

Table 1: Traditional vegetables traded on the Mutare market

Vegetable	**Traders dealing in the vegetable (%)**
Cleome spp- (Nyevhe Runi, Banyara)	97
Corchorus spp-(Derere Munda)	78
Bidens spp– (Guku)	78
Amaranths spp– (Mowa)	57

Almost all traders, whether wholesalers or retailers dealt with *Nyevhe*. *Nyevhe* supply at the time of interviews was also said to be satisfactory. The amounts available were less than previous season (200/2001) and on the wholesale market the supplies from producers quickly ran out, so that by noon almost all *Nyevhe* on the wholesale market would have been sold out.

Derere Munda was the next important indigenous vegetable. Its supply was reported to be much lower than in previous seasons so that there were shortages on the market during the period of the interviews (Dec/January). During normal seasons, when rains start falling in November, *Derere Munda* is usually available in considerable amounts during January.

The supply of the each of the vegetables was reported to be erratic during the 2001/2002 season and the main reason given by traders was that there was a drought and most of them thought the quantities of traditional vegetables required by the market could not be reached.

Based on the two most important traditional vegetables the major sources of vegetables that were sold around Mutare were as follows.

Table 2: Major Sources of Tradition Vegetables Found in Mutare

Source Area	Distance to Mutare (km)	Percentage for traders Sourcing vegetables from area.
Zimunya	30-50	74
Mabiya	60-80	81
Dora	30-50	56
Chitakatira	30-50	66
Honde Valley	90-120	67
Nyanyadzi	90-120	77.7
Chiadzwa	80-100	74
Chitora	50-70	65

Most of the *Nyevhe* sold in the Markets in Mutare is sourced from Zimunya Mabiya, Dora and Chitakatira. The most frequently mentioned areas were Mabiya and Dora although they were not necessarily the nearest to the city, they seemed to have the most reliable supply.

Honde Valley and Nyanyadzi were furthest from the markets, but still managed to have some market share. The period during which vegetables from these areas were available tended to be limited probably due to transport considerations especially when other areas closer to town had the same products. Both areas tended to have traditional vegetable supplies earlier in the season, but as the season progressed, or once rain started in other areas; their contribution as sources diminished significantly.

The vegetable producers in these areas were the ones who took them to the market using public transport. The frequency of delivery depended on demand and what price they could offer. Since most of them depended on rain-fed cropping, largest volumes of traditional vegetables only became available about three to four weeks after the first effective rains. The 2001/2002 season started late in most cases and hence, there was a shortage of traditional vegetables on the market at the time that the interviews were carried out.

The traders had an area of production although they could also buy from others as a means to make up volumes? Traders and producers from areas that were further from the market tended to be active only when there was a shortage on the market that resulted in higher prices.

2. **PRODUCTION OF *CLEOME* AND *CORCHORUS* IN MANICALAND**

The producers of tradition vegetables in the areas of the province that were identified as sources were visited. The main purpose of those visits was to observe the production of *Cleome* and *Corchorus* in the different production areas. The visits were done during the growing season so that clear observations on general crop condition, pest and disease situations and cultural practices could be better understood. It was also important to appreciate the different factors that farmers looked at and worked within when they produced traditional vegetables for the Mutare market.

Crop Establishment

Cleome and *Corchorus* are established from seed and there appeared to be no other commonly practised way of propagating them.

Less than fifty percent of producers collected seed for *Corchorus* and *Cleome* for sowing. Most producers leave those plants that are allowed to seed to just shed their seed onto the soil. In almost all cases the vegetables are inter-cropped with some of the major food and cash crops such as maize, sunflower or small grains that are grown in rain-fed (dryland) conditions. When the seed heads shed the seed, it remains in the soil throughout the dry period. Land preparation (ploughing) is usually carried out in November. The turning of the soil during ploughing facilitates the placement of seed in the growing medium. When effective rains fall, which is when the farmers will sow the seed for the major crops(s) the traditional vegetables emerge within seven days of the effective rainfall. Farmers reported that inter cropping with groundnuts was avoided so as to reduce pest pressure.

Farmers who harvest seed from selected plants usually do it in February to March. As plants grow, the larger ones that are not too close to the plants of the main crop are left to seed. The pods on the lower one-third of the seed-head are reaped and then put out to dry. They are then threshed and the seed put in old jam jars or Khaki/brown envelopes for preservation. The plants that remain on the land are then destroyed, without allowing them to shed seed.

At land preparation time in November, the seed is broadcast onto the land just after ploughing. By harrowing, the seed is then incorporated into the soil. Seed emergence also occurs with the effective rains. Farmers, who chose seeds from plants tended to be those who sold more traditional vegetables and were also good farmers for all other crops such as the main food and cash crops.

It was found that because they are used as inter-crops, *Cleome* and *Corchorus* benefit from the application of both organic and inorganic nutrients. Farmers also reported that they found that the crops (vegetables) performed well, in terms of leaf volume where manure had been applied. They also reported that both *Cleome* and *Corchorus* produced better leaf sizes and production on the heavier textured soils was higher than on the lighter sandy loams. Nutrients that were commonly used on the land were compound fertiliser (7:14:7) –N.P.K. at a rate of 100-200kg per hectare and manure at about 2-5 kg per square metre. It appeared that the traditional vegetables did not benefit immediately from the inorganic fertiliser as this was sport applied by the main crop plant usually after

emergence. The organic nutrients though, were of benefit since they were broadcast during land preparation

CULTURAL PRACTICES

Under normal rainfall, and climatic factors, *Cleome* will be ready for harvesting in about three weeks from emergence. The plants will usually occur in a cluster due to the method of sowing. The taller plants within those clusters are the ones that are picked as a way of thinning them (whole plant harvesting). When removed, usually at about four to six leaf stage, they are either consumed or sent to market after the lower part of the stem bearing roots has been removed. The harvest that hits the market early usually fetches the best prices. The warmer areas that have access to water usually have rapid plant development and producers from Honde Valley and Nyanyadzi usually have that advantage.

The plants that remain after the initial thinning process have more room for them to branch. Harvesting of the tender, full leaves continues and this is also accompanied by thinning where clusters of plants are found to be too dense. Farmers generally aim to keep plants about 10-15 cm apart when they are less than 30 cm tall. In 70% of the cases farmers did not allow their plants to be more than about 40-50 cm tall as they were considered over-mature for the harvesting of leaves. Those plants that were allowed to get bigger were those meant for seeds. As plants got bigger they tended to compete more with the main crop, and removal meant that the main crop could develop better. Those plants that were allowed to remain would be about 30 cm away from the nearest plant of the main crop so that there is no competition.

The plants are in production i.e. leaf production for up to about two months from emergence. If some plants have pods shattering plants may emerge which are also used during the same season. But the second generation plants do not grow as vigorously due to shading by the main crop.

Branching is encouraged by trimming the main shoots during harvesting. The objective is to have as many new shoots as possible so as to have good production of leaf. *Corchorus* was a smaller plant that tended to branch less profusely than *Cleome*, and thus farmers had a tendency of removing the whole plant when harvesting.

PESTS & DISEASES

Cleome and *Corchorus* are attached by a number of pests and diseases. Farmers also avoided inter-cropping *Cleome* with groundnuts because they noted that there was an increase in the incidence of aphids on both the groundnuts and the *Cleome*.

Leaf eaters

Cleome is attacked by a number of leaf eating caterpillars that make holes on the tender leaves. The caterpillars have white longitudinal lines along their sides. They can be observed feeding during daylight. In some cases their presence was associated with weeding. When other weeds are removed, their presence on *Cleome* is higher. Farmers did not use any agro-chemicals for the caterpillars which when mature maybe about 20

mm long. Hand picking was the most commonly practised control. Other farmers also reported the use of wood ash and some plants that had been badly infected.

Bagrada (*Bagrada hilaris*) bugs.
These were commonly seen on land that had Bambara (*Voandzei subterranean*) nuts. Infestation was severe on some lands in the Mabiya area particularly during the dry period of the rainy season.

The main form of damage noted on the leaves was the "windowing," whereby small holes were made on the leaves, which left the leaf epidermis intact on one side. The younger softer leaves seemed more preferred by the pest, but in serve circumstances all the leaves were attacked.

No chemical control was reported. Severely attacked plants were often rouged. In some cases farmers reported that they avoided inter-cropping Bambara and groundnuts because of the associated increase in the bugs. Bagrada bugs were also a problem on *Corchorus* but to a lesser extent than *Cleome*.

Aphids were a lesser problem in both *Cleome* and *Corchorus*. The common black aphid usually seen on groundnuts and bambara nuts infected the traditional vegetables when they were grown in close proximity to the legumes.

Diseases
Some white fungal growth that appeared to be powdery mildew occurred on the leaves of some of the plants that were allowed to remain so that seed could be collected from them. The incidence appeared to be limited to the older leaves that were over–mature for human consumption

As in the case with pests, there were no chemical control measures applied. Farmers did not appear worried about the disease because the leaves were no longer desirable. The symptoms also appeared to be more prevalent in the green than on the purple cultivar.

NATURAL ENEMIES

Associated with the pests on the crops were natural enemies. The lady bird beetle larvae were most common particularly where there were many aphids.

On some *Corchorus* plants, *Syriphids* were also observed, but to a much lower extent than the lady bird beetle.

HARVESTING & POST HARVEST HANDLING

In both *Cleome* and *Corchorus*, the harvested part is the leaf. Farmers aim to harvest those leaves that are fully expanded but are still soft and tender. Harvesting usually commences about three weeks after emergence. Initially, harvesting involves the removal of the whole plant as it is also a thinning process. The removed plants are then trimmed of roots before they are used.

For the more mature plants, harvesting involves pinching off the whole leaf. Over mature leaves are pruned. The tender leaves are preferred by the market and these are bundled for wholesale by producers. The number of leaves depends on size, but most growers aim to have a bundle that works out to about 200-300 grams. Availability also determines the size of the bundle.

Harvesting is done usually in the morning when the leaves are fully turgid. If they are destined for a distant market, then it may be done late in the afternoon. Once harvested the leaves are left in a shade, where it's cool. Sorting may be carried out at this stage, so that the bundles that one made are uniform. Some farmers may also sort to ensure that they separate the purple from he green variety of *Cleome*.

If the leaves are being transported to a distant market, then they are put in a basket, or a Hessian piece that is tied so as to hold the leaves together without causing too much squashing and bruising.

3. **SEED COLLECTION AND PROCESSING**

The collection of seed by farmers starts in the field. Those plants that are bigger with large leaves and are generally free from pests are left to flower so that from the resultant pods, seeds will be collected. Most seed is collected from plants in January/February depending on the nature of the rainy season. The selection of plants that are to be used for seed tends to favour those plants that either geminate late or are slow growers so that they are not harvested for consumption early in the season. The plants that are desirable for seed are harvested (pruned) so that they have many branches and hence many seed heads.

The bottom 4-6 pods are picked when they are turning a light brown from the green colour. Farmers reported that at that stage, the seeds would have developed fully. Farmers do not allow the pods to dry as seed loss may occur due to shattering. The bottom pods on the seed head are used as farmers have noted that seed from them tends to germinate better that the smaller seed that is produced by the later pods.

When harvested the pods are put out in the sun to dry quickly. Old newspapers and such materials that may hold seed when the pods shatter as they dry are used. When the pods are completely dry, usually after about two to three days, they are squeezed so that all the remaining seeds in the pod is released. The seeds are then cleaned by blowing out all the woody foreign material. The seed is then put in paper bags and put in a grain store so that they maybe used at the commencement of the next season. Other farmers reported that they place the seed in used glass jam jars that have a screw top that closes tightly. An even smaller number reported that they stored *Cleome* seed mixed with small grain seed, because they had observed that emergence was better with such storage as compared to other forms. The seed is then broadcast at the time that sowing is carried out; i.e. at the on set of the rains. In all cases, farmers only stored their seed from one season to the next

VARIETIES

Cleome

More than sixty percent of the farmers interviewed recognised that there were two varieties of *Cleome*. About twenty percent (20%) were not sure whereas the remainder thought that there was only one *Cleome* variety.

The two varieties were observed in all areas that had the crop. The first variety had green leaf petioles and stems. The leaves were smaller and had a paler green colour. Plants of this variety tended to be more vigorous where soils were heavier, but where soils were lighter they were observed to be generally smaller than those with purple petioles and stems. For those farmers who actively marketed indigenous vegetables, they reported that consumers preferred the "green" *Cleome* than the other one with purple petioles and stems generally referred to as 'purple' *Cleome*.

The purple *Cleome* had more prominent veins on the leaves which were generally smaller than those of the green *Cleome*. The edges of the leaflets were also more prominently serrated than those of the green type. Farmers reported that the purple *Cleome* had a bitter taste as compared to the green one.

When subjected to the same pest pressure, such as Bagrada bugs, the green one was infested more than the purple one.

Because of their realisation that there were two varieties, Farmers in Mabiya separated the seed on collection. It did not appear that they avoided collecting seed from the purple variety. Collectors from most other areas mixed the seed room the varieties.