



# **Case Study: SPS Issues and Regional Trade in Horticultural Products in the SADC Region**

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**Submitted by:  
AECOM International Development**

**Submitted to:  
USAID/Southern Africa, SADC Secretariat**

**Gaborone, Botswana**

**August 2010**

**USAID Contract No. 690-M-00-04-00309-00 (GS 10F-0277P)**

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## ACRONYMS

AACP	ACP (African, Caribbean, Pacific) Agricultural Commodities Programme
AGOA	African Growth Opportunities Act
APIS	Directorate Agricultural Product Inspection Services of the Department of Agriculture, Forestry and Fisheries
CAC	CODEX Alimentarius Commission
CEPAGRI	Center for the Promotion of Agriculture
CGA	Citrus Growers Association
COMESA	Common Market for East and Southern Africa
CRI	Citrus Research International
DPH	South African Department of Plant Health (Directorate of Plant Health)
EAC	East African Community
EAPIC	East African Phytosanitary Information Committee
FANR	Food, Agriculture and Natural Resource Directorate
FAO	Food and Agriculture Organization
FPEF	Fresh Produce Exporters' Forum
HACCP	Hazard Analysis and Critical Control Points
HASSP	Harmonised Seed Security Project
HS	Harmonized System
ICIPE	International Centre of Insect Physiology and Ecology
IPPC	International Plant Protection Convention
ISPM	international Standard for Phytosanitary Measure
ITC	International Trade Centre
MAT	male annihilation technique
NEP	National Enquiry Point
NNA	National Notification Authority
NPPO	National plant protection organization
PPECB	Perishable Products Export Control Board
RISDP	Regional Indicative Strategic Development Plan
RPPC	Regional Plant Protection Committee
SADC	Southern African Development Community
SPS	Sanitary and Phytosanitary
STDF	Standards and Trade Development Facility
TA	Technical Assistance
TBT	Technical Barriers to Trade
TIPS	Trade & Industrial Policy Strategies
TPC	Third Party Certification
UK	United Kingdom
US	United States of America
USAID	United States Agency for International Development
USDA-APHIS	United States Department of Agriculture - Animal and Plant Health Inspection Service
USDA-FAS	United States Department of Agriculture - Foreign Agriculture Service
WTO	World Trade Organization

## EXECUTIVE SUMMARY

Presented here is a case study on Sanitary and Phytosanitary (SPS) issues and regional trade in horticultural products in the Southern African Development Community (SADC). This study is part of a three part series which highlights areas where practical implementation of the SPS Annex can be put into operation in terms of technical, scientific and business interventions that would be most appropriate to deliver the goals of increased trade, food security and food safety.

The effects of the Sanitary and Phytosanitary Agreement on trade in horticultural products in the Southern African Development Community (SADC) region falls primarily under the provisions of the International Plant Protection Convention (IPPC). Other constraints to the movement of horticultural and other plant products that come under the SPS agreement are various third party certifications (TPC) that include certain requirements many of which (but by no means all) fall into the ambit of the CODEX Alimentarius Commission which deals with food as a commodity. The review of horticultural trade in the SADC region focuses on the workings of the IPPC in the region because it is difficult in the context of a short study to do justice to a topic that is both complex and strays substantially into what is a cross cutting area normally classified as Technical Barriers to Trade (TBT).

In terms of the individual compliance to the requirements of the IPPC the general level of compliance in the SADC region is actually quite poor. SADC has the largest number of non IPPC member countries in the world outside of central Asia and the general level of compliance by national plant protection organizations (NPPO's) among member states to the basic provisions of the treaty is poor. The involvement of SADC in devising regional strategies for NPPO's is not really visible in terms of practical results despite the ratification of a SPS annex in 2008.

The general issues are illustrated by a review of national and regional responses to arguably the most significant plant health threat faced by Africa in the first decade of the new millennium that has been posed by a number of invasive fruit flies introduced to the continent from Asia. The general response to the threat has been generally reactive and, in general, not tinged with any sense of urgency or sense of how serious the problem can be in the long term. The major exception to this general rule is South Africa which has both considerable investments in horticultural exports at stake and a proactive private sector which is highly organized in terms of lobbying and engagement with their governments NPPO.

# **1. HORTICULTURE TRADE AND SANITARY AND PHYTOSANITARY (SPS) MANAGEMENT IN THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC) REGION**

## **1.1 Introduction**

Presented here is a case study on Sanitary and Phytosanitary (SPS) issues and regional trade in horticultural products in the Southern African Development Community (SADC). This study is part of a three part series which highlights areas where practical implementation of the SPS Annex can be put into operation in terms of technical, scientific and business interventions that would be most appropriate to deliver the goals of increased trade, food security and food safety.<sup>1</sup>

Horticulture is an important part of the agricultural sector in many countries including much of the SADC region. It is estimated that the horticulture industry employs over 600,000 persons directly with over two million involved indirectly, often value adding, such as retail, logistics, service industries and processing. South Africa's regional share in horticultural production is estimated more than half of the regional figures. The horticulture sector also plays a gender balancing role employing between 50 to 90% women in its labor force. Horticulture contributes significantly to poverty alleviation, fosters gender equality by empowering women, generates rural employment, and provides opportunities for intensive land use.

Despite the accelerated growth in global horticulture and fruit trade, the share of Africa in this trade remains low. Regionally, horticulture trade represents only 1.4% of intra-SADC trade. This situation is a result of various supply chain constraints which include non-tariff barriers such as SPS measures. In addition to these constraints private actors including supermarket chains also impose their own standards which are referred to collectively as third party certification (TPC) and are now almost standard for the larger scale horticulture suppliers. Data on the impact on SPS measures in the horticulture sector on SADC trade are scarce. This paper seeks to fill in the gap by making an assessment of SPS measures and their impact on intra-SADC horticulture trade and highlights the initiatives that are planned or underway at the regional, national and donor partner level. In particular, the impact of SADC and the SPS Annex to the SADC Protocol on Trade on horticultural trade is examined.

The two areas in which the SPS Agreement can impact on trade in horticultural goods and products is in terms of plant health through the International Plant Protection Convention (IPPC) and in terms of human health through certain provisions of the CODEX Alimentarius Commission (CAC). These two areas are explored in this study. Unfortunately the SPS Annex to the SADC Protocol on Trade was only approved in mid 2008 and since most of the available trade data dates only to the end of 2008 it is difficult to determine the direct impact of the protocol using trade flows at this point in time. Therefore this study primarily uses other types of data such as direct measurements of specific traded items.

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<sup>1</sup> See "Case Study: SPS Issues and Regional Trade in Livestock and Livestock Products in the SADC Region" and "Assessment of the Status of Implementation of the SPS Annex to the SADC Protocol on Trade" by Dermot Cassidy, USAID Southern Africa Global Competitiveness Hub, 2010.

This case study is structured as follows. In the remainder of this section, the obligations of SADC Member States under international conventions are reviewed followed by an overview of SADC trade in horticultural products. Section 2 examines the regional SPS regulatory framework. Section 3 reviews the regional responses to the most significant threat to horticultural trade in the region – invasive fruit flies. Section 4 provides conclusions and recommendations.

## **1.2 The International Plant Protection Convention (IPPC); Obligations of contracting parties.<sup>2</sup>**

The main agreement (convention) regulating international trade in plants and most plant products is the International Plant Protection Convention (IPPC). There are a number of agreements in the IPPC but the principle ones are that each member of the convention ('contracting party') has agreed to the following;

1. The setting up of an official national plant protection organization (NPPO)
  - Empowering the NPPO to:
  - Issue phytosanitary certificates for exported products,
  - Carry out the surveillance of growing plants and plant products in storage or in transportation,
  - Inspect consignments of plants and plant products moving in international traffic with the object of preventing the introduction and/or spread of pests;
  - Disinfestations/disinfection of international movement of consignments of plants, plant products to meet phytosanitary requirements;
  - Protection of endangered areas and the designation, maintenance and surveillance of pest free areas and areas of low pest prevalence;
  - Conduct of pest risk analyses;
  - Ensure through appropriate procedures that the phytosanitary security of consignments after certification regarding composition, substitution and re-infestation is maintained prior to export;
  - Training and development of staff.
2. International cooperation expected of an NPPO includes cooperation with one another, in particular to:
  - Exchange of information on plant pests, particularly the reporting of the occurrence, outbreak or spread of pests that may be of immediate or potential danger,
  - Participate, in so far as is practicable, in any special campaigns for combating pests that may seriously threaten crop production and need international action
  - Cooperate, to the extent practicable, in providing technical and biological information necessary for pest risk analysis.
3. Contracting parties are required to designate a contact point for the exchange of information connected with the implementation of this Convention and to cooperate with one another in establishing regional plant protection organizations.

All contracting parties are required to provide lists of points of entry into the country, lists of regulated pests whose entry is prohibited, restrictions and prohibitions and descriptions of official national plant protection organizations

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<sup>2</sup> Based on the New Revised Text approved by the FAO Conference at its 29th Session - November 1997

### 1.3 Intra-SADC Trade

Most of SADC trade in horticultural products is with Europe or other international players. By comparison intra-SADC trade in horticulture products is low. The latest SADC Trade Performance Review by Trade and Industrial Policy Strategies (TIPS) states that intra-SADC trade has not improved irrespective of regional integration initiatives under the SADC Annex to the Protocol on Trade. Detailed statistics for most SADC countries are available from the United Nations Commodity Trade Statistics Database (COMTRADE) database to the Harmonized System (HS) six figure code level but they are only available to the end of 2008.

The specialization of the region in horticulture exports to the European Union (EU) does present a potential opportunity for regional trade expansion in horticulture products, particularly to the Southern African market where there is an increasing demand for high value vegetable products. It is important to note that SADC represents a climatic range from north to south i.e. tropical to temperate as well as displaying variations in rainfall patterns with the region being drier in the west and more humid in the east (see Figure 2c). The climatic variation should theoretically allow for crop specialization where the climate is best suited for the crop e.g. pineapples and bananas in the tropics, citrus in the sub-tropics and deciduous fruit in the winter rainfall temperate or cooler desert regions. Given that trade flows are dominated by exports from South Africa, which has no tropical climates, this would argue for a significant potential for the development of a multiple-way trade in fruit within the SADC region.

#### 1.3.1 Fruits

SADC imports less than 1% of the world's traded fruit and exports up to 5% of total world fruit exports. Traded values are given in Table 1. South Africa is by far the greatest contributor to regional exports and intra-regional trade.

Table 1: Main traded whole and minimally processed fruit commodities in the SADC region.

Product	Intra regional trade within the Southern African Development Community (SADC) (US \$'000)							
	2001	2002	2003	2004	2005	2006	2007	2008
Apples, pears and quinces, fresh	15349	25655	24037	27451	25934	23317	30806	25715
Citrus fruit, fresh or dried	7091	12778	9599	15927	11034	14141	14311	11465
Bananas and plantains, fresh or dried	4365	7045	6953	5381	6386	10483	9415	6752
Grapes, fresh or dried	2719	4137	3823	4961	4081	4616	5293	4662
Brazil nuts, cashew nuts & coconuts	1466	1123	2116	3781	3099	6051	5831	3773
Nuts nes	4237	3055	4516	4478	4004	3919	3115	3374
Fruits nes, fresh	1237	1458	2442	2322	2183	1976	2757	2090
Dates, figs, pineapples, mangoes, avocados, guavas	1292	1630	2571	2250	2339	2283	2789	2082
Apricots, cherries, peaches, nectarines, plums & sloes, fresh	1611	1967	2389	3015	2684	2312	2571	2021
Dried fruit	1179	1453	1826	1843	1675	1802	2085	1828
Melons (including watermelons) & papayas, fresh	629	838	1097	1183	1307	1129	1771	1348
Frozen fruits & nuts	519	553	530	280	256	212	379	268
Provisionally preserved fruits & nuts (unfit for immediate consumption)	126	566	595	462	334	226	238	106
Citrus fruit and melon peel	15	41	19	16	16	4	22	7

Deciduous fruit production is almost completely dominated by South Africa though there are small areas suitable for such production in Lesotho, the Swazi highveld, the Eastern

Districts of Zimbabwe and, marginally, parts of northern Malawi. Bananas are dominated by production in marginal sub-tropical parts of South Africa although the climatically more suitable, areas in Mozambique are coming back into production – as was historically the case in the 1960's. Citrus production is suited to the sub-tropics and this has been dominated by those climatically suitable areas in South Africa, Swaziland, Zimbabwe and Botswana that also have good logistical links to export markets. There is a significant amount of cashew and macadamia nut production in the SADC region. Due to the relatively non perishable nature of these products production tends to be in areas where farming systems and climate are most suitable.

Net trade flows of fruit in the SADC region are shown in Table 2. The main importers and exporters within the SADC region are presented. Namibia's position is quite interesting since, whilst it is a major net importer of fruits as a whole, it is one of the largest exporters of grapes from the Orange River area (as one of the earliest seasonal producers in the southern hemisphere). While grape exports alone account for 1% of all Namibian exports, the season is short and in fact grapes have to be imported into the country much of the time. While trade flows remain small, it is nevertheless possible to see that the climatic advantage as briefly discussed above does play some role in the trade flows shown in Table 2. If these climatic advantages are fully exploited then regional trade would dramatically increase especially in terms of tropical fruit sales to South Africa – notably, bananas, pineapples and mangoes.

Table 2: Main fruits produced and traded in the SADC region.

Product	Main exporting countries	Main importing countries
Bananas & Plantains	Mozambique, Swaziland, Zimbabwe	Zambia, Botswana, Namibia , South Africa
Grapes	South Africa, Namibia	Mauritius, Botswana, Zambia
Citrus fruits	South Africa, Swaziland, Zimbabwe	Zambia, Mauritius, Namibia Botswana
Pineapples, mangoes & Avocado	Zimbabwe, South Africa, Namibia, Swaziland	Namibia, Botswana, South Africa
Apples and pears	South Africa	Botswana, Mauritius, Namibia, Zambia
Melons and papaya	South Africa, Namibia	Mauritius, Botswana
Source- International Trade Centre (ITC) Trade map statistics		

### 1.3.2 Vegetables

The traded values of vegetables between 2001 and 2008 are shown in Table 3 for intra-SADC trade of various vegetables produced within the region.

Table 3: Intra-SADC trade in vegetables and minimally processed vegetable products.

Product label	Southern African Development Community (SADC)'s imports from Southern African Development Community (SADC) in US 000'							
	2001	2002	2003	2004	2005	2006	2007	2008
Potatoes	14673	18975	25154	25834	25007	32268	32182	22967
Dried vegetables, shelled	12593	28365	22072	25793	15556	28519	22939	28989
Onions, garlic and leeks, fresh or chilled	4215	5710	7990	9373	10473	15607	17816	14800
Frozen vegetables	3266	4670	7569	11238	13860	11140	12273	6330
Vegetables nes, fresh or chilled	4033	5554	8882	10757	9417	8548	10530	5526
Tomatoes	3484	4162	7239	6234	6007	7974	9865	3593
Carrots, turnips and salad beetroot, fresh or chilled	1888	2621	3925	3833	4576	4172	5432	2344
Leguminous vegetables, shelled or unshelled, fresh or chilled	2626	2836	7397	4990	3382	3548	3637	3199
Cabbages and cauliflowers, fresh or chilled	1564	2007	3021	2790	2771	2210	2823	1196
Lettuce and chicory, fresh or chilled	645	1485	1555	1459	1653	1390	1751	824



Vegetables, provisionally preserved (unfit for immediate consumption)	951	1638	2630	1505	901	884	1128	711
Cucumbers and gherkins, fresh or chilled	530	535	755	771	862	786	1065	566
Dried vegetables	689	1512	2166	1069	899	515	700	625
Manioc, arrowroot, yams etc	255	331	791	609	822	474	502	347

Vegetables are generally produced by annual plants and are to some extent climate independent though are often seasonal in their availability. Net flows of fresh vegetables within the SADC region are shown in Table 4. South Africa, Tanzania, Zambia and Zimbabwe are the main exporters of vegetables in the region. In world terms they are only minor actors, accounting in total for 0.5% of total world exports. Fluctuations in traded volumes have occurred due to political instability in Zimbabwe and foreign exchange fluctuations. The larger importers in the region include Botswana, Namibia, Mozambique and Swaziland. Namibia, whilst a major net importer of vegetables is a large exporter of onions, garlic and leeks.

Table 4: Main vegetables produced and traded in the SADC region

Product	Main exporting countries	Main importing countries
Potatoes	South Africa	Botswana, Namibia, Zambia and Swaziland
Onions, Garlic, Leeks	South Africa, Namibia	Mozambique, Namibia, Botswana
Dried vegetables	South Africa, Malawi	Botswana, Namibia, Malawi
Fresh vegetables	Zimbabwe, South Africa	Botswana, Namibia
Frozen vegetables	Zimbabwe, Zambia, South Africa	Botswana, Namibia
Tomatoes	South Africa	Botswana, Mozambique, Namibia
Carrots and turnips	South Africa	Botswana, Namibia
Cabbages and cauliflower	South Africa	Botswana, Namibia

Source- International Trade Center (ITC) Trade map statistics

## 2. REGIONAL SPS REGULATORY FRAMEWORKS

### 2.1 International and regional plant health activities by NPPOs

The SADC trade agreement calls upon Member states to harmonize SPS measures in line with international standards and to seek synergies in building up regional capacities in SPS management. Plant Health related issues are dealt with by the Regional Plant Protection Committee (RPPC)<sup>3</sup>. The committee meets on a regular basis to discuss issues relating to regional plant health. Of particular interest is the strengthening of member states to support their domestic industry's ability to meet phytosanitary measures required by importing countries, implement trade related phytosanitary obligations, and develop common positions in phytosanitary related trade discussions in international standard-setting organizations and the World Trade Organization (WTO). This last activity is considerably affected by the fact that SADC has one of the largest groups of IPPC non contracting states which considerably weakens its position.<sup>4</sup> The main output of the RPPC during the past eight or so years has been the production and implementation of the Harmonised Seed Security Project (HASSP). While this is of direct benefit to seed marketing companies, and thus farmers, there has been little direct benefit in terms of trade in fresh produce. More recent activities are focused on the issues brought up by pesticides and the production of draft guidelines 'Pesticide guidelines for SADC' which are yet to be adopted by Member States.

<sup>3</sup> Referred to as the Plant Protection Technical Committee (PPTC) by the Inter-African Phytosanitary Council > (IAPSC) and the SADC Plant Protection Technical Sub-Committee on the SADC website. There are no available references to the workings of this committee after 2002

<sup>4</sup> Angola, the Democratic Republic of Congo, Lesotho, and Zimbabwe

In November 1951, the Food and Agriculture Organization (FAO) Conference approved the IPPC for submission to governments. The Convention came into force on 3 April 1952 and has been open for adherence by non-signatory States since its entry into force. A revised text was approved in November 1979 and fully came into force in April 1991. In 1997, the FAO conference approved wide-ranging amendments to the Convention and the (third version) into force in October 2005. In SADC, only South Africa has fully joined the IPPC though most countries in the region have the status of 'Adherence' (Table 5). The exceptions are Angola, the Democratic Republic of Congo, Lesotho, and Zimbabwe which are defined by the IPPC as 'non contracting parties' i.e. are technically not members though they theoretically adhere to the basic texts of the IPPC. The status of 'adherence' as opposed to signature and ratification is not really defined by the IPPC but for practical purposes the countries listed in Table 5 below are full members of the IPPC and receive the benefits of full membership such as targeted technical assistance (TA) in complying with the provisions of the Convention.

Table 5 International Plant Protection Convention (IPPC) status of Southern African Development Community (SADC) countries

Participant	Signature	Definitive Signature	Ratification	Adherence
Botswana				30 June 2009
Madagascar				24 May 2006
Malawi				21 May 1974
Mauritius				11 Jun 1971
Mozambique				15 May 2008
Namibia				23 Feb 2007
Seychelles				31 Oct 1996
South Africa	6 Dec 1951		21 Sep 1956	
Swaziland				12 Jul 2005
Zambia				24 Jun 1986

In terms of the workings of the NPPOs that each SADC country has set up under the IPPC the organizational and working transparencies are summarized in Tables 6 and 7. Table 6 is based on the WTO Transparency Tables with the addition of information on the number of notifications made on edible products of plant origin and on number of documents submitted to the IPPC. The WTO Transparency Table merely records whether the event has occurred and makes no attempt to qualify it. Table 7 provides some of the missing information.

On the basis of Table 6, both Lesotho and the Seychelles have some way to go in compliance. The Seychelles is in the process of joining the WTO and will thus be able to get some assistance in this area. Angola, the Democratic Republic of Congo, Lesotho, Mozambique, Namibia and Zimbabwe have not notified any plant related SPS measures to the WTO though Mozambique, Namibia and Zimbabwe submitted documentation to the IPPC. The countries with the highest level of transparency/compliance to the IPPC requirements are Madagascar, South Africa and Mauritius.

Table 7 explores the issue of transparency and reporting requirements in more detail with particular reference to IPPC reporting requirements as outlined in section 1.2 (the IPPC and obligations of contracting parties). The table shows that the generally the reporting record for SADC countries on even such basic requirements such as designated point of entry is poor with nine of 15 countries not posting their designated ports of entry on the IPPC website. South Africa, for example, is one of the culprits in this instance and while the information on designated ports of entry into South Africa for plants and plant products is available on direct application to the NPPO, it has not been posted on the IPPC website.

Table 6: World Trade Organization (WTO) transparency table for Southern African Development Community (SADC) member countries and WTO Sanitary and Phytosanitary (SPS) notifications made for Harmonized System (HS) products 06\*, 07\*, and 08<sup>~</sup> as of 23 July 2010

WTO Member	Has Notified SPS:		Has Notified SPS Measures	WTO Notifications made (HS codes 06, 07, and 08)	IPPC (documents submitted)
	Enquiry Point	National Notification Authority*			
Angola	X	X		0	0
Botswana	X	X	X	0	0
Democratic Republic of the Congo	X	X		0	0
Lesotho				0	0
Madagascar	X	X	X	0	6
Malawi	X	X	X	0	1
Mauritius	X	X	X	0	7
Mozambique	X	X		0	4
Namibia	X	X		0	2
South Africa	X	X	X	0	16
Seychelles*	Not a WTO member				0
Swaziland	X	X	X	0	0
Tanzania	X	X	X	0	0
Zambia	X	X	X	0	2
Zimbabwe	X	X		0	2

Note; Number of notifications by Brazil and Australia in the HS, 01, 02 and 05 categories were 21 and 11 respectively.

\* The Seychelles joined the World Animal Health Organization in 2010 and is a member of both CODEX Alimentarius and the IPPC

\*Live trees and other plants

\*Edible vegetables and certain roots and tubers

~Edible fruit and nuts; peel of citrus fruit or melons

Table 7; Data submitted by SADC countries in respect of general reporting requirements of the International Plant Protection Convention (IPPC).<sup>5</sup>

Participant	Designated Plant Protection Organization and contact point	Membership in regional plant protection organizations (Inter-African Phytosanitary Council)	Data submitted	Adherence	Succession
Angola	Y	Y			
Botswana	Y	Y		30 June 2009	
Democratic Republic of Congo		Y			
Lesotho	Y	Y			
Madagascar	Y	Y	<ul style="list-style-type: none"> <li>List of regulated pests (Art. VII.2i) (1)</li> <li>Back to top</li> <li>Entry points (Art. VII.2d)</li> <li>Legislations (Art. VII.2b) (3)</li> <li>PUBLICATION (1)</li> <li>WEBSITE (1)</li> <li>IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	24 May 2006	
Malawi	Y	Y	<ul style="list-style-type: none"> <li>Entry points (Art. VII.2d) (1)</li> <li>PUBLICATION (1)</li> <li>WEBSITE (1) IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	21 May 1974	
Mauritius	Y	Y	<ul style="list-style-type: none"> <li>List of regulated pests (Art. VII.2i) (1)</li> <li>Entry points (Art. VII.2d) (1)</li> <li>Legislations (Art. VII.2b) (4)</li> <li>Organizational arrangements of plant protection (Art. IV.4) (1)</li> <li>WEBSITE (1)</li> <li>IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	11 Jun 1971	
Mozambique	Y	Y	<ul style="list-style-type: none"> <li>Official Pest Report (Art. VIII.1a) (1)</li> <li>List of regulated pests (Art. VII.2i) (1)</li> <li>Entry points (Art. VII.2d) (1)</li> <li>Legislations (Art. VII.2b) (1)</li> <li>IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	15 May 2008	
Namibia	Y	Y	<ul style="list-style-type: none"> <li>IPPC Contact Point (Art. VIII.2) (1)</li> <li>Organizational arrangements of plant protection (Art. IV.4) (1)</li> <li>PUBLICATION (1)</li> </ul>	23 Feb 2007	

<sup>5</sup> For a summary of the reporting and other requirements see section 1.2; The International Plant Protection Convention (IPPC); Obligations of contracting parties.

Participant	Designated Plant Protection Organization and contact point	Membership in regional plant protection organizations (Inter-African Phytosanitary Council)	Data submitted	Adherence	Succession
Seychelles	Y	Y	<ul style="list-style-type: none"> <li>• IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	31 Oct 1996	
South Africa	Y	Y	<ul style="list-style-type: none"> <li>• Official Pest Report (Art. VIII.1a) (5)</li> <li>• Description of the NPPO (Art. IV.4)</li> <li>• Legislations (Art. VII.2b) (4)</li> <li>• PUBLICATION (6)</li> <li>• WEBSITE (2) IPPC Contact Point (Art. VIII.2) (1)</li> </ul>		
Swaziland		Y	<ul style="list-style-type: none"> <li>• IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	12 Jul 2005	
Tanzania	Y	Y	<ul style="list-style-type: none"> <li>• IPPC Contact Point (Art. VIII.2) (1)</li> </ul>		
Zambia		Y	<ul style="list-style-type: none"> <li>• Description of the NPPO (Art. IV.4) (1)</li> <li>• Entry points (Art. VII.2d) (1)</li> <li>• IPPC Contact Point (Art. VIII.2) (1)</li> </ul>	24 Jun 1986	
Zimbabwe		Y	<ul style="list-style-type: none"> <li>• Description of the NPPO (Art. IV.4) (1)</li> <li>• Entry points (Art. VII.2d) (1)</li> <li>• IPPC Contact Point (Art. VIII.2) (1)</li> </ul>		

## 2.2 Third Party Certification (TPC)

In addition to the official legal framework, a number of private standards have become widespread in the horticulture sector especially when dealing specific SPS market standards or requirement from supermarkets. The growing concerns about consumer health protection and global competitiveness which are linked to food safety and quality have resulted in an expanding number of private standards and codes of practice with the consequence that different level of mandatory or voluntary standards are being observed within the SADC regional market of horticulture products (Figure 1).

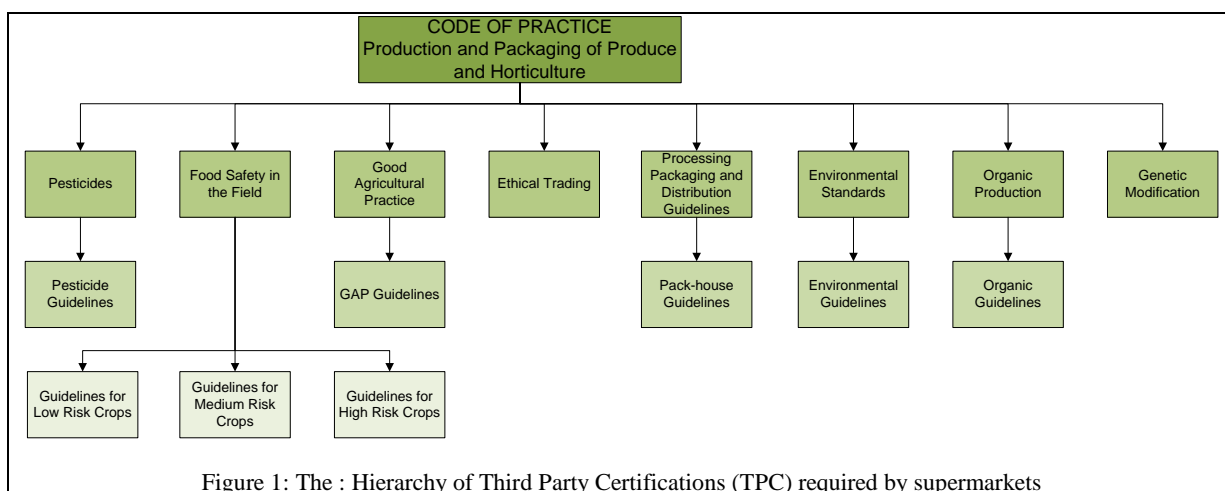


Figure 1: The : Hierarchy of Third Party Certifications (TPC) required by supermarkets

The existence and workings of TPC are often misunderstood by the development community and are frequently regarded in development literature as comprising Technical Barriers to Trade (TBT) and additional (unnecessary?) SPS constraints which often exclude smaller producers from trade. One reason for the misunderstanding is that there is an element of truth in this view though *the primary intention of private sector standards is to demonstrate compliance with standards set by governments and international treaties*. The systems of traceability used to demonstrate compliance, which are often based on Hazard Analysis and Critical Control Points (HACCP), are generally taught to individuals by implementation in a working environment (i.e. learning by doing) and since such individuals seldom leave the private sector to work in government such skills are lacking in the public sector. TPC demonstrated compliance is aimed at; 1) domestic legislation in both the exporting country in terms of pesticide residues (set by CODEX and national governments), 2) food safety laws, 3) national labor laws (but including the United Nations convention on Human Rights and International Labour Organization [ILO] guidelines), 4) national and international environmental laws and guidelines (such as the Montreal Protocol on preservation of the ozone layer and the International Convention on Climate Change), 5) organic standards (of which the FAO is an active participant) and 6) genetically modified organisms (in terms of the Cartagena

Protocol). All of these obligations are, in the final analysis, set by governments, either in their own sovereign right or as part of their participation in international treaties. TPC set by buyers have become *de facto* requirements growers, producers, pack-houses, processors and distributors and their importance for competitiveness in regional market has significantly increased, for example in the case in the retailers Woolworths and Pick'n Pay in South Africa.

### **2.3 Constraints to Sanitary SPS sensitive trade support in SADC**

SADC countries face significant challenges in complying with import standards of trading partners including those relating to residues of pesticides (maximum residue limits [MRL's]) in horticulture products, permissible levels of mycotoxins in some products<sup>6</sup>, and the presence of pests including fruit flies. Achieving consistent compliance constitutes a significant regional challenge.

The human and financial resources of most SADC Member states are severely limited and few countries in the region have a specific budget to address SPS issues. Compliance with SPS requirements often involves huge investments, which most SADC countries cannot afford. There is a limited capacity to conduct the specific research needed for evaluating and setting proposed standards and thus to participate effectively in international standard setting activities. Consequently international standard setting often fails to take proper account of the needs and special circumstances of developing countries.

An additional problem is the highly fragmented SPS management of most SADC countries which often have more than three ministries and/or departments within ministries dealing with SPS standards. Often there is no coordinated focal point to manage all the issues raised by the WTO SPS Agreement. Often there is duplication of functions (inspection, issuance of import permits and phytosanitary certificates). An attempt is underway via the SADC SPS Annex which mandates the formation of national SPS Committees to coordinate all national and regional SPS issues, and to resolve overlapping areas of responsibility. This is in any case a requirement of the WTO SPS Agreement. About ten member states in SADC have now formed SPS Committees though their functionality is still largely untested.

Most SADC member states have theoretically adequate phytosanitary legislation. Much of this has been achieved in recent years through interventions organized by the IPPC in conjunction with its parent organization, FAO, and other organizations such as the Standards and Trade Development Facility (STDF). In recent years much of the SADC region has seen internal and national reviews of phytosanitary services in the past decade – generally through use of the Phytosanitary Capacity Evaluation (PCE) tool. The tool looks at the entire working of the NPPO using this as

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<sup>6</sup> In particular groundnuts, cassava flour and maize.

a determination of the fit between the requirement of compliance to the IPPC and taking national legislation as the starting point. Many governments in the region also use the PCE as an internal auditing and benchmarking tool. While there has been some progress in updating legislation, e.g. in the case of Mozambique, much of it has been languishing in the various processes necessary to bring them into force. In terms of food safety the majorities of the member states only have legislative frameworks limited to regulating import and export licensing, certification and testing. There is no Member State at SADC level with a comprehensive National SPS/Food Safety policy. Most of the acts and regulations are generally unable to adequately deal with emerging SPS issues and the process of updating them is cumbersome. For instance, the regulation of pesticide residue levels, microbiological hazards, and pest registration, with the exception of South Africa is still lacking at a regional level.

### **3. RESPONSES OF SADC NPPO's TO THE THREAT FROM BACTROCERA INVADENS AND OTHER INVASIVE FRUIT FLIES TO TRADE IN FRUIT IN THE SADC REGION**

#### **3.1 Introduction**

This section of the report explores the invasive fruit fly issue in the context of the workings of NPPOs of the SADC region. The threat posed by fruit flies is, arguably, the most significant threat posed to regional horticultural trade in the past 10 years. The response of individual NPPOs within SADC as well as of SADC itself therefore illustrates how regional cooperation has worked in addressing regional threats to plant health, and by extension, to regional trade.

Pests including, invasive fruit flies, the Larger Grain Borer (*Prostephanus truncates*), Banana Bunchy Top Virus, and Coconut Lethal Yellows are among a variety of threats to plants and plant products in the SADC region posing a risk to production and trade. Fruit flies are one of the most significant causes of loss of production in the absence of effective pest management responses in the region and are reviewed in this section. Fruit flies are one of the world's more devastating crop pests and cause millions of US\$ in lost production each year. In Africa there are several native species that attack fruits, vegetables and wild plant species. Within the past decade a number of exotic invasive species of fruit flies including *Bactrocera invadens* (Diptera: Tephritidae), a fruit fly species native to Asia, have been recorded for the first time on the African mainland (Lux et al., 2003) and have already become a pest species of major concern to fruit growers in the continent.<sup>1</sup> *B. invadens* attacks a wide variety of crops including mango, guava, pumpkin, melon, tomato, citrus and cashew nuts. Since its first detection in Kenya in 2003, *B. invadens* has spread to at least 27 countries in Africa and is known to attack at least 46 host plants, including many commercially grown crops and species indigenous to Africa.<sup>2</sup> The level of diversity and common ancestry among several African populations collected across the invaded areas confirm the Asian origin of this pest. Although Sri Lanka belongs



to the native range only a small percentage of genotypes from this country can be found in Africa. African populations display features that are indicative of rapid population growth and expansion with possible multiple introductions. The results of the analyses support that the fly was first introduced in East Africa, where *B. invadens* was initially isolated (Khamis et al 2009)<sup>3</sup>

Using modeling algorithms De Meyer et al (2010) have determined that the areas considered most suitable the establishment of *B. invadens* are the Equatorial climate categories (minimum temperatures  $\geq 18^{\circ}\text{C}$ ), especially Af (Equatorial rainforest, fully humid) and Am (Equatorial monsoon) based on the updated Köppen-Geiger climate classification (Kottek et al., 2006) (Figures 1 (a) and 1 (b)). These climates correspond to the blue regions in Figure 1 (c).<sup>4</sup> In addition the model also assigns high suitability to a large part of the Aw (Equatorial savannah with dry winter) climate class suggesting that *B. invadens* prefers hot and humid environments with high annual precipitation. Continuous presence of *B. invadens* in Af and Am climates is not as yet supported by field data for lack of field studies, but some presence in Aw and more recently in Csa climates [the latter corresponding to the pale green in Figure 1 (c) where winter are dry and minimum temperatures during that season are below  $18^{\circ}\text{C}$ ] is now amply demonstrated. (Mwatawala et al 2006).<sup>5</sup>

*B. invadens* is a devastating pest that can severely impact on sustainable agriculture and rural livelihoods, as well as export markets and poses a threat to agriculture in other countries, particularly to the US, should it be introduced through transport or trade. The detection of *B. invadens* in Mozambique, northern Namibia and Zambia led to the temporary curtailment of fruit exports to South Africa and, most recently all exports into Zimbabwe from Mozambique and from Zimbabwe into South Africa have been stopped. The border closure again highlights the urgent necessity to establish the extent and status of invasive flies in Southern Africa, the implementation of surveys and monitoring for establishment of Pest Free Areas (PFAs) and Areas of Low Pest Prevalence (ALPPs) and research into the biology, ecology and appropriate post harvest treatments to mitigate the effects of this pest.

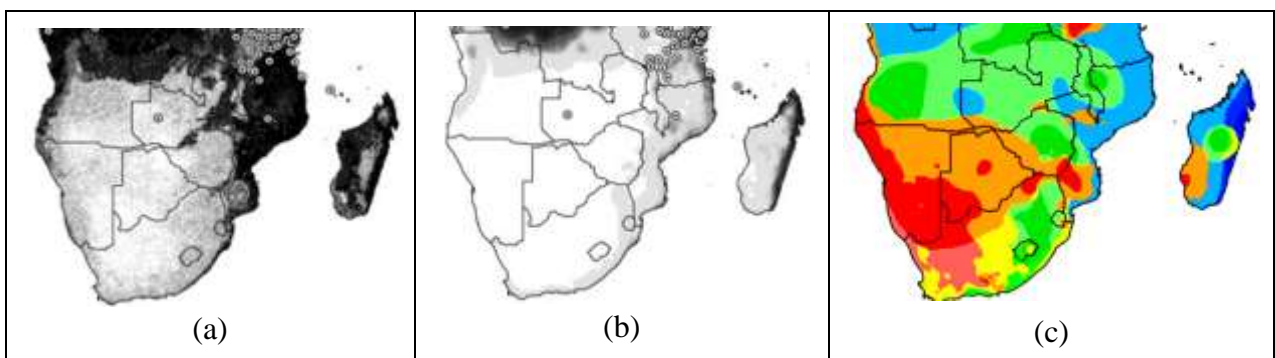


Figure 2(a) and 1(b) Predicted distribution of *Bactrocera invadens* in southern Africa and Madagascar, using genetic algorithm for rule-set prediction (GARP) and maximum entropy method (Maxent). White, predicted absence, as indicated by the LTPT thresholding; shades of grey indicate higher levels of prediction (chosen

arbitrarily); with black the highest strength for predicted presence.<sup>6</sup> Figure 2 (c) Koppen map (from Kottek et al 2006).

### **3.2 Responses of SADC countries to the threat/presence of invasive fruit flies**

Given that until the 5th May 2010 South Africa had not recorded the presence of *Bactrocera invadens* or any of the other invasive fruit fly species recorded in Africa during the third millennium the pattern of national responses within the SADC region has been one of ensuring the protection of existing horticultural exports as is the case in Mozambique and Namibia or passively recording its presence as is essentially the case in Zambia. The differing responses are because, uniquely in Africa, South Africa, Namibia, Swaziland, Mozambique and (potentially) Zimbabwe, have a lot to lose should these flies become established in fruit exporting areas within the country.

#### **3.2.1 Angola, Lesotho and Malawi,**

There are no credible reports of the presence of *B. invadens* in Angola, Lesotho or Malawi nor of any domestic fruit fly surveillance programs although Angola is deemed by the US to be a country where the pest is present (APHIS 2009).<sup>7</sup> Only in the second half of 2010 has there been any attempt to carry out fruit fly surveillance in Malawi but results are not public at this point. It is very important that both Angola and Malawi start surveillance for this pest soon as both countries are effectively surrounded by countries where *B. invadens* has been recorded. The possibility of *B. invadens* establishing itself in Lesotho is unlikely from both a climatic and host plant perspective. Furthermore, since Lesotho has only one neighboring country i.e. South Africa, the chance of the pest establishing itself in the country without it first being detected in South Africa is improbable.

#### **3.2.2 Botswana**

The declaration by the NPPO of Botswana to the NPPO of South Africa that the fruit fly *Bactrocera cucumis*, a pest of quarantine importance to South Africa, was present in Botswana resulted in slowing/stopping the imports of possible hosts of *B. cucumis* such as butternuts and melons into South Africa. In fact the pest does not occur in Botswana, or, for that matter, even Africa. When the South African NPPO requested confirmation, the NPPO of Botswana replied that the fruit fly was actually *B. cucurbitae* and not *B. cucumis*, an even more serious quarantine pest and an Asian species which in Africa is almost certainly a very long established introduction dating from at least the early 1930's (White, 2006).<sup>8</sup> There also have been incorrect assertions in some non peer reviewed articles that *B. invadens* is, in fact, present in Botswana (CIRAD, 2008).<sup>9</sup>

Subsequently, in October 2009, the Botswana NPPO notified the South African NPPO of the results of a fruit fly trapping program initiated in August of that year. McPhail traps with methyl eugenol were specifically included in the program to determine the true status of *Bactrocera* spp, including *B. invadens*, in the country. No *Bactrocera* spp were identified from the trapping program. In February 2009, the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) visited Botswana and reviewed the trapping program in the south-eastern parts of Botswana. A second visit occurred later in 2009 by a USAID funded Sanitary and Phytosanitary (SPS) specialist from South Africa to the northern parts of the country including a mango growing area near the Zambezi River. Additionally USDA-APHIS had been involved since August 2008 in the identification of fruit flies from the initial trapping program. The South African NPPO has since accepted that the initial declarations by the Botswana NPPO in respect of *B. cucurbitae* and *B. cucumis* were in error.

### **3.2.3 Namibia**

Initial surveys and trapping for the presence of *B. invadens* were started in Namibia by the NPPO with assistance from USDA-APHIS at Etunda in the northern part of the country in September 2007 as well as in the southernmost grape-growing areas of Aussenkehr and Komsberg (on the Orange River), and Mariental (between Windhoek and the Orange River). The discovery of *B. invadens* at Etunda in northern Namibia allowed the South African NPPO to be selective from the start in applying restrictions on fruit exports from Namibia. Upon discovery of the fly, South Africa closed its borders to certain agricultural products, including watermelons, butternuts, mangoes and tomatoes, and then only from the north of the country. The Etunda Irrigation Scheme, a 600-hectare producer at Ruacana in the Omusati Region, was severely affected by the closure of the South African borders in November 2008 with reported immediate losses to the scheme in excess of US\$ 500,000 in the weeks following the closure.<sup>10</sup> The existence of over a year of data from extensive trapping that met the prescribed standards for surveillance enabled the Namibian NPPO to immediately declare the southern part of the country as remaining free of *B. invadens*.

Follow-up work included measures to prevent the potential movement of *B. invadens* into the southern parts of Namibia. Such a southward movement would be of concern to the grape and citrus growing area along the South African side of the Orange River, which though some distance to the east of Aussenkehr and Komsberg, is considered at risk. Also of concern is the securing of logistical routes for grape exporters from Namibia whose growers export all their grapes through Cape Town, an option that would possibly be closed if *B. invadens* became established in southern Namibia. Longer term plans include the starting of a Male Annihilation Technique (MAT) program in the northern Etunda and southern grape

area to eradicate *B. invadens* from the former and, should it be introduced, eradicate it quickly from the southern area given that these areas are climatically marginal for establishment of the fly. It is possible to control *B. invadens* by increased surveillance trapping and this has commenced at Tsumeb with no further *B. invadens* being trapped. Namibia still has a great chance to eradicate or keep *B. invadens* at bay and, in fact, would be a wonderful country study to see how this can be achieved in practice. However there is no information on whether a possible eradication program has been attempted or not.

### 3.2.4 Mozambique

As can be seen from Figure 2c Mozambique, because of its climate and geographical position, represents the most southerly area in Africa that present good opportunities for the southward movement of invasive tropical fruit flies. Furthermore, because it shares a land border with South Africa the movement of fruit both between Mozambique and South Africa and within Mozambique are of interest to the South African NPPO and, by extension, due to South African citrus exports to North America, the US government.<sup>11</sup> *B. invadens* was recorded in Mozambique for first time in 2007 in the Cuamba district in the Northern Province of Niassa (Figure 3) (Correia *et al.*, 2008).<sup>12</sup> The two main fruit exports from Mozambique to South Africa are bananas and mangoes. Both of these are of interest in the spread of the pest because of the status of bananas<sup>7</sup> as a host and the fact that mango appears to be a preferred host of *B. invadens*.<sup>13</sup>

Subsequent to the discovery in Niassa a few isolated fruit flies were found at the Vanduzi farm in northern Manica Province in July 2008. At the time, this discovery did not lead to breeding populations (Vanduzi is represented by the green dots just to the north of the Machipanda-Inchope road in Figure 3a). The checkpoints and surveillance plan summarized in Figure 2 has led to the recognition that areas to the south of the Zambezi river can potentially be considered for fruit exports to South Africa.<sup>14</sup> A follow up visit by the South African NPPO in December 2009 to inspect the on-the-ground activities by the Mozambique government led to the recognition of various areas in Mozambique as being pest free.<sup>8</sup> Banana exports from Maputo province have continued, though all mango exports to South Africa from Manica province were suspended in 2008 and 2009 leading to severe difficulties for growers. The newly in-production banana project headed by Chiquita in Nampula province continues to be excluded from South African markets. Bananas from Nampula were discovered in Harare early in 2010. The presence of these bananas directly led to the closure of the Zimbabwe-Mozambique border for fruit imports from

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<sup>7</sup> The status of banana as a host of *B. invadens* has been effectively been established in a paper published in a peer reviewed journal (Ekesi *et al* 2006). The exact nature of this host status needs to be established by further research – see main text.

<sup>8</sup> The three southern provinces of Maputo, Gaza and Inhambane as well as certain farms in southern and central Manica province.



practical approach would be similar to that of Hawaiian bananas destined for the continental USA whereby USDA post harvest packing and shipping protocols are used to exclude fruit suitable as a host for fruit flies (Armstrong 2001).<sup>15</sup> One point raised earlier is the exact nature of the current proof that *B. invadens* is a pest of banana. The only published piece of literature on for this is the paper by Ekesi et al (2006) which in turn cites unpublished data. If this is all the evidence to hand then the true status of banana as a host merits further investigation although it is currently beyond the means of the Mozambique government to do so.

Other research activities planned are the importation of natural enemies (*Fopius arisanus* and *Diachasmimorpha longicaudata*) originally imported from Hawaii. Mozambique is one of three countries in Africa and the only one in southern Africa selected for experimental releases of these parasitoids (Ekesi, undated;<sup>16</sup> AACP 2009,<sup>17</sup> MAFSC 2009<sup>18</sup>). The development of public private partnerships in Mozambique is at an early stage and several attempts have been made to develop a national partnership of fruit exporters so far without success. The various attempts are discussed in the section 'The role of the private sector and the formation of Public Private Partnerships (PPPs).

### **3.2.5 Swaziland**

The citrus industry and other fruit exports are under threat from the potential movement of *B. invadens* spreading into the country from northern Mozambique given that Swaziland shares a border with Maputo Province. Swaziland temporarily closed its border to fruit and vegetable imports from Mozambique late in 2008 because of concerns that further unmonitored southward movement within that country would potentially result in the introduction of this pest into Swaziland. In this regard the South African plant health regulatory authorities and Citrus Research International (CRI) had expressed concern about Swaziland being a potential pathway for introduction of *B. invadens*. As a consequence the national fruit fly survey program by the Swaziland NPPO and private sector assisted by USDA-Foreign Agriculture Service (FAS) and USDA-APHIS in March 2009 initiated the current program for early detection and monitoring of the movement of invasive fruit flies in the country.<sup>19</sup>

In terms of the ongoing institutional arrangements, Swaziland has the active involvement of CRI which has led directly to a coordinated response between the citrus industry and the public sector. In particular the close link between the private sector and NPPO, involving growers (represented through a strong association), research bodies (e.g. CRI, Universities) means that although the NPPO of Swaziland lacks resources this does not necessarily represent a major constraint. In addition, legal updates via the new Plant Health Protection Bill of the SPS system are fully justified (Kleih et al 2010).<sup>20</sup>

### 3.2.6 South Africa

A description of the workings of the South African NPPO and the interactions between the government and private sector is given in Appendix 1. On 5 May 2010, exotic fruit fly specimens were detected in surveillance traps in the northernmost part of the Limpopo province adjacent to the Zimbabwe border. This event set in motion a long standing emergency response plan drawn up by the South African NPPO and the fruit industry. Once the flies were identified as *Bactrocera invadens*, a delimiting survey was deployed by the Department of Agriculture, Forestry and Fisheries directorates Plant Health and Agricultural Product Inspection Services (APIS) on 12 May 2010 to determine the geographical extent of the occurrence. A risk assessment was conducted and phytosanitary control and containment actions were implemented with immediate effect to control the movement of fruit from the area under delimitation according to the provisions of Regulation R110 of the Agricultural Pests Act, 1983 (Act number 36 of 1983). Eradication procedures commenced on 4 June 2010 and are directed at host patches in the area between Pontdrift and Musina. Intensified monitoring will continue in the area after completion of eradication.<sup>21</sup> The event was immediately reported to the IPPC website and South Africa's trading partners were immediately made aware of the situation and what was being done to control it.

### 3.2.7 Zambia

On 20 March 2008 the Zambian NPPO reported the presence of *B. invadens* to the WTO (WTO, 2008).<sup>22</sup> The report was as a result of a fruit fly surveillance program which commenced earlier in 2007 with the assistance of the USDA-APHIS. The presence of *B. invadens* has been confirmed as far south and west as Kaoma in the Western Province of Zambia (corresponding to the single point in west central Zambia – Figures 2a and 2b). A by-product of this surveillance program was the first undisputed record of *Ceratitis capitata* in Zambia. Previously this had been the subject of a dispute between South Africa and Zambia as the latter had been insisting on cold sterilization of deciduous fruit to eliminate this pest despite reasonable prior evidence that it was endemic in the country (Jaffee et al 2006).<sup>23</sup>

### 3.2.8 Zimbabwe

Currently there is no formal surveillance for fruit flies in Zimbabwe by the NPPO though some is carried out in the Burma Valley (on the border of Mozambique south of Machipanda) under the auspices of the University of Pretoria and by some citrus growers north of the Limpopo River. There is some surveillance for fruit flies in the area 70 km south east of Harare but the details and results are confidential. In part, the lack of a comprehensive fruit fly surveillance program is a consequence of the severe budgetary constraints under which the Zimbabwe NPPO operates but is also a function of the virtual disappearance of significant fruit exports from the country in

recent years. The discovery of bananas from Nampula in Mozambique at Harare's Mbare market in January and February 2010 led directly to the border closure by Zimbabwe to all fruit imports from Mozambique (Global trade Alert, 2010).<sup>24</sup> Because of the limited fruit fly surveillance in Zimbabwe the NPPO is not clear as to the status of various invasive fruit flies in the country (especially *Bactrocera* spp). It was confirmed with the NPPO that the known economically important fruit fly species in Zimbabwe are primarily *Ceratitis* spp and that invasive *Bactrocera* spp have not been confirmed as either present or absent in the country. The NPPO is therefore keen to develop a surveillance partnership for fruit flies with the private sector including the citrus industry and other fruit growers and exporters based on International Standard for Phytosanitary Measure (ISPM) 26 and Annex 1 to this ISPM. The first trapping for *B. invadens* under this partnership started about 70 km southeast of Harare in April 2010 (Williams, personal communication).

### **3.2.9 Tanzania**

After the first discovery of *B. invadens* in Kenya in 2003 (Lux et al., 2003) it was discovered shortly thereafter in Tanzania (Mwatawala et al., 2004). Close on this discovery, work on the host range was started by Mwatawala in three agro-ecological areas of Morogoro region of central Tanzania, during 2004–2005. Early research work established the climatic and host plant preferences of *B. invadens*. At higher altitudes (1650m) its incidence was determined to be temporal, possibly the result of human dispersal from lower altitudes. Most importantly grapefruit (*Citrusxparadisi*) was determined to be a favored commercial host fruit and that the fly was also capable of infesting avocado (*Persea americana*) as a host (Mwatawala et al 2006).<sup>25</sup> The main fruit fly pest of mango in Tanzania is now determined as *B. invadens*. A multi-pronged proposal to the FAO by the Ministry of Agriculture Food Security (MAFSC) of the Republic of Tanzania proposes several parallel activities to mitigate the effect of *B. invadens* including research into post harvest protocols, trapping to prevent the introduction of other Asian fruit flies, and the introduction of parasitic wasps for bio control (MAFSC 2009). This is a very worthy program as it brings together many of the principle institutions involved in *B. invadens* work in Eastern and Southern Africa but also involves a pro-active strategy rather than the reactive work, that has been mainly the case so far, and is a pre-requisite for any sustained export led horticultural development involving fruit crops in the region and not just Tanzania alone.

## **3.3 Donor funded fruit fly programs in the region**

### **3.3.1 FAO**

A significant level of support is given to Africa through the IPPC which is administered by FAO. Support is usually broad based and consists of legal framework reviews, support for participation by the NPPO in standards setting



meetings, general capacity building, and needed infrastructure to support national plant protection obligations entered into under the IPPC. There is limited direct intervention in fruit flies in southern Africa although there is an FAO led program underway in Mozambique for the introduction of the natural enemies, *Fopius arisanus* and *Diachasmimorpha longicaudata*. Training of Mozambican technicians in the care and rearing of these parasitoids is already in progress at Centre of Insect Physiology and Ecology (ICIPE) in Kenya.

### **3.3.2 The World Bank**

The main support provided by the World Bank is in Zambia and Mozambique under bilateral assistance programs. In the case of Zambia support is under the umbrella of Agricultural Development Support Program (ADSP) whereby the Government of Zambia and World Bank agreed to include a funding line for SPS management within the Institutional Component of ADSP. In practice, however, most fruit fly related activities have been in conjunction with USDA-APHIS.

In the case of Mozambique there have been a wider range of activities undertaken by the World Bank as subcomponents of existing plans. While these have limited impact as yet the Coordination Unit, All ACP (African, Caribbean, Pacific) Agricultural Commodities Programme (AACP) which is being implemented by the university of Eduardo Mondlane has already considerably strengthened surveillance activities in Mozambique (source Action fiche, AACP, 2009)

### **3.3.3 The USDA; APHIS and FAS**

The USDA has an office in Pretoria, South Africa, operated by the Agriculture and Plant Health Inspection Service (APHIS). USDA-APHIS in Pretoria has significant technical expertise on fruit flies. The office provides technical support but no money and works with other agencies such as the NPPO's, and funding agencies to initiate surveillance. USDA-APHIS provides a regional fruit fly taxonomic service. Specimens are initially identified by APHIS in Pretoria and if any are provisionally identified as being potentially quarantine pests, they are sent to the Royal Museum in Belgium for final confirmation. Advice is provided on mitigation or eradication measures for invasive flies. NPPOs are helped with the generation of a pest list of fruit flies of economic importance, knowledge of invasive species present can help in preparation of management plan; presence/absence information is vital to initiate and maintain trade relationships. Mozambique, Namibia, Zambia, Botswana, South Africa, Swaziland, Rwanda have all benefited from this program to date. The USDA-FAS operate a United States Agency for International Development (USAID) funded program in sub Saharan Africa for trade related technical support under the African Growth Opportunities Act (AGOA). Primarily this involves the use of diagnostic tools for helping prioritize government support for agricultural exports. Capacity building of NPPO's to certify exports in terms of the presence/absence of fruit flies forms an

important part of this program and here FAS supports APHIS activities through its own funds.

A regional training course on the identification and management of economically important fruit flies was held at the ICIPE in July 2009. The training was presented jointly by USDA-APHIS, USDA-FAS and the African Fruit Fly Program (AFFP), ICIPE as well as the (Belgian) Royal Museum of Central Africa, with a grant from USDA-FAS. A total of 12 participants represented their NPPOs from Botswana, Kenya, Mozambique, Rwanda, Swaziland and Zambia. USDA and USAID also support the development of regional information sharing and have been instrumental in the formation of the East African Phytosanitary Information Committee (EAPIC) of which some southern African countries, notably Zambia, are active participants (EAPIC 2009).<sup>26</sup>

### **3.3 The role of the private sector and the formation of public-private partnerships (PPPs)**

It is an established fact that regional NPPO's in Southern Africa are inadequate when compared with the nature of the regional threats to plant health. The institutional weaknesses of the NPPOS in less developed countries was been explicitly recognized in the response to the incorporation of the WTO SPS Agreement into the overall setting up of the WTO in 1994. Sixteen years later many of these weaknesses persist despite significant strides to address problems. A major weakness that is not directly recognized in the WTO SPS agreement is the necessity for strong public private partnerships (PPPs). The one exception in Southern Africa is the South African Department of Plant Health (DPH) which has established good communication with all private sector stakeholders involved in the export of fruit. Although there are a multitude of SPS related forums and working groups in South Africa their existence is deemed necessary for exporters and export certifiers in order to comply with the requirements of SPS sensitive fruit markets and in order not to jeopardize exports of this important industry.

The Southern African Citrus Growers Association (CGA) and its research arm, CRI, is by far the most pro-active regional growers organization addressing the problems posed by *B. invadens*. Included in the program is a large scale trapping exercise by grower members of the GGA using methyl eugenol based attractants the southern African region (including by CGA members in Swaziland, Mozambique, Zimbabwe, Botswana and Namibia). Additionally there is a research program at ICIPE paid for by CRI on the suitability of the existing cold sterilization protocols for false codling moth, FCM, (*Cryptophlebia leucotreta*) in citrus exports to the United States for controlling *B. invadens*.<sup>9</sup> CRI have also participated in trials in West Africa in the use

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<sup>9</sup> These cold sterilization procedures for control of FCM in citrus are unsuitable in terms of the post harvest physiology of tropical crops in terms of time (generally too long) and temperature (too cold)

of MAT for control of the pest and have taken the lead role in drawing up an emergency action plan should the pest be detected in South Africa – a plan that is also available to other SADC countries.<sup>27</sup> &<sup>28</sup> Swaziland, Botswana, and Namibia's citrus exporters and NPPO are firmly linked with the South African system and any changes in the latter's SPS set-up and processes would equally affect them.

In contrast the other fruit export associations in Southern Africa are weak or non-existent. The Horticulture Promotion Council (HPC) of Zimbabwe has taken no active part in supporting its member's fruit exports and the Zambian Export Growers Association (ZEGA) has no effective technical arm. In Swaziland, Botswana and Namibia support has come mainly through regional grower support such as that through CGA and CRI. Attempts are underway to create an export growers association in Mozambique with the lead being taken by Mozambican government through the Center for the Promotion of Agriculture (CEPAGRI). In the interim a fruit fly working group has been formed in Mozambique to address immediate technical issues.

#### **3.4 The role of regional trade associations The East African Community (EAC), the Common Market for East and Southern Africa (COMESA), and SADC**

There are no known programs to deal with the threats of *B. invadens* that directly involve the East African Community (EAC), The Common Market for Eastern and Southern Africa (COMESA) or SADC. Within SADC the Food, Agriculture and Natural Resources Directorate (FANR) is one of four directorates at the SADC Secretariat in Gaborone, Botswana. FANR's main function is to harmonize agricultural policies and programs in the SADC countries, in line with priorities in the Regional Indicative Strategic Development Plan (RISDP). The main focus of FANR is in the realm of regional food security and there have been no programs that address regional SPS issues in more than a general way. In 2008 the United Kingdom (UK) ComMark Trust commissioned a study which came up with (among other recommendations) a recommendation for action on fruit flies by SADC; i.e. a "regional survey for *Bactrocera invadens* and other fruit fly species (Lopian 2007)<sup>29</sup>

This project has yet to get underway though it was understood at the time some funds had been allocated for the holding of a regional workshop under the now completed ComMark Trust program. To summarize the African regional trade groups are primarily focused on activities at a policy level and the harmonization of laws and regulations that influence trade. The issue of the threat posed by *B. invadens* has been dealt with within the scope of that sort of thinking and not by specifically directed actions. It has not been possible to detect any practical activities or outcomes that have originated from SADC-FANR.

### **3.5 The role of ICIPE as a regional training and research institution**

ICIPE has participated in and run several courses in fruit fly identification and taxonomy held in various parts of Africa. ICIPE's expertise, laboratory facilities and field sites are ideal for such training. The most effective training is aimed at taxonomists and para-taxonomists that are active in their country's fruit fly programs. In addition ICIPE has assisted with African PhD studies, the establishment of national fruit fly teams, the development of biological control with two parasitoids (*Fopius arisanus* and *Diachasmimorpha longicaudata*), the development of cost effective food baits, pioneering the use of entomopathogenic fungi *Metarhizium anisopliae* and *Metarhizium mazoferm*, (in baits and applied to the soil) and male annihilation technique (MAT) as part of the overall support to the program. With Citrus Research International (CRI) funding, the potential for cold sterilization has been largely completed with the assessment of duration of exposure to achieve probit 9 level of mortality (99.9968) completed for citrus. Similar trials are being carried out for avocado and heat treatment (hot bath) trials on mango are underway. These, it is hoped, will lead to protocols being generated for citrus, avocado, mango for quarantine sensitive markets.

## **4. CONCLUSIONS AND RECOMMENDATIONS**

Intra-SADC trade in horticultural products remains a small part of total production and is dwarfed in value terms by exports from the region. The evidence (not presented here) is that vegetable trade in the SADC region is constrained by high logistical costs and the generally low unit value of such items. The exception is specialty vegetables which are generally produced by specialist growers for larger customers such as retail chains.

Trade in fruit has more drivers in that production is often constrained by climatic considerations and values are often high enough to justify high logistical and related costs. However the SPS constraints are very high in the case of fruit and, in fact, in most cases intra SADC trade has become virtually impossible. South Africa, Namibia, Botswana, Zimbabwe, Lesotho, and Swaziland do not take in fruit from countries where invasive fruit flies are a problem – which effectively means these markets are closed to the rest of Africa. The facts are that the national and regional plant protection organizations generally fall short of their horticultural export sectors needs and requirements. The exceptions are in countries such as Mozambique and South Africa where the private sector has a lot at stake in the outcome of government to government interactions. In contrast direct commercial considerations are not a feature of regional trade organizations such as SADC COMESA.

It is, nevertheless crucial for the development of regional trade that the private sector, NPPO's and regional trade organizations cooperate more closely and to more effect. Also, given the severe lack of resources and the fact that COMESA,

SADC and the EAC are formal political organization representing governments of Eastern and Southern Africa with close ties to multi-lateral and other development agencies their participation is crucial. The role of these 3 organizations should be related to providing political leadership to the development of regional trade in plants and plant products and in keeping the fruit fly problem (among other plant protection issues) high on the priority list of all the member countries.<sup>30</sup>

A mechanism for integrating the various national interests and priorities in a way that would address the problem in a truly regional way needs to be formulated. While a strong regional approach was felt to be crucial for the long term solution of the problem, the existing national efforts must go on in parallel and even be strengthened in the short to medium term. The existing PPP in South Africa works well and could serve as a model for other countries. Mozambique, for example, has many similar elements in its approach, though still suffers from the absence of a truly national fruit growers association. The incorporation of the existing elements, that both the private and public sector feel work well on a national level, into a regional mechanism for addressing the problem at a regional level is therefore a priority area that needs urgent attention.

Using the existing trade organizations of the region (EAC/COMESA/SADC) to set priorities in terms of agreed policies and through these organizations to solicit funding (such as a regional Fruit Fly Fund) for addressing the problem. It must be recognized in the founding agreement of the fund that the main purpose of the regional blocs is trade and that trade has led to some of the more effective research on fruit flies to date. Much of the trade related research has direct (and very significant indirect) impacts on poverty alleviation and food security. Implementation of the policies via a possible regional Fruit Fly Fund through a Proposal Evaluation Committee and national steering committees which *would ensure that submitted proposals and proposal implementing bodies meet the criteria pre-agreed by regional trade blocs*. The involvement of ICIPE is considered crucial and is considered as a lead organization for being a member of the Proposal Evaluation Committee and hosting a possible secretariat for this committee.

## **APPENDIX 1: THE SOUTH AFRICAN SPS MANAGEMENT SYSTEM FOR PLANT HEALTH**

In implementing the WTO SPS Agreement, and as part of “transparency” obligations, Members are required to identify a *single* central government authority which is responsible for the notification requirements of the SPS Agreement, the National Notification Authority (NNA). In addition, Members are required to establish a National Enquiry Point (NEP) responsible for answering questions from other Members about SPS measures and related issues (Jennings, 2009).

According to the WTO SPS Information Management System, the Director of International Trade of the Department of Agriculture, Forestry and Fisheries represents both the NNA and NEP. De facto, South Africa has three SPS enquiry points, namely the Directorate of Plant Health, the Directorate of Animal Health, and the Directorate of Food Safety and Quality Assurance. All three belong to DAFF, although there are overlaps with the Department of Health as far as food safety and quality assurance are concerned.

The fact that the SPS enquiry points and the National Notification Authority are all based in the Department of Agriculture, Forestry and Fisheries is advantageous in that it avoids cross-departmental communication hurdles. Nevertheless, some stakeholders commented that the link between NNA and NEPs could be strengthened. On-going organizational changes at Department of Agriculture, Forestry and Fisheries (DAFF) and staff shortages were mentioned as possible reasons for infrequent meetings of the SPS Coordination Committee, and a link between NNA and NEPs that could be stronger (e.g. infrequent participation of International Trade staff in citrus related working groups).

Given that the focus of this study is on plant health matters, the following sections will concentrate on the elements and functioning of the NPPO. The NPPO of South Africa consists of the Directorate of Plant Health (DPH) and the Agricultural Product Inspection Services (APIS), which form both part of the DAFF.

The DPH acts as the national plant protection contact point for South Africa. It is responsible for policy development within the NPPO and ensures compliance with international plant health obligations and responsibilities. The DPH is divided into the following sub-directorates:

- Plant Health International Standards and Contact Point;
- Import and Export Protocols;
- Plant Health Pest Risk Analysis and Plant Health Import Permits;
- Plant Health Quarantine and Diagnostic Services;
- Plant Health Early Warning System;
- Plant Health National Policies, Norms and Standards;

- National Plant Health Promotion and Communication Programmes.

**APIS** is responsible for phytosanitary certification at points of entry/exit. It is divided into two sub directorates:

- Port of Entry Point Control (responsible for point of entry controls and the issue of phytosanitary certificates;
- National Plant and Plant Product Inspection Services (mainly responsible for the quality assurance of agricultural and liquor products, genetic resources related to GMOs and plant propagating material, including seeds for planting. This includes some import controls and the certification of regulated articles intended for export, including the issue of phytosanitary certificates and international certificates.

APIS may carry out on-farm verification where notifications of non-compliance were received in order to determine and address the reasons for non-compliance.

**PPECB** (Perishable Products Export Control Board) is a parastatal body working closely with DAFF, which is responsible for performing quality assurance inspections and the certification for fresh produce, including citrus fruits, for export from South Africa.

Responsibility for the pre-export phytosanitary check has been formally delegated to the PPECB by the NPPO. The PPECB carries out the official phytosanitary inspections at the pack-houses at the same time as the quality assurance check, which the PPECB carries out for all fresh produce exported from South Africa.

**CGA** (Citrus Growers Association) was created following the deregulation of the South African marketing system in 1997. Growers were concerned that certain functions previously carried out by the Citrus Board could be discontinued or downsized. CGA represents citrus grower interests through representation to industry stakeholders – including government, exporters, research institutions and suppliers to the citrus industry. The CGA represents the interests of the producers of export citrus. In total approximately 1400 growers throughout Southern Africa (including Zimbabwe and Swaziland) are members of the Association. The growers are organised into eighteen regions (<http://www.cga.co.za>).

CGA is funded by an escalating levy which was 32 ZA cents per 15-kg carton in 2008, 38 cents in 2009, 39 cents in 2010, 40 cents in 2011, and 41 cents in 2012.

**CRI** (Citrus Research International) provides research and technical support to the citrus industry, with the objective of maximising the long-term global competitiveness of the South African citrus industry through the development, support, co-ordination and provision of Research and Technical services. CRI also coordinates all research

conducted in support of the industry. Citrus Research International and partners in the CRI Group, all use funds from the Citrus Growers Association levy to conduct research for the citrus industry in southern Africa (<http://www.citrusres.com>).

CRI includes a number of Divisions, including Research, Technical, Citrus Improvement Scheme and Cultivar Development. CRI also has an Extension Division, which provides technical information and advice directly to producers through monthly study groups in each region. These groups provide growers, pack houses and exporters with pest and disease management guidelines and other relevant information.

While the CEO of CRI is based at the University of Stellenbosch, the main research infrastructure is located in Nelspruit, Mpumalanga.

**Other research bodies.** The University of Pretoria, Department of Microbiology and Plant Pathology, has been active in CBS related research and PhD theses have been produced on the subject. The issue of lack of funding was raised. To some degree, the Agricultural Research Council also carries out research on CBS. Both organisations have participated in expert working groups on CBS.

### **Forums and committees**

The NPPO holds various meetings and forums together with CGA, CRI, and other stakeholders to discuss issues regarding the phytosanitary requirements for the export of citrus fruit from South Africa to overseas markets.

The following forums have been established to discuss relevant issues:

- Market Access Working Group for Fresh Fruit: This meeting is held once every two months between DAFF, PPECB, CRI, CGA, FPEF and other fruit industry representatives to discuss phytosanitary issues and other matters that are of importance for the access of new markets and maintenance of current export programmes.
- Annual citrus export coordinating meeting, which is held immediately after the end of the South African citrus season. This is attended by representatives from DAFF, pack house managers, PPECB, CRI, CGA, FPEF and other stakeholders. Any problems encountered during the season are highlighted and discussed with the aim of correcting and planning in order to improve compliance during the coming season.
- The Fresh Produce Exporters' Forum (FPEF) is a non-profit industry organization and its membership is voluntary and open to all companies that



export fresh fruit from South Africa. Strict accreditation and admittance criteria were established to ensure that only competent and reliable marketing agents and grower-exporters are admitted to the Forum.

- Ad-hoc working groups such as the CBS Expert Working Group, which has been set up to prepare responses to the European Commission in relation to notifications and subsequent communications.

In sum, the NPPO has established good communication with all stakeholders involved in the export process. Stakeholders have commented that the forums are necessary for priority setting in the industry. As an example one of the most significant and measurable threats posed to regional trade in horticultural products is that of invasive fruit flies - notably those belonging to the genus *Bactrocera*. The existing structures for addressing the fruit fly threats in the case of South Africa are summarized in Figure 2. The principle features of this system are;

1. The primary importance of protecting South Africa's existing fruit export sector, protection of this sector being the main driver of national responses
2. The threat has led directly to the forming of a strong public private partnership (PPP) between the South African NPPO and the private sector (represented by the various fruit growers associations)
3. The PPP finds its expression in the form of a National Steering Committee which meets on an ad hoc basis to resolve issues pertaining to the threat of *B. invadens* and other *Bactrocera spp.*
4. The Steering Committee then agrees/endorsees the coordinated responses from the various members. South Africa has other Steering Committees to address other problems (e.g. American Foul Brood of honey bees)

While this structure meets some of the internal needs of South Africa and that some of the outcomes (such as sharing of the national action plan with regional NPPO's and the development of a cold sterilization procedure for citrus) were of value to other African countries, there was a real and urgent need for a fully regional program as despite the perception that South Africa is well resourced in terms of financial, technical and scientific resources the true situation is actually quite different with multiple calls on very limited resources. The main driver for South African approaches to the problem, i.e. trade, is however, not necessarily that of other African countries where other concerns such as food security and poverty alleviation could lead to different national approaches to the problem. Given these differing national interests and priorities integrating these regionally poses a dilemma given that a strong regional approach is crucial for a long term resolution of the problem. There is nevertheless general agreement that the existing PPP in South Africa works well and could serve as a model for other countries. Mozambique, for example, has many similar elements in its approach, though still suffers from the absence of a truly national fruit growers association to form an effective partnership with the country's NPPO. Other countries, such as Zambia, which in the Zambia Export Growers Association (ZEGA) have a theoretically strong private sector interest group have not been able to form an effective partnership with the NPPO to address phytosanitary issues.

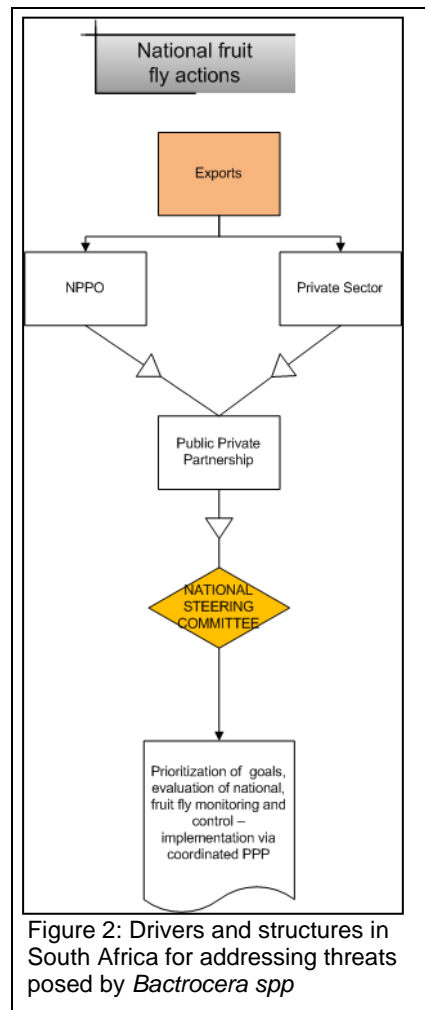


Table 8 summarises the main elements of the South African SPS system (Plant Health) highlighting key institutions involved and issues encountered.

**Table 8: Overview of the South African SPS System (Plant Health)**

SPS-System Function	Organization / Issues
National Notification Authority	<p>Directorate of International Trade, DAFF</p> <p>SPS Coordination Committee is not meeting regularly, due to changes in the DAFF structure; more communication is required; for example, Directorate of International Trade have only limited involvement in the Market Access Working Group. Similarly, the Department of Trade and Industry (DTI) get invitations but rarely attend.</p>
National Contact Point	<p>Directorate of Plant Health (DPH);</p> <p>It is one of three national enquiry points; ensures compliance with international plant health obligations and responsibilities; it has three sub-directorates;</p> <p>Good interaction with the private sector (e.g. CGA, CRI), and other Government directorates (e.g. APIS) dealing with plant health issues;</p>
Committees	<p>There are several forums and committees (e.g. Market Access Working Group; Citrus Working Group; Cold Chain Forum) bringing together private and public sector players. If required, some ad-hoc technical committees have been formed depending on circumstances.</p> <p>Working groups and committees play an important role in setting priorities; involvement of Directorate of International Trade at DAFF, or Department of Trade and Industry could be strengthened.</p>
Implementation of SPS matters	<p>APIS (Agricultural Product Inspection Services)</p> <p>PPECB (Perishable Products Export Control Board)</p> <p>There may be an issue of overlap of functions between the two organizations.</p>

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