

Version: 6.0  
Effective date: 05 July 2011

## SERVICE BOOKLET

# PLANT HEALTH LABORATORY DIAGNOSTIC & LABORATORY SERVICES



PLANT HEALTH LABORATORY DIVISION  
AGRI-FOOD & VETERINARY AUTHORITY OF SINGAPORE  
ANIMAL & PLANT HEALTH CENTRE  
6 PERAHU ROAD  
SINGAPORE 718827  
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## 1. Sample Submission Procedures

### Selection of Sample for Analysis

Incomplete information or poorly selected specimens may result in an inaccurate diagnosis or inappropriate control recommendation. Badly damaged specimens are often unidentifiable and additional sample request may result in delays. As such, when submitting a sample, please observe the following general guidelines:

Select plant materials that are showing the symptoms you are concerned about. Send several samples showing various stages of the disease, especially the early stage. Place samples into a plastic bag or wrap samples in a newspaper to keep them moist but do not add water. Wrap roots in a second bag to keep the leaves free of soil. In addition, please observe the following specific guidelines for the various categories of samples:

### Plant Samples for Disease Diagnosis

**Herbaceous Plants:** For general decline or dying of plants, send whole plants (if practical) including roots, showing early symptoms. Dig up carefully to include 500 grams of surrounding soil (see guidelines for soil samples below for more details). It is important to keep soil off the foliage.

**Tree Wilts:** Collect branches or twigs which are actively wilting but not totally dead. Wrap in plastic to retain moisture.

**Leaves, Branches, Fleshy Parts:** When localised infections such as cankers, leaf spots and rots are involved, send specimens representing early and moderate stages of disease. Press leaves flat between papers. Send entire or small parts of infected branches and twigs to include several centimeters of healthy wood adjacent to the diseased part. Wrap fleshy parts e.g. fruits or vegetables separately in dry paper.

**Turf:** Turf sample plugs should be around 9 cm in diameter and include the transition area between the diseased and healthy portion of grass. It is best to place root systems separate in another plastic bag. Submit around 500 g of turf sample plugs.

### Insect Specimens and Infested Materials for Diagnosis

For insect pest diagnosis, collect several (the more the better) live specimens of the insects together with associated plant parts (hosts). Collect all stages of the life cycle if available. Care should be taken to pack insects so that they arrive as complete specimens. If 2 or more species are included in the same package, be sure to separate and label the insects and provide appropriate information on each.

**Affected Plant Parts:** e.g. leaves, flowers or fruits: Send affected twigs, branches, leaves or flowers with presence of pest related products (webs, bags, frass) together with unaffected plant parts. Place highly mobile pests in a vial with some alcohol (70%) or in separate plastic bags. For fruits, send freshly damaged fruits, wrapped individually in paper.

**Tiny and / or Soft-bodied Specimens:** e.g. aphids, mites, thrips, caterpillars, spiders: Submit specimens in a small leak proof bottle or vial with 70% alcohol. Do not submit insects in water or without alcohol, as they will readily decompose.

**Hard-bodied Specimens:** e.g. flies, grasshoppers, butterflies and beetles: Submit specimens dry in a crush-proof container. Do not tape insects to paper or place them loose in envelopes.

### **Soil Samples for Plant Nutrition or Nematode Analysis**

Take several sub-samples from the root zone at depth of about 15 to 20 cm, especially from around plants showing similar symptoms. Mix the sub-samples to form a composite sample for submission. Avoid collecting samples when the soil is extremely dry or wet, or immediately after fertiliser application. Transfer the soil to a clean polythene bag or paper bag and label.

Submit around 500 g of soil (mixture of sub-samples) from plants showing nutritional problems e.g. yellowing or unhealthy colour in a plastic bag for submission. It will be useful in the diagnosis to include a sample of soil from the same plant type/species without the symptoms (healthy) for concurrent analysis for comparison. Reference samples will not be charged.

**Soil-less Media:** Submit around 2 litre sample in a sealed polythene/paper bag.

**Compost/Organic Fertiliser:** Submit around 500 g compost/organic fertiliser in a sealed polythene bag.

**Fertilisers (chemical):** Submit around 250 g fertiliser in a sealed polythene bag.

### **Tissues for Plant Nutrition Analysis**

Send 150 grams of fresh plant tissues showing nutritional problems e.g. yellowing or unhealthy colouring in a plastic/paper bag. For plant tissues, include similar plant parts of same plant species from a healthy source for concurrent analysis. DO NOT WET the leaves. It will take a longer time to dry them for analysis and the foliage may rot.

### **Water / Nutrient Solution for Nutrition Analysis**

Submit 1 litre in a sealed bottle and state the required analysis to be performed e.g. pH, EC, N, P, K, Na, Mg, Ca etc.

### **Completion of Application Form**

Application form for Plant Health Services is available as a hardcopy (pdf format) or as an electronic form for customers applying using eServices from AVA website.

For home growers or individual, please give your name, mailing/billing address, contact number and NRIC no. for billing purpose. For company representative, please include your name and your company name, mailing/billing address, your contact number and your Company's UEN number for billing purpose.

The application form together with the worksheet for tests must be filled in and signed. Please read the terms and conditions before signing/submitting the form.

For the first time, it is recommended that you complete the form and the worksheet with an AVA plant health officer. He or she can help you fill in the relevant information requested or the necessary tests to be performed for your particular sample.

### **Submission of Samples and Application Form**

Sample submitted for analysis must be accompanied by the hard copy form or the eService acknowledgement slip with the acknowledgement reference. The samples together with the completed application form or acknowledgement reference should be submitted to the Animal and Plant Health Centre (APHC) soon after collection. Otherwise keep the samples cool (refrigerated at 5 to 10°C) if you are unable to submit immediately.

Alternatively, you may mail/courier the sample in a sturdy box (to prevent damage) with the completed application form.

### **Sample Submission from Overseas (including Malaysia)**

AVA regulates the import of plants and plant products, biological control agents, soil and organic fertilisers in Singapore under the Control of Plants Act (Chapter 57A, Section 49). An import permit fee would be levied for overseas samples by the Quarantine and Inspection Department for each application. Customer will be billed for the import permit in addition to the lab analysis. When sending plant samples from overseas, International Air Transport Association (IATA) Packaging Instruction 650 should be followed. Further information on regulations covering postal packages can be obtained from IATA.

## **2. Test Reports**

Test results are ready within 7 to 14 days depending on test types. We will send an invoice when the laboratory report is ready if prior payment had not been made. Report will be released only upon full payment for services and can be collected from the reception counter. One report will be issued for one application. Please call 6316 5168 to check if report is ready for collection.

For customers using our eServices, results can be viewed online upon payment. The official report will be sent to you based on your preferred method of receipt.

## **3. Payment Procedures**

Payment for all laboratory services is by NETS, GIRO, Cheque or Internet Banking ONLY. For clients not residing in Singapore, please contact APHC for payment arrangements. (+65-63165188, E-mail: [chan\\_geok\\_hua@ava.gov.sg](mailto:chan_geok_hua@ava.gov.sg))

For customers using our eServices, payment is by credit card (VISA, Mastercard), GIRO or Internet banking (eNets Debit). Applications for payment by GIRO should be made in advance to allow time for processing. Please contact APHC for GIRO application forms (+65-63165188, E-mail: [chan\\_geok\\_hua@ava.gov.sg](mailto:chan_geok_hua@ava.gov.sg))

#### 4. Contact Details / Hours of Service & Location Map

##### Animal and Plant Health Centre (APHC)

##### Agri-Food and Veterinary Authority

6 Perahu Road, Singapore 718827

Tel: (65) 63165168 / (65) 63165188

Fax: (65) 63161090

E-mail: [AVA\\_Planthealth@ava.gov.sg](mailto:AVA_Planthealth@ava.gov.sg)

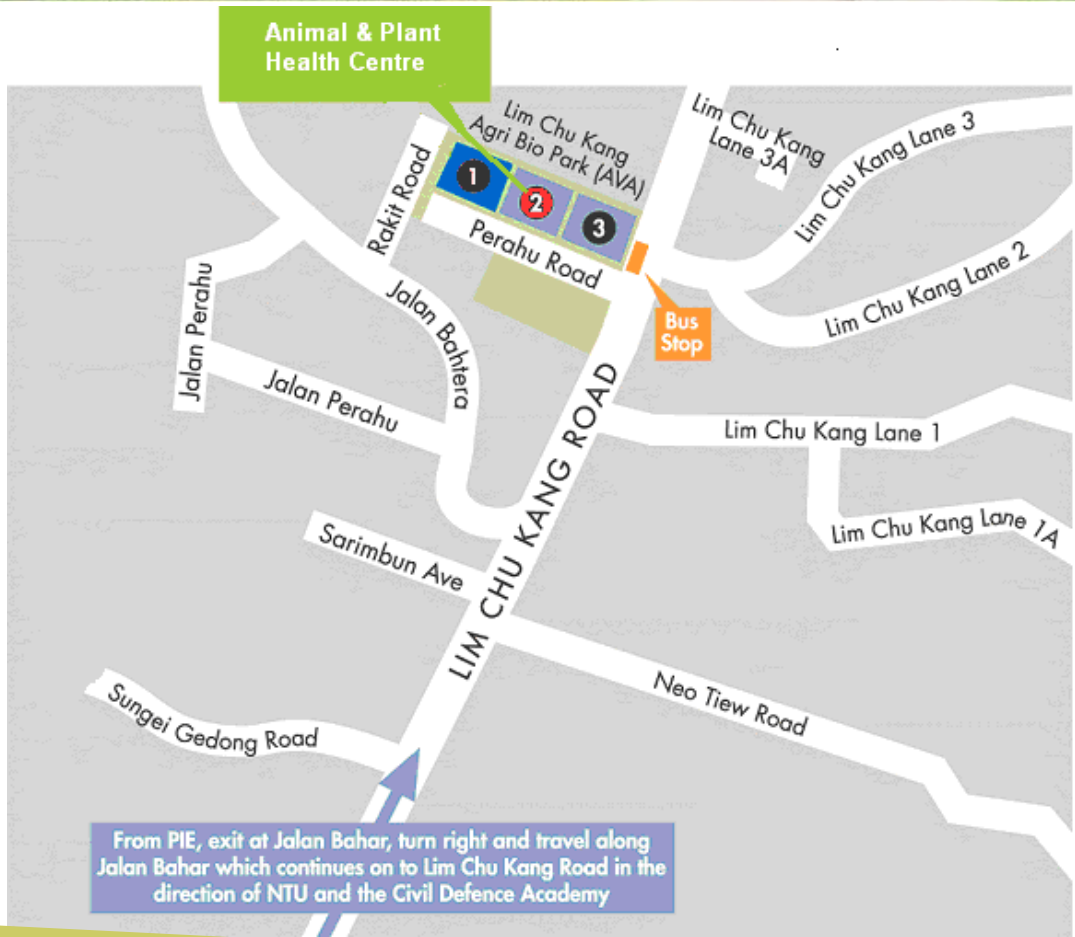
#### Hours of Service

	Counter Services	Sample Submission
<b>Mondays to Thursdays</b>	8:00 am to 5:30 pm	8:00 am to 5:00 pm
<b>Fridays</b>	8:00 am to 5:00 pm	8:00 am to 4:30 pm
<b>New Year's Eve, Chinese New Year's Eve and Christmas Eve</b>	8:00 am to 12:30 pm	8:00 am to 12:00 noon
<b>Saturdays, Sundays and Public Holidays</b>	Closed	Closed
<b>Lunch break - 1230 to 1330 hrs</b>		

**ANIMAL & PLANT HEALTH CENTRE (APHC), 6 PERAHU ROAD, SINGAPORE 718827**



**Location Map**



From PIE, exit at Jalan Bahar, turn right and travel along Jalan Bahar which continues on to Lim Chu Kang Road in the direction of NTU and the Civil Defence Academy

Map not to scale

## 5. Diagnostic & Laboratory Services

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
<b>PLANT PEST DIAGNOSIS</b>						
1	Plant Samples	Bacteria Disease Diagnosis	\$28.35 per test for up to 3 tests for each pest type.	\$13.65 per test from 4th test onwards for same pest type	Nil	Ms Yap Mei Lai Tel: 63165142 or 63165173 Email: yap_mei_lai@ava.gov.sg
2	Plant Samples	Fungus Disease Diagnosis				
3	Plant Samples	Virus Disease Diagnosis (By ELISA)*	\$28.35 per test for up to 3 tests for each pest type.	\$13.65 per test from 4th test onwards for same pest type	* Specific virus tests by Enzyme-Linked Immunosorbent Assay (ELISA)	
4	Plant Samples	Virus Disease Diagnosis	\$68.25 per test per pest type	Not applicable	Nil	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
5	Plant Samples	Viroid Disease Diagnosis (General)	\$68.25 per test per pest type	Not applicable	Nil	Ms Yap Mei Lai Tel: 63165142 or 63165173 Email: yap_mei_lai@ava.gov.sg
		Phytoplasma Disease Diagnosis				
7	Plant or Insect Samples	Insect or Pests Diagnosis	\$28.35 per test for up to 3 tests for each pest type.	\$13.65 per test from 4th test onwards for each pest type	Submit pest / insect specimens with the affected plant part	Mr He Lian Sheng Tel: 63165169 Email: he_lian_sheng@ava.gov.sg
		Nematode Disease Diagnosis			Submit 500 g soil around affected plant roots / 200-300 g of affected plant roots / stem / leaves	
8	Plant or Soil Samples	Nematode Disease Diagnosis				

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
<b>PHYSICAL &amp; CHEMICAL ANALYSIS</b>						
9	Soil or Soil Mix or Soil-less Media	Bulk Density* or Moisture Content	\$15.75 per test	Not applicable	* Bulk Density is only offered for soil mix (disturbed sample).	Dr Varughese Philip Tel: 63165143 or 63165174 Email: philip_varughese@ava.gov.sg
10	Soil or Soil Mix or Soil-less Media	Cation Exchange Capacity (CEC)	\$47.25 per test	Not applicable	Nil	
11	Soil or Soil Mix or Soil-less Media	Particle Size or Soil texture*	\$42.00 per test up to 3 tests for the same test	\$37.80 per test from 4 <sup>th</sup> test onwards for the same test	*Soil texture can be performed only on mineral soils and not on soil mixes	
12	Soil or Soil Mix or Soil-less Media	pH or Electrical Conductivity (EC)	\$10.50 per test up to 5 tests for the same test	\$9.45 per test from 6 <sup>th</sup> test onwards for the same test.	Nil	
13	Soil or Soil Mix or Soil-less Media	Each analysis—N, P, K, Ca, Mg, Na, B*, Fe, Cu, Mn, Zn, Organic Carbon, Total Carbon, Organic Matter, C:N Ratio ** (2 tests done for C & N)	\$28.35 per test up to 3 tests for the same test \$56.70 for CN Ratio	\$23.10 per test from 4 <sup>th</sup> test onwards for the same test. For CN Ratio - \$46.20 from 4 <sup>th</sup> test onwards	*B is not offered for soilless media Total Carbon is usually done on soil and sand only. ** C:N ratio consists of 2 tests and is charged \$56.70	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
14	Soil or Soil Mix or Soil-less Media	<b>Package A1 (Soil &amp; Soil Mix) &amp; A2 (Soilless Media)</b> Analysis for N,P,K, pH & EC	\$94.50	Not applicable	Nil	Dr Varughese Philip Tel: 63165143 or 63165174 Email: philip_varughese@ava.gov.sg
15	Soil or Soil Mix	<b>Package B (Soil, Soil Mix &amp; Soilless media)</b> Analysis for any 5 Nutrients, Organic Carbon/Total Carbon/Organic Matter, pH and Particle Size or Soil Texture	\$183.75	Not applicable	*For package B, choose 5 nutrients from the following list:: N, P, K, Ca, Mg, Na, Fe, Cu, Mn, Zn  *Total Carbon is usually done on soil and sand only.  *Soil texture can be performed only on mineral soils and not on soil mixes	
16	Soil or Soil Mix or Soil-less Media	<b>Package C (Soil, Soil mix &amp; Soilless media)</b> Analysis for pH, EC, N, P, K, Ca, Mg, Na, Cu, Fe, Mn, Zn, Organic Carbon/Total Carbon/Organic Matter, CEC, C:N Ratio and Moisture Content	\$367.50	Not applicable	*Total Carbon is usually done on soil and sand only.	
17	Compost / Organic Fertiliser	Moisture Content	\$15.75 per test	Not applicable	Nil	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
18	Compost / Organic Fertiliser	Cation Exchange Capacity (CEC)	\$47.25 per test	Not applicable	Nil	Dr Varughese Philip Tel: 63165143 or 63165174 Email: philip_varughese@ava.gov.sg
19	Compost / Organic Fertiliser	pH and Electrical Conductivity (EC)	\$10.50 per test for the same test	\$9.45 per test from 6th test onwards for the same test	Nil	
20	Compost / Organic Fertiliser	Particle Size	\$42 per test for the same test	\$37.80 per test from 4th test onwards for the same test	Nil	
21	Compost / Organic Fertiliser	Each Analysis—N, P, K, Ca, Mg, Cu, Mn, Fe, Na, Zn, Organic Matter, Organic Carbon	\$28.35 per test for the same test	\$23.10 per test from 4th test onwards for the same test.	Nil	
22	Compost / Organic Fertiliser	Carbon Nitrogen Ratio	\$56.70 per test for the same test	\$46.20 per test from 4th test onwards for the same test.	Nil	
23	Compost / Organic Fertiliser	<b>Package A3</b> pH, N, P, K and EC	\$94.50	Nil	Nil	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
24	Compost / Organic Fertiliser	<b>Package B</b> pH, Organic Carbon/ Organic Matter, any 5 Nutrients and Particle Size	\$183.75	Nil	For package B you have to choose 5 nutrients from the following list N, P, K, Ca, Mg, Na, Fe Cu, Mn, Zn	Dr Varughese Philip Tel: 63165143 or 63165174 Email: philip_varughese@ava.gov.sg
25	Compost / Organic Fertiliser	<b>Package C</b> Analysis for pH, EC, N, P, K, Ca, Mg, Na, Cu, Fe, Mn, Zn, Organic Carbon/Organic Matter, CEC, C:N Ratio and Moisture Content	\$367.50	Nil		
26	Water / Nutrient Solution	<b>Package A 4 (Nutrient Solution)</b> pH, EC, N, P, K <b>Package A 5 (Water)</b> pH, EC, Na, Ca, Mg	\$94.50	Nil	Submit 1 L of nutrient solution or water	
27	Water / Nutrient Solution	pH, EC,	\$10.50 per test for the same test	\$9.45 per test from 6 <sup>th</sup> test onwards for the same test.	Nil	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
28	Water / Nutrient Solution	Each Analysis—N, P, K, Ca, Mg, Na, Fe, Cu, Mn, Zn, Chloride.	\$28.35 per test for the same test	\$23.10 per test from 4 <sup>th</sup> test onwards for the same test	Nil	<p>Dr Varughese Philip Tel: 63165143 or 63165174 Email: philip_varughese@ava.gov.sg</p>
29	Fertiliser (Chemical)	Each Analysis—N, P, K, Ca, Mg, Na, Cu, Mn, Fe, Zn	\$28.35 per test for the same test	\$23.10 per test from 4 <sup>th</sup> test onwards for the same test.	N - Total, P - Total & water soluble form. All other nutrients in water soluble form only Submit 250 g fertiliser sample	
30	Leaf Tissue	Each Analysis—N, P, K, Ca, Mg, Na, Cu, Mn, Fe, Zn, B	\$28.35 per test up to 3 tests for the same test	\$23.10 per test from 4 <sup>th</sup> test onwards for the same test.	Submit 150 g leaf sample	
31	Leaf Tissue	Moisture Content	\$15.75 per test	-	Submit 150 g leaf sample	

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact Person
<b>SEED HEALTH TESTING</b>						
32	Seeds	Seed Germination Test	\$50.40 per test	Not applicable	Sample size varies. Please call to check	Ms Yap Mei Lai Tel: 63165142 or 63165173 Email: yap_mei_lai@ava.gov.sg
33	Seeds	Seed Purity Test	\$50.00 per test	Not applicable		
34	Seeds	Seed Viability Test (Tetrazolium Chloride Test)	\$113.40 per test	Not applicable		
<b>PROFESSIONAL &amp; TECHNICAL SERVICES</b>						
35	-	Professional Service (e.g. Plant Health Site Assessment)	\$63 per hour or part thereof	Not applicable	Time spent on site including travel time constitutes hours of service	Appointment to be made at Tel: 63165168 or Email:
36	-	Professional & Technical Services	\$63 & \$38 per hour respectively or part thereof	Not applicable	A cost proposal will be provided	AVA_Planthealth@ava.gov.sg

S/N	Sample Type	Tests	Laboratory Fees (Incl of GST)	Discounted Fees	Remarks	Contact
<b>PHYTOSANITARY LABORATORY EXAMINATION FOR CERTIFICATION (EXPORT)</b>						
37	Plant and Plant Products	Laboratory Examination for Pests and Pathogens (Bacteria, Insects, Fungi, Nematodes and Viruses (by ELISA); To certify freedom from Pests for the issuance of Phytosanitary Certificate for export purpose	\$50.00 per consignment per pest type	Not applicable	For export only (For issuance of Phytosanitary Certificate )  Samples should be submitted through Plant Health, Quarantine & Inspection Department.	Plant Health, Quarantine & Inspection Department, Sembawang Research Station, Lorong Chencharu, Singapore 769193 Tel: 67530657 or 61519843 Fax: 67520170
38	Plant and Plant Products	Urgent Examination for above (for Nematodes & Insects only)	\$100.00 per consignment per pest type	Not applicable		



# APPLICATION FOR PLANT HEALTH LABORATORY SERVICES

## FOR OFFICIAL USE

IFAST Lab Application/Service Acknowledgement No:  
Application Type  BSAA (Sample of foreign origin)

## REQUESTOR INFORMATION\* [\* MANDATORY FIELDS TO BE COMPLETED BY REQUESTOR]

Requestor Ref. No.: \_\_\_\_\_ NRIC No (Individual) / \_\_\_\_\_ UEN No. (Company representative)]

Requestor Name : Mr/Mrs/Ms/Dr \_\_\_\_\_ (Individual / Company Representative)

Company Name:

Contact Number: Office/Home \_\_\_\_\_ ; HP \_\_\_\_\_ ; Fax \_\_\_\_\_ ; Email \_\_\_\_\_

Billing Address:	Mailing Address (If different from Billing Address) :
Postal Code:	Postal Code:

## SPECIAL INSTRUCTIONS

Sample Handling/ Testing Instructions:

Results Reporting Instructions:

Preferred Method of Receiving Report:  Fax  Mail  Email  Self Collection  
Preferred Payment Method:  Nets  Cheque / Bank Draft  Existing AVA GIRO a/c  Internet

## SITE SAMPLING INFORMATION (PLS PROVIDE SAMPLE DETAILS AND TESTING REQUEST ON PAGES 2/3)

Sampled by\* \_\_\_\_\_ Sampling Date & Time\* / / on \_\_ : \_\_  
Sampling Location:  
GPS Reference:  
Observation / Comments:

## REQUEST FOR PROFESSIONAL / TECHNICAL SERVICE / PTS APPLICATION ONLY

Type  Field Evaluation / R&D  Site / Farm Visit  Training  Others No. of Pro /Tec hrs : \_\_\_\_\_  
Labs involved  Entomology / Nematology  Bacteriology/ Mycology/Virology  Soil Management  
PTS application with samples collected for lab testing (Details in pages 2, 3): Y / N  
AVA Officer's Name:

## ACKNOWLEDGEMENT BY REQUESTOR \*

### Terms & Conditions:

- AVA accepts no liability for loss or damage to plants submitted for examination/testing.
- Samples will not be returned unless specifically requested. One lab report will be issued for one application.
- The mention of trade name(s) is NOT an endorsement for the product(s) by AVA. AVA report is NOT to be used for advertisement or claims.
- Payment terms: 21 days from invoice date. Late payment would incur a \$20 surcharge. Cheque shall be made payable to AVA. Lab Report shall be released upon payment of Lab testing.

Total Amount Payable : \$ \_\_\_\_\_

I agree to the above terms & conditions stated and hereby submit the sample(s) to be analysed OR agree to the testing of samples collected (for PTS).(Sample & testing details in pg 2-3).

\_\_\_\_\_  
Name of Requestor

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**REQUEST FOR AVA PLANT HEALTH TESTS – WORKSHEET 1  
 PLANT PEST DIAGNOSIS & SEED HEALTH TESTING  
 ONE LABORATORY REPORT WILL BE ISSUED FOR ONE APPLICATION.**

IFAST Lab Application No.: P-

Sample Details	Sample Details	Sample __	Sample __	Sample __	Sample __	Sample __
	Sample Name / Plant Name					
	Sample Marking (Label)					
	Sample Description (e.g. Plant Parts – Leaf, Branches, Trunk etc)					
	Symptoms					
	Country e.g SG					
	Location ie Farm / Road					
	Disease Distribution					
Plant Pest Diagnosis and Seed Health Testing (Pls. select tests with a tick)	Select Tests (✓) *	Sample __	Sample __	Sample __	Sample __	Sample __
	Bacteria Disease Diagnosis					
	Fungus Disease Diagnosis					
	Phytoplasma Disease Diagnosis					
	Virus Disease Diagnosis (General)					
	Virus Disease Diagnosis (By ELISA *)					
	Viroid Disease Diagnosis					
	Insect Pest Identification					
	Nematode Pest Diagnosis					
	Seed Germination Test*					
	Seed Purity Test *					
	Seed Viability Test *					
	<b>Estimated Costs (\$\$)</b>					
<b>Total Estimated Costs (\$\$)</b>						

\* Please check with our officer on the specific testing.

Additional Comments:
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**REQUEST FOR AVA PLANT HEALTH TESTS – WORKSHEET 2  
PHYSICAL & CHEMICAL ANALYSIS  
ONE LABORATORY REPORT WILL BE ISSUED FOR ONE APPLICATION.**

IFAST Lab Application No.: P-

Sample Details	Sample Details	Sample ___	Sample ___	Sample ___	Sample ___	Sample ___
	Sample Name / Plant Name					
	Sample Marking (Label)					
	Sample Description (e.g. Soil, Soil Mix, ASM, Compost, Fertiliser, Water, Nutrient Solution, Leaf)					
	Symptoms					
	Country e.g SG					
	Location ie Farm / Road etc					
Tests for Soil, Soil Mix, ASM, Soilless media, Leaf, Compost, Fertilisers Water & Nutrient Solution	Select Tests (✓)	Sample ___	Sample ___	Sample ___	Sample ___	Sample ___
	pH					
	Electrical conductivity (EC)					
	1. Nitrogen (N)					
	2. Phosphorus (P)					
	3. Potassium (K)					
	4. Calcium (Ca)					
	5. Magnesium (Mg)					
	6. Sodium (Na)					
	7. Copper (Cu)					
	8. Iron (Fe)					
	9. Manganese (Mn)					
	10. Zinc (Zn)					
	Organic Matter / Organic Carbon / Total Carbon					
	Boron (B)					
	Moisture content					
	Bulk Density (Only Soil Mixes)					
	Soil Texture (Not for Soil Mixes)					
	Particle Size					
	Cation Exchange Capacity (CEC)					
	C:N ratio					
Package A*						
Package B*						
Package C*						
Other tests -						
<b>Estimated Costs (\$\$)</b>						
<b>Total Estimated Costs (\$\$)</b>						

\* **Package A** – pH, EC, N, P, K;

**Package A (For Water)** - pH, EC, Na, Ca & Mg

\* **Package B** – Analysis for any 5 nutrients (select from 1 to 10), Org. C/Total C/OM, pH, Particle Size/Soil Texture

\* **Package C** – Analysis for pH, EC, N, P, K, Ca, Mg, Na, Cu, Fe, Mn, Zn, Org. C/Total C/OM, CEC, C:N Ratio and Moisture Content