Workshop on Promoting the Use of Fresh and Processed Indigenous Vegetables in Zimbabwe

St Lucia Park, Organisational Training and Development Centre,

29-30 November, Harare, Zimbabwe.

PROGRAMME

Day 1: Wednesday 29 November

08:00 – 09:00	TEA and REGISTRATION	(*Joanne Manda)*
CHAIRPERSON:	Mr. N. Nenguwo	
RAPPORTEUR:	Mrs. J. Kwaramba	
09:00 – 09:15	Opening Remarks (*Dr. N. Gata (DR&SS))*	
09:15 – 09:45	Introduction to the project (*R..R.. Schippers)*	
09:45 – 10:30	Presentation of Survey Results (*B. Mvere, F.C. Ngwerume*) **Harare**	
10:30 – 11:00	**TEA**	
11:00 – 11:45	Presentation of Survey Results (*E. Gwenero, B. Dube*) Bulawayo	
11:45 – 12:30	Presentation of Survey Results (*E. Mutimutema, R.. Maambira*) Mutare	
12:30 – 01:30	**LUNCH**	
CHAIRPERSON:	Mr. F. Ngwerume	
RAPPORTEUR:	Ms. B. Dube	
01:30 – 01:50	Marketing Info. Constraints	(L. Mukwereza)
01:50 – 02:30	Overview of needs constraints and opportunities	*(P. Greenhalgh)*
02:30 – 03:00	Short paper Presentation (*V. Machakaire, UZ)*	
03:00 – 03:30	**TEA**	
03:30 – 05:00	Group Discussions	

Topics

- Indigenous vegetable crop improvement (*P. Greenhalgh)*
- Post harvest handling of IV's (*R.R. Schippers)*
- Marketing & Dissemination - opportunities and constraints (*F.C. Ngwerume)*

DAY 2: Thursday 30 November

CHAIRPERSON:	Mrs. T. Sibanda	
RAPPORTEUR:	Mr. K. Mariga	
08:30 – 08:45	Recap of previous day	*(P. Greenhalgh)*
08:45 - 10:30	Group Discussion Continuation	
10:30 – 11:00	**TEA**	
CHAIRPERSON:	Mr. R.R. Schippers	
11:00 – 01:00	Presentations from group discussions Plenary - Recommendations & Conclusions	
	Closing Remarks	
01:00 – 02:00	**LUNCH & DEPARTURE**	

TOWARDS A NEW RESEARCH AND SERVICES PARADIGM FOR DR & SS

By

Dr N. Gata

Mandate, Mission and Vision

A public sector organisation such as DR&SS, has to have a clearly defined mandate provided by the Government, a mission which satisfies its stakeholders and, a shared vision.

DR&SS Mandate

The mandate of the Department of Research and Specialist Services (DR&SS) is to conduct research and development, and provide services in all areas of agriculture except agriculture engineering, tobacco, sugarcane, pig and forestry research respectively. Research in these other areas are covered by sister departments which include DVS, AGRITEX and others such as TRB, ZSR, PIB and the Forestry Commission. Since the inception of the Department over 50 years ago, the mandate of DR&SS remained the same until after independence, when it was modified to include and emphasize the small scale farming sector. The mandate of DR&SS has subsequently also included stewardship of the agro-ecological environment, socio-economic research, (Indigenous knowledge Systems (IKS) and gender) and food technology research.

DR&SS Mission

The mission of DR&SS is to conduct food and market oriented research for the generation of information, knowledge, relevant technologies and the provision of high quality services that will effectively and efficiently improve agricultural production, income generation and sustainable management of resources, for all groups of farmers and other client users. DR&SS disseminates agricultural technology and information to farmers, extension services, agro-industry, decision makers and other stakeholders.

Strategy

The mission will be accomplished through the creation of conducive research policy environment strategies and through improved institutional capacity in DR&SS, efficient and sustainable use of all forms of resources and maximising linkages with stakeholders for effective and efficient development and dissemination of technologies' information and knowledge. The overall approach to research and development (R&D) by DR&SS needs to be both participatory and diagnostic to understand rural communities and, discern their technical knowledge and its underlying rationale.

The prime objective of obtaining people's participation is to enable the rural poor in their quest to initiate self reliant development, influence and manage change within their environment and achieve their own set of goals/objectives, using their own resource-use-strategies.

Agricultural research and development programmes' overall goal should be *to develop a total human being* whose broader human aspirations are to achieve a more fulfilling life:

- Satisfying the basic material and non material necessities to support life

(clean -water, nutritious food, clothing, shelter, hygiene, technologies, literacy etc).
- Social and political needs, *(the meeting of which liberates the human spirit.)*
- Fostering community spirit;

Research and development programmes must take into account the impact they will have on the achievement of these broader human goals. *It is now appreciated that there is no other area, where broader human goals are more important than in agricultural research and development.* Research emphasis must be placed on understanding the real needs of the poor and, sharper focus on the process of poverty elimination through approaches aimed at attacking poverty directly at its roots by eliminating its causes. Research therefore must aim at developing people-centred and environmentally friendly methods, that is, appropriate farmer participatory research and sustainable resource development methods. Research must embark on multidisciplinary team building as a process of planning, constraints analysis, priority setting, implementation, evaluation of project/programme formulation and, impact assessment.

The technical component should play a facilitation role in processes of innovation, creativity leadership and labour sharing. Farmers are trained, facilitated and motivated in the processes of goal setting, identifying their own constraints, setting their priorities, implementing their programmes and assessing the impact of those programmes.

It must however, be appreciated that agriculture is not isolated from industry and that the problems of the rural poor cannot all be solved entirely by improved agricultural methods. Inter-sectoral linkages are required.

The analysis of issues presented above calls for a new research paradigm for DR&SS, which aims at facilitating the envisaged development pathway.

New Research Paradigm for DR&SS

The new paradigm requires that researchers develop technologies that not only produce increased productivity but will at the same time arrest degradation, reclaim, rehabilitate, restore and enhance the environment. Agronomy will form the language of R&D and farmers will be partners in the process of research and development (R&D) right from needs analysis, priority setting through to programme planning, implementation and impact assessment. Farmers' knowledge will be recognised and, in partnership with farmers, researchers will work on research solutions that build on the existing farmers knowledge. This new research paradigm will integrate:

- Production and post harvest processing and utilisation;
- Sustainable environment and natural resource management and;
- Socio-economic and technological factors;
- Planning, management and information system (including M&E and Impact Assessment)

Research approaches needed will include:

Developing relevant databases and its analysis
Building a systems perspective
- Creating multidisciplinary teams for research and development
- Stewardship of resources (including natural resources - *"Cultivate and Take Care " - "Till and Tend"*
- Emphasizing socio-economic and research policy issues (including gender and IKS)
- Forming extended partnerships for research and services and;
    - Developing post harvest storage, processing, product development technologies and working out utilization options

Research and management tools:

- Setting relevant research priorities for the dual agriculture of Zimbabwe
- Building capacity and capability
- Planning and implementing integrated, interdisciplinary farmer participatory research
- Developing sustainable resource management R&D tools
- Developing cost-effective and realistic solutions for the small-scale farming sector
- Developing management and socio-economic research methods
- Facilitating farmer participation and
- Creating better information systems.

Organisational changes:

- Creating conducive organisational policy environment
- Developing a medium and long term research policy and strategy.
- Seeing up cross - sectional planning, management and information systems
- Integrated, multidisciplinary and farmer participatory R&D research Programmes
- Gender, IKS and stewardship of resources policies, strategies and programmes
- Forging intra-and inter-institutional links and partnerships and;
- Strengthening Research-Extension/Training and Farmer linkages
- Implementing these appropriate structural and functional changes

INDIGENOUS VEGETABLES WORKSHOP HARARE

Introduction

By

Rudy Schippers

During previous centuries, most people in Africa, including Zimbabweans depended fully on food collected from the wild. At the time when people were still hunting and gathering, proteins were partly derived from fish, birds and other animals and to a significant extent from the consumption of young leaves from trees and under-storey vegetation. People were also collecting a range of wild fruit species. The diversity was considerable when we now know that there are about 3000 plant species in Africa that could be consumed in one form or another and out of these there are about 850 vegetables. At present some 80 different African vegetable species are being cultivated to some extent, out of which 25 are important in more than five countries each. In Zimbabwe, people are known to use about 40 different indigenous vegetable species at present. In the past, the proportion of micro-nutrients in the diet was considerably higher than that seen in today's food which is rich in starch. As a consequence, elderly people perceive that people used to be stronger and healthier than the present population.

Since the introduction of maize, pumpkins, cassava, potatoes, cabbages and other crops, people in Zimbabwe have changed their diet in such a way that only a few of the old traditional crops are currently used. This story could be repeated for almost every country in Africa. Admittedly, there are only few crops with a truly African origin, which play a significant role in the world's food supply. Amongst these are the West African oil palm, the world's number one source of vegetable oil, and the cowpea. Other crops include the melon and the watermelon as well as okra and some cereal crops such as sorghum and millets. This picture is certainly not characteristic for Africa only. In the USA for instance, we find that the only indigenous food crop of importance that is currently used is the sunflower whereas Australia depends for 100% on introduced food crops. Most major crops found in Africa originate from South America and to a lesser extent from Asia with only a few from Europe such as the cabbage group.

There appears to be a phenomenon whereby a domestication process usually occurs outside the region of origin since people do not see the need to cultivate a crop that could easily be collected from the wild. As a result, people in south Asia use several African species that are not or only sparingly used as a vegetable in Africa. Some examples are the bottlegourd as a vegetable, the bittergourd and the water spinach.

The only food crop of real significance known to occur wild in Zimbabwe is the watermelon with small, rather bitter fruit. There are also a number of rootcrops and crops used for their oil that were used by people in the past and some of these are still being collected for consumption. Presently, people collect many wild fruits and some vegetables from the wild, in particular leafy vegetables. Leafy vegetables are a rich source of iron, calcium and other minerals and contain considerably more minerals and micro-nutrients than cabbages, lettuce and other exotic vegetables. A further point is that many indigenous vegetables have a medicinal value; they were initially used more as a medicine than as a condiment to supplement other food items.

The present project wishes to raise the profile of indigenous vegetables from food for the poor to food for strong and healthy people and support their improvement and subsequent promotion. There have been a number of recent initiatives in several African countries to promote the use of African vegetables and we can now witness a clear reversal away from exotic crops and back to indigenous crops. A survey carried out by CTDT clearly showed that also in Zimbabwe, people actually like to eat local vegetables such as the spiderplant *nyevhe* or *ulude* and the mallow *derere nyenye.* These vegetables, and others that we will hear more about today, play an important role for both subsistence and income generation in rural areas.

However, these crops are also becoming more important in urban areas where people can not always afford expensive vegetables, especially during the rainy season when there are few exotic crops and plenty of indigenous ones.

People who migrated to the cities, looking for work, often get stranded and some of these start to grow cheap vegetables. Studies have shown that people, who are producing amaranth in and around Dar es Salam in Tanzania, can hardly cope with the demand. In Accra, Ghana, new immigrants from the north of that country brought their own vegetables along such as the roselle and kenaf and also these new farmers discovered a big market for their produce. The above demonstrates that a similar picture might well arise in Zimbabwe's big cities with new crops like *nyevhe* or *derere.*

One more interesting crop from Zimbabwe is the wild cucumber, *Cucumis metuliferus* or *magaka.* This species was recently brought to Australia and New Zealand and is now becoming an expensive fruity vegetable in Japan, the USA and Europe. This looks like a lost opportunity for Zimbabwe but there are recent reports that new strains were found in Bulawayo without spines. This species is tolerant to many diseases and has a very long shelf life and would therefore be very much worth further investigation and possibly domestication.

There are therefore several indications that a new indigenous vegetables initiative could be successful. Accordingly, DFID's Crop Post Harvest Programme accepted NRI's proposal to start a new project**:** *"Improving the livelihoods of peri-urban vegetable growers through market promotion of fresh and processed indigenous vegetables".*
As the title indicates, the project will assist people in urban and peri-urban areas and will also promote the development and use of indigenous vegetables, both in fresh form and in processed form.

The project will use a phased approach whereby the first phase will provide baseline data and investigate the major constraints in production and marketing of both fresh and processed vegetables. The second phase of the project will make a contribution to the solution of problems identified in phase 1 and promote and disseminate the projects' outputs.
We are here today to listen to the presentations from staff who worked in three big cities: Harare, Bulawayo and Mutare. The workshop participants will be asked to make a recommendation for follow-up activities, if any, and to make a choice between these cities since there are only enough funds to cover two cities.

A guideline for these follow-up activities can be given by listing the project activities as mentioned in the project memorandum:

Phase 1.
Output 1. Characterisation of indigenous vegetable commodity systems and assessment of market potential for fresh and processed vegetables.

Indigenous vegetables are commonly produced or collected from the wild in rural areas and earlier surveys by CTDT indicated that approximately 75% of Zimbabwe's people eat them when available. No such information is available from the major cities but experience from other places in Africa indicates that many people would like to eat traditional food despite the social stigma attached to it as "poor man's food". This proposal will select case study areas that encompass representative cultivation and marketing systems and processing technologies found in the peri-urban production system of one or two cities in Zimbabwe. Groups of farmers including women's groups and co-operatives will be identified for collaborative work.

1.1 Initial planning meeting to draw together current wisdom and key players in the sector. Objectives: to bring all involved with the project up to speed and to identify gaps in knowledge about the sector, which will help to inform the design of needs assessment and the development of the project.

1.2 Review of relevant literature and project documentation on the IV sector in Zimbabwe.

1.3 Survey to identify existing and potential markets for fresh and processed vegetables in 3 cities. Out of these, depending on the information obtained, one or two cities will be proposed for further work. Information collected will be on a range of crops and products. Those which are commonly grown by poorer households and which demonstrate potential for increased marketing will be selected for subsequent activities. Surveys conducted at village and market level to identify participants and working partners in the production, processing and marketing of IVs. This will inform the needs assessment exercise by identifying potential respondents for more in-depth appraisal exercises.

1.4 *Characterisation of marketing system for IVs.* This survey will identify those IVs (fresh and processed) which are commonly traded and their marketing channels. The survey, combined with secondary sources of information, will determine seasonal changes in marketing pattern with respect to IV types, volumes of trade, price and quality. Changes in seasonal prices of commodity will be used to establish whether there are potential returns to storage. *Consumer preferences:* For consumers purchasing IVs in the market, the survey will identify those factors influencing their purchasing decision-making. These are likely to include physical appearance, quality, uniformity, taste, cost and perceived nutritional benefit. Interviews with consumers will reveal how IVs rate with respect to these criteria, and how different IVs relate to alternative, competing products, such as exotic vegetables. Analysis of this information will allow an assessment of market demand for different IVs.

1.5 Existing production and post-harvest practices of vegetable growers will be investigated in the selected areas using informal survey techniques and the major constraints identified. These will be compared with information on these crops available from other countries in Africa.

1.6 Needs assessment: production, processing and marketing constraints identified using discussion/PRAs with participants identified in 1.3.

1.7 Conduct a workshop for stakeholders to present the findings of the first phase, the various surveys and investigations. The workshop participants will define the problem areas more critically and decide on the way forward. It will also make a choice of cities where the project will operate.

PHASE 2.

Output 2. Varieties of specific vegetable crops with improved marketability selected and bred.

For many indigenous vegetables there are no cultivars available either in Zimbabwe or elsewhere in Africa. The landraces currently used by farmers tend to have very heterogeneous properties. There is therefore great potential to improve both the yield and the quality of fresh and processed produce through improvement of germplasm. The project will make selections from germplasm available in the region and facilitate the development of improved varieties as is feasible within the lifetime of this project.

2.1. For those indigenous crops identified with the greatest importance, local knowledge will be collated and local germplasm collected.

2.2 For each selected crop participatory on-farm evaluations will be undertaken to evaluate existing landraces. The evaluation will be based on production and post-harvest characteristics important for improved marketability and will address issues identified at 1.7.

2.3 The most promising landraces will be screened and purified. Seed of the new varieties will be multiplied to the commercial seed stage and disseminated (see 4.2).

2.4. The same varieties identified in 2.2. will be used to initiate a breeding programme in collaboration with HRC, who have already shown a commitment to do this.

Output 3. Appropriate processing and packaging techniques identified and optimised.

The rains in Zimbabwe usually come during the warm season whereas the cold weather coincides with the dry period. The season of high production occurs during the rainy season. It is at this time that farmers usually sun-dry their vegetables to secure their food requirements for the dry season and to develop market opportunities. Poor drying has been identified as a factor in producing a product of poor quality, prone to storage rots. However, appropriate technologies for forced drying are available.

3.1. Current processing techniques will be recorded and evaluated. Appropriate improved techniques for drying vegetables will be identified and tested in collaboration with selected farmers' groups. Participation of technology users to ensure the technology developed is appropriate. Of particular importance to women processors will be demands on workload, and there is a need to develop labour-saving technology. Financial analysis of all technologies will be carried out to assess the accessibility of technologies to the target group (poorer households). Use of local materials will be maximised to reduce costs.

3.2. New products appropriate to the market niches defined in Output 1 will be identified. These will be market tested, and evaluated as soon as is feasible, to allow modification in processing methods as necessary. It is envisaged that processing may include the drying of vegetables previously not extensively dried, mixed packs of dried vegetables, and processing involving cooking.

3.3. Packaging and storage methods for fresh and processed vegetables will be assessed for optimisation of quality as defined in activity 1.3. Critical control points in the processing system will be identified to ensure that potential food safety problems are avoided.

3.4. The economics of new products and their processing technology will be evaluated and the information used in refining the processing operations.

Output 4. Promotion and dissemination of project outputs

4.1 Appropriate means of dissemination will be developed jointly with AGRITEX and CTDT. We anticipate that these would include recommendations to the farming community by means of leaflets, extension manuals, video shows and demonstrations. The new information will further be disseminated through publications in relevant journals, reports and presentations through the media, including radio and television.

4.2 In order to disseminate the varieties identified and developed within Output 2 community seed banks of selected varieties will be established in two locations through CTDC.

4.3 A final workshop will be conducted for the research and extension services within Zimbabwe, describing the findings, successes and failures of the project.

Marketing Information Constraints for Smallholder Horticultural Farmers of Zimbabwe: Experiences in Evaluating Projects, Undertaking Marketing Research and Extension

by
L. Mukwereza
Department of Agritex, Ministry of Lands, Agriculture and Rural Resettlement.

SUMMARY
A significant proportion of smallholder farmers are deriving their livelihoods from horticulture. Almost all of them have been dissatisfied with the prices they get for their produce. Prices are reportedly low, fluctuate from day to day and vary so much between markets. Marketing conditions which have been noted to be less-than-transparent could partly explain the variability in market prices. This paper discusses some marketing interventions which are either underway or have been undertaken lately in some small holder farming areas of Zimbabwe. In the paper it is argued that much as information on prices is valued, farmers also appreciate receiving the wider **marketing information**. There is a strong need for farmers to diversify from traditional crops and more training on growing the existing and alternative crops is needed.

INTRODUCTION
The government of Zimbabwe with assistance of donors has been undertaking concerted efforts developing and rehabilitating small holder irrigation schemes in their quest to improve food security and alleviate poverty amongst communal farmers. Of the over 154,000 hectares developed for irrigation, less than 20,000 hectares are in small holder farming areas (Government of Zimbabwe, 1997). An even greater area whose size is unknown is under *vlei* gardens. By far the predominant crops at irrigation schemes and gardens are horticultural with the major markets being Mbare Musika and Bulawayo. Most documented work is for farmers selling through Mbare and most experiences often quoted are based on that market.
van Santen (1996) estimates that between 280,000 and 350,000 tonnes of produce pass through Mbare Musika. Gordon (1997) estimates that smallholders account for around 40% of such an intake. Recent policy statements by the government of Zimbabwe (e.g. the Zimbabwe Agricultural Policy Framework; 1995 – 2020) place a lot of emphasis on commercialising the small holder farming sector. Invariably, little consideration has been made of marketing in undertaking feasibility studies; marketing has been considered as an afterthought. Whilst farmers seem to have reasonable access to agronomic advice, marketing information seems to be rather elusive. The Ministry of Lands and Agriculture undertook an extensive consultative process with its stakeholders and came up with a Core Functional Analysis Report. In that report, stakeholders noted the provision of marketing information as an important "public good" they expected Agritex to continue providing.

This paper defines market- and marketing information and places them in the context of Zimbabwe's markets. The paper briefly catalogues some of the marketing information constraints that are pervasive to small holder farmers. Some suggestions and current efforts in overcoming some of the constraints are discussed.

MARKETING INFORMATION DEFINED
Shepherd (1997) distinguishes between market information and marketing information noting that the former refers to price data and sometimes quantities. The latter refers to a much wider concept and could include details on potential market channels, payment arrangements and various marketing services in addition to market information. Undoubtedly, most information

available to small holder farmers in Zimbabwe is market information. Such accessible information should be interpreted with caution as it is current rather than historical. Current price information is gathered and disseminated on a regular basis for specific markets unlike historical information which is compiled over a period of time and analysed to inform decisions about planting, storage, government planning and early warning (Poulton et al, 2000). With horticultural produce being readily perishable and producers competing fiercely amongst each other in servicing given markets, prices reported on a given day may not necessarily be repeated on the next day. Prices also fluctuate over time and differ between markets. As an example, the price of tomatoes per box were as high as $300 in May, $100 in August and currently stand at $50 at Mbare. On 11 November 2000, tomato prices per box were $40, 400, 175, 50 and 55 at Marondera, Chinhoyi, Bulawayo, Mbare and Chitungwiza markets respectively (Agritex Produce Price Report, Nov 2000). Agritex staff and farmers have expressed a need for more historical market information to also be provided in addition to the current market information. More efforts are needed to build capacity amongst them (extension staff, farmers) to analyse time series market data.

CATEGORISING MARKETS

On the basis of when produce arrives at the market and the trading hours of the latter, Shepherd (1997) comes up with two types of markets:

a) those where deliveries are made throughout the day; price variability is within narrow ranges on any day and even between days,
b) those where produce arrives before a market opens with the trading hours being restricted. At such markets, prices could start off being high only to decline towards closing times as traders offload their remaining produce.

Farmers' markets (wholesale) such as Mbare and Marondera fit into category b) above. In times of gluts, a number of farmers have been disappointed by the prices at which their produce was cleared; in some instances farmers could not even cover transport costs. Price fluctuations are accentuated by the limited range of horticultural crops grown by farmers at any given time (tomato, rape, cabbage, onion).

MARKETING INFORMATION CONSTRAINTS

Amongst the initiatives Agritex has undertaken to alleviate marketing information constraints include setting up the marketing desk, the appointment of marketing officers (albeit limited) and the undertaking of specific studies. The more recent of such studies include Marketing Information Constraints Project (Poulton et al, 2000), Participatory Marketing Problem Analysis (Sithole, 2000) and a Marketing Study for Musikavanhu and Nyanyadzi South Irrigation Schemes (Sanyatwe and Chaonwa, 2000).

Below are some of the significant constraints identified and where applicable, suggestions of overcoming them are discussed. It should be mentioned that Agritex staff already had inferences on the impact of some of the constraints. The inquiries confirmed the significance of some of them and explored with farmers how they can be ameliorated.

Farmers grow a narrow range of crops at given times resulting in flooding of markets thus depressing prices. Continuous maize/ wheat cropping at irrigation schemes has been linked to increased incidences of maize streak virus (Sanyatwe and Chaonwa, 2000). There is a need for farmers to stagger plantings, diversify more and exploit their innate environmental advantages where possible. On the latter point, farmers in frost-free areas are being advised to push their crop onto the market at a time when it is not possible to do so from other areas.

Farmers need to be exposed to alternative market outlets. Under the Marketing Information Constraints project which worked with nine groups of farmers in Mudzi (4) and Mutoko (5), an average of two farmers were taken on a tour of wholesale markets in Harare to expose

them to alternatives to Mbare. The feedback the representatives gave to their colleagues has helped in dispelling mistrust and misconceptions which small holder farmers and wholesalers had towards each other. Four groups of farmers from Ngondoma (Kwekwe) and Ngezi-Mamina (Kadoma) irrigation schemes numbering altogether 278 were sent on *Look and Learn* tours to successful irrigation schemes in Midlands and Mashonaland East provinces (Sithole, 2000). Through such *Look and Learn Tours,* farmers have been advised on marketing arrangements (especially contracts), alternative crops they could grow as well as the ideal times for delivery to get higher prices. Poulton et al (2000) report of all farmers who sold their produce through wholesalers to have realised considerably higher returns than they could had they sold through Mbare. Disadvantages of independent wholesalers, however, are that payments are made by cheque and not immediately on delivery. In some instances, transport problems for smallholder farmers have been magnified when delivery is made to independent wholesalers. Transporters are reluctant to take produce to independent wholesalers as the transfer process (weighing, inspection, grading, pricing, etc) takes longer and not necessarily all the produce will be bought.

Farmers have limited access to market information. Weekly, Agritex collects and compiles market information and disseminates the same through the radio[1] and its network of staff. Current market information often gets to farmers late and does not specify the prices which farmers could receive for their produce. Some farmers (especially from Mutoko, Mudzi, Chinamora, Seke) get up-to-date price information from colleagues on their return from visiting markets. Farmers feel that market information should continue to be provided through existing and other means. More efforts are however required in providing information on alternative crops and market opportunities (Poulton et al, 2000). A group of farmers in Mudzi noted that they found the market information they were getting from Agritex/ VeCo useful in negotiating and setting prices for on-farm sales.

More training on marketing for both farmers and extension staff is required, particularly to cover such aspects as grading, packaging, price setting, contract negotiation and market assessment. Price setting is particularly critical – Sanyatwe and Chaonwa (2000) report of farmers setting prices of dry beans on the basis of "*cost of living"* mainly rather than considering cost of production and supply and demand conditions for that commodity. Farmers also need to be enlightened that prices at farm gate and at the market (often in the city) have to differ by at least the magnitude of transport costs. Agritex is intensifying the training of extension staff and farmers in marketing and the agronomic requirements of alternative crops.

Horticulture is a high input, high output undertaking. Most small holder farmers make compromises with input use due to inadequate resources. Seed is particularly scarce and thus expensive. For tomatoes, a number of farmers select their best fruit for seed for subsequent crops. Yields are invariably lower than in commercial areas and quality is also poorer. In Mudzi and Mutoko districts, Agritex/ VeCo facilitated linkages between farmers and a major horticultural seed house. Work is also continuing on assessing the efficacy of traditional pest control remedies with a view of reducing costs of production as well as minimising the exposure of farmers to hazardous substances.

Small holder farmers have been noted to realise lower margins from their produce due to inadequate grading. Wholesalers only confirm grades of horticultural crops after grading at their premises usually in the absence of farmers, much to the consternation of the latter. As part of activities under the Marketing Information Constraints project, efforts were made to

[1] Once a week, ZBC broadcasts a Business Brief programme and also carries market prices. The programme is presented on Radio 4 whose audience is limited. Produce prices are slotted for five or so minutes between 16:10 and 17:00 on a Friday; most farmers will still be in their fields at this time.

enlighten farmers on the importance of grading and grading standards used on major horticultural crops were explained and distributed to farmers.

Transport for both inputs and outputs has been a perennial problem for small holder farmers. Inputs are bought largely as individuals and transported using rural buses. Farmers are being encouraged to procure inputs as groups and thus benefit through quantity discounts and other concessions such as free delivery. Problems with group marketing of produce remain however. Following a series of fuel price increases, bus fares (for both people and produce) have significantly gone up thus reducing the farmers' margins. In Mudzi, farmers noted that when produce prices are low, they assign a few of their members to take produce to the market so as to save on bus fares.

Contracts can be viewed as a mechanism for securing a market and guaranteeing some price for produce. A number of farmers commit themselves to contracts without quite understanding the legal implications of doing so. A number of farmers renege on prior commitments though most wholesalers have been noted to be very "considerate"[2]. Higher prices and more convenient payment arrangements entice farmers to side-market, usually with their better crop. Farmers are strongly encouraged to approach their local extension officer for advice before committing themselves to contracts.

Small holder farmers have not adequately advertised/ promoted their products out of ignorance. A number of groups have heeded the advice to put up billboards along roads identifying themselves and specifying the range of commodities in season.

Infrastructure in communal farming areas is in a poor state and is largely inadequate. Poor roads slow transportation of produce, market participants and mail[3]. Few smallholder farmers have consistent access to telephone services and those with access, costs are rather prohibitive limiting its use as a mode of transmitting marketing information. Agritex has since included farmers' groups (through Agricultural Development Projects supported by VeCo) on its mailing lists with produce prices being sent to Mudzi, Mutoko, UMP and Chikomba by electronic mail every Friday.

CONCLUSION

With more irrigation development in communal areas, small holder farmers will participate even more in horticulture production. Marketing information constraints, which are already significant will most likely intensify. A number of initiatives by the government, NGO's, private companies and farmers to alleviate marketing information constraints are underway. Such initiatives need to be nurtured and expanded to ensure that efforts of commercialising small holder farming are sustained.

[2] It has been noted that most contracts are in favour of buyers (who draw them up), farmers are given little time to study and understand them and almost all of them are in English (Sanyatwe and Chaonwa, 2000).
[3] In Mudzi, produce prices are dispatched to the various groups by the Horticultural Development Association using the postal system.

OVERVIEW OF NEEDS, CONSTRAINTS AND OPPORTUNITIES REGARDING THE PRODUCTION, MARKETING AND CONSUMPTION OF INDIGENOUS VEGETABLE CROPS IN THE URBAN AND PERI URBAN AREAS OF ZIMBABWE

Peter Greenhalgh - NRI

INTRODUCTION

The objective of this paper is to provide an overview of the needs, constraints and opportunities identified in the three socio-economic surveys undertaken on the production, marketing, consumption and processing of indigenous vegetables (IVs) in Bulawayo, Harare and Mutare. However before discussing these needs, constraints and opportunities I would like to raise a number of points and queries with regard to the surveys, which should be borne in mind during the discussions. These include:

How representative were the interviews? Because of various constraints – fuel shortages, delays in implementing the work, cyclones, financial constraints, lack of secondary data, inability and or reluctance of interviewees to provide information – it was not possible to undertake the work as planned or gather detailed quantifiable data as hoped. As a result, we only have very limited data on the volumes of trade, the trends in prices/quantities offered or quality aspects of IV production and marketing. Therefore, the needs and constraints identified may not be complete and this overview is unlikely to be exhaustive – and some might argue that it is not representative.

To what extent were the needs and constraints identified actually raised during the discussions or rather represent the researcher's interpretations and views?

Understandably the work tended to concentrate on the supply side of IVs - there was little analysis of demand side aspects. Again we have very little data on competing products, especially competing products, as well as the prioritisation of factors affecting consumers purchasing decisions – i.e. what is the relative importance of price, taste, physical appearance, uniformity, quality, perceived nutritional and medicinal factors.

A word of caution: one should not just assume that there is a massive market for IVs out there, which is waiting to be satisfied. There are many examples of supplies of agricultural products being expanded in the belief that consumers are just waiting to buy. In reality what has sometimes happened is that supply has been expanded too quickly – the excess supply has lead to a fall in prices and farmers have become very dissatisfied with the advice that has been provided. I would argue for a cautious expansion where detailed market demand data are not available.

Another aspect that needs to be borne in mind is that while identifying the various needs and constraints is important, it is equally important to be able to prioritise these needs and constraints in relation to what is achievable and can be undertaken within the relatively narrow confines of this project. For example, the transport of IVs from farm to market was identified as a major constraint. However, the project as currently formulated can do little to improve the transport facilities. It might be able to provide advice on preserving and packaging during transport but it is unlikely to be able to do another regarding the actual means or cost of transportation.

Another point that always needs to be borne in mind is the economics of any planned intervention. For example, it may be possible and desirable to improve the shelf life of IVs through interventions such as sophisticated dehydration techniques, refrigeration, cold storage

chains, vacuum packaging and so on but in the current situation it would be totally uneconomic. Similarly, while all-year round production of IVs may be desirable the ability to provide the necessary water resources may be beyond the reach of many, if not all, producers.

Finally, two points need to be stressed. First, the overall aim of project is to improve the livelihoods of peri-urban vegetable growers (i.e. not rural producers) through the production and market promotion of fresh and processed IVs. Second, other African countries are more advanced than Zimbabwe in production, marketing and research on IVs. Their experience should be used in assisting and guiding the Zimbabwe experience – the project's efforts should not be spent on re-inventing the wheel.

2. NEEDS AND CONSTRAINTS

2.1 Introduction

With these queries in mind I now want to outline the various needs and constraints that were identified. For ease of analysis these needs and constraints have been divided into five groups, although there is obviously a degree of overlap and interlinking. These needs and constraints relate to the production of IVs, post harvest constraints, marketing constraints, consumer related needs and lack of external support services.

2.2 Agronomy Related Needs

The needs and constraints relating to the production of IVs include the lack of seeds and planting materials, either no seeds are available or they are of poor quality; the lack of variety in planting materials available within each vegetable type; the seasonal nature of production and the need to increase the availability of both fresh and processed IVs during the year; the lack of technical knowledge and advice on the production of IVs with the need for production packages to be developed. Pest and diseases were cited as a problem in Bulawayo while labour shortages during harvesting also occurred in some regions.

The limited availability of reliable quality seed and seed sources was identified as one of the most limiting factors to increasing IV production. Farmers and traders want seeds available to enable a rise in output, off-season production to be undertaken and to facilitate the introduction of IVs to new areas. Currently most farmers rely on unimproved landraces, self retained seed and nature. There is a lack of distinct varieties within each vegetable group, and if these could be developed it would not only enable production in different seasons but also increase consumer choice. Particular IVs that were mentioned included spider plant, Jew's Mallow, cowpea and okra.

Another constraint was that no information was available on IV production techniques. The extension services do not appear to have the information on such aspects as planting, optimum spacing, weeding, use of fertilisers and manure, yield and water requirements.

A need identified by most industry stakeholders was to extend the production period and ideally have year round availability. The seasonal supply of IVs affect their trade. IVs are grown under rainfed conditions and hence heavily seasonal and affected by drought. Currently IVs cannot be grown on a year-round basis because there were no special varieties suited for out-of-season production and there were no agronomic packages for IVs cultivation, whether for on-season or for off-season. However, there must be some doubt as to whether IVs can be viably grown on a year round basis using better planting materials and irrigation techniques.

If more IVs could be grown on a year round basis this should not only increase the supply of fresh IVs and lower the price and increase demand but also would provide an alternative cheap but nutritious relish as well as a steady income flow. Prices also fluctuate as more

produce becomes available, hence the desire for some farmers to produce out of season to enable them to sell at a much higher price. Prices seem to be dependent on market forces.

Another constraint affecting IVs are pests and diseases, and those identified include aphids in cowpea, leaf eaters in *iDelele* and *Ulude,* bugs in gourds and powdery mildew disease in pumpkin and squash leaves.

2.3 Post-Harvest Related Needs and Constraints (Processing, Packaging and Storage)

Post harvest constraints and needs include the very short shelf life, which leads to most IVs deteriorating very quickly after harvesting; the need to reduce losses and increase availability by processing of IVs, although inadequate sunshine and rains during the harvesting period limits the ability to sun dry. Other constraints include the absence of/or inappropriate packaging, and hence the need to improve packaging methods. Other constraints are the non-existent or poor storage facilities, especially at markets; and the need to improve quality both with regard to a loss of flavour and the poor quality of processed products.

Most IVs have a very short shelf life and deteriorate very quickly in quality and flavour, and are reported to last at best for only 3 days. This creates problems for all in the marketing chain whether it is producers, traders or consumers. Handling practices and techniques need to be developed to minimise these problems. However, in the short term sophisticated dehydration techniques, refrigeration, cold storage are most unlikely to be viable.

As regards processing, consumers showed a very clear preference for fresh IVs compared to dried ones. Various derogatory comments were made about dried or processed IVs; these included that they were dirty, had a bad odour, their nutritional value was low and their colour was unattractive. There is still a debate as to what extent these are due to inadequate processing techniques and could be overcome. Nevertheless, since fresh IVs are only available for a short period and are likely to remain so for some time then one major technique of increasing availability is drying. Drying is hampered by the fact that it has to be undertaken during the wet summer season and if undertaken poorly can lead to deterioration. Thus there is a need to adapt or develop cheap, improved and easy-to-adopt post harvest technologies for IVs. These should include processing and storage technologies. It should be possible to develop solar drying of IVs to provide increased availability and reduce losses. Alternative products could be developed both for domestic consumption and export. The surveys showed informal exports of dried cowpea and spider flower leaves to neighbouring countries.

Another identified need was the absence of/or inappropriate packaging and the need to develop appropriate, attractive but cheap packaging containers for both fresh and processed IVs. This should facilitate increased consumption. Other than okra, fresh IVs are not packaged other than wrapping in newspaper at the point of retail sale. However, are there any viable packaging methods that can be adopted to improve shelf life, quality and appearance of IVs? Similarly, appropriate packaging of processed IVs needs to be developed and improved. Currently dried IVs are packed in sacks and if humidity is not controlled then moulds and rots can develop, thus lowering quality and marketability.

Storage facilities were either non-existent or very poor, and this was particularly a problem at the market. In addition, there are problems in the storage of dried/processed IVs. Other related needs include the development of methods to improve quality and the grading of IVs. Most IV producers and traders believe that quality and size plays an important role in marketing and in the level of prices obtained.

2.4 Marketing Related Needs

Marketing constraints and needs identified include the lack of marketing data; the cost and unreliability of public transport; the limited seasonal availability of IVs and problems at wholesale markets

.

There is a severe lack of marketing data on sales, weights and prices. Such data would be of assistance not only to producers, traders and consumers but also would assist planners. Most farmers, traders and consumers appeared to be unable (or unwilling?) to quantify in terms of how many buy/sell and at what price, as well as the "profits" they make. Would it be possible for Agritex to assist in the collection and analysis of these data?

The cost and unreliability of transport was identified as a major constraint to the development of IV production and markets. Public transport, which is invariably used to transport IVs, is unreliable, especially during the rain season, which is peak of IV production.
The seasonal nature of IVs supplies affects the business of suppliers and traders and limits their ability to specialise.

A variety of problems were highlighted regarding the operation of wholesale markets. These included a lack of hygiene and storage space, security, lack of protection from rain, illegal vending and theft.

Nevertheless, while representations can be made, solutions to these constraints are mainly dependent upon actions by the relevant authorities.

2.5 Consumer Related Needs

Identified consumer related needs include the need for year-round availability; concern over the state and taste of dried products; the need for improvements in packaging; the lack of information on the use of IVs (e.g. recipes, nutritional and medicinal qualities); the need for promotion of encouragement amongst different groups especially children

Consumers would appreciate having all vegetable types available throughout the year. Availability of fresh traditional vegetables is limited to the wet season only (two to three months for *Cleome gynandra* and *Corchorus* species). There was also concern over the state and taste of dried products, and while in the main, consumers preferred fresh IVs most consumers preferred dried cowpea leaves to fresh ones. Also there was a preference for processed *Ulude* and *iNdumba.* Many consumers were concerned over the state and taste of some dried products. The nutritional value of processed IVs was regarded as low and colour was seen as unattractive.

Currently people rely on old methods passed on to them by their grand parents and processing methods need to be investigated and improved upon. One area for improvement is packaging, where as previously mentioned consumers expressed a desire for improvements, even a suggestion of vacuum packaging of IVs.

There is a general lack of information on the use of IVs. The was identified for additional information on IVs, such as recipes, as well as data on nutritional and medicinal qualities.
In addition the use of IVs, especially among different groups, including children, should be promoted. Year round availability coupled with promotion and encouragement of consumption from a younger age would result in increased utilisation.

2.6 External Support Services

The involvement of external support services in IVs is lacking or severely restricted. Other than the work of Comitech there is little extension work. In Bulawayo there was no external institutional involvement or assistance on IVs, while in Harare external assistance is very limited, with a few farmers in contact with CTDT. Most producers are unaware of the simple drying facilities and nutritional advantages of IVs. In Mutare there is a strong reliance on oral traditions. The need for extension information on such aspects as cultivation, seed production and recipes was raised quite strongly.

2.7 Summary of various R&D and other needs

From the above discussions a wide variety of research and development needs have been identified:

- At the agronomic level three particular needs were identified including an investigation of the general agronomy of IVs, off-season production of IVs, and the development of and introduction of new varieties of IVs. This could be achieved through germplasm enhancement and improvement of current processing techniques, thereby raising the quality and improving food safety aspects.
- At post harvest level there is a need to adapt or develop cheap, improved and easy-to-adopt post harvest technologies for IVs. These should include processing, packaging and storage technologies.
- At the marketing level there is a need to improve data, transport and the situation at the wholesale markets
- At the consumer level there is a need to extend availability, quality, packaging, and knowledge of use and benefits of IVs
- As regards external support there is a need to increase the involvement of various existing organisations – e.g. agronomic research, extension, processing and marketing. Also there is a need to use existing knowledge obtained elsewhere in Africa.

3. OPPORTUNITIES

Current economic hardships within Zimbabwe provide opportunities for an expansion of IV production to satisfy food needs. Moreover, there is anecdotal evidence to suggest that there is a trend to revert back to traditional food crops and reduce dependence on exotic crops. This is certainly the case in other African countries. This creates a potential to commercialise some of the main IVs, which are currently used mainly for subsistence in rural areas in either fresh or processed form.

The development of IVs would have several benefits including the widening of the range of foods available to all sectors of the population as well as assisting farmers/producers in diversifying their production base, thus improving incomes and increasing food security. In addition, IVs appear to have medicinal uses that will be of benefit to consumers as well as better nutritional qualities, although this does not appear to have been scientifically proven.

Another possibility is the development of small-scale food processing activities. This can take a variety of forms including the processing/drying of fresh vegetables, the development of new food products incorporating IVs, the development of street food production in urban areas. For example, recent analysis of street foods in Accra, Ghana suggest that the value of supplying traditional foods including IVs for consumption in urban areas by office workers, migrant labourers, school children and even the unemployed is valued in excess of $100 million.

Finally it is worth remembering that a major objective of DFID and other donors is to reduce poverty by enhancing capacity in the renewable natural resources sector. These activities are invariably aimed at improving the livelihoods of the poor in environmentally sustainable

ways. This is why IVs are often seen as attractive projects to fund. The evidence collected so far on IVs in Africa shows that IVs are grown on a small scale with limited inputs and provides a major source of income for the poorest people. They do not require large capital investments or working capital to provide inputs for production or to trade IVs. Their production systems are both short and very labour intensive. In peri-urban areas where a substantial proportion of food requirements for cities is being produced, many producers are either women or middle aged or elderly people who are unable to find suitable employment in the town. IVs can be important commodities for poor households because their prices are relatively affordable compared with other food items.

SOCIO-ECONOMIC SURVEY OBJECTIVES

(As presented to Training Workshop January 2000)

The objective is to collect information on a range of indigenous vegetables (IVs) and products. Definition of IVs - originate in Africa (e.g. spiderplant, okra, cowpea leaves, Ethiopian kale and Jew's mallow). Exotic vegetables not included (e.g. mange tout, carrots, cauliflower, cabbages, onions, potatoes, corn and asparagus leaves etc). Differentiate between traditional and exotic vegetables.

List of names in local languages will be prepared.

- Identify the types of fresh and processed IV available in Harare, Bulawayo and Mutare
- Marketing channels by which they are traded.
- Determine seasonal changes in the demand, supply and marketing patterns of particular IVs, including volumes traded, price and quality.
- Relate quality characteristics to market value.
- Production and marketing costs collected and compared with some exotics.
- Seasonal price changes will be used to establish potential returns to storage.
- Production and marketing constraints will be identified
- Identify consumer preferences for important IVs e.g. physical appearance, quality, uniformity, taste, price and perceived nutritional benefit.
- How do IVs rate with respect to these criteria, and how do different IVs relate to alternative, competing products, such as exotic vegetables.
- Production and post-harvest practices of IV growers and the major constraints. Identify sources of seed, quality issues, storage and processing practices as well as any relevant social and cultural issues.
- Survey also aims to identify groups of farmers including women's groups and co-operatives for collaborative work in Phase 2.
- Potential for the development of alternative products.

GROUP 1: DISCUSSIONS ON IV CROP IMPROVEMENT

Compiled by
Ben Mvere. Horticultural Research Centre. Marondera

Introduction
The discussions on indigenous vegetable (IV) crop improvement were drawn from an overview of the production needs and constraints of the 3 cities of Bulawayo, Harare and Mutare. These had been identified as:

- seed availability
- poor seed quality
- lack of varieties within vegetable species
- seasonality of production
- lack of know-how/technical knowledge
- pests and diseases
- labour shortage

The group focussed on the first seven simply because it felt that the last item was beyond the scope of the project.

Priority Species
In order to come up with an effective IV crop improvement program that can be implemented within the time-frame of the project, the group felt the need to prioritize the IV species to be improved.
Using the knowledge of the traders in the group (2 out of the 6 members were traders) and the information generated from the socio-economic survey, the group was able to identify the following:

Name of IV	City		
	Bulawayo	Harare	Mutare
Spider Plant	+	+	+
Corchorus	+	+	+
Cowpea leaves	+	+	+
Blackjack	-	-	+
Gallant soldier*	-	-	+

+ Indicates that the IVs are important in that city
- indicates not mentioned at all.
All IVs except * available in both the fresh and processed (dried) form.

Other important traditional vegetables were okra, pumpkin leaves and kale. However, the group felt that since seed of these 3 crops is available in the retail shops, priority be given to those for which there is no seed at present. While the same could be said of cowpeas, the reason for its inclusion on the priority list is because the commercial cowpea varieties were developed for high pulse yield and not for leaf yield.

It was also felt that some crops had a very high potential on both local and external markets although they had not been prioritized. These included the African cucumber *(Cucumis metuliferous)* and the gourds/calabash (*Lagenaria siceraria)*. Since they have a high potential, these 2 IVs should be developed and promoted concurrently with the priority vegetables.

The demand for some IVs is area specific e.g. Blackjack and Gallant Soldier. However, these are readily available throughout the year and they are weeds that can be found in any crop throughout the country.

Development of IVs
The group felt that the development of IVs lies foremost in availing the communities with seed or planting material. All the priority crops are sexually propagated, implying that development of their seed systems becomes paramount. The IV crop improvement should consider the following:

- High leaf yield (or in the case of cucurbits, a high yield of fruit)
- Good quality - taste, appearance
- Adaptability to the different seasons of the year and the different parts of the country

For example, it was noted that while spiderplant grows very well during the wet season in Mutare's Zimunya area, the same IV performs dismally in winter. Although germinating, this vegetable simply does not develop fast enough to make it attractive as a commercial crop. Therefore, it is important to identify adaptable varieties as well as locations, which are not too cold as to limit plant growth and development.

How should IVs be developed?
The group felt that the development of IVs should include some of the following:

a. Plant Introductions
It is a well-known fact that IVs development in East and West Africa is more advanced than in Southern Africa. The project will benefit immensely by borrowing from these regions' experience,
in terms of IVs improvement as well as germplasm. The germplasm should then be submitted to
adaptability and productivity evaluations.

b. Collections
A lot of germplasm is available locally. Unfortunately, it is scattered all over the country and it has never been systematically collected for characterization and evaluation. A local germplasm collection
exercise should be undertaken at the end of the rainy season when seeds have formed whilst the plant structure can still be well-recognized.

c. Evaluation
All the collected germplasm (local and introductions) should be subjected to thorough and systematic evaluation. Yield, quality, and adaptability to low temperatures are some of the attributes that should be evaluated for each IV species. It is very important that the evaluation is not restricted to one site only but to many simply because different species and indeed varieties within the same species behave differently in different environments. Close collaboration with the communities within which the evaluations are being carried out is very important (this is because they will be able to pass on their remarks as the project progresses and also because this is a practical way of extending information to the communities).

d. Multiplication
It was felt that foundation seed of the IVs be multiplied and maintained at the Horticultural Research Centre at Marondera. Agritex and DR&SS staff at the centre would collaborate in this activity. It was also felt that during the second phase, the communities within the selected evaluation sites would benefit in terms of extension information on production and seed production. However, this is a third phase activity.

Lack of technical knowledge

The group felt that both the producers and the extension staff were deficient in this area. Production packages were not known and in most cases, extension ended up using recommendations for exotic vegetables for the IVs. Although the extension part of this is primarily a phase 3 activity, phase 2 should address the following:

a. Method of establishment (use of nurseries) with a view to addressing seasonality
b. Spacing/thinning for maximum quality and yield
c. Use and effect of inorganic and organic fertilizers on yield and quality (taste?)
d. Harvesting techniques/timing
e. Use and misuse of pesticides
f. Identification of pests and diseases
g. Production of fact sheets

It is important that there should be a close collaboration with institutions who already have strengths in some of the areas listed above. These include the Plant Protection Research Institute and the University of Zimbabwe Crop Science Department for pests and disease identification. The use of existing knowledge is also important. This knowledge can be indigenous e.g. producers and the Zimbabwe Farmers Union, or external and this means opening up to the local communities and international institutions. The Swedish Cooperation Centre was said to have already produced some information on the agronomy of some IVs.

Seed Production Techniques

The local communities should be empowered with seed production techniques to ensure sustainability. These techniques should be developed in the 2nd phase of the project. Not only will the local communities benefit but it is likely that the private sector may be interested as well. The techniques should include production, processing and storage of IV seed.

Group 2: Working group on Post-Harvest Issues
Summary of Discussions:

Required output second phase:

1. Stakeholder analysis
   - An inventory of all stakeholders involved and their activities (who, where, what, when, why)
   - Consultation process
   - Short workshop, maximum one day

2. Processing and Storage
   - Effect of processing on nutrition and appearance
   - Critical Control points: hygiene, temperature, duration, moisture
   - Drying Techniques

3. Extending Shelf life
   - of perishables

4. Packaging and labelling
   - Identifying appropriate packaging materials for different commodities and clientele
   - Packaging standards

5. Product Development
   - Recipes
   - New products

Group 3: Marketing and Dissemination of Information on IV's – Opportunities and Constraints.

The market for indigenous vegetables remains untapped and hence is very informal. This poses great potential for growth as far as marketing of IV's is concerned. Nonetheless, several constraints have to be tackled during phase 2 of the project in order to improve the marketing and dissemination of information on the indigenous vegetables. These constraints are:

- Seasonality of Supply
- Transport
- Lack of marketing data

Seasonality of Supply.

Consumers prefer eating most of the IV's in their fresh form. Unfortunately, IV's are only available for a short period during the rainy season when farmers often face a glut on the market resulting in some of the produce being thrown away. To counteract this problem, the following were suggested:

- There should be *production in the off season* i.e. from late February to December. This could be done in the Irrigation Schemes and wetlands where exotics are produced.
- Producers should be encouraged to *adopt better/ Improved ways of processing* the IV's. The reasons why there could be low consumption/preference to processed IV's could be due to the quality of the produce. Therefore, an improvement in its quality could lead to more people preferring vegetables in this form.

Transport

Transport was more of an issue with the producers and collectors than with the traders. Producers' produce was sometimes too little to warrant the hiring of a truck to ferry the produce to the market. It was against this background that the following was suggested: Farmers should be encouraged to market as a group. This would enhance their negotiation skills both for the transport and for the price of their products. Collectors of the vegetables should be encouraged to collect these from the farm.

Lack of Marketing Data

Good marketing data is the key to an efficient functioning of any marketing channel. Lack of it would result in market imperfections. To reduce these imperfections, the following were recommended:

- There is a need to identify a forum that can be used to disseminate information on the project activities as well as the data on the market itself. This could be done through Agricultural Shows, Agritex, NGO's, DR&SS as well as farmers' lobby groups such as the Zimbabwe Farmers Union.
- Identify Zimbabwean nationals in foreign countries with an interest in these vegetables, who could disseminate information as well as market the products in those countries.
- Channel produce via hotels and restaurants with an interest in indigenous dishes.

FINAL CONCLUSIONS

The workshop participants were unanimous with their recommendation that the project should proceed with the second phase and implement the recommendations given by the three working groups.

In short this meant that emphasis should be given to three priority crops: the spider plant *Cleome gynandra,* the jute mallow *Corchorus* spp. and cowpea varieties that are primarily used for their leaves. In addition and when time permits, attention will be given to the African cucumber *Cucumis metuliferus* and the edible varieties of the bottle gourd *Lagenaria siceraria.* Within the time available these activities are likely to concentrate on germplasm collection, characterisation and evaluation, leading to the selection of new varieties and the production of seeds thereof.

The second task will be to find a solution for the problems with processing faced by the farmers, especially drying leafy vegetables during the rainy season. In addition, attention will be paid to quality and food safety issues of processed produce.

On the dissemination of project outputs, the workshop participants were of the opinion that this should be dealt with by a third phase of the project if and when an extension would be possible. If not, then dissemination will be handled within the mandate of both HRC and Agritex and other relevant departments within DR&SS.

Participants were asked to make a choice between the three cities. The meeting suggested that if follow-up activities were limited to two regions, these should be Bulawayo and Mutare. Whilst Harare would have been a good choice for further studies not only because of its proximity to the Horticultural Resource Centre in Marondera but also because of its large and diverse population and resultant wide range of vegetables consumed. However, Harare is said to be over-researched when compared with the two other cities. Bulawayo is considered to be behind in economic development and it was found that indigenous vegetables are often exported from Bulawayo to Botswana and South Africa. Further work on traditional crops could thus benefit the local community. Mutare has the advantage that there are nearby irrigation schemes that could assist follow-up work while Mutare residents are already familiar with indigenous crops, more so than Harare residents.

LIST OF PARTICIPANTS

NAME	POSITION	ORGANISATION + ADDRESS
F. Gwenero	SAES	Agritex, Box 1927 Bulawayo Tel 09 67161/3
Langton Mukwerenza	CAES Agric. Mngt. Serv.	Agritex Box CY 639 Causeway, Harare
Farai S. Mvere	Programme Coordinator Mashonaland Central	Zimbabwe Open University, Bag 984 Bindura fmvere@bindura.zou.co.zw
Mary Goretti Kariaga	UZ Research Student	University of Zimbabwe Box 167 Mt Pleasant Dept of Biol. Science Kariaga@hotmail.com
Victoria Machakaire	Program Coordinator	UZ Crop Science Box MP 167 Harare Victoria@Cropsci.uz.zw
Noah Sigauke	Social Scientist ITDG (SA)	P.O.Box 1744 Harare itdg@internet.co.zw
Peacot Bhebhe	Trader	20137 Pumula South Bulawayo
Ntombizodwa Dlodlo	Trader	123 Sotshangane Flats P.O. Mzilikazi
Bongeka Dube	Principal Horticulturist	Agritex Box 1927 Bulawayo
Peter Mapfumo	Training Officer	Enterprise works Zimbabwe 62800 Masvingo
C.T. Kagoro	Engineer/ Manager	ENDA-Zimbabwe Tel 301024/69 or 011 204678
Brighton Mvumbi	Lecturer	UZ Dept of Soil Science Box MP 167 Harare
K. Mariga	Horticulturist	Agritex P.Bag 3717 Marondera
T. Matafeni	Output Marketing Officer	CARE Zimbabwe 8 Ross Av. Belgravia root@care.icon.co.zw
J. Zharare	Ass. Prog. Mngr. Small Dams	CARE Zimbabwe P.O.Box 264 Masvingo care@icon.co.zw
I. Mutimutema	Horticulturist	Agritex Box 143 Mutare
S. Kabibi	Farmer	2743 Chikanga II Mutare
C.T. Mapika	Agric. Economist A.R.C.	P.O.Box MP 1140 Harare tel 309574/6 arcaref@mango.zw
Ngoni Nenguwo	Act. Head, Hort. Res. Centre	P.O.Box 810 Marondera Tel 079 24122
Ben Mvere	Horticulturist HRC	P.O.Box 810 Marondera Tel 079 24122
Fabeon Chigumira Ngwerume	Principal Horticulturist HRC	P.O.Box 810 Marondera Tel 079 24122
Joanne Manda	Assist. Regional Coordinator CPHP	P.O.Box CY 550 Causeway, Harare plantpro@internet.co.zw
Tafadzwa Sibanda	Regional Coordinator CPHP	P.O.Box CY 550 Causeway, Harare plantpro@internet.co.zw
Rudy Schippers	Principal Horticulturist	NRI Chatham, U.K. r.r.schippers@gre.ac.uk
Peter Greenhalgh	Principal Economist	NRI Chatham, U.K. p.greenhalgh@gre.ac.uk