

REPORT
Regional Crop-based Information Exchange Workshop
2-3 September 2009
Mpongo Game Lodge, East London,
South Africa

Sponsored by the Implementation and Coordination of Agricultural Research and Training in the SADC Region (ICART)

Organised by the Agricultural Research Council – Roodeplaat Vegetable and Ornamental Plant Institute, Pretoria

PROGRAM

31 August 2009		
Arrival		
Arrival of participants from Lesotho, Botswana, Mozambique		Ms Estia Joubert
1 September 2009		
Excursion		
9:00 – 12:00	Arrival of participants from South Africa	
12:00 – 16:00	Visit to running crop-based project with orange-fleshed sweetpotato at Cotlands Nutrition in Wilsonia	Mr Musa Mtileni, Ms Estia Joubert, Mrs Sunette Laurie
2 September 2009		
Workshop: Information sharing on the crop-based approach Program Director: Mr David Modise Scribes: Ms Erika vd Heever, Mr Sidwell Tjale		
8:30	Welcoming	Mr David Modise
8:35	Opening	Mayor/Councilor
8:40	Introductions	Mr David Modise
8:45	Purpose of the workshop	Ms Sunette Laurie
8:50	Eastern Cape crop-based approach experiences	Project members (10 min each): Cotlands Nutrition – Nomapha Mbili Motherwell Primary - Nomondi Ntsundwana
9:10	Food Security as a National Priority	Mr Steve Mohlabi. Director Food

		Security, National Department of Agriculture(APOLOGIZED)
9:50	Background and context of the crop-based approach: MRC	Dr Mieke Faber
10:20	Discussion	Mr David Modise
10:30	Tea	
11:00	Overview of the coordination of the crop-based approach in South Africa: ARC	Ms Sunette Laurie
11:30	Mozambique: Approaches utilizing orange-fleshed sweetpotato	Dr Maria Andrade, etc.
12:15	Lesotho: Sweetpotato and vegetable research	Ms Mokhantso Morahanye
12:30	Botswana: Sweetpotato research	Dr Geoff Wiles
13:00	Discussion	Mr David Modise
13:15	Lunch	
14:00	Reaching the end-users with orange-fleshed sweetpotato – HarvestPlus project in Mozambique	Dr Anna-Marie Ball
15:00	Orange-fleshed sweetpotato in school food production program – North West Province	NW Department of Education – Mr Thapelo Sedupane
15:15	Inclusion of orange-fleshed sweetpotato in provincial programs (10 minutes each): Department of Education	
	Department of Social Development	
	Department of Health	
	Department of Agriculture	
16:15	Discussion	Mr David Modise
16:30	Closure	Mr David Modise

3 September 2009

Workshop: Information sharing on the crop-based approach
Program Director: Mr David Modise
Scribes: Ms Erika vd Heever, Mr Sidwell Tjale

8:30	Mini workshop on Reaching the end-users program of HarvestPlus	Dr Anna-Marie Ball
10:00	Experiences of the Ndunakazi project: MRC	Dr Mieke Faber
10:15	Discussion	Mr David Modise
10:30	Tea	
11:00	Development of strategic/action plans per country team	Dr Anna-Marie Ball, Mr David Modise
13:00	Lunch	

14:00	Plans for inclusion of orange-fleshed sweetpotato into programs of NGO's (5 minutes each): Cotlands Nutrition	Ms Nomapha Mbili
	Food Garden Foundation	Ms Hilda Pheto
	WESSA	Mr Phikisile Zondani
14:30	Presentation by Country teams (20 minutes each followed by 10 min discussion)	Lesotho, Botswana, Mozambique, South Africa
16:30	Closure	Mr David Modise

4 September 2009

Workshop: Discussion of information materials

8:30 – 14:30 (Tea 10:30; Lunch 13:00; Tea 15:00)	Sharing of manuals, pamphlets, promotion materials. Identification of materials to be developed. Responsibilities	Dr G Wiles Country teams
14:30 – 15:00	Closure	Ms SM Laurie
13:00 – 16:00	Departure of local participants	

5 September 2009

Departure

Departure of participants from Lesotho, Botswana, Mozambique

EXCURSION - 1 September 2009

The group travelled by bus from Mpongo to Wilsonia to visit Cotlands Nutrition branch office at 6 Alison Road, Reeston, Wilsonia, East London. We were hosted by the branch manager Ms Nompaha Mbili, and Lizo Gudula, community care worker. The project entails child health care and nutrition as well as training in vegetable production – especially orange-fleshed sweetpotato. The garden is used to train groups from communities and then to send them back with seedlings to go and establish gardens. The personnel then conduct monitoring visits to assist with gardens. They have trained 172 groups in this manner. They have a nursery with 7 orange-fleshed sweetpotato cultivars to supply cuttings for the gardens. They often get severely malnourished children being brought to them to be helped. This is done through growth monitoring, counselling on diet, and teaching the mother to grow vegetables and feed the child. Ms Mbili was invited to other branches of Cotlands to train them in production of orange-fleshed sweetpotato.

WORKSHOP – 2 September 2009

WELCOMING

Mr David Modise welcomed everyone local and from the SADC regions, Lesotho, Botswana and Mozambique.

He specially welcomed Dr Monica Murata as the M&E Specialist from the SADC office in Botswana, Dr A Ball from Uganda - Harvest Plus, Mr Malefetsane Lephota, team leader of the Lesotho delegation, Dr Maria Andrade from Mozambique and Dr Geoff Wiles from Botswana. The local councillor Mr Morata opened the workshop with the following message; Firstly he apologised for the Mayor who had to attend other important business. He acknowledged the ARC who hosts the workshop at Mpongo. He made it clear that malnutrition is not only the responsibility of government but all of us must fight it. He encouraged the participants to come up with strategies to address malnutrition. He welcomed everyone once again and declared the workshop open. Ms Mbili Nomapha opened the workshop with a prayer.

Apologies:

Director from National Department of Agriculture office of Food Security, Mr Steve Motlhabi who was sick.

Purpose of the Regional Exchange Workshop by Ms S Laurie

Ms S Laurie gave a brief background regarding the workshop and the funding obtained from SADC-ICART Implementation and Coordination of Agricultural Research and Training in the SADC Region

The main reason for the workshop is to network in southern SADC using a crop-based approach, with emphasis on orange-fleshed sweetpotato, to address vitamin A deficiency.

As already indicated the participating countries were: South Africa, Mozambique, Botswana and Lesotho

Rationale

- Malnutrition, specifically vitamin A deficiency (VAD), is a major public health problem in the developing world
- One approach towards alleviation of VAD: production and consumption of provitamin A rich vegetables, including orange-fleshed sweetpotato
- Research programs on sweetpotato, vegetables and crop-based approaches to address vitamin A deficiency have been conducted collectively by partner countries
- Networking/information shared amongst partners
- Wider implementation to enhance crop-based efforts to address vitamin A deficiency

Purpose of the workshop

- To share existing knowledge and experience on orange-fleshed sweetpotato and the implementation of crop-based programs to address vitamin A deficiency (including production systems, marketing, reaching the end-users, material dissemination, rapid multiplication, nutrition education systems) to strengthen and expand such programs within South Africa and the SADC region.

Cotlands Nutrition Program

By

Ms Nomapha Mbili

The program focuses mainly on children suffering from malnutrition. They started in 2004 doing counseling and education to address the malnutrition problem identified in some areas around East London. They started with 40 community gardens and thereafter ARC became involved in the project. In 2008 they already had 152 gardens where OFSP are incorporated. Some important aspects are;

- Continuous monitoring
- Openness
- Learn more
- Continue working with purpose

The target groups are woman and they have been task to have meetings and motivate other to take ownership. They often help with HIV/AIDS infected children.

They did move to other municipalities. One of the main challenges is to be patient with people and monitoring is very important. Even people that relied on collecting food from dumping sites were introduced to the gardens with OFSP.

Crop-based approach experiences in Port Elizabeth

By

Ms Nomonde Ntsundana

Marion Beeforth, a private dietician, invited the ARC to assist with establishment of a nursery at Ms Ntsundana's school and got the paroled prisoners involved with the community, to support their rehabilitation. They are also part of the WESSA eco schools project and the OFSP is part of the curriculum. They are even involved with the TB hospital where they introduced OFSP. The nurseries are doing so well that they are selling the cutting to other interested parties.

They also presented the case study of Canzibe Primary School Sweet Potato Nursery Project

November 2008

- Planting workshop at Canzibe Primary school
- Establish nursery with 4 cultivars -
- Resisto, W119, Isondlo, Impilo

December 2008

- Nurturing the nursery with 4:3:2 and watering
- Prepare land for transplanting
- Nurturing the nursery with 4:3:2 and watering
- Prepare land for transplanting

January and February 2009

- Multiply with learners and inmates on parole with warden

March and April 2009

- Plant new plots and keep clean and water where necessary
- Plant other vegetables

May 2009

- WESSA (Wildlife Environmental Society of South Africa) - planned Eco School Workshop
- Canzibe Primary school asked to link-Sweet Potato Project + National Curriculum Statement and Lesson Plans and Introduction of Growing the Sweet potatoes
- Prof Martheanne Finnemore compiled booklet with school assistance about HOW WHY WHAT the ORANGE FLESH SWEET POTATO is all about?

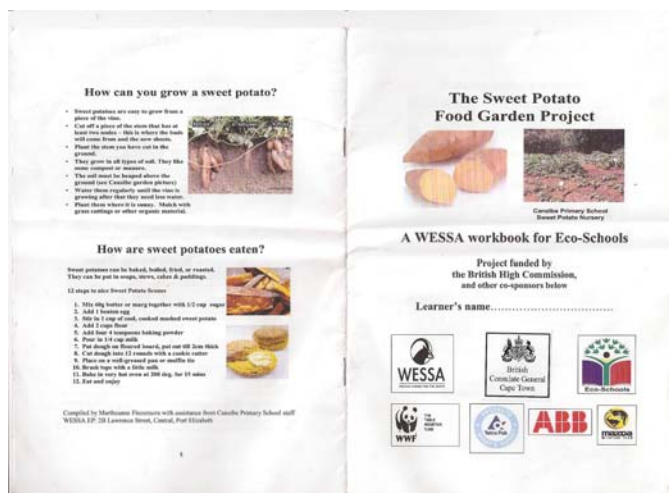
The Sweet Potato Expert Sharing her Knowledge...

- Eco – schools workshop

WESSA Schools eco –project and attached is the booklet which was developed by WESSA about OFSP.

JUNE 2009

- 4 June 2009
- WESSA workshop



26 June 2009

CANZIBE PRIMARY SCHOOL HARVEST

60 bags of sweet potato-donated some to community chest

- Media coverage on the front page THE HERALD was a highlight for the community and the school. This motivated the volunteers and community members to go out to other schools and promoted the OFSP in school and community gardens

CANZIBE PRIMARY SCHOOL HARVEST

- WESSA funders did a lot of interviews
- Great interest from schools and community projects
- WESSA bought cuttings for 10 schools and two community projects

June - July 2009

WESSA assists with planting cuttings with 10 schools and two community projects

At the moment in total there is a planting of nearly 1 Ha – all four cultivars

More outlets happened to 6 more schools

They even moved to the Northern Areas, where they provided Gelvandale Primary School with cuttings of the right size. Learners enjoying the planting

It was important to show the children the correct spacing of the plants and watering

Nomonde received an award for all her efforts

Thank you we appreciate our nursery!

Expectations from Workshop Participants

Before the next speaker Mr Modise asked the people what were their expectations; Networking, learn more from each other, a concrete plan of action after the workshop, Sweet potato revolution, Best approach for Technology transfer, Good participation through participation, awareness creation, crop diversification, benchmarking, have patient with people, policy brief to SADC, moving from research to adoption of research, collaboration between stakeholders, branding sweetpotatoes, natural production of OFSP.

Background and context of the crop-based approach in SA By Dr Mieke Faber

Dr Faber gave an outline of the combined efforts where the crop based approach started from to address vitamin A deficiency. The outline of the approach address

- Vitamin A status
- Strategies to address vitamin A deficiency
- Vitamin A-rich foods
- Crop-based approach
- Critical issues

Vitamin A status: children <5 years

Globally	33% (190 million)	[WHO, 2009]
Africa	44.4%	[WHO, 2009]
Mozambique	68.8%	[WHO, 2009]
South Africa	64% (1-9 y old)	[NFCS-BF, 2005]
Lesotho	32.7%	[WHO, 2009]
Botswana	26.1%	[WHO, 2009]

Consequences of vitamin A deficiency

Night blindness, xerophthalmia, permanent blindness, loss of appetite, growth failure, impaired immune response, lowered resistance to infection and finally death

Studies showed that;

50% SA children consume < ½ the required amount of vitamin A [NFCS, 2000]

Cereal-based staple diet, Low consumption for fruit, vegetable and animal products because of cost, Poverty greatest single factor limiting access of malnourished populations to an adequate diet

Strategies addressing micronutrient malnutrition

Supplementation – e.g. high-dose vitamin A capsules

Food fortification – addition of micronutrients to commonly eaten food

Dietary modification – dietary change to increase intake of micronutrient-rich foods

Dietary modification

Aim to increase	Through
Production, availability and access to micronutrient-rich foods	Agricultural approaches
The consumption of micronutrient-rich foods	Behavior change: communication, social marketing, nutrition education
Bio-availability of micronutrients in the diet	Improved methods of food preparation, preservation and cooking

Constraints for frequent consumption of vegetables and fruit

- cost
- availability

so a solution is to increase household production of fruits and vegetables as a way of supplementing the cereal based diet

Benefits of vegetable gardens

- Long-term strategy
- Complements supplementation and food fortification programmes
- Includes nutrition education: informed decisions by mothers
- Potential for income generation
- Multiple nutrients are supplied
- Nutrients within physiological levels, risk of toxicity is minimised
- Natural balance of nutrients (interactions are minimised)

Selection of crops

Mono-crop production of low nutrient content crops does not translate into adequate nutrition

- Diversify crops
- Grow crops to meet the nutritional needs of vulnerable populations
- Nutrients that are limited in the diet
- Nutrient content of the crop
- Potential contribution towards nutrient requirement of target population
- Bio-availability – the amount of a nutrient ingested that is available for normal physiological functions and storage

- ❑ Bio-conversion – the amount of absorbed provitamin A carotenoid that is converted to vitamin A (retinol) in the body
- ❑ Bio-efficacy – the product of the abovementioned – refers to the efficiency with which dietary provitamin A carotenoids are absorbed and converted into vitamin A in the body

Dark-green leafy vegetables

Bio-conversion of provitamin A carotenoids in dark green leafy vegetables is lower than previously thought

Vitamin A requirements

Recommended Dietary Allowance for vitamin A to maintain normal vitamin A status, expressed as Retinol Activity Equivalents (RAE)

1 RAE = 1 µg Retinol = 6 µg β-carotene

= 12 µg β-carotene

= 21 µg β-carotene

E.g. 1 – 3 –year –old child, RDA = 300 µg RAE

x 6	=	1 800 µg β-carotene	1
x 12	=	3 600 µg β-carotene	2
x 21	=	6 300 µg β-carotene	3.5

Therefore orange-fleshed sweetpotatoes are:

- ❑ Excellent source of β-carotene
- ❑ Semi-perishable crop
- ❑ Economic benefit to small-scale farmers
- ❑ Multi-purpose crop
 - fresh and post-harvest products
 - roots and leaves can be consumed
- ❑ High in carbohydrates (food security crop)
- ❑ Women's crop (suitable for food-gardens)

Studies by the MRC showed efficacy of orange-fleshed sweetpotato to improve vitamin A status by children (5-10 yrs): consumption of ½ cup of orange-fleshed sweetpotato for 53 school days, improved vitamin A liver stores of children.

Effectiveness of orange-fleshed sweetpotato to improve vitamin A status

1. Increase farmers access to orange-fleshed sweetpotato vines
2. Increase nutrition knowledge and create demand
3. Ensure sustainability through market development 2-year intervention

The ultimate goal with the approach is to have:

- holistic food-based approach
- increase dietary variety
- traditional / indigenous foods
 - orange-fleshed sweetpotato
 - PLUS
 - butternut, pumpkin, carrot,

dark-green leafy vegetables
paw-paw, mango
Crop rotation: e.g. legumes
Plant in addition to existing crops

Agricultural interventions with a nutritional outcome

- Nutrition education is needed
- Awareness on micronutrient malnutrition must be created

Community-based growth monitoring in South Africa:

Children under 5 years

- 90% coverage
- 71% monthly attendance

Home-garden project in Ndunakazi Community-based growth monitoring with nutrition education and gardening activities which improved;

- maternal knowledge
- dietary intake
- serum retinol

Hypothesis (Ndunakazi project)

If the mothers plant dark-green leafy and yellow/orange-fleshed vegetables at home, their children's dietary intake of vitamin A will increase and as a result their vitamin

It is very important that nutrition, agriculture and the community must work together therefore the result will be

- Nutrition – nutritional aspects
- Agriculture – gardening activities
- Community – acceptability

Sensitize to discipline's terminology, concepts and priorities

Define the role of all involved

Do not create expectations that can't be met

Some Critical issues to consider are:

Be flexible

Do a situation assessment

Determine

- infrastructure
- dietary practices
- gardening practices
- constraints
- resources

Methods

- data review
- observation
- key informants
- semi-structured interviews

- group discussions
- questionnaire

Involve the community

- Invite all stakeholders
- Take community's opinions into account
- They should take ownership of the project
- Establish garden committee

Provide appropriate training

Training of trainers

- Crop production
- Food consumption
- Factors affecting bio-availability of nutrients

Establish demo garden

- Training center to teach mothers how to plant vitamin A rich vegetables

Ensure regular supply of quality seed at an affordable price

Provide nutrition education

- Promotion and education during growth monitoring sessions
- Introduce β -carotene rich vegetables to children
- Monitor project activities

Evaluate impact

- Did the project make a difference to the people's lives?
- Document the project

Have an exit strategy

- Withdraw gradually
- Develop exit strategy at the start of the project
- Invest in human resources
- Organization for technical assistance

Prolong period of availability

Availability can be prolonged by

1. Staggered planting

2. Storing

- unharvested vegetables in the field, or
- harvested vegetables at room temp

3. Processing

For large scale implementation we need to

- create awareness
- develop capacity
- integrate with other programs
- create markets

Part of technology transfer and awareness eg. Calenders

Integrate with other programs

Orange-fleshed sweetpotato integrated with vitamin A supplementation

Crop-based approach

Supplementation

Food fortification
Breastfeeding
Immunization
Growth monitoring
Hygiene and sanitation
 Food quality and safety
 Disposal of household refuse
 Sanitation
 Clean and safe water

General Discussion

What is happening with vitamin A when sweet potatoes are cooked?

If boiled covered with water and lid on, 80% of the Vitamin A is retained. Consumption with a bit of fat/oil improves the bio-availability

How cost effective is the crop based approach?

Bio fortification is quiet effective; OFSP is a low input crop.

Can ARC provide clear guidelines to produce OFSP in different regions?

Yes ARC did evaluation trials in different climatical conditions in the country. That makes it easier to recommend different cultivars for the different areas

Prizing of OFSP?

Nomonde sells a bag at R30 and they have sold 60 bags in one season
ARC and other vine growers sell at R70 for 1000 cuttings

Is it possible for ARC to exchange plant material with SADC regions?

Yes if proper legislation documentation can be obtained from SADC regions
Harmonized seed policy document to be effected at SADC conference??

Overview of coordination of the crop-based approach in South Africa: ARC

By

Sunette Laurie, Musa Mtileni, Sidwell Tjale, Julia Domola, Erika van den Heever, Estia Joubert, David Modise, Ian du Plooy

Long term goal:

- to facilitate the role out of food-based model and promotion of OFSP on national level through other role players to alleviate malnutrition in South Africa
- Essential components of approach
 - nutrition education
 - training in production of crops rich in provitamin A
- Crops:

Short term goals:

- Create awareness of value of food-based approach and OFSP
- Present training workshops on implementation.
- Develop, distribute promotion & information materials
- Train extension, nutrition coordinators, small-scale farmers & communities in production & management of provitamin A-rich vegetables - demonstration plots.
- Establishment of sustainable nurseries.
- Partnership with government departments, municipalities, NGO's to implement approach.

Implementation

- Requests for training in vegetable production used as opportunity to implement food-based approach
- Different entry points, building on existing structures. Flexibility in implementation.

Research back bone at ARC are;

Breeding program: Aimed at combination of high dry matter content, good yield, good β -carotene content. Additional traits – tolerance to drought, virus and Alternaria stem blight

- Virus-free scheme: Propagation and distribution of virus-tested stock plants of popular varieties
- Drought physiology: boxes, field
- IRWH
- DNA fingerprinting

BREEDING PROGRAM

- Plant biofortification refers to the breeding of food crops with enhanced micronutrient contents
- The strategy holds great promise because of it's enormous potential to improve dietary quality (Bouis, 2006; Ruel & Levin, 2002)
- Another example of using this tool for fighting micronutrient malnutrition is golden rice (Beyer et al., 2006)
- Sweet potato breeding has been conducted at ARC-VOPI for past 50+ years; breeding for orange-fleshed types since 1996.

Aims of breeding:

- Good yield, good storability, sweet taste, dry texture
- Additional traits: drought and disease tolerance
- Use conventional breeding practices
- Improved crops for use in food-based approaches in South Africa
- Linked with HarvestPlus and VITAA

Advantages of OFSP for South African conditions

- High productivity per area per time
- High level of adaptability
- Hardy crop compared to, for example, spinach and carrot
- Less labor and input required
- Good storability
- A multi-purpose crop, e.g., fresh and post-harvest products (Laurie, 2004)

Breeding scheme

Orange-fleshed cultivars were imported from the USA for breeding of orange-fleshed sweet potato (OFSP) at ARC-VOPI, since very few were available in our collection. It was used in polycrossing as well as evaluation programmes.

Germplasm of sweet potato lines and cultivars are maintained in glass houses; a collection of about 444 accessions.

The polycross method is used to combine required traits. Between 15 and 25 parents are selected for specific traits. Cross pollination is achieved through natural occurring insects. About 10 000 - 15 000 seeds are produced annually at two localities. Additionally, directed crosses are performed in a glass house. High yielding, good tasting cream varieties are combined with dark OFSP varieties.

The seeds are treated with sulfuric acid (promotes germination) and sown in seedling trays inside a glass house. Seedlings are transplanted into 12 cm diameter pots and after 2½ months the small storage roots are cut transversely enabling the identification of orange lines. Cream lines are discarded.

Cuttings of the orange lines are then planted in the field in a seedling nursery (1500-2000 lines).

Harvesting is done after five months and 2-3% of lines are selected for further evaluation based on yield, flesh colour, raw taste, dry matter content & storage root appearance.

The next phase is a preliminary yield trial where 100 - 150 lines are evaluated in single plots. Only the best lines are retained for further evaluation in the intermediate yield trials with 20-30 promising lines. Trials are at ARC-VOPI and another site with a warmer climate. These are replicate trials from which the best lines are selected.

Selection criteria are:

- Yield & Appearance
- Orange colour & Total carotenoid content (spectrophotometer measurements)
- Dry matter content & Taste of boiled roots
- Storability & Disease tolerance
- Oxidation (Grey coloring)

Screening of 40 lines per time for drought tolerance is conducted in plastic boxes with drought sensitive control Resisto and Letlhabula as tolerant control. This is a quick preliminary screening based on vegetative performance only (2-3 months).

Screening for disease tolerance include: viruses and *Alternaria* leaf - and stem blight; both conducted in glass houses and field trials at ARC-VOPI.

After 5-6 years only the most promising advanced lines (± 20 lines) are selected for testing in target production areas in order to determine adaptability and acceptability in the main production areas (multi-location trials) and at farmer's conditions. These trials are conducted in collaboration with extension officers from the Department of Agriculture. Farmers evaluate the taste of the cooked storage roots as well as the appearance of the raw roots. After two seasons at each locality, varieties are recommended to be produced in the area based on yield potential and taste acceptability.

Agronomy trials are performed at ARC-VOPI to test the new varieties using:

- different plant spacing and planting dates
- different water regimes in rain-out shelters to determine water requirements
- different fertilizer levels

These results are included in varietal recommendations.

The sweet potato virus-tested scheme provides healthy, true-to-type planting material of popular varieties in nursery bags for sale. Sweet potato nursery projects provide farmers with cuttings for production and training in sweet potato cultivation practices.

Performance of OFSP varieties

Mean marketable yield for orange-fleshed varieties from multi-location trials 2003-7								
		Lusikisiki	Badplaas	Taung	Polokwane	Polokwane	Pretoria	Pretoria
Variety	Mean	2004-5	2003-4	2006-7	2003-4	2004-5	2004-5	2004-5
		Eastern Cape	Mpumalanga	North West	Limpopo	Limpopo	Gauteng	Gauteng
Ndou (cream)	50.54	28.73	53.67	15.55	49.10	78.13	56.73	71.87
Blesbok (cream)	48.37	33.33	76.10	22.85	48.90	26.13	58.03	73.24
Khano	41.39	31.27	20.20	14.05	69.30	43.80	59.60	51.50
Impilo	37.72	15.92	18.33	11.25	60.67	46.78	48.30	62.80
1999-1-7	35.61	12.70	35.03	10.85	58.43	15.58	51.27	65.40
Serolane	32.29	20.67	38.40	6.70	47.67	27.23	38.77	46.60
Excel	32.34	13.17	43.07	11.95	32.87	29.57	43.20	52.57
W-119	31.44	19.90	32.53	10.35	50.30	28.20	33.80	45.00
Resisto	30.60	10.73	26.87	10.65	51.07	21.13	41.60	52.17
A15	30.37	16.03	33.60	9.65	52.97	27.37	31.50	41.49
Grand mean	37.07	20.25	37.78	12.39	52.13	34.39	46.28	56.26
LSD (P<0.05)	5.09**							
CV%	22.1							

TABLE 2: Quality of sweet potato varieties

Variety	Oxidation	Dry matter content %	Cooked taste	TSS (°Brix)	Keeping ability
Blesbok	4.1	17.2	Poor–Average	5.4	41.9
Ndou	2.7	25.0	Good–Average	6.2	13.1
1999-1-7	3.0	21.3	Average–Good	7.1	10.9
Impilo	3.1	20.8	Average–Good	8.5	4.4
W-119	2.7	25.7	Good	7.6	1.8
Beauregard	3.6	17.6	Average–Poor	6.5	10.5
Resisto	3.6	24.0	Excellent	7.8	19.5
Mean	3.4	21.7		7.3	11.7
P-value	**	**		**	
S.E.D	0.098	0.359		0.245	
CV%	7.1	4.1		8.2	
LSD (P=0.05)	0.19	0.72		0.49	

** Significant at $P = 0.05$

TABLE 3: Description of orange-fleshed sweet potato varieties

Name (origin)	Flesh colour	Advantages	Disadvantages
Impilo (ARC)	Light orange to Orange yellow	Medium to high yield. Good taste.	Medium to low total carotenoid content (6280 µg/100g). Some cracks.
Resisto (USA)	Very dark orange	Excellent taste. Very high total carotenoid content (15840 µg/100g).	Medium to low yield. Sensitive to weevil. Sensitive to drought. Veins.
Serolane (ARC)	Orange with yellow ring	Very good taste.	Some constrictions. Medium to low total carotenoid content (6181 µg/100g). Poor storability. Low yield.
Beauregard (USA)	Orange – Darker orange	Medium to high total carotenoid content (8365 µg/100g). Commercial cultivar.	Watery texture, poor taste. Medium to low yield.
W-119 (USA)	Orange	Medium to high yield. Good taste. Tolerates low input conditions.	Some long irregular. Poor storability. Medium total carotenoid content (7574 µg/100g).
1999-1-7 (ARC)	Orange	Medium to high yield. Average to good taste. Medium carotene content (7918 µg/100g).	Some long irregular.

Breeding achievements:

- Achieved success with breeding
- OFSP varieties currently used in food-based projects: Resisto, W-119, 1999-1-7, Impilo,
Resisto: excellent taste, high total carotenoid content
W-119: widely adapted, tolerates low input conditions
Impilo, 1999-1-7: medium to good yield, acceptable taste.
- These varieties are to be replaced over time as better varieties are released
- Breeding of OFSP continues at ARC focusing on varieties that are:
 - tasty, - high yielding, - high in beta-carotene content, - drought tolerant
 - resistant to important pests & diseases.

ARC CROP-BASED PROJECTS

ARC community projects with a research component

➤ **Lusikisiki, Eastern Cape:**

- Started in 2002
- Role players:
 - 4 extension officers local Dep. of Agriculture
 - Staff from Integrated Nutrition Program of local Dep of Health & nurses from Gateway Hospital
 - 14 project health volunteers (2 per village) x 5 villages
- Demonstration plots, training
- Nutrition education – monthly sessions
- Included community-based growth monitoring
- Follow-up survey in 2005 (MRC-ARC). Findings:
 - improved maternal knowledge of vitamin A nutrition,
 - Increased intake of provitamin A-rich veg,
 - Improved health status of 1-5yr-olds

➤ **Giyani, Mopani District, Limpopo Province**

- Started in 2005
- Role players: Giyani sub-district Department of Agriculture, Maternal Child and Women's Health and Nutrition Services (MCWTT) of Dep of Health – training w/s
- Growers at large communal gardens - 5 villages
- Infrastructure: pumps, pipes & fittings, water tank, fence
- Establish demonstration plots. Nurseries with OFSP.
- Training in nutrition education
- Follow-up training: compost making, water saving techniques, household pest & disease management; processing products of OFSP
- Information day (May 08) – Theme of the day: orange and green vegetables for vitamin A.
- Follow-up survey in May 2009:
 - * most respondents were aware of vitamin A nutrition,
 - * adopted most of provitamin A-rich vegetables
 - * ~60% respondents ate provitamin A-rich vegetables(excl. miroho) the day prior to the survey

Training package offered by ARC

›Training Workshop:

- ›Principles of the food-based approach
- ›How to plan a garden with vitamin A rich vegetables
- ›Production practices of vitamin A rich vegetables
- ›Nutrition education & promotion strategies
- ›Practical training in planting of provitamin A-rich vegetables at demonstration plots which serves as sites for follow-up training
- ›Establishment of nursery of OFSP.

›Monitoring visits

- ›Follow-up visits and training in production practices at the demonstration site (compost making, integrated pest management, water saving techniques) and advice with problems experienced at demonstration sites. Harvesting and processing of orange-fleshed sweetpotato when harvest is ready.
- ›(2 visits during the season).

List of community projects/collaborators

Current

Completed

Motherwell Primary, Sapphire Primary, EC (Dep. Education, Priv. Dietician)	Zwelitsha, King Williamstown (ARC-ISCW), ECape	Hoggsback, ECape & Thaba Nchu, Free State (ARC-ISCW)
Provincial Dep. Education North West, 5 regions	Mdantsane, (ARC-ISCW), ECape	Thoyandou, Limpopo (ARC-PPRI)
Nestle Nutrition, Pretoria-Johannesburg (Gauteng) – 5 areas	Provincial Dep. Health, 4 regions, Mpumalanga	Everton Renewal project, Gauteng (Consultant for Municipality)
Cotlands Nutrition– Wilsonia, ECape	Health Systems Trust, Umtata, ECape	Health Systems Trust -Empangeni, KwaZ.-Natal
Africare - Queenstown, ECape	Lusikisiki (Dep Agric, Health), ECape	Farm Africa - Coffee Bay, Kimberley - NCape
4 Schools, Pinetown (MRC), KwaZulu-Natal	Giyani (Dep Agric, Health), Limpopo	Mavambe Primary, Malamulela, Limpopo

Entry points to beneficiaries

- › Garden groups/community gardens/individual growers
- › Larger communal gardens
- › Community training gardens
- › Crèche gardens
- › Demonstration gardens of other projects
- › Clinics/Clinic gardens
- › School gardens/School feeding scheme
- › Ministerial programs
- › Municipal programs
- › NGO programs

Examples:

- School gardens
North West (Dep of Education) Sustainable Food Production in Schools (SFPS)
Regional training in production of provitamin A-rich vegetables 20 cuttings x 20 schools
OFSP and food-based training workshops in 6 regions
OFSP trial and nursery at Taung School (Vryburg) - Harvest and training
Exhibition: 3500 pupils
 - * Sapphire School, Port Elizabeth
 - Establish OFSP nursery, training in 2006
 - Share with community and other schools
 - * Malakgere School - demonstration garden, training
- Provincial Dep. of Health Mpumalanga - on regional level training at a central clinic
- Cotlands Nutrition
 - Since 2006. Community training garden
 - Nursery of 40 x 40m, enlarged
 - Expanded to projects in Lydenburg and Hlabisa
- Africare - Hewu clinic, Queenstown
 - OFSP nursery and plantings
 - Support 30 gardens
 - 2059 people attended nutrition education lessons, taste OFSP, want cuttings

Achievements 2004-2009

- Training & promotion of vit A veg production, nutrition education annually ~ 250 people.
- Training workshops: over 600 people attended
- Projects in 7 provinces – 150 sites
- Approach was presented together with the MRC at the Nutrition Congress 2006 attended by ±500 people.
- Presented at 41st Conference of the South African Society of Agricultural Extension (SASAE) in 2007.
- Presented at congress of SA Agric technicians 2007
- Exhibitions were made at the World Food Day in Pietermaritzburg, Nampo and the Science and Technology Week.
- Larger scale promotion opportunities creating awareness of OFSP & food-based approach, attended by ~ 6200 people.
- Scientific paper, technical report
- Home-gardens manual developed by ARC & MRC in 2006: Assists organizations in implementing the model. Copy handed to Minister of Agric at World Food Day Celebrations in Pietermaritzburg in Oct 2006.
2000 copies printed – 1140 sold/distributed.
Also used by tertiary institutions: UP Dept Occupational Therapy 2nd and 4th year students. Univ NW.
- OFSP symposium, 3 Oct 2007, ARC-CO: research results on orange-fleshed sweetpotato presented. Organized by ARC & MRC.
Attended by 85 people: local research, government sectors, NGO's as well as international guests.

Mozambique: Approaches Utilizing Orange-Fleshed Sweetpotato OFSP Breeding/Seed Systems

By

Maria Andrade, Jose Ricardo, Abilio Santos and Cheila Martins

The program address:

- Poverty
- Malnutrition
- Drought

Challenges to keep the crop going during

- Vine Survival During Prolonged Dry Period
- Disease and Pest
- Low and Unstable Yield (low productivity)

Good lessons learnt in the following

- Market
- Agro-processing
- Poor Breeding, Crop Management & Post Harvest Capacity

Progress with the OFSP program

Year	Varietal Development	Scope	Dissemination	Scope
1996	Began adaptive testing 34 introduced materials from CIP	Umbeluzi Station (Capital)		
1999	Provincial level trials	14 sites throughout country		
2000	Released 9 OFSP varieties		Dissemination & one-shot nutrition campaign in response to massive floods	Southern Mozambique: Gaza, Maputo, Limited areas of Sofala (122,000 families received materials)
2001	Received additional materials for testing from CIP	Umbeluzi Station	SARRNET/INIA receives 3 years USAID/PROAGRI support	All provinces. except Niassa
2002	Began adaptive testing of material at provincial level		Towards sustainable nutrition (TSN) project initiated (September)	Zambézia (Mopeia. Namacurra)
2004	Began adaptive testing of CIP OFSP polycrosses (Higher Dry matter content)	Umbeluzi Station and Provincial sites		Nicoadala
2005	Began crossing best OFSP from 2000 release with more drought resistant local material	Umbeluzi Station	TSNI pilot ends	
2006	Considering release of 2 CIP polycrosses+ one other OFSP		SARRNET/INIA receive no-cost extension through 2006	All provinces. but greater focus on Tete, . Zambézia, Manica, Sofala, Gaza, Maputo
2006			TSNI reaching end users initiated	Zambezia

Sweetpotato distribution per province per year, (2005-2007)

Year	2005		2006		2007	
	Area (Ha)	N. Benef. (Famil.)	Area (Ha)	N. Benef. (Families)	Area (Ha)	N. Benef. (Families)
Maputo	6.0	3.000	4.0	12.000	3.0	12,500
Gaza	5.2	2.250	3.7	11.100	3.0	11,500
Inhambane	5.0	5.250	1.5	4.500	-	-
Sofala	1.05	753	0.5	1500	0.5	1,250
Manica	0.3	450	1.0	3.000	2,0	9,500
Tete	6.6	600	0.9	2.700	2.0	5,750
Zambézia	13.0	33.615	1.5	4.500	2.0	3,500
Nampula	15.1	20.400	1.5	4.500	1.5	4,600
TOTAL	50.9	66.318	14.6	43.800	14.0	48,600

List of training courses

Title	No. of Participants	Date
National training course on multiplication and distribution of cassava and sweetpotato planting materials	30	2-13 July, 2001
Agro-processing and Nutrition. New recipes of cassava and sweetpotato	26	29 Oct-9 November, 2001
Women Training in Chiquelene on the utilization of orange-fleshed sweetpotato	12	7 December, 2001
Multiplication and distribution of planting materials. agronomy and utilization	16	25-29 March 2002
Agro-processing. Nutrition and utilization of cassava and sweetpotato for the Food for the Hungry International staff and collaborators	8	15-19 April, 2002
Agronomy of cassava and sweetpotato for Africare/INIA directed to the technicians of Sussundenga research station	5	22-27, October 2001
Agro-processing/Utilization of cassava and sweetpotato directed to the ADRA technicians and DDA of Mocuba	32	2-5 June, 2002
Nutrition and integration of nutritional concept in primary school curriculum in collaboration with ANSA to the pupils of Cumbene primary School in Marracuene	38	25 January to 18 February, 2003
Agro-Processing and small business development to the group "Association of orange-fleshed sweetpotato processors of Cumbene"	10	7-9 March, 2004
Agro-processing of orange-fleshed sweetpotato to World Vision staff in Zambézia	9	27- 30 May, 2004
Techniques and technologies to reduce the risk of food insecurity in coordination with MISAU	15	18 -19 August, 2004
Agro-processing and nutritional aspects of cassava and orange-fleshed sweetpotato for technicians from 12 districts of Inhambane. selected by DPA Inhambane	8	13- 15 October, 2004
Multiplication of cassava and orange-fleshed sweetpotato for technicians from 12 districts of Inhambane, selected by DPA Inhambane	9	13- 15 October, 2004
Integrated pest management of cassava and	31	18-22 October, 2004

sweetpotato: Rapid and conventional multiplication in collaboration with Save the Children Nampula		
Evaluation of palatability of Xima made of Rale (fried grated cassava) in Nampula	30	7-9 September, 2005
Multiplication of cassava and sweetpotato to the technicians of ATAP	22	April, 2004
Multiplication of sweetpotato to the technicians of VIDA (Voluntarios Internacionais para o Desenvolvimento da Africa)	10	2 August, 2006
Multiplication of sweetpotato and disease and pest of cassava for new staff (technicians)	8	18-23 April 2006

Training Agro-processing and commercialization of OFSP

Theme	Participants
Production	
How to produce sweetpotato?	105
Selection of good quality planting materials	79
Desinfection of vines for planting	59
Conventional Multiplication	58
Harvest, selection, Washing and transport of OFSP for sale	42
Selection of OFSP for market	52
Selling sweetpotato in identified market	38
Promotion and selling sweetpotato	2
Total producers trained	435

Aware nesses - Display/ expositions/promotions

Activity	No of people attended	Date
Exposition for the occasion of the visit of former president Joaquim Chissano	>100	22 January, 2005
Display/Exposition for the visit of USDA Vice-President	>50	17 February, 2005
Display/exposition at food fair (International school of Maputo)	>300	12 August, 2005
Display/Exposition of technologies for the visit of the Minister of Science and Technologies at IIAM	>40	29 August, 2005
Display/Exposition of products for the Deputy Director of IITA	14	17 August, 2005
Display/Exposition at the 1º. Symposium to address Poverty, Food Security and Nutrition by SETSAN	>200.	5 September, 2005

Display/Exposition. Third Science and Technology event.	>200	12-17 September, 2005
“Display/exposition on Orange-fleshed sweetpotato to improve nutritional status. Meeting held at IIAM with collaborators to discuss project results	>55	28 September, 2005
Promotion of OFSP products in Shoprite	>500	19 May, 2002
Promotion of cassava products in Chagalane with women group of Gaiato’s house (catholic Mission).	>50	21 May, 2002
1. Field day/Nampula. Demonstration of Agro-processing equipment	21	18 December, 2001
2. Field day/Gaza Demonstration of OFSP processed products in collaboration with Save the Children	218	15 March, 2002
3. Field day/ Chokwe Research Station. Field multiplication trial, processed products, agro-processing equipments and films.	159	26 February, 2004
4. Field day/Umbeluzi Research Station during the visit of the DDG of IITA. With the presence of Deputy Minister of Agriculture, several NGO’s farmers, and extension agents.	>128	22 April, 2004
5. Field day/ Post Agronomic of Nampula (PAN) during the visit of DDG of IITA.	53	30 August, 2004
6. Field day/Namanjavira, Zambézia. Presence of the administrator of Mocuba. Director of INIA and several NGO’s operating in Nampula and Zambezia and farmers.	>233	02 September, 2004

Partners

There is about 56 partners since (2005-2007) who assisting in the distribution of OFSP in 8 provinces of Mozambique

Objectives of Breeding Program

- Identification and release of adapted OFSP varieties that meet consumer preferences
- Investigate the potential to select for drought stress in OFSPs
- Screening new promising OFSP clones
- Develop new genetic variation in OFSPs for further selection with potential to benefit Southern Africa
- Capacity strengthening:
 - Masters degree in breeding by Jose Ricardo with drought-research fieldwork to follow
 - Collaboration with Ivonne Muocha on molecular characterization of parental material for crossing block at Biotech Lab of Eduardo Mondlane University
 - Exploit Advantages of Clonal Propagation
 - 57 Clones for Multi-location
 - Genotype selected from 352 families planted in the screen house March to July 2008 at IIAM

Drought: Challenge in Seed Systems

1. How do we increase the availability of healthy planting materials in timely manner and sustain vine multiplication effort
2. Improve timely availability of vines for on-farm vine production and commercial multipliers following dry periods
3. Improve quality of planting material through the provision of clean, disease –free planting materials
4. Vine survival (maintaining strong vines during the dry season and rapid re-sprouting in the rainy season)

Drought Study within OFSPs

58 clones tested at 1 location in 2 treatments

=> Response to drought is extremely genotype dependent

58 clones tested at 1 location in 2 treatments (1100mm, 556mm water supply)

Treatment effects for Yield & Biomass not significant.

Large genetic variation and genotype x drought-environment interaction

=> There might be are large potential to select for drought stress in SP

Vine survival

- Challenge in the seed system
- How do we increase the availability of healthy planting materials in timely manner and sustain vine multiplication effort

Trial Established

- Seventeen (17) OFSP clones and one local clone, different for each site, were used in 9 sites.
- Length of vines
- Diameter of vine
- Vine vigor determined on the basis of visual appearance
- Vine color determined on the basis of visual appearance

Lessons Learned

- Lessons learned from the first phase of OFSP dissemination
- Multiplication and dissemination effort during this phase is modifying its approach to emphasize the creation of **decentralized multiplication centers that are commercially oriented**
- The goal is to identify and establish **entrepreneurial individuals or community-based organizations as vine sellers for their communities**, as well as develop their capacity for large-scale OFSP root production to potentially provide a reliable supply of roots for processors and non-OFSP producing consumers.

Sweetpotato Variety Maintenance, Dissemination

Maintaining

- Maintaining varieties and clean pre-basic planting material is generally a critical
- Viruses are of particular relevance to sweetpotato varietal maintenance,

- In-vitro “mother plants” are propagated to be planted in greenhouses under specially quarantine conditions, which prevent contact with disease-transmitting vectors.
- The “mother plants” serve as sources for cuttings for “seed” (S) vine production under field conditions

For supporting the Zonal Centers program in Mozambique

- Ten sweetpotato varieties are being cleaned (best local and best BCRS materials). Work on-going;
- About 1000 plantlets of clean pre-basic planting material are supplied annually to provincial multiplication programs (Manica, Tete, Zambezia, Maputo, Gaza)” Work on-going;

Capacity Building

- Greenhouse and field studies comparing rapid screen techniques for drought in the greenhouse with the field screening (Jose Ricardo master thesis) is finalized;
- Master’s training in UKZN, South Africa. Field Work finalized, data analysis has been initiated;
- Five skilled Mozambican technicians were trained in crossing techniques;
- Three technicians trained in screen house plant and facility maintenance;
- Three technicians trained in diagnostics and tissue culture techniques; and
- Two students finished their (honor’s BSc) and one Master’s.

Awareness creation in communities

Posters etc.

CHANGE

- Creation of decentralized multiplication centers that are commercially oriented
- Identification and establishment of entrepreneurial individuals or community-based organizations as vine sellers for their communities
- As well as develop their capacity for large-scale OFSP root production to potentially provide a reliable supply of roots for processors and non-OFSP producing consumers
- Revolving fund

Sweet potato Production in Lesotho

By

Ms Mokhantso Morahanye

Introduction

Since early 1990's Lesotho experienced the worst drought that caused the widespread shortage of food, water and the deterioration of animal and human, health.

Lesotho has, for a long time, relied on the culture of Maize, wheat and Sorghum production thus this has increased the risk of vitamin deficiency, as a result this led to the introduction of Sweet potato in the country, as an intervention to the problem.

Tuber and root research program on this crop started in 1992.

The planting materials were supplied by IITA, and AVRDC the reason being that Lesotho had no germplasm of its own

After sweetpotato's arrival in this country in 1992, a baseline study was carried out as an assessment of its production and utilization. It was found that sweetpotato was once known and planted in the country obtaining tubers from the market but somehow became extinct. The results of the survey enforced Agricultural Research Department to do a lot of investigations that included screening of varieties for adaptation and acceptance.

BASELINE STUDY

Before the establishment of sweet potato in Lesotho, baseline study was conducted to assess the status of its production and utilization in Lesotho.

OBJECTIVES

To assess the present status of sweet potato production and utilization

To introduce sweet potato as a crop to farming communities.

MATERIAL AND METHOD

- Baseline was conducted in the lowlands, (Maseru, Berea and Mafeteng), Foothills (Nyokosoba, Pitseng and Sefikeng) and Mountains (Semonkong, Thabatseka and Qacha'snek).
- The three Agro ecological zones represent blocks or replications (meaning there were three reps), from each zone.
- Three locations were selected and from each location, five farmers were selected at random.
- Based on that, a simple questionnaire was developed and utilized to collect information such as, area planted, yield per area, adaptation and acceptance.

RESULTS

- Germplasm of four varieties of sweet potato were selected and identified as 490059.5, 192004.6, 490061.2 and 191005.1 and multiplied. In addition to that farmers identified promising varieties such as 88.002, Vanshu, Brondal, Zapallo, Japon, Tres and Selecto, the main emphasis was yield, root quality and pest and disease tolerance.

PROBLEMS ENCOUNTERED

- Delay on multiplication and distribution of sweet potato.
- Selected germplasm could not tolerate highlands conditions.

- Farmers consume all the produce without saving seed for the next cropping season.

DEPARTMENT INVOLVEMENT

- Since 2006 to date the Horticulture Section provided vegetative planting materials to various groups: farmers, schools and non government organizations.
- The department is focusing on developing a sustainable system of propagation and distribution of vegetative planting material.

PLANNED ACTIVITIES

COLLABORATORS INVOLVED

- Lesotho Agricultural College. Leribe Campus
- District Agricultural Offices
- World Vision
- Mapoteng Wellness Centre-

FUTURE DEPARTMENT FOCUS

- Exploration, collection, documentation and promotion of sweet potato.
- Extension of vegetable research to other ecological zones of the country
- Establishment of home gardens
- Use of organic fertilizers
- Encourage training and research-extension linkage
- Provision of more staff, funding and facilities i.e. greenhouses, shade houses etc.
- The below mentioned collaborators to be involved
- The National University of Lesotho.
- Department of Field Services.(Agric Information through Radio Programmers) and Department of Nutrition

STATUS OF SWEETPOTATO RESEARCH IN BOTSWANA

By
DR GEOFF WILES

Background about country climate

Rainfall

The rainfall is the highest in the summer seasons with Jan – Feb the highest.

Temperature

The maximum temperatures vary between 22 and 35 °C in two different areas like Maun and Gaborone, where the minimum varies between 4-20 °C.

Sweetpotato production in Botswana

- Generally planted on a small scale
- Most important in north-eastern Botswana (Francistown area) and Bobirwa area (Central District)
- May be grown as a dryland crop or with irrigation
- Consumers in northern Botswana prefer white-fleshed varieties with high dry matter
- Consumers in southern Botswana prefer soft fleshed sweet varieties (no colour preference)

Sweet potato research in Botswana

The main focus of sweet potato research has been:

- Variety evaluation
- Identification of optimal planting and harvesting dates
- Comparison of irrigated and rainfed production

Trials have been conducted in three phases:

- Early trials (1981 – 1985) [Sebele only]
- SARRNET Phase 1 (1995 – 1998) [Sebele/Bobonong]
- SARRNET Phase 2 (2000 – 2009) [Sebele/Maun]

Sweetpotato Marketable yields, Sebele, 1981 – 5 (t/ha)

Variety	1981-2	1982-3	1983-4	1984-5
Brondal	31.7		17.8	9.1
Eland	30.3		20.0	23.9
Ribbok	29.7	26.3	17.6	33.2
Impala	26.5	30.1	26.7	38.4
Steenbok	19.5			
Kudu				10.5
Bosbok				12.4
Mafutha				9.4

SARRNET Phase 1 Trials: 1995-8: Yields (t/ha) of top 12 varieties

Variety	Sebele	Bobonong	Mean
Blesbok	48.7	58.6	52.7
Ribbok	41.7	41.0	41.4
TIS 3290	26.8	36.2	30.7
Xushu 18*	25.7	31.7	28.7
Japon Tresmesino	24.3	33.1	27.9
Mafutha	30.8	15.5	24.5
LM 88.002*	15.0	35.4	23.3
SPN/0 (Kenya)	26.0	19.2	23.2
Yan Shu-1*	18.4	29.4	22.9
Eland	32.8	6.0	21.9
Bosbok	23.7	17.5	21.2
TIS 2434	19.4	23.5	21.1
* Prone to tuber cracking			

SARRNET Phase 2 Trials: Main findings

Planted	Harvested	Main findings
16th Feb 01	16th Jul 01	Planted very late; yields low. Only two lines (1994-5-1 and 1995-13-2) yielded over 10 t/ha
20th Dec 01	21st May 02	Moderate yields; A59 gave top yield of 24.5 t/ha. Four other varieties/lines gave 15 t/ha or more (A56, A2, Blesbok and 1997-18-1)
25th Nov 03	10th May 04	Good yields; A59 gave top yield of 34.4 t/ha. Six other varieties/lines gave 20 t/ha or more (A56, A40, Kenya, W119, 1994-5-1 and Tainung 64)
26th Jan 06	13th Jun 06	Planted late; low yields. 1994-5-1 gave top yield of 22.7 t/ha. Only two other varieties/lines gave over 10 t/ha (W119 and ST 87-030). A59 performed poorly with 50% of tubers cracking.

Objectives:

- To screen newly introduced varieties under Maun conditions
- To evaluate recommended varieties (Sebele/Bobonong) for their performance in Northwest Botswana (2007 – 9)
- Recommended variety Kenya remained vegetative and produced little or no tuber yield in three seasons (2004/5, 2005/6, 2006/7)
- Only 1994-11-3 gave any significant yield in 2004/5 and 2005/6 trials
- A59 gave high yields but poor to very poor quality tubers (2006/7 and 2007/8)
- Other recommended varieties (Blesbok, Impala, Mafutha, Ribbok) were obtained in 2007 and gave satisfactory yields in 2007/8 and 2008/9 trials

Marketable Yields of Selected Varieties*: Maun - 2006/7 to 2008/9

Variety	2006-7	2007-8	2008-9
1994-11-3	11.6	24.6	25.3
A 59**	18.6	2.5	
Blesbok		31.1	17.5
Impala		14.5	24.5
Mafutha		21.2	10.7
Ribbok		30.7	30.2

* None of the other varieties included in trials (Cemsa 74, Tainung 64, W 119, Kenya, 1987-16-1, CIP 42008) gave yields above 10 t/ha in any trial.

** Variety A 59 had a very high incidence of tuber cracking which reduced marketable yields; total yields were 39.9 and 24.1 t/ha respectively

Marketable Yields of Selected Varieties*: Maun - 2006/7 to 2008/9

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** Variety A 59 had a very high incidence of tuber cracking which reduced marketable yields; total yields were 39.9 and 24.1 t/ha respectively

Conclusions

- Varieties Blesbok, Impala, Mafutha and Ribbok have given fair to good yields in all Botswana trials (Sebele, Bobonong, Maun)
- No orange-fleshed variety has consistently given good yields of good quality tubers
 - A 59 has given high yields but has shown severe tuber cracking in some trials
 - Eland has done well at Sebele but poorly at Bobonong
- For optimum yields sweet potatoes need a growing season of at least 4 months before 15th May, when temperatures start to fall rapidly
- When sweet potatoes were grown without irrigation yields were only 51% of the irrigated crop

**Vitamin A Supplementation
Nutrition and Food Control
Department of Public Health, Botswana
By
Lorato Nelson**

Challenge to Botswana

- 1994: 35% of children 0-71 months of age had sub-clinical Vitamin A deficiency (moderate to severe)
- 3% of children had severe vitamin A deficiency
- <35 of households eat Vit A rich foods at least 3X a week
- Following the micronutrient study Vitamin A Supplementation programme was piloted in 1 district and later up scaled to the whole country.
- Was given to children under 3 years, however it now has been increased to cover all children under 5.
- However, of recent years infant mortality has increased.
- Infant mortality rate is currently at 75 deaths per 1,000 live births

What is being done

- Routine supplementation - all children attending child welfare clinic
- 2009 : 2 vitamin A supplementation campaigns - June and November
- Accelerated routine supplementations (month) in subsequent years
- Nutrition education to improve dietary intake

If a child has not been supplemented at all in the past, give the child the appropriate dose for their age and continue with the recommended doses at subsequent visits. Make sure that 6 months pass before the next supplementation.

Important Precaution: Check the Child Welfare Card. If the child received Vitamin A capsule within the last 4 weeks, do not give vitamin A supplementation.

Reason to Act

Improving vitamin A status of deficient children increases their chances of survival

- Death from measles can be reduced by 50%
- Death from diarrhoea can be reduced by 33%
- Overall mortality can be reduced by 23%

General Discussions

Are sweet potatoes a gender crop?

It looks like woman are growing it more than men, but men like it as much as woman and like the sweet and dry varieties.

Is there any social responsibility / contribution that the ARC can organise that the partners can benefit from their scheme?

S Laurie answered that ARC had to try and get funding in order to provide partners with OFSP

Mr Modise indicated that there should be a source to supply the hospices and crèches with OFSP and this can only be done if ARC can be augmented financially.

Dr Faber indicated that MRC can provide funding for research but it will be the responsibility of government to do social responsibilities.

Mr Modise make the audience aware that there is food security offices in all provinces that can also assist.

Lesotho wants to buy cuttings from Zimbabwe?

But you can get cuttings from ARC-Roodeplaat.

**HarvestPlus reaching the end-users – OFSP project:
Promoting orange sweet potato in Mozambique and Uganda**

**By
Dr Anna-Marie Ball**

Orange Fleshed Sweet Potato in Mozambique and Uganda (2006-2009)

- *cost effective strategies* for farmer adoption and consumer acceptance of OFSP
- Identification of *bottlenecks* in the production-marketing-consumption continuum
- Translate **successes** and “**lessons learned**” in the deployment of OFSP into “**best practices**” for application by HarvestPlus and other biofortification programs
- Randomized control study in two countries

“Making an impact on human nutrition and health” – Created awareness

Sweet potato is a seasonal, secondary crop

- One primary growing season (sometimes a smaller second season)

Seed Systems & Agric Extension

Vine distribution to farming house-holds in 4 districts

Each household (man and woman) received 2-4 kg of OFSP vines (free); opportunity to buy more at subsidized prices (responsive vine distribution policy)

Trainings for Agriculture Promoters

- Planting of OFSP
- Production of quality roots
- Vine conservation
- Fresh storage of roots
- Pests and diseases

Medium Scale Producers for roots and vines - Vouchers for vines

Nutrition & Demand Creation

Nutrition promoters teach mothers on the following aspects....

- balanced diet,
- exclusive breast-feeding,
- complementary feeding,
- care & feeding of a sick child
- hygiene and sanitation

Recipe Demonstrations

With orange sweet potato

And other locally available foods (seasonality)

Community Channels

Community drama

Used to address various topics of relevance to the project

- Introduction of the project
- How to obtain and plant vines
- Importance of Vitamin A, Nutrition
- how to market

Influential groups

Training of:

- Grandmothers (mothers-in-law)
- Community leaders, fathers

Mass Media

Radio programs and Spots

- translated and broadcasted into Portuguese and 3 local languages (vitamin A, production, marketing)
- Radio novella – integrated messages with HIV/AIDS

Songs (key messages)

- Distributed to radio stations and used in other events

DVD IS REMARKABLE

Market and Product Development

Training of sweetpotato traders

- Traders trained in improved trading practices
- Traders linked to medium scale producers and promotors
- Promotional sign boards for traders

Market strategies



Awareness raising designs of sweetpotato figures – but reaction was initially negative. People were afraid they will also end up with thin legs etc.

Be careful what drawings are used

Promotion of golden bread and juice

Market Promotion Event Days

Within the province; neighboring provinces; Cross border

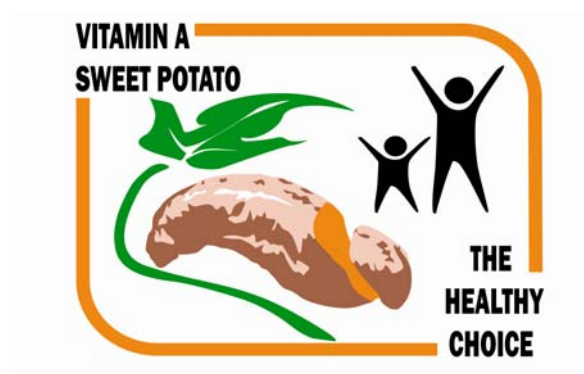
Songs, samples of OFSP and products, vines, information

T-shirts, capulanas, scarves, caps

COLLABORATORS

<i>Implementation</i>	<i>Uganda PRAPACE with VEDCO and FADEP</i>
	<i>Mozambique World Vision with Helen Keller Int'l</i>
<i>Operations Research</i>	<i>International Potato Center – Seed Systems and Farmer Extension</i>
	<i>Natural Resources Institute, U of Greenwich – Markets and Product Development</i>
	<i>HarvestPlus /IFPRI – Demand Creation</i>
<i>Impact</i>	<i>International Food Policy Research Institute International Potato Centre</i>

BRANDING OF SWEET POTATOES



Varieties

2 pre-release OFSP

2 Land races

Vine Production happened at central places and distributed by bicycles

National Research Centre

Local (trained) Farmer Groups

Training

- Train Extensionists
- Extensionists train Promoters
- Promoters train farmers in production and nutrition

Nutrition Education

- Cover basics in nutrition, infant and young child feeding and maternal nutrition (target pop)
- Methods: presentations, focus groups, practical sessions, cooking demos

AWARENESS

Drama and Songs Script developed by and reviewed by the team,

- translation by extension workers & drama groups
- Rehearsals with extension worker and DCS support
- Presentations at parish level, on field days, during vine distribution

Field days

Targets local leaders, community and stakeholders

- Project objectives & activities shared with communities & leaders
- Exhibitions by farmers/promoters

- Field visits
- Drama and songs
- Marketing of OFSP and products
- Testimonies from farmers

SUCSESSES

OFSP Products

mandazi, half-cakes, chapatti, biscuits, “crackies”, juice, kabalagala (“pancake”)

Marketing of OFSP

- Bicycle traders
- Village retailers
- Market traders

Promotional Tools

- Signposts
- Boards
- Aprons

Promotional Tools

Sensitization of schools

Sensitization meetings conducted in primary schools

Posters and brochures distributed

Vines distributed for those with school gardens

INCLUSION OF OFSP IN GOVERNMENT PROGRAMS

Social Development Eastern Cape Province

By

Mr Ayanda Qetsini

The OFSP is something that can fit into their social development plan, especially where the recipients of grant can be encouraged to plant OFSP.

It will be needed to train the staff on crop production to support the programs properly.

Profile: Mokasa Primary School Sweet potato project School-community partnership

By

Mr Thapelo Sedupane (School garden program, Department of Education)

BACKGROUND AND DISCUSSION

Mokasa Primary School is located in Dr Ruth Segomotsi Mompati District in the North-west Province of the Republic of South Africa. The district is one of the 21 Presidential nodes and majority of the people are living below the poverty level. In 2007, the Department of Education in partnership with Agricultural Research Council introduced the trial project in order to empower school communities around the district with expertise, knowledge and experiences on the establishment, management and propagation of sweet potatoes in production and nursery units.

Strategic Objectives: Mokasa Primary School Project

1. To develop knowledge, experience and practical skills of school community on the production, management and establishment of sweet potato production and nursery units
2. To ensure the sustainability of the school nutrition programme through the setting up of food gardens and other food security initiatives
3. To facilitate the establishment of the school based nursery which will serve as a resource centre for the district

Step by Step Process of establishing the Project

- 1. Debriefing, Land layout and preparation**
- 2. Measuring out, fertilizer application and preparation of ridges**
- 3. Planted Plot**
- 4. After 5 months Project team members harvest, grade sweet potatoes**
- 5. Graded Sweet potatoes according to cultivars**
- 6. Tasting time by Project team members**
- 7. Our Strategic Partners in the Project**
- 8. Achievements 2007-2009**

4 capacity building workshops were held for 110 educators, 110 learners and 70 parents.
Three harvests of sweet potatoes successfully completed

School based nursery has been established and sustained
The project is supplying the neighbouring schools in the circuit and district with sweet potato cutting
Learners have ample access to vitamin A rich orange fleshed sweet potato in their diet, thus supplementing the feeding scheme in the schools

9. CHALLENGES

- Poor management of the school garden records
- The educator regard the programme as add on activity.
- Minimal or no parent involvement in the school project
- Inconsistent monitoring and reporting of the garden initiative

Plans for Sweet Potato **Mr Monde Sotana (Eastern Cape Dept. of Agriculture & Rural Development:** **Agri-Business Directorate)** **& Reg Barry [OTP]**

Objectives:

- Growing of Sweet Potato for household nutritional purposes for rural poor communities.

Progress to date

In the process of sourcing the plant propagation material, funding and expertise
But nothing happened yet

Stakeholders:

- Eastern Cape Dept. of Agriculture
- University of Fort Hare
- Office of the Premier

Planned and current activities:

- Establish mother garden, nursery & tissue culture propagation centre
- Maintenance & evaluation
- Business & technical skills transfer
- Collaboration networks
- Potential to expand considered pending the success

National School Nutrition Program (NSNP) EASTERN CAPE

By
Mr Unathi Sinhlahla

This program has set 3 objectives

- Feeding the learners
- Food production

- Nutrition education

The program has R420 000 000 to feed 5 million learners in Eastern Cape and would like to participate in OFSP program but the budget is already allocated for this year. Contractors are being contracted to feed the learners.

A set menu is given to contractors and it includes starch, protein and vegetables, 123 contractors are appointed to feed the learners.

A proposal is received for promoting school nutrition for children. Local OFSP growers are welcome to sell their produce directly to suppliers to ensure they feed the learners properly.

University of Fort Hare

By

Ms Mapaseka Mphaha

She is willing to collaborate in supplying mother material to projects and students to assist in research, disseminate information on OFSP, nutrition project, feasibility studies and social works.

Care and Support for Teaching and learning

SCCS May 2005- March 2009

By

Ms Elma Maaga

BACKGROUND

- The Schools as Centres of Care and Support project is a partnership project initiated by the provincial Department of Education, MiETA and funded by the Embassy of the kingdom of the Netherlands. Other partners include sister government departments, non-governmental organizations, community-based organizations, faith-based organizations and school communities.
- The strategy is based on the premise that schools are often the strongest and most stable institutions in rural communities.
- If the school and community structures are empowered, they will be able to lead a strategy that responds to HIV and AIDS and improves care and support for orphans and other vulnerable

GOAL

- Reduce the negative impact of HIV and AIDS and poverty on impoverished school communities, and especially on orphans and vulnerable children (OVCs), in the North West Province.

What is an outreach programme?

- Access and retention (getting children into school)
 - Helping parents obtain maintenance for children
 - Gardening, jam making, and chicken egg laying for food security
 - Home visits
 - Obtaining official documents – IDs, birth certificates, death certificates, marriage certificates
 - Obtaining social grants
 - Accessing support for the physically challenged
 - Recreational activities
 - After school care
 - School feeding scheme
 - Skills development in income generation.
- Building partnerships- schools, communities, government departments, NGOs, CBOs, FBOs, municipalities, traditional leaders, business etc

Registration Campaign for Home Affairs

School community members opening bank accounts

Skills development for food security and income generation

Established school and home vegetable gardens

Trained teachers, and School Support Team members
(workshops)

- Teachers and School Support Team members trained
parents, caregivers and children

Gardening tools, seeds, seedlings, fertilizers and some boreholes and tanks
accessed largely through project funds

Parents, caregivers and children who have been trained are
helped to establish home gardens

- A professional gardening coordinator / nutritionist monitors and
supports the cluster and school-based farmers encouraging sustainability
- The Department of Agriculture provides ongoing skills
- The produce from the gardens is used to supplement the school
feeding scheme

Vulnerable children are given vegetable packs to take home to
their families on a regular basis

Harvesting orange-fleshed sweet potatoes at Mokasa primary school

Schools conduct regular market days to sell the excess to the community

Establishment of 35 CBOs for income generation

Achievements

- 280 schools are functioning as centres of care and support.

- 35 clusters have been trained in CBOs establishment to sustain care and support in school communities. 15 CBOs have received NPO numbers but still need more support.
- Ongoing internal monitoring and evaluation has been done by MiETA and North West DoE
- The National Department of Education has adopted the SCCS model as a strategy for implementing care and support across all provinces.

Awards

- ❖ The SCCS project has been awarded the **Global Best Award** in the category: ‘Promoting Health and Well-being in Education’. Presentation of award by International Partnership Network at a conference in **Finland (1-5 Sept 2008)**
- ❖ SCCS awarded prestigious certificate from Centre for Public Sector Innovation in the category ‘Innovative Partnership in Service Delivery’ 28 November 2008
- ❖ SCCS awarded bronze at the Premier’s Excellence Awards in category ‘The best Innovation in the NW DoE’ 11 December 2008
- ❖ SCCS awarded silver at the MECs Excellence Awards in the category ‘The Best Innovation in the NW DoE’ 23 January 2009
- ❖ Vodacom donated twenty thousand rand (R20 000) towards the sustainability of school vegetable gardens

GENERAL DISCUSSION

What is the role of paroled prisoners in such a project?

They can be used and show to them that they are accepted in the community. Can be part of rehabilitation program. They are willing to work.

Skills development programs can also be approached in each province to fund projects.

Is ARC willing to provide virus free material to Botswana and other regions??

YES but order in time and sanitary certificates must be issued or that ever the case might be in each SADC region.

WORKSHOP – 3 September 2009

The Home-garden project in Ndunakazi

**By
Dr Mieke Faber**

This presentation made it clear that yellow and green Vitamin A rich foods were not readily available in Ndunakazi in 1999 when the study started.

As times went on the vegetables started to be more available and after 4-5 years it only declined again with 6 %. This study indicated very clear that the community took the concept and apply it to better their livelihoods.

The knowledge increased like 80% of the mothers know about Vitamin rich foods after it was introduced to the community. Except for the knowledge the the vitamin A intake is still only 35% of what it is suppose to be.

In 1999 only 150 house holds participated in the study in the Ndunakazi community but 1120 in 2002 and in 2007 still 662 households participated.

In 1999 the vitamin A intake was very low and since the study started it increased meaningful with the fruits and vegetables that that was introduced. Another remarkable remark was that imifino and spinach supplement each other very good during the Feb, May, August and November

Nutrient contribution of vitamin A-rich vegetables and fruit (%)

Vitamin A	49 – 74
Iron	13 - 31
Calcium	17 - 36
Riboflavin	8 - 16
Vitamin C	10 - 21
Folic acid	2 – 13

Conclusion

>40% of the households planted vitamin A rich crops

1/3 of the households obtained vitamin A rich vegetables from a group or community garden (2 group gardens)

INCLUSION OF OFSP IN PROGRAMS OF NGO'S

Food Garden Foundation

By

Ms Hilda Pheto

The foundation started in 1976 due to food insecurity reason, mainly Soweto.
The main concept is to do it organic, use IPM methods
Mainly operated in Gauteng and changed the names to Peace Gardens
Then it started at clinics, schools, households
Mulching and intercropping
Now it goes into all provinces
Would like to encourage vitamin A rich vegetables
Already started to negotiate for OFSP cuttings
Work with support groups
Lots of cooperative companies would like to fund food gardens as a social responsibility
Also linked with ELC – Nestle
National department of Health use them to establish gardens in schools, clinics and TB groups.
Will contact the ARC to establish a few nurseries for OFSP.

WESSA Eco-Schools Program

By

Mr Phikisile Zondani

What is an Eco-school?

A school that has made a commitment to continuously improve its environmental performance.

Working towards

- better environmental learning
- better environmental management

Very active in Border – Kei Region

- 6 Primary schools
- 3 ECD centres
- 1 High school
- 4 BK schools

Sustainable Livelihoods Education Program

Home-based nutrition and health Improvement

- Improves the nutritional and health status of household and vulnerable orphans and children (VOC).

School Feeding Scheme Program

Improves school feeding scheme through the development food gardens and good water management strategies for sustainable food production

Teaching and learning for a Healthy Environment

- To support curriculum development linked to environmental learning and teaching

Partners

Buffalo City Municipality, E.L.Museum & Aquarum, ESCOM, Dept of Education
Dept of Agriculture, Social Development

Funders

- World Wildlife Fund
- Tetrapak
- Nestlé

Canzibe Primary School Networking will be used as a good example and move forward to the other schools.

Cotlands Nutrition Program
By
Ms Nomapha Mbili

Components to target the problem, they are already involved in:

Psychosocial

- Nutrition counseling and education
- Individuals
-households
- Purpose

For them to adopt healthy behaviors.

Sustainability

- Activities
- Food gardens

Food supplementation

- Feeding sites

Pre-schools

Nutrition education workshops

Primary schools

Clinics- children on Anti TB drugs

Community gardens

Education and stimulation

Stimulation -especially children with mental disabilities

Education-themes on health calendar and education curriculum

Health promotion

Plan

Health care

- Community based growth monitoring and promotion
- Rehabilitation
- Disease identification and referral
- Micronutrient supplementation

Lessons learnt

- Community participation
- Knowledge sharing

Expansion plan

Toy library

Bakery

Health promoting schools

General Discussion

Sweet potato processing is lacking in SA

Dr Faber comments that we must be careful of what of the processed foods are promoted and make sure about the nutrition first.

There must be a clear message between income generation and nutritious food.

Several people comment on this issue and others advised that 5-a-day must be consulted.

Remember the plate of nutritive food must always be attractive

Other institutions complained that money is a issue to implement such a program

In Lesotho the school feeding schemes are managed by the head of schools and they are responsible to check the menu's and sometimes recommend a menu.

In SA each province differs in how they manage the feeding schemes.

May be the workshop must come up with a policy statement to amend school feeding schemes.

Development of country strategic plans

Country Plan for South Africa

Goal

Enhance national food security and Vit A nutrition by complement existing programs

Objectives

- Availability; effective or continuous supply of nutritious food at both national and household level
- Food access or effective demand; ability of nation and its households to acquire sufficient food on sustainable basis
- Increase household food production
- Enhance safety nets and disaster management systems
- Strengthen public good i.e infrastructure, information and technology
- Improving the storage life of basic and nutritious foods at the farm/ household level

Activities

- Creating awareness by sharing success stories and experiences
- Facilitate the establishment of sustainable seed system
- Develop promotional and training material
- Assist and support existing projects technically
- List groups and gardens were active
- ARC will provide mother material
 - Virus free material
 - Already evaluate cultivars in many areas
- Establish 10 nurseries in local municipalities (EC)
- Establish 280 little nurseries for serve 1200 school in 5 districts
- Fort Hare Primary nursery and Univ NW

Target groups

Children between 2-5 years

School children

Chronical sick – Hospices, TB groups, HIV/AIDS

Constraints

Need other stakeholders to work in close relationship with each other

Monitoring and evaluation is essential

Problems with livestock

Funding for implementation

Adoption strategies

Generalize the school feeding scheme – incorporate it with school gardens through department of Education

Establish nurseries at municipalities or schools or clinics
Include OFSP in curriculum
Work in close relationship with NGO – Spread same message

Entry points

Institutes of higher learning
Existing nurseries (food gardens)

Demand creating

- Mass media
 - Local radio stations
 - Local news papers
- Focus groups
- Churches
- Woman org
- Youth groups
- Clinics
- Schools
- Crèches
- Traditional councils

Marketing

Need awareness and to identify local marketing channels

Expected outcomes

To increase household and school food security and Vit A intake
Improve income generation for rural and urban communities within the country
Sustain the knowledge and technology for use and handling of orange-fleshed sweet-potato
Improved understanding of value-adding or processing of the sweet-potatoes
Constant supply and production of sweet-potato by ARC and communities

Roles

Government

Funding
Technical support
Training
Providing resources
Monitoring and evaluation

NGO's

Training
Awareness campaigns
Implementation
M&E
Fundraising
Technical support

ARC

Mother material for nurseries

Training

Technical support

Implementation, budget and time frame?????

The implementation of this project will be piloted into two Provinces i.e North West and Eastern Cape with the collaboration of their Departments of Agriculture, Health and Education.

SADC Secretariat requested that a joint project proposal be send to them for funding of the two pilot projects. This mean that the two Provinces and ARC should draft a sound proposal of the pilot projects.

It was agreed that the time frame of the pilot projects should be two years and if successful should be roll-over to other Provinces.

SWOT

Strengths

Manual, some promotional material

ARC breeding program

Existing nurseries

Diversity in stakeholders

Recipes for processing to be promoted

OFSP all year available in EC

Weakness

No common goal yet

Must plan together

Must know and trust each other

Threats

Budget

Change and convince government on higher levels to fit this into the Food security program

Opportunities

Diversity of stakeholders

Departments shows commitment (Education, Agriculture, social development

Many NGO's

Country Plan for Mozambique

Common policy

Promoting crop-based approach to mitigate VAD in primary schools of Maputo and Gaza Provinces

Overall objective

To raise awareness among children and teachers about the importance of including OFSP in school gardening and its impact on the overall nutrition and income generation;

Specific objectives

- To improve the nutritional status of children and teachers of targeted primary schools;
- To increase income generation by targeted schools;
- To improve the knowledge and skills on school gardening among children and teachers.

Targeted areas

- 6 Primary schools from peri-urban area of Maputo and Gaza provinces
- Maputo: U6, Bagamoyo, Laulane and Cumbene
- Gaza: Maniquenique and Chibuto

Beneficiaries

- At least 100 children at each school from grade 4 to 7
- About 8 teachers per school will be involved

Partners

- Schools
- IIAM
- CIP
- MEC
- MINAG
- Save the children
- Millennium village (MCT)
- Communities surrounding the schools

Expected outputs

- Nutritional status of children and teachers of targeted primary schools improved;
- Schools income generation increased;
- Availability of dark-leaf vegetables increased;
- Knowledge and skills on school gardening improved.

Activities

1. Training of teachers and children on gardening, nutritional and processing aspects;
2. Establishment of nurseries and production plots;
3. Harvesting and assistance on grading standard of produce;
4. Linking the schools to the market;
5. School promotion through mass media;

6. Monitoring and evaluating the activities

SWOT analysis

Strengths	Weakness
<ul style="list-style-type: none"> • GOM interested in promoting school gardening; • Availability of land and water; • Availability of suitable OFSPV at IIAM/CIP • Availability of qualified expertise; • Availability of human capital to implement project activities 	<ul style="list-style-type: none"> • Cyclical drought and floods in selected provinces; • Lack of culture for school gardening; • Crop failure due to school break; •

Opportunities	Threats
<ul style="list-style-type: none"> • Consumers willing to purchase fresh and processed products; • Existence of GOM favorable policies towards better nutrition and food security; • High demand for OFSP vines; • High level of VAD in Moz • Drought 	<ul style="list-style-type: none"> • Drought • High prevalence of diseases and pests • Theft • Lack of funds for continuity

Resources needed

- Seeds;
- Gardening tools;
- Fertilizers and pesticides;
- Labeling tags and bags;
- Pan and pots;
- Stove;
- Other ingredients.

Country plan for Lesotho

Food security, poverty alleviation, good nutrition and reduction in HIV/AIDS impact.

Objective

Support and improve the national food security program in the country

OUTPUT	ACTIVITY	TARGET	TIME FRAME	RESPONSIBLE PERSON	RESOURCES	BUDGET (EUR)
1.0 Reduced vitamin A deficiency cases	1.1 Identification and sensitization of beneficiaries	180	7-12 SEPT 2009	- MOAFS - WV - RC - Farmers	-Transport - Pamphlets	
	1.2 Training of beneficiaries	180	21 – 30 Sept 2009	- MOAFS - WV - RC - Farmers	- Teaching Aids	
	1.3 Procurement of cuttings	1800	07 -30 Sept	- MOAFS - WV - RC - Farmers	- Transport - Meals	
	1.4 Planting demonstrations	1	October 2009	- MOAFS - WV - RC	- Planting material - Purchase order	
	1.5 Follow-ups conducted	10	October 2009 – April 2010	- MOAFS - WV - RC	- Transport	
	1.6 Field days	2	January and March 2010	- MOAFS - WV - RC - Farmers	- Transport - Subsistence	
	1.7 Harvesting and storage	1	April 2010	- MOAFS - WV - RC - Farmers	- Transport - Labour - Store material	
2.0 OFSP	2.1 Cookery	14	May	- MOAFS		

promoted	demonstrations		2010	- WV - RC - Farmers	- Transport - Cooking utensils - Stove -	
	2.2 Publicize through media	8	October 2009 and May 2010	- MOAFS - WV - RC - Farmers	- Transport	
3.0 Study tour conducted	3.1 Conduct study tour to SADC region	1	March 2010	- MOAFS - WV - RC - MOAFS - Farmars	- Transport - Subsistence	6216.00
	4.0 Cuttings locally accessed	4.1 Establish a nursery	1	Sept 2009 – Sept 2010	- MOAFS - WV - RC - Farmers	- Production material - Labour

SWOT ANALYSIS

Strengths <ul style="list-style-type: none"> ❖ Enough personnel and capacity ❖ Determined farmers 	Weaknesses <ul style="list-style-type: none"> ➤ No budget ➤ Un popularity of product
Opportunities <ul style="list-style-type: none"> ✓ Arable land ✓ Ample water 	Threats <ul style="list-style-type: none"> • Unreliable weather conditions e.g. (Early frost)

WORKSHOP – 4 September 2009

Discussion of information materials

Sharing, displaying information and training materials

Mozambique

1. Capulana (human skirt) – US \$ 8-10 each
2. t-shirt (the sweet that gives health / it gives strength and vision)
3. banner on walls at markets
4. sign/ bill board
5. wall painting
6. typical Mozambique family – man sitting on the small stool, women and children on the mat, (orange fleshed sweetpotato – good health, good vision, the sweet that give health)
7. Scientific poster – use of communication strategies to promote OFSP in Mozambique
8. video
9. profile poster for video
10. radio (on the spot; when there is an event, the radio was there broadcasting it)
11. children make songs: song on food – but the most important is to feed your children
OFSP for the vitamin A
12. poster with recipe

Training material – REU-Mozambique

Teaching cards; how to produce good quality roots, spacing, store sweet potatoes for 3-4 months (for agric promoters)

Policies of the program; who will get what, how much; conditions (on file)

Two manuals for marketing; (i) sweetpotato traders; (ii) marketing committees

Two nutrition manuals; for extensions with 7 diff topics; different manuals for promoters with same 7 topics; revise every year, add more exercises

Post cards of different kinds of food; each promoter had a set of cards; mothers had to make a balanced diet; caregivers give the diff vit A foods; ministry of health food groupings

Set of cards for nutrition extensions and promoters – how to feed a sick child; excl breastfeeding; 6-9 months; 10-24 months; recopies; vit A rich foods; hygiene practices; washing vegetables, pot and pans.

Calendars

Information

1. Recipe book
2. Pest and disease pamphlet
3. Conservation on OFSP
4. Poster on different weaning foods, plus a recipe
5. Poster with recipes with ofsp
6. OFSP production material (in Portugese)

Must adapt for each country to be applicable to the local customs.
Different people will interpret it differently.
Health messages need to be tested.
Involve the local people in design the material and defining the messages.
The original pictures were drawn by children, with a prize for the best picture. The artist then just adapted a bit.
Align nutrition education with Dept of Health guidelines
Lesotho (3 groups)
Botswana (food groups, moving to FBDG)
SA (FBDG)
All materials must be tested and retested – pictures with at least 10 people
Testing and developing is sort of a continuous process

Lesotho

Pamphlet – sweetpotato and 3 other crops production (adopted from material sent by Sunette)

Botswana

Leaflet on sweetpotato production, plus leaflets and carrots, curcubits, spinach, leafy braccicas.
Vegetable crop production manual
Pamphlet on sweetpotato for HIV/AIDS
Nutrition pamphlet (Ministry of health)

South Africa

Sweetpotato production manual
7-page fact sheet on sweetpotato production
Picture pamphlet
Home-garden manuals
t-shirts
pamphlets (food-based; ofsp)
Calenders
Posters

REU-Uganda

Training guide: seed systems; nutrition (ext); marketing and development (ext); trainers on processing (small one)
Combined all the above into one training manual
Training charts (like a flip chart) for (i) agric and (ii) nutrition
Pamphlets; general one on OFSP; making products out of OFSP;
Radio scripts; drama scripts
t-shirts; caps

Identification of needs for information and promotion materials

Manual

A need was expressed for a general crop-based manual for the region

Seasonal availability of vitamin A rich food require a more holistic approach

Production and use of vitamin A rich crops

Demand creation and marketing

Specific practices for different agro-ecological differences within the country will be added by the country

Extensioners and promoters are country specific

Research results on production processing and marketing

OFSP is new in Lesotho, they therefore need to do research

When they go in the production, they will get lot of the information to put in the manual

Biggest problem in Lesotho – keep planting material during the winter; conserve as roots

Botswana

General info on how to plant sweetpotato – they have info; little on utilization; no information on crop-based approach (the latter is therefore the most important)

Posters

Calendars (for SA only)

Poster on vitamin A rich crops

Sweet potato picture must be bigger than the other pictures

Must the poster have only OFSP or a combination of the crops?

Training poster to teach the crop-based approach

But each country had their own need for posters, pamphlets

And the needs were much more than the budget made provision for

Decisions

- 1) To develop a manual on the crop-based approach (based on the manual of South Africa with inputs from Mozambique and REU). The general manual will then be used by each country to develop a country specific manual per country
- 2) Each country will identify their needs for promotion and training materials to the value of €1980. Three quotes will be submitted to the SADC office.
- 3) In addition each country will identify needs for additional funding in terms of promotion and information materials. A request for additional funding will be prepared and submitted by Dr Geoff Wiles.
- 4) The protocol for testing of pamphlets used by Dr Ball in Uganda, will be made available to all.

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