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### **Plant Health Surveillance in South Africa**

#### **Submitted by South Africa**

#### **Background**

1. South Africa is a signatory member of both the World Trade Organisation — Agreement on the Application of Sanitary and Phytosanitary Measures (WTO-SPS) and the International Plant Protection Convention (IPPC). The objective of both is to enhance free and safe trade in plants and plant products. These international organisations recognise the necessity of international co-operation in controlling pests of plants and plant products as well as in preventing their international spread. Further, they recognise the sovereign right of members to protect plant health and life within their territories. If phytosanitary measures are required, however, they must be technically justified in order to prevent the use of unjustified barriers to free trade.
2. The WTO-SPS recognises the IPPC as the relevant international organisation responsible for drafting, adopting and maintaining international standards for phytosanitary measures. The purpose of the IPPC is to secure common and effective actions to prevent the spread and introduction of pests, and to promote appropriate measures for their control.
3. South Africa established an official National Plant Protection Organisation (NPPO) to comply with IPPC requirements. The Directorate: Plant Health (DPH) of the Department of Agriculture and the South African Agricultural Food, Quarantine and Inspection Services (SAAFQIS) form part of the official National Plant Protection Organisation (NPPO) of South Africa with the following main responsibilities:
  - (a) Issuance of certificates relating to the phytosanitary regulations of the importing country;
  - (b) Surveillance of growing plants and wild flora, and plants and plant products in storage or in transportation with the objective of reporting the occurrence, outbreak, spread and controlling of pests;

- (c) Inspection of plants and plant products moving in international traffic with the objective of preventing spread of pests;
- (d) Disinfection and disinfestation of plants and plant products moving in the international traffic;
- (e) Protection of endangered areas and designation, maintenance and surveillance of pest free areas (PFA) as well as areas of low pest prevalence;
- (f) Conducting pest risk analysis (PRA);
- (g) Distribution of relevant information.

### **Plant Pest Surveillance – International Phytosanitary Standard No. 6 (1997)**

4. Surveillance is defined as “An official process, which collects and records data on pest occurrence or absence by survey, monitoring or other procedures”. Survey is “An official procedure conducted over a defined period of time to determine the characteristics of a pest population or to determine which pest species occur in an area”, and monitoring is “An official ongoing process to verify phytosanitary situations.”

#### **Types of surveillance**

5. Two types of surveillance systems are recognised: General surveillance and Specific Surveys

#### General Surveillance

6. General surveillance is a process whereby information on particular pests, which are of concern for an area, is gathered from many sources, and then made available and provided for use by the NPPO.

7. Sources of information: NPPO, provincial government departments, research institutes – such as the Agricultural Research Council (ARC), and Citrus Research International (CRI) – universities (such as Pretoria and Stellenbosch), producers/producer associations (such as the Southern African Citrus Growers’ Association), consultants, general public, scientific publications (both national and international) and trade journals.

8. Use of information – Information gathered will be used for:

- (a) Supporting NPPO declarations of pest freedom;
- (b) Aiding early detection of new pests (such as Karnal bunt and Oriental fruit moth);
- (c) Pest reporting by NPPO to the IPPC, Regional Plant Protection Organizations (RPPOs) and trading partners;
- (d) Compiling host and commodity pest lists and distribution records (for use in PRAs by the NPPO of importing countries).

#### Specific surveys

9. These are procedures by which NPPOs obtain information on pests of concern on specific sites in an area, over a defined period of time. The verified information so obtained may be used to determine the presence or distribution of pests in an area, or on a specific host or commodity,

or its absence from an area. The latter is important in the establishment and maintenance of a PFA.

10. Specific surveys may be detection surveys (for instance for fruit fly species such as *Bactrocera* spp), and delimiting or monitoring surveys (such as the one currently being undertaken in South Africa for Karnal bunt). These are official surveys and should follow a technically valid plan, which is approved by the NPPO. The survey plan should include the following:

- (a) Definition of the purpose, such as early detection of *Bactrocera* spp., or assurance of a pest free area (for instance Citrus Black Spot – or CBS);
- (b) Identification of the target pest (e.g. a fruit fly species);
- (c) Identification of the scope (i.e. the geographical area, such as the Hartswater and Warrenton districts in the Northern Cape that were surveyed to establish a PFA for CBS, or all wheat production areas, that are being surveyed to determine the occurrence of Karnal bunt in South Africa);
- (d) Identification of the target commodity (e.g. Persimmon fruit);
- (e) Determination of the statistical basis (for instance the number of samples required for Karnal bunt is 300 per year);

11. Description of the survey methodology and quality management procedures, including the following:

- (a) Sampling procedures (such as attractant trapping for fruit flies), sample collection methods (for instance for Karnal bunt) and laboratory testing (such as for Karnal bunt, where wash testing is used and then PCR to verify and confirm the identity). The procedure shall be determined by the biology of the pest as well as the purpose of the survey;
- (b) Diagnostic procedures according to the specific test to be used;
- (c) Reporting procedures.

12. Pest surveys - Surveys for specific pests will provide information to be used for:

- (a) NPPO declarations of freedom from such pests;
- (b) Early detection; or
- (c) Pest reporting.

13. Selection of suitable sites may be determined by:

- (a) Previous reports (such as in the case of Golden Cyst Nematode), and the known distribution of pest;
- (b) Biology of the pest (such as for the CBS PFA for Citrus);
- (c) Distribution of the host of the pest, and of the area of commercial production;
- (d) Climatic suitability of sites for the pest (for instance CBS and Karnal bunt);

14. Timing of the survey may be determined by:

- (a) Life cycle of pest;

- (b) Timing of pest management programmes;
- (c) Best time to detect (for instance during the growing season or harvest).

15. Commodity or host surveys – Specific commodity surveys can provide information for pest lists of commodities produced under specific cultural practices. They can also provide for information for the preparation of pest lists where data from general surveillance is lacking.

16. Targeted and random sampling – Surveys should be designed to favour detection of specific pests of concern. The survey plan should also include random sampling to detect unexpected events.

### **Good Surveillance Practice**

17. Personnel involved in general surveillance should be adequately trained in appropriate fields of plant protection and data management.

18. Personnel involved in specific surveys should be adequately trained in sampling methods, preservation of and transportation of samples for identification, and record keeping associated with samples.

19. Appropriate equipment and supplies should be used. The methodology used should be technically valid.

### **Technical requirements for diagnostic services**

20. The NPPO shall provide appropriate diagnostic service to support general surveillance and specific surveys, which should include:

- (a) Expertise in the disciplines relevant to pest identification;
- (b) Adequate infrastructure;
- (c) Access to specialists for verification;
- (d) Facilities for storing of voucher specimens and records;
- (e) Appropriate Standard Operational Procedures;
- (f) Verification of results and diagnosis by other recognised authorities will provide for increased confidence in the survey results.

### **Record Keeping**

21. The NPPO shall keep appropriate records to assist with PRA, establishment of PFA, and preparation of pest lists.

22. Voucher specimens should be deposited in the relevant national collection where appropriate.

### **Surveillance with regard to Plant Health in South Africa**

23. The current situation is that the Department of Agriculture recently started implementing an approved new structure. In this structure provision was made for the following divisions that will be involved in surveys.

24. Directorate: Plant Health:

- (a) Division Early Warnings – Provides for policy guidelines and standard operating procedures regarding surveys and eradication programmes.
- (b) Division International Plant Health Matters – Provides for an official national contact point as part of the NPPO in terms of South Africa's membership of the IPPC.

25. South African Agricultural Food, Quarantine and Inspection Services

- (a) Sub-directorate: Port of Entry Point Control – Provides for inspection service at ports of entry.
- (b) Sub-directorate: National Plant and Plant Product Inspection Service – Provides for a national inspection service that will include surveillance of plants and plant products in production areas, storage areas and means of transport. With regard to specific surveys, samples shall be drawn in accordance with prescribed procedures and submitted to diagnostic laboratories for verification and identification.
- (c) Division Diagnostic Biological Laboratories – Provides for isolation/extraction of pests and the identification thereof.

26. Currently various market access committees for fresh produce, seeds and grains, and ornamentals are operational. The terms of reference of these committees include co-ordination of general surveillance and specific surveys to enhance market access and maintain existing markets.

#### **South Africa – Status of general surveillance**

27. The source for this information is the various stakeholders involved in agriculture, forestry and nature conservation. These include producers, research institutes – for instance the ARC, CRI, Subtropical Fruits Association, Forestry and Agricultural Biological Institute (FABI), consultants, universities (such as Pretoria, Stellenbosch, Pietermaritzburg), growers associations (such as the Citrus Growers' Association / CGA and the Deciduous Fruit Producers Trust / DFPT), extension officers and officials of the Department of Agriculture's National Regulatory Service (comprising DPH and SAAFQIS).

28. Pest lists have been compiled to date for: Fresh fruits of apples, pears, stone fruit (including plum cots), citrus spp, grapes, litchi and persimmons; and Amaryllis bulbs.

29. Interception data of plant pests on consignments of plants and plant products imported either by commercial importers or international travellers is an important source of information.

30. The Agricultural Pests Act, 1983 (Act 36 of 1983) provides for the establishment of control measures. Currently the following pests are listed and prohibited and must be declared by a land owner:

- (a) *Meloidogyne partityla*
- (b) *Pratylenchus* spp.
- (c) *Tilletia indica*
- (d) *Tylenchulus semipenetrans*
- (e) *Xiphinema index*.

### **South Africa - Status of specific surveys**

31. The South African NPPO has undertaken various specific surveys to date. Various stakeholders were involved and in some cases the survey protocol was finalised in bilateral agreement with the respective trading partner.

32. The following surveys have been conducted:

- (a) Larger Grain Borer (LGB) – During the last 5 years a specific survey was done by the Directorate: Plant Health/South African Agricultural Food, Quarantine and Inspection Services in collaboration with the Departments of Agriculture of Mpumalanga and Limpopo, along the northern and eastern borders of South Africa to ensure early detection from infested neighbouring countries. LGB was intercepted along the northern border with Zimbabwe, and in the middle area of the National Kruger Park.
- (b) Citrus Black Spot (CBS) – After a specific survey protocol was agreed upon with the National Plant Protection Organization of the United States of America, delimiting surveys were conducted for CBS (*Guignardia citricarpa*) in three citrus production areas of the Western Cape and two magisterial districts (Hartswater and Warrenton) in the Northern Cape. The pathogen was found to be absent in the areas surveyed, and the reports were submitted to the National Plant Protection Organization of the USA. Currently four areas are recognised as pest free areas for CBS, and this enables South Africa to export citrus grown in these areas to the USA.
- (c) Karnal bunt (KB) – In December 2000, Karnal bunt (*Tilletia indica*) was found in a wheat field near Douglas. Since then a national delimiting survey in accordance with the international accepted standard was undertaken, and wheat (*Triticum*) seed and grain produced in South Africa was sampled (by SAAFQIS, SA Silo Industry, SANSOR) and tested (by the ARC- PPRI). Karnal bunt was found to occur in the irrigation areas of Herbert, Hopetown and Prieska districts.
- (d) Golden Cyst Nematode (GCN) – Thirty years ago GCN (*Globodera rostochiensis*) was found to occur in the Bon Accord area north of Pretoria. Three years ago the GCN was found in a field in the Ceres district. Currently a delimiting survey is being undertaken to establish the spread of GCN in South Africa. At present, GCN is known to occur in the Ceres area, Sandveld and Krugersdorp area. It was not found in the Bon Accord area in this survey. All fields of seed potatoes that are included for export are sampled during harvest and tested for GCN.

- (e) Fruit Flies - Currently, a specific detection survey in and around the Cape Town seaport and Vissershok dumping site is conducted where all air and seaport waste is dumped. This survey is specifically for the fruit fly genus *Bactrocera*. This survey is going to be extended to other ports of entry and the surrounding areas.

#### Regulatory service

33. The regulatory service is focussed on preventing the introduction, establishment and spread of regulated plant pests. This requires well-trained inspection services, risk analysis core, diagnostic laboratory service to ensure interception, detection, identification, control and irradiation.

34. This unit is targeted for the protection of the South African agricultural industry and the environment. To ensure that the introduction of organisms with a potential for biological weapons, a specialist core that focuses on the interception and control of these organisms is needed.

Annex I

**Plant Pathogens Non-Proliferation of Weapons of Mass Destruction Act  
(Act No 87 Of 1993)**

Bacteria

- *Xanthomonas albilineans*;
- *Xanthomonas campestris* pv. *citri*, including strains referred to as *Xanthomonas campestris* pv. *citri* types A, B, C, D, E or otherwise classified as *Xanthomonas citri*, *Xanthomonas campestris* pv. *aurantifolia*, *Xanthomonas campestris* pv. *citrumelo*, *Xanthomonas axonopodis* pv. *citri*, *Xanthomonas axonopodis* pv. *citrumelo*, *Xanthomonas axonopodis* pv. *aurantifolii*;
- *Xanthomonas oryzae* pv. *oryzae*;
- *Xylella fastidiosa*;

Fungi

- *Colletotrichum kahawae* (*Colletotrichum coffeanum* var. *virulans*);
- *Cochliobolus miyabeanus* (*Helminthosporium oryzae*);
- *Deuterophomonas tracheiphila* (syn. *Phoma tracheiphila*);
- *Microcyclus ulei* (syn. *Dothidella ulei*);
- *Monilia rorei* (syn. *Moniliophthora rorei*);
- *Puccinia graminis* (syn. *Puccinia graminis* f. sp. *tritici*);
- *Puccinia striiformis* (syn. *Puccinia glumarum*);
- *Magnaporthe grisea* (*Pyricularia grisea*/*Pyricularia oryzae*);
- *Sclerotinia sclerotiorum*;

Viruses

- Banana bunchy top virus

Annex II

**Glossary**

Agricultural Research Council: ARC  
Citrus Black Spot: CBS  
Citrus Growers' Association: CGA  
Citrus Research International: CRI  
Deciduous Fruit Producers Trust: DFPT  
Directorate Plant Health: DPH  
Forestry and Agricultural Biological Institute: FABI  
Golden Cyst Nematode: GCN  
International Plant Protection Convention: IPPC  
Karnal bunt: KB  
Larger Grain Borer: LGB  
National Plant Protection Organisation: NPPO  
Pest Free Areas: PFA  
Pest Risk Analysis: PRA  
Regional Plant Protection Organization: RPPO  
South African Agricultural Food, Quarantine and Inspection Services: SAAFQIS  
SA Silo Industry: SANSOR  
World Trade Organization — Agreement on the Application of Sanitary and Phytosanitary Measures: WTO-SPS

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