Consultancy report for work carried out during the PPG entitled "Developing virus indexing capacity for planting materials" (STDF/PPG/404)

July 2014

Pretoria, South Africa

Lilongwe, Salima and Blantyre, Malawi

Report compiled by Ms MJ Theyse

Phyto SOLUTIONS
IMPROVING AGRICULTURAL TRADE

1. Mandate and purpose of the project preparation grant

This feasibility study is based on a project preparation grant (PPG) entitled "Developing Virus Indexing Capacity for Planting Materials" approved by the STDF Working Group in March 2013. The PPG was requested by the Department of Agricultural Research Services (DARS) in the Ministry of Agriculture and Food Security in Malawi and supported by various government and private sector stakeholders.

The objective of the PPG is to assess the feasibility of establishing capacity for the indexing and production of virus-free planting materials for bananas in Malawi and, depending on the findings and recommendations of this assessment, to develop a project proposal.

2. Scope of the feasibility study

The feasibility study was based on consultations with relevant stakeholders and included a systematic assessment of the following aspects:

- The current situation of BBTV in Malawi, including its status as a quarantine pest, with particular focus on districts with greatest potential for banana production.
- An analysis of the existing capacity of the government, private sector and other relevant stakeholders to adequately contain BBTV in Malawi, as well as significant capacity gaps and priorities. This analysis should consider other necessary regulatory actions which should be undertaken by the NPPO to effectively control BBTV, as well as any other important complementary actions and measures which should be undertaken by other stakeholders
- Human resource needs (including virus indexing and tissue culturing at professional and technical level), infrastructural requirements and costs related to the production and development of clean planting materials.
- Commercial opportunities to produce disease-free planting materials in Malawi for export to neighbouring countries (e.g. Zambia and Mozambique) based on market demand in the region, other financial aspects private sector interest, opportunities for public-private partnerships. This should include an analysis of selected, commercially-viable facilities for virus indexing and the production of disease-free planting materials in other parts of Africa.
- Capacity of stakeholders in Malawi to meet regulatory requirements necessary to export banana planting materials within the region, including relevant SPS requirements, SPS export/import clearance procedures, etc.
- Linkages and complementarities to related (ongoing/planned) capacity building activities supported by donors and development partners in Malawi, such as support for virus indexing in potatoes and the rehabilitation of a small tissue culture facility.
- Synergies to other ongoing/planned efforts in the region to address problems related to the use and spread of infected planting materials

- Prospective interest of donors and development partners to fund or co-fund all or part of the project to be developed through this PPG (particularly given the likelihood that such a proposal would not meet STDF eligibility criteria given an expected focus on infrastructure and equipment).

The report of the workshop and field visits of the feasibility study on developing virus indexing capacity for banana planting materials in Malawi contains the details of the outcomes of the assessment that include data captured by means of questionnaires, workshop outcomes and observations from field visits to facilities with potential as virus indexing facility or tissue culture laboratory.

3. Activities of the feasibility study

3.1. Planning and background research

Background research the pest status of bananas, and particular that of BBTV in Malawi and the region commenced on 4 November 2013. A draft workshop programme and itinerary to include field visits was initially planned for the week 23 - 28 November 2013 but had to be postponed on request from DARS due to previous commitments of important potential stakeholders during that week.

On 19 November 2013, a special planning meeting was arranged in Pretoria, South Africa to coincide with another project visit to the city by Mr Soko from DARS. The meeting was attended by Mr M Soko, Dr E Jooste and Ms M Theyse and focused on the logistical as well as technical details and new date for the planned workshop and facilities visit by Dr Jooste. The details of Mr Soko's assistance with logistical arrangements for the workshop and a tentative itinerary for Dr Jooste for the workshop and field visits was drafted.

By 25 November 2013 the date for the visit was concluded to take place from 08 - 14 December 2014, including travel time:

<u>Dr Elize Jooste:</u>

08 December	Air travel SA to Malawi and book in at Lilongwe Hotel
09-10 December	Workshop and stay at Lilongwe Hotel
11 December	Road travel with Mr Soko by car to Blantyre, visit NPPO Lab Sleep Blantyre Hotel
12 - 13 December	Visit banana plantations with BBTV, potential mother block etc. Travel by road. Sleep Blantyre Hotel.
14 December	Air Travel from Malawi to SA

Mr Mischeck Soko (stationed in Blantyre at the Bvumbwe Agricultural Research Station)

07-08 December	Workshop preparations. Sleep Malawi Hotel
09-10 December	Workshop and sleep at Lilongwe Hotel
11 December	Road travel with Dr Jooste by car to Blantyre, visit NPPO Lab.
12 - 13 December	Visit banana plantations with BBTV, potential mother block etc. Travel by road.

3.2. Questionnaires and background research

Questionnaires were formulated by the international consultants based on the assessment requirements of the feasibility study and to accommodate the inputs of stakeholders in the private sector (including producers), the public sector including officials from the National Plant Protection Organisation (NPPO) of Malawi in the Department of Agricultural Research Services (DARS) as well as research professionals, accordingly.

The following questionnaires formulated and are attached as Appendix 3 to the Report of the workshop and field visits of the feasibility study on developing virus indexing capacity for banana planting materials in Malawi:

- Questionnaire A: To do an assessment of the current status of BBTV in Malawi, including its status as a quarantine pest, with particular focus on districts with the greatest potential for banana production. The participant focus group: NPPO, producers and researchers.
- Questionnaire B: To do an assessment of the pest profile for bananas in Malawi, with particular focus on NPPO regulatory services in districts with the greatest potential for banana production. Participant focus group: NPPO, producers and researchers. *A banana pest list compiled by de Villiers et al. (2002) was used.*
- Questionnaire C: To establish human resource needs (including virus indexing and tissue culturing at professional and technical level), infrastructural requirements and costs related to the production and development of clean planting material for banana. Participant focus group: Researchers and academia. *Tables used in this questionnaire are based and/or adapted from the IPPC PCE questionnaire (FAO, 2003)*
- Questionnaire D: To establish human resource needs (including virus indexing and tissue culturing at professional and technical level), infrastructural requirements and costs related to the production and development of clean planting material for banana for the NPPO. Participant focus group: NPPO. *Tables used in this questionnaire are based and/or adapted from the IPPC PCE questionnaire (FAO, 2003)*
- Questionnaire E: To determine the commercial challenges and opportunities to produce disease free planting materials in Malawi. Participant focus group: Producers (small scale and commercial producers).

- Questionnaire F: To determine the linkages and complementaries to other capacity building activities supported by other donors and development partners in Malawi. Participant focus group: NPPO, Private sector, Researchers, Producers, Donors, Development partners.
- Questionnaire F - Tissue culture facility: To determine the commercial challenges and opportunities to produce disease free planting materials in Malawi - laboratory information. Participant focus group: Development partners, NPPO, Researchers, Private sector.
- Questionnaire G: To determine the size and capacity of banana production and market demand in Malawi. Participant focus group: Trade and industry (Private sector)

Questionnaires were disseminated via e-mail to the Heads of the 8 Agricultural Development Divisions of DARS on 29 November 2013 to provide opportunity for inputs, and again the following week via e-mail to the final list of invitees in preparation of the planned workshop in Lilongwe, Malawi (see Appendix 1 of this report).

3.3. Workshop

A two day workshop was held in the Pacific Hotel in Lilongwe on 9-10 December 2013 on developing virus indexing capacity for banana planting materials in Malawi. Day 1 of the workshop was attended by stakeholders in the private sector, including producers and researchers, and some public sector stakeholders from the Ministry of Trade and Industry (MoIT), DARS officials and a member of Parliament. Day 2 was attended by public sector stakeholders from the NPPO, MoIT and a Member of Parliament. Dr Elize Jooste facilitated the workshop and Mr Misheck Soko assisted as national consultant with logistical arrangements.

The objectives of the workshop were formulated according to the terms of reference and the Questionnaires listed in section 3.1. of this report were used as guidelines for discussions during the workshop.

On day 1 of the workshop two introductory presentations were given. Mr. M. Soko presented on the most current spread of BBTV in Malawi and also reported on other important diseases of banana in Malawi. Dr. Jooste presented on the objectives of the workshop and other viruses that is a threat to bananas worldwide.

Participants were asked to complete the questionnaires and Dr Jooste took note of any additional comments. Questionnaire inputs and additional comments from stakeholders were processed and incorporated into the findings of the workshop are discussed in detail in the ''Report of the workshop and field visits of the feasibility study on developing virus indexing capacity for banana planting materials in Malawi''.

3.4. Field visits to existing facilities in Malawi

On Days 3 - 5 of the visit to Malawi, Dr Jooste was accompanied by Mr Soko on field visits to three private sector producers as well as the facilities that were proposed for development into a virus indexing centre and/or banana tissue culture laboratory.

The first field visit was to a farm outside Lilongwe where banana are planted to supply suckers to other farmers. The plantations were severely infected with BBTV.

The second field visit was to the farm of the Washoni brothers (Hortnet) in the Lilongwe area where good Integrated pest management and the use of imported disease free material has resulted in a successful 8ha commercial enterprise with much potential for expansion.

The third field visit to private producers was to the Mangoes Malawi farm that is situated in Salima district in the central region of Malawi. This is the largest commercial producer of banana in Malawi and makes use of imported disease free material and integrated pest management strategies to ensure disease free plantations.

The following facilities with potential for development into a virus indexing facility and/or tissue culture laboratory were also visited to evaluate and confirm infrastructure and technical resources:

- Chitedze Agricultural Research Station is situated just outside Lilongwe and coordinates research services in cereals, legumes, oilseeds and fibres, soils and agricultural engineering. The infrastructure at Chitedze is deemed suitable for establishing a banana virus indexing laboratory.
- Bunda College is part of Lilongwe University of Agriculture and Natural Resources (LUANAR). Dr Jooste visited the tissue culture facility where Irish potato, sweet potato and banana are propagated by tissue culture and met some of the staff working in the existing facility. The tissue culture facility at Bunda College is suitable for establishing a banana tissue culture laboratory.
- Bvumbwe Agricultural Research Station is located in Limbe, South of Blantyre in Malawi. Dr Felistus Chipungu is heading Horticulture research in Malawi and introduced Dr. Jooste and Mr Soko to the existing tissue culture facility. The research station coordinates research services in Horticulture and Plant Protection. Dr. Jooste visited the tissue culture facility and related facilities in Bvumbwe as well as the potential virus indexing laboratory. The tissue culture facility at Bvumbwe Research Station will be suitable for propagation of clean materials for banana, but the supporting structures, i.e., quarantine facilities and greenhouses need renovation. It is also possible that the facility can become a banana virus indexing centre although it will need investment in equipment and human resources.

The findings of the field visits are discussed in detail in the ''Report of the workshop and field visits of the feasibility study on developing virus indexing capacity for banana planting materials in Malawi''.

3.5. Validation of draft report

A draft report that was disseminated for validation to workshop participants was submitted to Ms Ayral at the STDF on 20 December 2013. By 12 January 2014, no comments were received so the report was again circulated to all participants with a reminder for validation. Some comments were received and incorporated and a validated draft report was submitted on 31 January 2014 to Ms Ayral at the STDF.

3.6. Finalising the Report

Comments from Ms Ayral at the STDF, and a request for additional information to the draft report was received on 07 March 2014. MS Word Copies of the report was resubmitted on 11 March 2014. Additional information was compiled and submitted in a separate document on 13 March 2014. Following a request from Ms Ayral on 13 March 2014, additional information on regional initiatives on BBTV and inputs on financial projections were consulted with Mr Soko and submitted to Ms Ayral at the STDF on 24 March 2014.

On 27 June 2014 Ms Hopper requested that the revised draft report (including regional BBTV information and rough estimates regarding the cost of establishing virus indexing facility and banana tissue culture laboratory be included in the final report.

The consultants followed-up with potential private sector investors to confirm whether there is still a private sector interest and if any business plans have been developed since December 2013. The issue was also raised with Mr Soko at DARS to confirm whether there were any developments in this regard that he was aware of. No additional/ new information was available from private sector.

Rough estimations for the development of tissue culture laboratory and/or virus indexing facility at potential existing facilities were based on existing models in literature and in practice and included in the revised draft report. The revised report was submitted on 3 July 2014 to Ms Hopper at the STDF.

Activity	Description	Time frame	Responsible person(s)
Workshop preparation: Documents and electronic interviews	Background research; electronic interview with DARS; draft and disseminate questionnaires	3 days	International consultant: Ms Theyse, Dr Jooste
Workshop and field visits preparation: Logistics and travel arrangements	Draft itinerary; obtain approval of workshop dates; make travel arrangements and venue preparations for workshop and facilities visits	1 day	International consultant: Ms Theyse
		2 days	National consultant
Workshop: Expert facilitation, presentations, data collection and secretarial services	Presentations on the objectives of workshop and banana pests' status in Malawi; facilitate workshop; provide secretarial duties and logistical support	2 days	International consultant: Dr Jooste
		2 days	National consultant: Mr Soko
Field visits and collection/verification of infrastructure information	Visits to producers and potential facilities for consideration to be developed into national virus indexing centre and/or tissue culture facilities	3 days	International consultant: Dr Jooste
		3 days	National consultant: Mr Soko
Drafting of report	Preparation of draft report of workshop and field visits, including inputs from questionnaires	4 days	International consultant: Dr Jooste; Ms Theyse
Validation of report	Disseminate draft report for validation, follow-up with participants and revision of draft report;	1 day	International consultant: Ms Theyse; Dr Jooste
		1 day	National consultant: Mr Soko
Final report	Add information as per STDF request and revision of final report	1 day	International consultant: Ms Theyse; Dr Jooste

TABLE 1 Summary of activities of the feasibility study

3.7. Budget

A breakdown of expenses incurred is provided in Table 2 below.

Item	Description	Receipts in ZAR or MWK*	Budget (US$)
Expertise	International consultant = 15 days at US$600 per day	-	9000.00
	National consultant = 8 days at US$200 per day	-	1600.00
Travel/ DSA	One international flight to Malawi (06 December 2013)	R13 675.00	1320.97
	Airport shuttle for international consultant (06 December 2013)	R515.00	49.75
	DSA international consultant for 5 days in Malawi at US$226 per day	-	1130.00
	DSA national consultant for 4 days in Lilongwe at US$175 per day (consultant based in Blantyre)	-	700.00
Stakeholder meeting to discuss feasibility study	Venue hire and lunch for participants at Pacific Hotel, in Lilongwe, Malawi	-	1056.00
Other expenses	Fuel on 08 December 2013	K62386.20	153.26
	Fuel on 10 December 2013	K20000.00	47.36
	Fuel on 11 December 2013	K39500.00	93.46
	Fuel on 13 December 2013	K50500.00	119.27
	Road transport: Driver at US$50 per day for 4 days (09-13 December 2013)		200.00
TOTAL			**15470.07**

TABLE 2 Expenditure report for feasibility study

**Exchange rates were used in this calculation as it was on the date that payments were made:*

06 December 2013 1US$=ZAR10.3522472919
08 December 2013 1US$=MWK407.0499877930
10 December 2013 1US$=MWK422.2999826733
11 December 2013 1US$=MWK422.6499938965
11 December 2013 1US$=MWK422.6499938965
13 December 2013 1US$=MWK423.4000049664

Appendix 1

Participant attendance list: 9 December 2013

	NAME	Institution	E-mail
1	Owen M Chirwa	Lilongwe ADD	omduli05@yahoo.com
2	E Chongwe	Retired Scientist	edgar_chongwe@yahoo.com
3	Lobin Lowe	Producer and Member of Parliament	lowelobin@yahoo.com
4	Frankie Washoni	Producer	hortinet@afrcia-online.net
5	Maurice Washoni	Producer	hortinet@afrcia-online.net
6	Amon W. Phiri	Dept of Crop development	phiriad@yahoo.co.uk
7	Isaac B. Gokah	MOIT	Isaacb.gokah@gmail.com
8	Simon Mng'omba	ICRAF	s.mngomba@cgiar.org
9	Ibrahim Benesi	DARS	ibenesi@sdnp.org.mw
10	David Kamangira	DARS	davidkamangira1@gmail.com
11	Jacinta Nyaika	LUANAR/Bunda College	jnyaika@gmail.com
12	M. Soko	Scientist- Bvumbwe Research Station	Misheck_soko@yahoo.com

Participant attendance list: 10 December 2013

	NAME	Institution	E-mail
1	E.D.L. Mazuma	Chitedze Research Station, DARS	elisamazuma@gmail.com
2	David Kamangira	DARS	davidkamangira1@gmail.com
3	Lobin Lowe	Producer and Member of Parliament	lowelobin@yahoo.com
4	Isaac B. Gokah	MOIT	Isaacb.gokah@gmail.com
5	Ibrahim Benesi	DARS	ibenesi@sdnp.org.mw
6	Mathias Nkhoma	Department of Crops	matiyasi@yahoo.com
7	Jacinta Nyaika	LUANAR/Bunda College	jnyaika@gmail.com
8	M. Soko	Scientist at Bvumbwe Research Station	Misheck_soko@yahoo.com