

Annex 1. OFSP Awareness Campaign Organized from 5 to 20 October 2010

Date	Organization	Location (EPA)	Village	Time	Content of the Campaign	Attendance	Notes	Documentation
Tuesday 5 October	CU-DEDZA	Bembeke	Bembeke 1	9:00 am	Drama by Mtsetse Youth, speeches, dances	>500	More school children	
			Bembeke 2	2:00 pm	Drama by Mtsetse Youth, speeches, dances	>800	Mixed female, male, kids	
Wednesday 6 October	CU- DEDZA	Kanyama	Ngondo	9:00 am	Drama by Mtsetse Youth, speeches, dances	>400	Mixed female, male, kids	By professional Cameraman
			Madzumbi	2:00 pm	Drama by Mtsetse Youth, speeches, dances	>400	Mixed female, male, kids	By professional Cameraman
Thursday 7 October	MVP- ZOMBA	Thondwe	Makoka Cluster	9:00 am	Drama and traditional dance by Yoneco, speeches	135	Female: 37 Male: 74 Kids: 24	
			Mswaswa Clusters	2:30 pm	Drama and traditional dance by Yoneco, speeches	>400	Mixed female, male, kids	Film taken by Erna
Friday 8 October	MVP-ZOMBA	Thondwe	Msamba Cluster	9:00 am	Drama and traditional dance by Yoneco, speeches	>500	Mixed female, male, kids	By professional Cameraman
			Katete Cluster	12:30 pm	Drama and traditional dance by Yoneco, speeches	>600	Mixed female, male, kids	By professional Cameraman
Monday 11 October	MVP-ZOMBA	Thondwe	Nambande Cluster	9:00 am	Drama and traditional dance by Yoneco, speeches	>350	Mixed female, male	
			Dindi and Mwandama Clusters	2:00 pm	Drama and traditional dance by Yoneco, speeches	>450	Fem:75% Male: 25% Kids: several	
Tuesday 12 October	CU-PHALOMBE	Kadewere, Khamula, Karama	Khamula	9:00 am	Hope for Life Dancer, speeches	>400	Fem:75% Male: 25% Kids: several	
		Nalingula 1 Nalingula 2 Bokosi	Nalingula 2	2:00 pm	Phunzira Theatre, speeches	>250	Fem: 80% Male: 20% Kids: several	
Wednesday 13 October	CU-PHALOMBE	Sakhome, Chingwalu, Tawanga	Chibwana	9:00 am	Hope for Life dancer and Phunzira Theatre, speeches	300	Fem:170 Male:130	
		Muronya, Bwanaisa	Bwanaisa	2:00 pm	Hope for Life dancer and Phunzira Theatre, speeches	270	Fem:100 Male:50 Kids:120	Film taken by John Ndovi
Thursday 14 October	CU-PHALOMBE	Nachamba, Mpheni, Milambo	Nachamba	9:00 am	Hope for Life dancer and Phunzira Theatre, speeches	120	Fem:50 Male:30 Kids:40	Film taken by John Ndovi

Date	Organization	Location (EPA)	Village	Time	Content of the Campaign	Attendance	Notes	Documentation
		Mtengo, Lomoliwa, Makwete	Lomoliwa	2:00 pm	Hope for Life dancer and Phunzira Theatre	400	Fem:180 Male:120 Kids:100	Pictures taken by John Ndovi
Saturday 16 October	FAO MVP and CIP participated in the event	Machinga District, near Liwonde Zomba	Machinga District Assembly Ground	8:00 am to 5:00 pm	Yoneco drama and dance and displaying the OFSP products	>1,200	Fem: 80% Male:20%	By professional Cameraman
Monday 18 October	CU-PHALOMBE	Daundi, Makolera, Mangoza, Chanasa	Mangoza-Chazinga school ground	9:00 am	Hope for Life dancer and Phunzira Theatre; Quiz for children and participants and the winners received the OFSP juice, porridge or other products	380	Fem:80 Male:50 Schoolkids:250	Film taken by John Ndovi
		Phunduma, Chole, Kambenje, Matanya	Kambenje	2:00 pm	Hope for Life dancer and Phunzira Theatre, speeches	176	Fem:70 Male:50 Kids:56	Film taken by Erna
Tuesday 19 October	CADECOM-CHIKWAWA**	Livunzu	Mkhate	9:00 am	Lower shire Giants Arts Theatre, dances, speeches	991	Fem:586 Male:405 Kids: few	Film taken by John Ndovi
Wednesday 20 October	CADECOM-CHIKWAWA	Mbewe	Rodreck	8.00 am	Lower shire Giants Arts Theatre, dances, speeches	207	Fem:132 Male:75	By professional Cameraman
		Mitole	Salumeji	2.00 pm	Lower shire Giants Arts Theatre, dances, speeches	410	Fem:245 Male:165 Kids: few	By professional Cameraman
15 days	3 NGOs	5 districts and 32 EPA	22 villages			>9,900		

Annex 2. Messages Disseminated by Theatre Groups during Awareness Campaign from 5 to 20 October 2010

1. BENEFITS OF ORANGE-FLESHED SWEETPOTATO

Source of vitamin A which is essential in our bodies for

- Good vision
- Strengthens your body's ability to fight disease

Source of income at household level through sales of:

- Storage roots
- Vines
- Small-scale enterprises: doughnuts, mandazi, cakes, juice, sweet beer.

2. DEMONSTRATE A MOTHER FEEDING ORANGE-FLESHED SWEETPOTATO TO HER CHILD

Demonstrate a mother feeding cooked sweetpotato her child, with a local source of protein like groundnuts, small fish, etc.

3. HOW TO MOTIVATE COMMUNITY TO DEVELOP INTEREST IN ORANGE-FLESHED SWEETPOTATO

Actors should stimulate interest to community by explaining the benefits of eating Orange-Fleshed Sweetpotato.

4. AGRONOMIC PRACTICES ON SWEETPOTATO GROWING

Planting: Use the top part of the plant as that avoids the weevils that can live at the base. Plant 30 cms apart.

Harvesting: 5 months after planting.

MESSAGE: eat OFSP every day, for as long as you can!

5. DEMONSTRATION ON HOW A FARMER IS GETTING VINES FROM A MULTIPLIER:

- USING a voucher that he/she received from the NGO and Extension.
- Farmers should buy vines from vine multipliers. Health, quality and disease free vines is the basis for high quality.

6. DEMONSTRATION ON HOW A MULTIPLIER IS REDEEMING MONEY AFTER RECEIVING VOUCHERS. THIS IS NOT IMPORTANT. FOCUS ON THE FARMERS.

Notes:

actors shared roles: one to be a Beneficiary approaching a Decentralized Vine Multiplier to buy Sweetpotato using a Voucher. One will be a Decentralized Vine Multiplier providing the vines, and a extension and NGO who will redeem the vouchers to Multipliers. There were also some multipliers who didn't want to sell their vines, but then later on this guy has realized that other farmers could make money out of it.

Basic Scenario.

Notes: since the chosen theater group at each district was a professional theater group so the scenario below was slightly different from one to another.

Two friends meet in a field. One is harvesting her old, white fleshed sweetpotato and is complaining about the yield to herself.

Her friend comes along with and she is on her way to redeem a voucher at the DVM. She stops to talk to her friend. She explains that she is just received this voucher to go pick up some exciting new sweetpotato variety. She received this voucher because she has a young child (on her back) She says she heard that this new variety is orange inside... And that the orange means it is good for your health. The friend responds that she has heard of this new Vitamin A power food, but what is Vitamin A. The woman with the voucher says Vitamin A is

essential for good health--- it helps the body resist disease And ensures good eyesight. I want my baby to have beautiful eyes and be strong and health. She invites her friend to come with her to redeem her voucher.

Next scene: at the DVM.

The DVM welcomes the women and explains to them how good sweetpotato is for their health. One woman comments on how green and vigorous his vines look. He responds that he has received good material and knows how to remove plants that look sick (if possible show a virus infected plant he has thrown away). He shows them how to plant it, using the top part of the vine, 30 cm apart. He tells them to hill up and not let cracks appear because that will let the weevil in. His wife appears feeding her child porridge... She explains that you can feed it by itself, but it is best nutritionally if some groundnut can be mashed and added or even just a little oil with some green leaves --- even sweetpotato leaves. The DVM invites them back anytime should they need more information.

A drunk appears on the scene.... He is carrying a tray with Golden bread and shouting buy Golden bread! (People love drunks... they stagger around and the crowd laughs). The DVM is shocked. He goes up to him and says --- Peter why are you selling Golden Bread today? Isn't it your wife who makes the bread? He responds... she is making so much money from selling this bread... you know the wheat flour is just so expensive and she replaces one third of it with this new Vitamin A Power food you are promoting.... I need some of that money to be happy you know... so I am just borrowing it... The women are angry... Peter we want to try this bread but we are going to give the \$\$ directly to your wife!! One woman tries to grab the tray and Peter stumbles and falls and then goes to sleep....

The DVM's wife laughs.. You know we are going to have to work very hard to improve our families' health: As we go, let's sing together to remember the benefits ...

Vitamin A makes our bodies strong
Our eyes will be brilliant and our skin healthy!
Children love Zondeni. Women think the taste is great.
And Men want the energy power of this Vitamin A power food!
Redeem your voucher and plant early!
Get high yields & eat the vitamin A power food every day...

Annex 3. Song Lyrics

SONG NUMBER 1

Song Title: Mbatata ya olenji m’kati
(Orange fleshed sweetpotato)

Composed by: John Kazembe and John warren Ndovi (CIP-Malawi)

Singers: John Kazembe and John warren Ndovi

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Song words:

Chorus: Mbatata ya olenji m’kati x3
(Orange fleshed sweetpotato) x3
Imapereka thanzi labwino
(For good health)

Stanza 1: Ananu Idyani Mbatata ya olenji m’kati,
(Children eat orange fleshed sweetpotato,)
Kuti mupeze Vitamin A
(For you to get vitamin A)
Makolo Idyani Mbatata ya olenji m’kati,
(Parents eat orange fleshed sweetpotato,)
Kuti matupi anu asalale
(For your skin to be smooth)

Chorus: Mbatata ya olenji m’kati x3
(Orange fleshed sweetpotato) x3
Imapereka thanzi labwino
(For good health)

Stanza 2: Tikadya Mbatata ya olenji m’kati,
(When we eat orange fleshed sweetpotato,)
Matupi athu adzasalala,
(Our skins shall be smooth,)
Mulitu Vitamin A wosanena,
(There is plenty of Vitamin A,)
Wothandiza maso kuti tiwone bwino
(Essential for our eyes to see better)

SONG NUMBER 2

Song Title: Zondeni

Composed by: Mphatso Matiki

Singer: Mphatso Matiki

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Song words:

Chorus: Zondeni, Zondeni,
 Mbatata ya olenji m’kati,
 (Orange fleshed sweetpotato)
 Zondeni, Zondeni,
 Imapereka Vitamin A
 (It provides Vitamin A)

Annex 4. Protocol for Postharvest

SUBJECT: SWEETPOTATO YIELD ESTIMATE AND POSTHARVEST HANDLING

PRINCIPAL INVESTIGATORS: Putri E. Abidin (CIP), F. Chipungu (DARS), I. Benesi (DARS), John Kazembe (CIP), and John Warren Ndovi (CIP)

CO-INVESTIGATORS: NGO Partners (CU, CADECOM, MVP)

INTRODUCTION

Sweetpotato farmers in Malawi, especially women, could gain substantially more profit from commercialization of sweetpotato if they bulked their product at an accessible site to transport and more efficient value chains were built. The development of an efficient urban fresh market would require a coordinated approach across the value chain. At the farm level, development of more continuous year-round supply is important in developing the crop as more than a snack food in urban markets. Improved efficiency in the marketing chain is also important in keeping sweetpotato competitive. Interventions at the production and marketing stages must be complemented by promotional strategies to change the image of the crop, develop alternative uses of the roots in urban diets, and increase effective demand.

Current situation of dissemination of OFSP with subsidized vouchers in Malawi has been reaching over 10,000 farming households using an implementation strategy that includes three integrated components: (1) seed systems, (2) demand creation campaign through behavior change communication (theatre, drama, poetry, songs and banners), and (3) markets and product development. Farmers will respond to improved market opportunities by expanding area under production and adopting practices, such as appropriate storage, to enhance root quality as well as clean planting materials.

Sweetpotato production estimate, storability of storage roots, and postharvest handling will be assessed at the time of harvest. The findings of the field observations will be used as a proposal to Department of Agricultural Research Services (DARS) for further investigation.

Each year, the Ministry of Agriculture and Food Security through the Department of Agricultural Extension Services (DAES) conduct agricultural production estimates to assess the performance of each crop as compared to the previous year. Sweetpotato is one of the crops in this exercise. In order to be in line with the Ministry of Agriculture's methodology, the procedure for assessing sweetpotato yield will be the same.

I. YIELD ESTIMATE

METHODOLOGY:

- a. Select at random 3 farmers who grow Orange-fleshed Sweetpotato (OFSP) and 2 local sweetpotato varieties in each district, preferable the multipliers.
- b. Visit the field of the selected farmers, put some pegs and draw sketches of each field in a note pad to standardize the figures.

- c. Pace or walk around each field to establish area (see the procedures for Pacing Coefficient (PC) and Garden Area of a sampled farmer below).
- d. When sweetpotatoes have reached the maturity stage, a Yield Estimate or a Yield Sub Plot (YSP) of 2m by 2m shall be demarcated. This area for Yield Estimate should be located inside of the sampled plots which have been measured using the procedures mentioned in this protocol. The sampled plots should be marked by pegs.
- e. At harvest count and weigh the total storage roots in the area of 2m by 2m that has been marked by pegs.
- f. Calculate the Yield Estimate in ton per ha (see Table 1).
- g. For further research, the research procedure on data collection can be advisedly considered (i.e. number of storage roots, number and weigh the marketable and non-marketable).

PROCEDURE OF FINDING PACING COEFFICIENT:

1. Demarcate a 100 m portion of land or alternatively find a standard football pitch of 100 m in length.
 2. Let the field staff walk over the 100 m portion for 3 times in their normal pace (walk) not too fast or too slow.
- Note:** each person may have a different number of steps. Make sure we employ the same person when recording the length and width of a plot to have an accurate measurement.
3. Record the number of steps for each trip
 4. Find the average number of paces covered over the 100 m portion.

Example:

First trip=132 steps

Second trip=136 steps

Third trip=134 steps

Average Steps = $(132+136+134)/3 = 134$ steps

5. Divide the 100 m portion into the average steps (i.e.134 steps) to find Pacing Coefficient (PC).

Example: $100M/134=0.74$; so the PC is 0.74

Measuring the garden of a sampled farmer

1. Go around the field to know the shape of the garden it can be a rectangle or a square.
2. Draw the sketch of the garden in your note pad using “give and take” method.

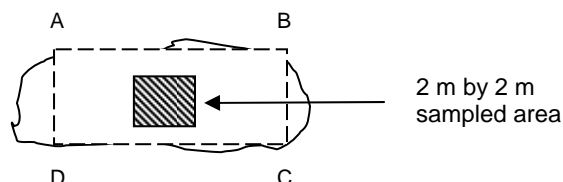


Figure: A “give and take” method

3. Start pacing along the length (AB and CD) of the garden and record the number of paces.
4. Similarly walk (pace) along the width (AD and BC) of the garden and record the number of steps or paces.

How to convert the number of paces into metres:

Use the pacing coefficient (PC) found in step number 5 above to calculate distance.

Example if the number of steps along the length is 20 steps (paces), the actual distance in metres is $20 \times 0.74 = 14.8\text{m}$.

If the number of steps or paces along the width is 10 steps (paces), the actual distance in metres is $10 \times 0.74 = 7.4\text{m}$

Calculate the area of the garden using the formula: Length * width.

Example: $14.8\text{m} \times 7.4\text{m} = 109.52 \text{ m}^2$.

Table 1. Yield Estimate

(A modified Table based on Form 4 of Ministry of Agriculture of Malawi)

Partner: _____

EPA: _____

District: _____

Varieties	1 ST SELECTED FARMER			2 ND SELECTED FARMER			3 RD SELECTED FARMER			Average Area (m ²) (2+5+8)/3	Average production (Kg) (4+7+10)/3	Yield (t/ha) 12/11
	Name:			Name:			Name:					
	PRODUCTION (KGS)			PRODUCTION (KGS)			PRODUCTION(KGS)					
	Garden Area (m ²)	YSP Production	Garden Production	Garden Area (m ²)	YSP Production	Garden Production	Garden Area (m ²)	YSP Production	Garden Production			
1												
Zonden												
Kenya												
Mugamba												
Semusa												
Other varieties												

Note: To calculate Garden production, use the YSP production:
 For example if the YSP production is 8kg, and the Garden area is 200m²
 Use the following simple proportion formula:
 $4m^2 = 8kg$
 Therefore 200m² will be more.
 $= 200 m^2 * 8 kg / 4 m$

II. Postharvest Handling

2.1 Storability Test

We apply two treatments: (i) the canopy of sweetpotato field will be cut 2 weeks before harvesting and (ii) no cutting of canopy until the harvesting time. Then we will observe the two treatments above for a number of investigations on the storage root shelf-life. We need to employ 6 farmers.

Procedures:

1. Mark with pegs a portion with the same size following the methodology and procedures of measuring the garden of a sampled farmer of the Yield Estimate, namely Plot A and Farmer A.
2. Repeat the same procedures mentioned above to make one more plot (Plot B and Farmer B) and mark it with some pegs.
3. Cutting the canopy (stems) of Plot A (Farmer A), 2 weeks before harvesting and DO NOT cut any canopies (stems) from Plot B (Farmer B) until harvesting time.
4. Harvest the storage roots and measure them according to the research routine procedures.
5. Select 6 farmers per district, this can represent 3 replicates of each procedure mentioned in number 3.

The storage roots harvested from 6 farmers above will be investigated on:

2.1.1 Healing/curing investigation on storage roots for fresh market

Treatments:

1. Pack the storage roots in a bag of 20 kg by volume and then keep them in the store where farmers normally keep them.
2. Pack the storage roots in a bag of 40 kg by volume and keep them in the same place as mentioned above (point 1).
3. Heap the storage roots on the floor as farmers normally do and keep them in the same room with other 2 treatments above. This can be our control measure.

Observations:

1. Check the storage roots from the three treatments weekly and record any skin damage and postharvest pest incidence.
2. Because the shelf-life of sweetpotato depends on varieties, in this case, Zondeni variety can only be stored until 3 months, so we do this observation up to 5 months.
3. In the end, invite farmers to judge which one is marketable and record their judgment.
4. Palatability test should be done to measure the taste of the storage roots.

2.1.2 Pit Storage

Procedures:

1. Dig soils approx 50 cm depth with the lengths of 60 x 60 cm.
2. Each farmer (Farmer A and B) has to prepare 1 pit
3. Collect ash from the kitchen.

Treatment: keeping storage roots in the pit with ash covering the storage roots

Procedures of the treatments: spread of ash at the bottom of the pit, put a layer of storage roots, cover the storage roots with ash, and repeat the procedure up to the top of the pit, and cover the storage roots with ash before covering them with soil.

Observations:

1. Observe the storage roots after 2.5 months and repeat this observation after 5 months
2. Record any damage on storage roots and pest incidence
3. Invite other farmers to judge on marketability of the storage roots after 5 months.
4. Palatability Test should be done to measure the taste of storage roots.

Table 2.1.1.1: Form for Healing/curing investigations (note: this form should be prepared a number of times to complete the observation till 5 months)

Quantity	Date harvested	Vines cut 2 weeks before harvesting* Yes/No	Condition of storage roots at 0 week of harvested**	Condition storage roots after 2 week of harvested**	Condition storage roots after 4weeks of harvested**	Condition storage roots after 8 weeks of harvested**	Condition storage roots after 16 weeks of harvested**	Remarks/ Comments
Zondeni								
Other varieties: name								
On the floor								

Notes: * to distinguish between the two farmers, A and B

** : good = 1; fair = 2; bad = 3; very bad = 4

Table 2.1.1.2: Yield data of storage roots (follow the routine research observations).

Table 2.1.1(2).3: Palatability Test for healing/curing and pit storage (follow the routine research observations)

Table 2.1.2.1: Pit Storage (this form should be prepared a number of times until reaching 5 months of observations)

Quantity	Date harvested	Vines cut 2 weeks before harvesting* Yes/No	Condition of storage roots at 0 week of harvested**	Condition storage roots after 2 weeks of harvested**	Condition storage roots after 4 weeks of harvested**	Condition storage roots after 8 weeks of harvested**	Remarks/Comments
Zondeni							
Other varieties							
On the floor							

Notes: * to distinguish between the two farmers, A and B
 **: good = 1; fair = 2; bad = 3; very bad = 4

III. Protocol for using sprouted roots as a source of planting material for areas with prolonged drought*

“I would like to use this following protocol for beneficiaries who received the subsidized vouchers so next year they can continue planting the OFSP by conserving the planting material received from the Irish Aid funded project”. However, this can be used by other producers as well – Erna Abidin

***Note:** *This protocol has been developed by CIP scientists in SSA led by Dr. Richard Gibson, Natural Resources Institute, University of Greenwich, Central Ave, Chatham Maritime, Kent, ME4 4TB, United Kingdom; Tel: +44 (0)1634 883254*

Protocol:

1. At the beginning of the dry season, harvest small to medium sized roots from parent plants that are apparently disease-free. Make sure that the roots are free from major imperfections, e.g., no weevil damage or major physical damage
2. Get a container about 30cm deep and of a fairly reasonable size [A large plastic laundry bowl is quite good but it could be any sort of container and made of tin, clay pot, perhaps even a plastic shopping bag! – though this may be a bit small]
3. Part-fill it with dry sand [sweepings from around house are just fine though you may need to cool them down!]. Place roots in the sand, ideally not touching and cover with sand; you can layer them one on top of the other to an extent. The top layer of sand needs to be about 5 cm. We get about 30 – 40 roots in a large bowl.
4. Keep container of sand and roots in a dry, fairly cool structure away from chickens [They just love to scratch & nest in it!]
5. About six or so weeks before the start of the rains, plant the roots out in a garden prepared near the house and protected by a stout prickly hedge. You plant the roots out at about 0.5m apart [varies with variety], planting the roots in a small depression to make watering easy. The roots are probably sprouting by now; plant the root deep enough to cover the root by about 5cm of soil, probably leaving some sprouts protruding. Water. May be a good idea to add some leaf debris – just to cut down the heat.

6. Keep watering about every 5 days, increasing the amount as the foliage increases. Rogue out any virus diseased plants. Harvest planting material as and when it develops. We get about 40 cuttings/ plant, taking several cuttings from each stem; I guess you could harvest sequentially. The roots sprout very vigorously.

Miscellaneous: We haven't tried adding fertilizer; it's an obvious thing to try. To an extent, the earlier you plant, the more cuttings you get – but you have to water for longer. I suspect the idea of getting masses of planting material ready for the moment the rains start is probably unnecessary; farmers will still want to plant their maize first.



Plate 1. Gives an idea of size of bowl. I'm not sure if the paper helps.



Plate 2. Planting out roots.

Annex 5. OFSP Project Activities and Its Achievement through March 2011

Project title: Rooting out Hunger in Malawi with nutritious Orange-fleshed Sweetpotato

Project Investigator/leader: Putri E Abidin (CIP-Malawi)

Backstopped by: Jan Low, Kefa Mugere, Margareth Mc Ewan (CIP-SSA)

Duration: October 2010 to September 2011

Partners: Department of Agricultural Research Services (DARS), Department of Agricultural Extension Services (DAES), Department of Nutrition, HIV and AIDS, and NGOs (Concern Universal, Millennium Villages Project, Catholic Development Commission),

Sites: Dedza, Zomba, Phalombe, Mulanje and Chikhwawa districts

Donor: Irish Aid

<p>Project goal: <i>To ensure the provision of high quality, disease free primary OFSP planting material, and to promote them in order to improve vitamin A and energy intake for at least 115,000 rural households with young children. To ensure that at least 20% of households growing OFSP earn at least \$100 USD per year from OFSP sales, and increase average sweetpotato yields among participants 50%.</i></p>					
<p>Objective 1: <i>Establish in-vitro tissue culture capacity at Bvumbwe Research Station and successful production of at least 4 ha of clean primary material of Zondeni and other new OFSP varieties.</i></p>					
Activities	Outputs	Motors	Actors	Time Frame	Achievement
<p>1.1 Rehabilitate the tissue culture lab at Bvumbwe. 1 Air Conditioner for Tissue Culture Lab at Bvumbwe will be bought.</p>	<p>1.1 An additional room in the tissue culture lab will have air-conditioning and shelves installed at Bvumbwe.</p>	<p>1.1 CIP and DARS</p>	<p>CIP</p>	<p>March 2011</p>	<p>An Air-conditioner has been purchased. However, it is crucially installed in the room with Air-flow cabinet where the activities of culturing the explants and plantlets are taken place. The room was too hot to work in.</p>
<p>1.2 Multiply cleaned-up Malawian sweetpotato varieties (viruses eliminated) that have been transferred from the Plant Quarantine Center in Kenya. CIP-Malawi is expecting to receive 4000 Zondeni plantlets from Nairobi.</p>	<p>1.2 Clean Malawian varieties maintained at Bvumbwe with selected ones for dissemination having at least 1,000 plantlets produced for each.</p>	<p>1.2 CIP and DARS</p>	<p>DARS</p>	<p>December 2010</p>	<p>Sent 15 Dec 2010 from Nairobi and they are now at the Bvumbwe lab in Malawi.</p>

<p>1.3 Establish at least 4 ha under irrigation with primary multiplication of Zondeni and other identified OFSP varieties for distribution. Activity in year 2 includes transferring of old plant materials to a new field (2Ha)</p>	<p>1.3 At least 4 ha of irrigated OFSP primary multiplication established by the end of year 24 Ha. 4 Ha. Field of Zondeni already established at Bvumbwe.</p>	<p>1.3 CIP and DARS</p>	<p>DARS</p>	<p>December 2010</p>	<p>4 ha of land have been established. They have already provided 1,446,000 vine cuttings to beneficiaries in 3 districts of Dedza, Zomba and Chikhwawa. Another 2 ha of land was newly established to replace the first 2 ha of nursery land in order to keep producing clean planting material of OFSP Zondeni in the coming years</p>
<p>1.4 Train 2 DARS technicians and 1 project technician in how to harden plantlets and rapidly multiply sweetpotato</p>	<p>1.4 Knowledge and skill on rapid multiplication and hardening the plantlets from the Lab to be planted in the field.</p>	<p>1.4 CIP and DARS</p>	<p>CIP and DARS</p>	<p>January to February 2011</p>	<p>Done in Dec 2010 by DARS.</p>
<p>Objective 2: <i>Identify and establish at least 25 additional secondary vine multipliers 108 additional tertiary vine multipliers and use of vouchers as a distribution mechanism to reach 7,097 households by November 2010 and an additional 23,000 households by November 2011.</i></p>					
<p>Activities</p>	<p>Outputs</p>	<p>Motors</p>	<p>Actors</p>	<p>Time Frame</p>	<p>Achievement</p>
<p>2.1 Distribute to at least 7,097 households using subsidized vouchers and permit multipliers to sell to additional producers, recording their sales.(Non subsidized vouchers will be used)</p>	<p>2.1 Database of vine recipients by gender established and percent redeeming vouchers captured.</p>	<p>2.1 CIP</p>	<p>NGOs and Extension</p>	<p>October 2010 - January 2011</p>	<p>More than 10,000 households (beneficiaries) have received subsidized vouchers. On the top of it, a number of multipliers have sold the OFSP planting material in a free market (details are written in the mid-year report.</p>
<p>2.2 Assess the use of subsidized vouchers and vine sales, using the findings to design the Year 2 distribution strategy.</p>	<p>2.2 Assessment of use of vouchers and potential for vine sales included in mid-term report.</p>	<p>2.2 CIP</p>	<p>NGO partners and Extension</p>	<p>January 2011</p>	<p>Voucher system worked well in the 4 districts. Detailed report is written in the mid-year project report.</p>

2.3 Identify and establish at least 25 additional decentralized secondary vine multipliers (secondary multiplication sites) and 108 additional tertiary multipliers in partnership with NGOs and public sector extension organizations.	2.3 Additional groups willing to multiply material identified.	2.3 CIP, NGOs and Extension	NGOs and Extension	December 2010	In a process
2.4 Train new vine multipliers and re-train Year 1 multipliers in quality vine multiplication and use of vouchers, including record keeping and accountability	2.4 New secondary vine multipliers trained by Extensionists in clean vine multiplication and record keeping; new tertiary trained by secondary multipliers backstopped by Extensionists as needed. Refreshing knowledge of secondary multipliers.	2.4 CIP, DARS and NGOs	NGOs, Extension, Farmers/ group	December 2010 to March 2011	Training is still going on in each district.
2.5 Coordinate distribution of materials by partners to 7,097 households with young children in November 2010 and an additional 23,000 by November 2011, ensuring quality control & recording of recipient names and location.	2.5 At least 7,097 households with young children have received at least 4 kg of OFSP vines by November 2010; an additional 23,000 by November 2011.	2.5 CIP	NGOs, DARS, Extension, Farmers/ group	November-December 2010	Complete – see Tables 2 and 3.
Objective 3 <i>Implementation of demand creation campaign</i>					
Activities	Outputs	Motors	Actors	Time Frame	Achievement
3.1 Conduct demand creation campaign on importance of OFSP through Drama performances, film making and Radio Programs	3.1 Report describing the design of the demand creation campaign, including supporting evidence for selecting the design. Documentary film is produced.	3.1 CIP	NGOs, Extension, DARS Farmers/ group	October 2010	More than 9900 people came to the campaign. Campaign was done in 22 villages of 4 districts. Two songs describing the importance of OFSP for the health were composed and activities were documented in a film and this film has been given to the project implementing partners (Annex 1).

<p>3.2 Implement the demand creation campaign</p>	<p>3.2 Description of campaign in midterm report and the impact of implementing the demand creation campaign in Annual Report.</p>	<p>3.2 CIP</p>	<p>NGOs, DARS, Extension and CIP</p>	<p>March and Sept 2011</p>	<p>The impact of the campaign is the demand on OFSP planting material is high. Initial evidence was noted from a number of multipliers who could generate incomes and keeping some for their own storage roots production.</p>
<p>3.3 Media/Radio Program</p> <p>3.3.1 How to plant sweetpotato.</p> <p>3.3.2 Weeding and useful information related to integrated sweetpotato production, pests and diseases management.</p> <p>3.3.3 How to harvest sweetpotato.</p> <p>3.3.4 Processing and utilization of storage roots.</p> <p>3.3.5 Importance of Vitamin A to people including HIV/AIDS infected persons.</p> <p>3.3.6 How a mother can feed a baby. How to make different recipes from OFSP</p> <p>3.3.7 Storage/Postharvest handling of storage roots. How to preserve non marketable storage roots to be source of planting material.</p> <p>3.3.8 Slicing of storage roots using chipping machine and sun drying using solar driers.</p> <p>3.3.9 How to make and maintain sweetpotato nursery.</p>	<p>3.3 Awareness on the use of OFSP for Malawians.</p>	<p>3.3 CIP</p>	<p>NGOs, DARS, Extension, Farmers/group and CIP</p>	<p>3.3.1 December 2010- January 2011</p> <p>3.3.2 January –February 2011</p> <p>3.3.3 March-April</p> <p>3.3.4 March – September 2011</p> <p>3.3.5 March – September 2011</p> <p>3.3.6 March – September 2011</p> <p>3.3.7 March – September 2011</p> <p>3.3.8 March – September 2011</p> <p>3.3.9 April – May 2011</p>	<p>For 3.3.1. It has been done and was sent to the TV Malawi. One DVD, one CD, one tape and 300 leaflets have been distributed to the project implementing partners in 4 districts.</p> <p>For 3.3.2., a film has been taken, but no further action yet. The main objective was to provide educational materials that can be useful for training done by Extension Services. For 3.3.3 to 3.3.9, they are not yet done but still in a plan</p>

3.4 Monitor Orange, White and Yellow fleshed sweetpotato flesh root prices	3.4 Price data analyzed for trends every six months	3.4 CIP, Extension and NGOs	NGOs, Extension and CIP	Every six months: December 2010–January 2011 March–April 2011	Will be done soon. However a big harvest occurs in June.
Objective 4: <i>ICM and postharvest research</i>					
Activities	Outputs	Motors	Actors	Time Frame	Achievement
<p>4.1 Conduct crop production fertility and crop management research and demonstration at sites in each district. Detailed trials:</p> <p>4.1.1 Combination of Sweetpotato production using fertilizer or manure vs sweetpotato production without fertilizer or Manure both under irrigation.</p> <p>4.1.2 Intercropping and Rely cropping between maize and Sweetpotato vs monoculture sweetpotato production.</p>	<p>4.1 Accurate assessment of yield potential under farm conditions and demonstration of ICM package to ensure increasing production by farmer at household level.</p>	4.1 CIP, DARS NGOs	NGOs, Extension and DARS	December 2010–June 2011	<p>For 4.1.1. A MSc student has been identified for conducting this research. The setup of investigation is ongoing.</p> <p>For 4.1.2. Based on the regulation from DARS, the initial demo trial should be done at on-station, at Bvumbwe Research Station (particularly for intercropping). For Rely cropping, it has been practiced in Mulanje. On-farm trial was just set up in Mulanje together with DARS.</p>
<p>4.2 Postharvest storage research and demonstration at sites (?) in each district. Detailed trials:</p> <p>4.2.1 Demonstrations on how to preserve the non-marketable storage roots to be used as source of planting material</p> <p>4.2.2 Sweetpotato healing trial</p> <p>4.2.3 Pit and storage trial</p>	<p>4.2 Knowledge and recommended practices about storage techniques that will allow for extended shelf life for home consumption, marketing, and processing</p>	4.2 CIP, DARS and NGOs	NGOs, Extension and DARS	March – September 2011	<p>A protocol has been produced and it has been given to the project implementing partners. Training related to this protocol is on-going, it is managed by the NGO partners in each district.</p>

<p>4.3 Research of appropriate technology for the production of high quality chips for flour at sites in each district. Additionally to measure content of vitamin A in finished product (biscuits) after processing under high temperature.</p>	<p>4.3 Knowledge and skills to produce chips and flour to support the value addition and market chain.</p>	<p>4.3 CIP, NGOs, Extension, DARS</p>	<p>NGOs, Extension, DARS and Universal Industries</p>	<p>March – September 2011</p>	<p>It is on a process.</p>
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Notes: Base-line survey has been done – data are still in the process of being analyzed. Formative Research – in the hands of Prof. Dr. Beatrice Mtimuni from Bunda College, the contract has been sign and her report will be produced soon. For chipping machines we are in a process of collecting the quotations.

Annex 6. Intercropping Maize and OFSP

Investigators: Putri E Abidin (CIP), FP Chipungu (DARS), A Ntonga (DARS) and IRM Benesi (DARS)

Design: RCB with 3 replicates

Site: 1 - Bvumbwe Research Station – as a demo trial

Method of analysis: 3 ways of ANOVA with main factors: Types of intercropping, Harvests and Varieties

Treatments:

2 Sweetpotato Varieties

3 Harvesting times

4 Intercrop types

Treatment combinations/site (site 1 and 2)/block= harvesting times 1, 2 and 3)

*RCBD within harvesting times

- intercropping Zondeni and Maize: 2 ridges zondeni and 1 ridge maize
- intercropping Zondeni and Maize: 1 ridge zondeni and 1 ridge maize
- intercropping Zondeni and Maize: 1 ridges zondeni and 2 ridges maize
- planted in the same row 1 maize plant and 3 Zondeni plants
- intercropping LU06/0428 and Maize: 2 ridges LU06/0428 and 1 ridge maize
- intercropping LU06/0428 and Maize: 1 ridge LU06/0428 and 1 ridge maize
- intercropping LU06/0428 and Maize: 1 ridges LU06/0428 and 2 ridges maize
- planted in the same row 1 maize plant and 3 LU06/0428 plants

3 Harvests of sweetpotato: 5, 6 and 7 months for OFSP Zondeni and for OFSP LU06/0428, a promising variety, will be harvested 5 months after planting due to having inadequate planting materials

All Maize harvested upon maturity

Planting management:

Plant and ridge spacings

-Planting on ridges, distance between ridges= 75 cm; within ridges plants 30 cm for both maize and sweetpotato

Plot sizes

- 22 rows gross plot and 20 rows net plot

Within the net plot rows, 1 outside plant of each end will be considered as border Plants

-Number of plants per ridge is 20 thus 6m long

Annex 6a.



SWEET POTATO AND MAIZE INTERPLANTING TRIAL

BASIC INFORMATION:

SITE: BVUMBWE RESEARCH STATION

SEASON: 2010/2011

VARIETIES USED: Sweetpotato - Zondeni
Maize -SC 627

HARVESTING AT 5 MONTHS AFTERPLANTING (For sweetpotato only)

DATE OF PLANTING: 30th December, 2010

BASAL DRESSING: (23:21:0+4S and Urea 46%N @ the ratio of 2:1): 10th January, 2011

TOP DRESSING: (Urea 46%N): 2nd February, 2011

Note: Fertilizers were applied only for maize

TREATMENTS:

TREATMENT 1: 2 Rows Sweetpotato and 1 Row maize
TREATMENT 2: 1 Row Sweetpotato and 1 Row maize
TREATMENT 3: 1 Row Sweetpotato and 2 Rows maize
TREATMENT 4: Intra planting 3 plants sweetpotato and 1 plant maize.
REPLICATION: 3
PLOT SIZE: 22 Ridges of each 6.6 M

Planting distance: within plants 30 and between ridges 75 cm

Annex 6b.



SWEET POTATO AND MAIZE INTERPLANTING TRIAL

BASIC INFORMATION:

SITE: BVUMBWE RESEARCH STATION
SEASON: 2010/2011
VARIETIES USED: Sweetpotato - Zondeni
Maize -SC 627

HARVESTING AT 6 MONTHS AFTERPLANTING (For Sweetpotato only)

DATE OF PLANTING: 6th January, 2011

BASAL DRESSING: (23:21:0+4S and Urea 46%N @ the ratio of 2:1): 2nd February, 2011

TOP DRESSING: (Urea 46%N):8th March, 2011

Note: Fertilizers were applied only for maize

TREATMENTS:

TREATMENT 1: 2 Rows Sweetpotato and 1Row maize
TREATMENT 2: 1 Row Sweetpotato and 1Row maize
TREATMENT 3: 1 Row Sweetpotato and 2 Rows maize
TREATMENT 4: Intra planting 3 plants sweetpotato and 1 plant maize.
REPLICATION: 3
PLOT SIZE: 22 Ridges of each 6.6 M

Planting distance: within plants 30 and between ridges 75 cm

Annex 6c



SWEET POTATO AND MAIZE INTERPLANTING TRIAL

BASIC INFORMATION:

SITE: BVUMBWE RESEARCH STATION
SEASON: 2010/2011
VARIETIES USED: Sweetpotato - Zondeni
Maize -SC 627 (medium maturity)

HARVESTING AT 7 MONTHS AFTERPLANTING (for sweetpotato only)

DATE OF PLANTING: 11th January, 2011
BASAL DRESSING: (23:21:0+4S and Urea 46%N @ the ratio of 2:1): 2nd February, 2011
TOP DRESSING: (Urea 46%N):8th March, 2011

Note: Fertilizers were applied only for maize

TREATMENTS:

TREATMENT 1: 2 Rows Sweetpotato and 1Row maize
TREATMENT 2: 1 Row Sweetpotato and 1Row maize
TREATMENT 3: 1 Row Sweetpotato and 2 Rows maize
TREATMENT 4: Intra planting 3 plants sweetpotato and 1 plant maize.
REPLICATION: 3
PLOT SIZE: 22 Ridges of each 6.6 m

Planting distance: within plants 30 cm and between ridges 75 cm

Annex 6d



SWEET POTATO AND MAIZE INTERPLANTING TRIAL

BASIC INFORMATION:

SITE: BVUMBWE RESEARCH STATION

SEASON: 2010/2011

VARIETIES USED: Sweetpotato LU06 /0428
Maize SC 627

HARVESTING AT 5 MONTHS AFTERPLANTING (For sweetpotato only)

DATE OF PLANTING: 19th January, 2010

BASAL DRESSING: (23:21:0+4S and Urea 46%N @ the ratio of 2:1): 2nd February, 2011

TOP DRESSING: (Urea 46%N):8th March, 2011

Note: Fertilizers were applied only for maize

TREATMENTS:

TREATMENT 1: 2 Rows Sweetpotato to 1 Row maize

TREATMENT 2: 1 Row Sweetpotato to 1 Row maize

TREATMENT 3: 1 Row Sweetpotato to 2 Rows maize

TREATMENT 4: Intra planting 3 plants sweetpotato and 1 plant maize.

REPLICATION: 3

PLOT SIZE: 22 Ridges of each 6.6 m

Planting distance: within plants 30 cm and between ridges 75 cm

Annex 7. First Vine Distribution Monitoring

SITE: CU DEDZA

DATE: 5 January 2011

Led by Dr. Putri E Abidin (Sweetpotato Seed Systems Specialist)

Reported by John Kazembe and John Warren Ndovi (CIP-Field/Technical Assistant)

I. Introduction

On 4 January 2011, CIP Bvumbwe Office bought 1,000 bundles of sweetpotato each 4 kg (300 cuttings) and delivered them to CU-Dedza to be distributed to 1,000 additional households in Kanyama and Bembeke Extension Planning Areas (EPAs). This has been so due to increasing demand created by the campaign on OFSP conducted in October last year (2010).

With a lorry the vines were transported from Bvumbwe Research Station to Dedza. The vines were disease free, tender, and in a good condition.



Figure 1. Clean OFSP Zondeni vine cuttings were transported from Bvumbwe Research Station on 5 January 2011.

During this distribution, a few farmers were visited for initial evaluation and monitoring. Dr. Erna Abidin interviewed some farmers at random meanwhile John Kazembe and John Warren Ndovi recorded the interview and made the report. An Extension Staff for Bembeke EPA Mr. Belekanyama accompanied the CIP team. We visited farmers who are also multipliers.

II. Areas

The vine cuttings were brought to Bembeke and Kanyama EPA. Detailed information can be seen in the following table. Each bundle is given to each household. It contains 300 cuttings.

NO	EPA	QUANTITY (Bundles)
1	Bembeke	150
2	Kanyama	850
	Total	1,000

III. Interviews with Farmers

3.1 Mr. Chimpikidzo

Mr. Chimpikidzo is one of the farmers who are participating in multiplication of Zondeni in Bembeke EPA as one of Decentralized Vine Multipliers. The Extension Staff for Bembeke EPA. Mr. Belekanyama acted as a translator in this interview.

The sweetpotato seed system specialist started by introducing herself, and extended a word of thanks to the farmer for taking part in the program.

In the interview, some topics were captured.

a) Participation

The sweetpotato seed system specialist asked if the farmer was in a group or alone. In response he said that he was doing it as a family.

b) Technology used

Asked about the technology he was using, he said he started last year with rain fed using rapid multiplication. After experiencing water shortage in November 2010, he still continued with irrigation using treadle pump.

c) Beneficiaries reached

In August 2010, he distributed vines (4 kg) to nine farmers, including himself, as tertiary multipliers and he had no leftover vines. In this second year, he has already distributed vines to 26 beneficiaries (13 males, 13 females) around his area, each receiving 4 kg using voucher system. He has written down all the beneficiaries in his record book, and showed them to us.

The names of beneficiaries from his record book are:

1. Mrs. Kalala
2. Mrs. Chatheka
3. Mrs. Jeniveva
4. Mrs. Sitela
5. Mrs. Agness
6. Mrs. Wayson
7. Mrs. Saiwa
8. Mrs. Londia
9. Mrs. Kachepa
10. Mrs. Chimphamba
11. Mrs. Chitsonga
12. Mrs. Mtsendera
13. Mrs. Chakudza
14. Mr. Maluza
15. Mr. Chilambe
16. Mr. Pononga
17. Mr. Kapatamoyo
18. Mr. Gama
19. Mr. Chaleka
20. Mr. William
21. Mr. Mkumbudzula
22. Mr. Chidzakadzi
23. Mr. Chimpeni
24. Mr. White
25. Mr. Sestino
26. Mr. Chimtondo

His vine distribution was still in progress when we visited him on 5 January 2011. From the numbers mentioned above, he would manage to generate income as much as $26 \times 155 = \text{Mk}4030$, an equivalent to around US \$28.

d) Procedure of distribution

This work is being carried out hand in hand with the extension officers of the area. When beneficiaries come, they are sent to the Extension Worker to assess them if they have an interest on sweetpotato. He also learnt from the Extension worker how to keep the proper records.

Erna Abidin asked him, after distributing vines to 26 beneficiaries, if he had some vines remaining. He said due to rains that were coming, vines were still regrowing.



Figure 2. Mr. Chimpikidzo's sweetpotato (Zondeni) multiplication nursery.

d) Future plans

Question of Erna Abidin: what he will do with the vines that are re-growing. His response: he will sell to farmers in end January and/or early February 2011 since in Dedza, people start planting sweetpotato on a small portion of land during the onset of rains, and plant on a large portion of land later in January and February. This is done to escape pests like sweetpotato weevils which attack early planted sweetpotatoes.

According to him, he is hoping to sell the vines by February 2011 and he is not worried since the demand will be high by that time. Currently he is preparing land for sweetpotato production.

e) Year-2 plans from the project

The farmer was also been enlightened on the year-2 plans that CIP had plans to train farmers together with partners (NGO, DARS, and Extension) on

- How to preserve the small storage roots to be used as source of planting material.
- How to store roots using pit method.
- How to chip storage roots for sweetpotato flour production
- How to make several products from storage roots.

f) Advice given to the farmer by the sweetpotato seed system specialist

The farmer should continue to keep records on his fellow farmers that are coming to buy vines in the future as he has already started with the farmers who collected vines through voucher system. If he can have some remaining vines after selling to fellow farmers, he may report the Extension worker and Concern Universal so that CIP can see what to do with the remaining vines.

Closing remarks:

Erna Abidin thanked the farmer and showed him the report where Mr. Chimpikidzo's was captured as one of the DVM in Dedza. She also assured the farmer of her commitment to work hand in hand with them. She also hoped that when visitors came, farmers should tell their accurate progress in the program.

3.2 Mrs. Asame Useni

Mrs. Asame Useni comes from Chiwamba Village aged 42 with five Children (two males and three females). Last year she was given sweetpotato vines by CU-Dedza.

a) Participation

This is one of the farmers who are participating in multiplication of Zondeni in Kanyama EPA as an individual.

b) Technology used:

She said she started with two standard beds of each 20 m by 1 m and she used a rapid multiplication technique but rain fed. In August 2010, she expanded the field to 0.1 ha using the same rapid multiplication with irrigation.

c) Beneficiaries reached

She said so far she had 21 farmers who have collected 4 kg of vines (300 cuttings) using vouchers. Then, she has managed to generate income as much as $21 \times 155 = \text{Mk}3255$ an equivalent to around US \$23.

d) Future plans

Asked if there were remaining vines. She said she has few and she has planned to plant in her own field since her land is already prepared. She was also asked about her opinion concerning the vines that were coming from Bvumbwe Research Station to be distributed to additional beneficiaries in her area. In response she said she was not worried with that, since she knows there are more people who are willing to grow Zondeni and she added that as of now vines that are remaining with multipliers can not satisfy the demand.

e) Marketing strategy

Asked what her plans are if she harvests more storage roots. She was willing to learn processing of sweetpotato into several products for selling and use the surplus as food.

f) Comments from her

She thanked CU-Dedza and also CIP for initiating the programme and she said she will be happier to receive money from the vouchers she gathered. She added that it is the first time to participate in such programme that after hard working she has also earn some thing.

Closing remarks

The sweetpotato seed system specialist thanked the farmer for actively participating in the program and advised her to go to CU-Dedza Office any day she feels she has completed receiving vouchers to redeem them with money.

3.3 Saidi Kandaya

Saidi Kandaya is the Chairman of Agriculture committee in Chiwamba VDC. He is one of the multipliers of Zondeni.

a) Participation

He is a member of Themba Irrigation Scheme comprising of 36 members (6males, and 30 females) they grow maize, beans, tomatoes, and potato besides sweetpotatoes.

b) Technology used

The scheme started in June-July 2010 by multiplying sweetpotato vines using rapid multiplication in 18 beds of each 30 X 1 m using gravity fed Irrigation system (canals). After multiplying these vines they distributed to 16 households.

c) Beneficiaries reached as an individual

He said so far he has received 10 vouchers from beneficiaries who have already collected the vines. For him, as of now he has managed to generate income as much as $10 \times 155 = \text{Mk}1550$ an equivalent to around US \$11.

d) Irrigation scheme Plans

The scheme has established a communal farm of 0.2 ha planted with sweetpotato. The purpose of this communal garden is to generate income through storage root sales to be used for purchasing fertilizer for the scheme.

e) Comments from him

Mr. Saidi Kandaya appreciated the program. He said through the programs he is now able to speak in public. People are able to harvest more yields in sweetpotato than before.

f) Radio program preparations

When going to this farmer we were accompanied by Asame Useni (a second visited farmer). Asking them what radio station was easily reaching most people in the area, they responded that **Zodiak Radio** was the one that most people tune to. The sweetpotato seed system specialist informed them that they would soon be getting information about radio programs that they should be prepared. More information pertaining to time of broadcasting will be communicated by CU-Dedza and Extension staff.

Closing remarks:

The sweetpotato seed system specialist thanked both farmers for participating in the programme. She also encouraged them to inform people who are interested to grow Zondeni to register their names through VDC Agriculture committee in collaboration with CU-Dedza and Extension staff.