

SERVICE BOOKLET

PLANT SCIENCE & HEALTH

LABORATORY AND DIAGNOSTIC SERVICES



PLANT SCIENCE AND HEALTH BRANCH
NATIONAL PARKS BOARD
ANIMAL & PLANT HEALTH CENTRE, NO. 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) 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. Identification is dependent on the quality of sample (s) submitted i.e. identification would not be possible for poorly decomposed samples.

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.

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.

Sample submission: eServices

Samples for testing shall be registered by the customer using eServices. The guide to eServices can be found at NParks website. Hardcopy submission of the Application Form for Laboratory Services will not be available effective 4 January 2021.

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.

Please read the terms and conditions before submitting the form.

Submission of Samples and Service Acknowledgement Slip

Sample submitted for analysis must be accompanied by the Service Acknowledgement Slip with the acknowledgement reference. The samples together with the 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 Service Acknowledgement Slip.

Sample Submission from Overseas (including Malaysia)

NParks 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 Group 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 results¹ are generally ready within 5 to 14 days depending on test types. Report will only be released upon full payment for services. One report will be issued for one application, any additional request is chargeable. Please call 6316 5168 to check if the 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 or Internet Banking ONLY. For clients not residing in Singapore, please contact APHC for payment arrangements. (+65-63165188, E-mail: chan_geok_hua@nparks.gov.sg) Payment can be made at time of submission of samples upon testing confirmation or via an issued invoice.

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@nparks.gov.sg)

¹Explanatory Note: There could be exception cases to the above guidelines, such as cases involving incubation tests which requires > 14 days to complete, cases where further confirmation of results is needed or delay due to unforeseen equipment breakdown. Customers will be informed if results will not be ready within 14 working days.

4. Contact Details / Hours of Service & Location Map

Animal and Plant Health Centre (APHC)

National Parks Board

6 Perahu Road, Singapore 718827

Tel: (65) 63165168 / (65) 63165188

Fax: (65) 63161090

Email: NPARKS_Public_affairs@nparks.gov.sg

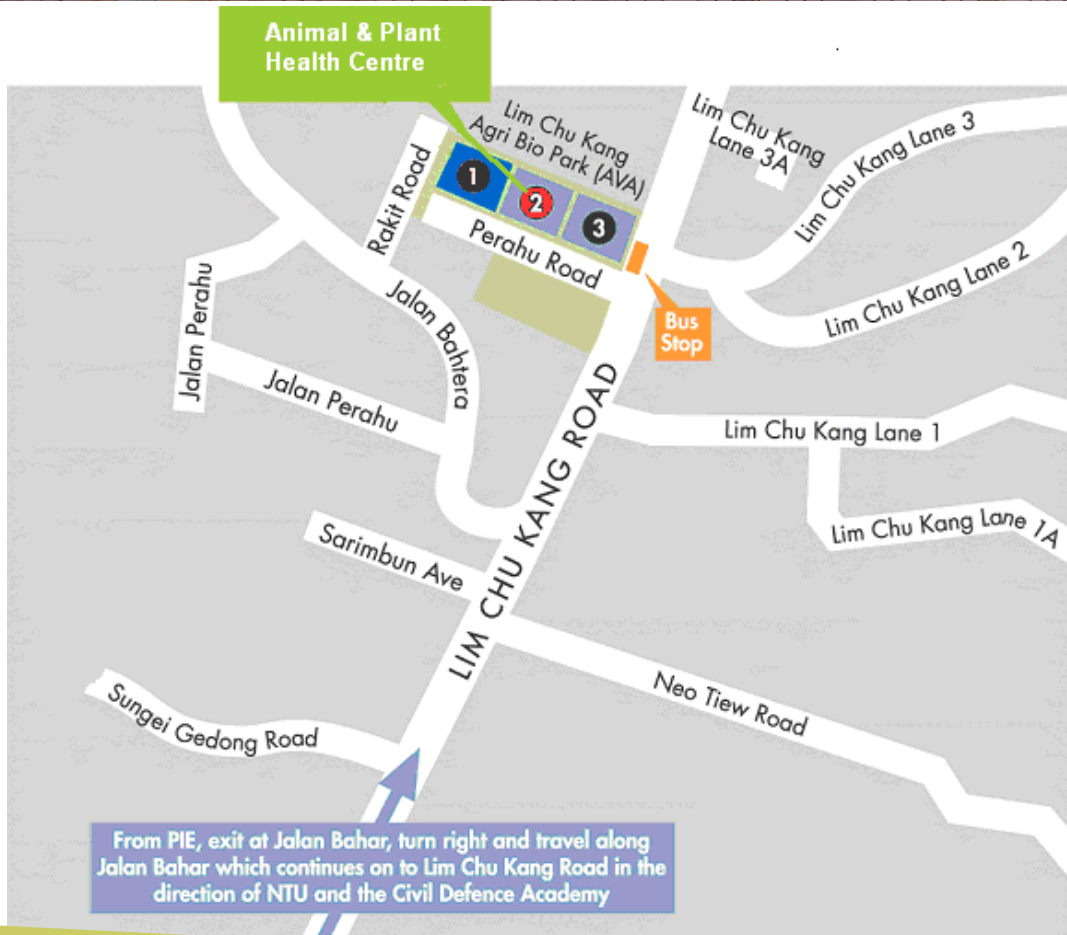
Hours of Service

	Counter Services	Sample Submission
Mondays to Thursdays	8:30 am to 12:30 pm 1:30 pm to 5:30 pm	8:30 am to 12:30 pm 1:30 pm to 5:00 pm
Fridays	8:30 am to 12:30 pm 1:30 pm to 5:00 pm	8:30 am to 12:30 pm 1:30 pm to 4:30 pm
New Year's Eve, Chinese New Year's Eve and Christmas Eve	8:30 am to 12:00 pm	8:30 am to 12:00 pm
Saturdays, Sundays and Public Holidays	Closed	Closed
Lunch break - 1230 to 1330 hrs		

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



Location Map



Map not to scale

S/N	Sample Type	Tests	Cost (+ GST)	Est. TAT*	Remarks
PLANT PEST DIAGNOSIS / IDENTIFICATION					
1.	Plant sample	Bacteria Disease Diagnosis	\$28.35 per test	7-14 days	\$13.65 per test from 4th test onwards for same pest type. Time taken for diagnosis is dependent on quality of sample submitted & rate of growth of isolated pathogenic bacteria.
2	Plant sample	Fungus Disease Diagnosis	\$28.35 per test	5-14 days	\$13.65 per test from 4th test onwards for same pest type. Time taken for diagnosis is dependent on quality of sample submitted & rate of growth of isolated pathogenic fungi.
3	Plant sample	Virus Disease Diagnosis (By ELISA)	\$28.35 per test	5-7 days	\$13.65 per test from 4th test onwards for same pest type.
4	Plant sample	Virus/Viroid/Phytoplasma Disease Diagnosis	\$68.25 per test	5-7 days	
5	Plant sample/ insect specimen	Insect or arthropod pest identification	\$28.35 per test	5-7 days	\$13.65 per test from 4th test onwards for same pest type. Time taken for identification may take longer i.e. weeks if rearing is required for immature stages of insect i.e. larvae, pupa.
6	Plant or soil sample	Nematode Disease Diagnosis	\$28.35 per test	5-7 days	\$13.65 per test from 4th test onwards for same pest type. Submit 500g soil around affected roots / 200-300g of affected plant roots/stem/leaves.
PHYSICAL & CHEMICAL ANALYSIS					
7	Soil or soil mix or soil-less media	Bulk density or moisture content	\$15.75 per test	7-10 days	Bulk density is only offered for soil mix (disturbed sample).
8	Soil or soil mix or soil-less media or Compost or organic fertiliser	Cation Exchange Capacity (CEC)	\$47.25 per test	7-10 days	
9	Soil or soil mix or soil-less media	Particle size or soil texture	\$42.00 per test	7–10 days	\$37.80 per test from 4th test onwards for same test. Soil texture can be performed only on mineral soil and not on soil mixes.
10	Soil or soil mix or soil-less media or Compost or organic fertiliser	pH or Electrical Conductivity (EC)	\$10.50 per test	5-7 days	\$9.45 per test from 6th test onwards for same test.
11	Soil or soil mix or soil-less media	Each analysis—N, P, K, Ca, Mg, Na, B, Fe, Cu, Mn, Zn, Organic carbon/Organic matter(OC/OM), C:N ratio*	\$28.35 per test	7-14 days	\$23.10 per test from 4th test onwards for same test. *For C:N ratio, cost is \$56.70 for C & N tests. Boron (B) is not offered for soil-less media.
12	Soil or soil mix or soil-less media	Package A1 (Soil & Soil Mix) & A2 (Soil-less media) Analysis of N, P, K, pH & EC.	\$94.50	7-14 days	

* Estimated TAT = Estimated Turnaround Time for testing and issuance of report. The actual TAT may vary. Please check during submission.

S/N	Sample Type	Tests	Cost (+ GST)	Est. TAT*	Remarks
13	Soil or soil mix	Package B1A (Soil) & B1B (Soil mix) Analysis for any 5 nutrients: OC/OM, pH & Particle size/ soil texture	\$183.75	7-14 days	You have to choose 5 nutrients from the following list: N, P, K, Ca, Mg, Na, Fe, Cu, Mn & Zn. B is not offered for this package.
14	Soil or soil mix	Package C (Soil & Soil mix) Analysis of pH, EC, N, P, K, Ca, Mg, Na, Cu, Fe, Mn, Zn, OC/OM, CEC, C:N ratio & Moisture content	\$367.50	7-14 days	
15	Compost/ Organic Fertiliser	Particle size	\$42.00 per test	5-7 days	
16	Compost/ Organic Fertiliser	Each analysis—N, P, K, Ca, Mg, Na, Fe, Cu, Mn, Zn, OC/OM.	\$28.35 per test	7-10 days	\$23.10 per test from 4th test onwards for same test.
17	Compost/ Organic Fertiliser	Carbon: Nitrogen Ratio	\$56.70 per test	7-10 days	\$46.20 per test from 4th test onwards for same test.
18	Compost/ Organic Fertiliser	Package A3 pH, N, P, K and EC	\$94.50	7-10 days	
19	Compost/ Organic Fertiliser	Package B3 pH, OC/OM, any 5 nutrients and Particle size	\$183.75	7-10 days	You have to choose 5 nutrients from N, P, K, Ca, Mg, Na, Fe, Cu, Mn & Zn.
20	Compost/ Organic Fertiliser	Package C3 Analysis of pH, EC, N, P, K, Ca, Mg, Na, Cu, Fe, Mn, Zn, OC/OM, CEC, C:N ratio & Moisture content	\$367.50	7-14 days	
21	Nutrient solution or Water	Package A4 (Nutrient solution) pH, EC, N, P & K; Package A5 (Water) pH, EC, Na, Ca & Mg.	\$94.50	7-14 days	To submit 1L of water/ nutrient solution
22	Nutrient solution or Water	pH & EC	\$10.50 per test	5-7 days	\$9.45 per test from 6th test onwards for same test.
23	Nutrient solution or Water	Each analysis—N, P, K, Ca, Mg, Na, Fe, Cu, Mn & Zn	\$28.35 per test	5-7 days	\$23.10 per test from 4th test onwards for same test.
24	Fertiliser (Chemical)	Each analysis—N, P, K, Ca, Mg, Na, Fe, Cu, Mn, Zn.	\$28.35 per test	7-14 days	\$23.10 per test from 4th test onwards for same test. Submit 250g fertiliser sample. N—Total form; P— Total & water soluble form. All others—water soluble form only.
25	Leaf tissue	Each analysis –N, P, K, Ca, Mg, Na, Cu, Mn, Fe, Zn & B.	\$28.35 per test	7-14 days	\$23.10 per test from 4th test onwards for same test. Submit at least 150g leaf sample.
26	Leaf tissue	Moisture content	\$15.75 per test	7-10 days	Submit at least 150g leaf sample.

* Estimated TAT = Estimated Turnaround Time for testing and issuance of report. The actual TAT may vary. Please check during submission.

S/N	Sample Type	Tests	Cost (+ GST)	Est. TAT*	Remarks
SEED HEALTH TESTING					
27	Seeds	Seed Purity test	\$50.00 per test	3-5 days	Sample size varies. Please call to check.
PROFESSIONAL & TECHNICAL SERVICES					
28	—	Plant health site assessment	\$63 per professional hour or part thereof &/ or \$38 per technical hour or part thereof	—	Cost is based on the length of time i.e travel time and time spend on site for the assessment visit. This is strictly based on appointment. Tel: 63165168.
LABORATORY EXAMINATION FOR EXPORT HEALTH CERTIFICATION (PHYTOSANITARY CERTIFICATION)					
29	Plant & plant products	Laboratory examination for plant pests (bacteria, insects, fungi, nematodes and viruses (by ELISA) to certify freedom from stipulated pests for the purpose of issuance of Phytosanitary certificate for export.	\$50.00 per consignment per pest type.	5-14 days	This service is strictly for export health certification. Samples should be submitted through the Quarantine & Inspection Group, NParks for the issuance of phytosanitary certificate only. Please contact Plant Health Section at 63165166 for sample inspection and collection for laboratory test.
30	Plant & plant products	Urgent examination for plant pests—specifically for freedom from insects and nematodes only for the purpose of urgent issuance of Phytosanitary certificate for export.	\$100.00 per consignment per pest type.	2 days	This service is strictly only to check freedom from insects or/& nematodes under export health certification. Results would be available within 48 hrs upon submission of sample for testing. Estimated TAT excludes the time required for inspection and sample submission. Samples should be submitted through Plant Health Section for the issuance of phytosanitary certificate only. Please contact Plant Health Section at 63165166 for sample inspection and collection for laboratory test.

* Estimated TAT = Estimated Turnaround Time for testing and issuance of report. The actual TAT may vary. Please check during submission.

Annex A: Terms of Use of Plant Science & Health Laboratory Services, National Parks Board (NParks):

By making an application for laboratory services, the Requestor shall be deemed to have agreed to be legally bound by the Terms of Use stated herein below. Please proceed only if you agree to the following Terms of Use. NParks reserves the right to amend these terms from time to time at NParks sole discretion.

1. Collection of Personal Data

By submitting this application, the Requestor is deemed as agreeable to provide their personal data to NParks. The consent that the Requestor provides for the collection, use and disclosure of his personal data will remain valid until such time that it is withdrawn by the Requestor in writing. Please refer to NParks' Privacy Statement for collection, use and disclosure of personal data.

Any information provided or created during the performance of laboratory activities will be kept confidential unless required by law or authorised by contractual arrangements to release such confidential information. The Requestor will be informed in advance by the laboratory if the information provided or created intends to be placed in the public domain.

2. Sample Submission

NParks accept no liability for loss or damage to samples submitted for laboratory examination.

All samples (whole or partial) and derivatives submitted for testing are the sole property of NParks and will not be returned to the Requestor unless specifically requested, subject to the nature of testing (destructive) and agreement of NParks at the time of submission. The Requestor should make his own arrangement to collect the sample(s) after the tests are completed, otherwise the samples and all derivatives will be discarded accordingly after testing.

As destructive examination/ testing may be required, NParks accepts no liability for any loss or damage to any plants submitted for laboratory testing. To avoid doubt, unless otherwise requested for and approved by NParks in writing, all containers and packaging material used in sample submissions will also be considered the property of NParks, and be disinfected and/or destroyed as deemed fit. The Requestor shall hold NParks harmless from any losses or claims whatsoever and howsoever arising in connection with the tests conducted.

Testing is dependent on the quantity and quality of the sample submitted. Samples found unsuitable for the required testing will be rejected. The Requestor will be notified if re-sampling is required. A sample may also be rejected if improperly collected, stored, packaged, transported or labelled, at the discretion of NParks.

Under circumstances where a sample is deemed less than the optimal standard for the requirements of the test and there are valid difficulties in obtaining another sample, written instructions must be given by the Requestor for NParks to proceed with testing. In such event, the condition of the sample will be reflected in the final Laboratory Report, and will include information as to the extent to which the test result or its interpretation was likely to have been affected by the quality of the sample tested, and that testing on such a sub-optimal sample was carried out at the Requestor's request.

3. Test Report

One Laboratory Report will be issued to the Requestor for all samples submitted under one application within 7 – 14 days upon payment. **Note:** Due to the nature of certain test methods, some tests may take more than 14 days to complete. Please refer to NParks website (<https://www.nparks.gov.sg>) for information.

Approval from NParks is required before any Laboratory Report can be reproduced in full. Where reference is made to the Requestor or the tests done in relation to the sample provided, by NParks in any of its materials or publications, such mention shall not constitute an endorsement for the Requestor or its product (s) by NParks. To avoid doubt, NParks will not provide any recommendations or endorsements on any product tested.

Any unauthorised reproduction or abuse of the NParks Laboratory Report shall constitute an offence under Section 27 (1) and (2) of the NParks Act & subject to prosecution. The mention of tradename (s) is NOT an endorsement for the product(s) by NParks.

All reports are proprietary to the Requestor. NParks will not release any information from a report without written authorisation from the Requestor.

4. Charges

The laboratory testing is chargeable. For details on cost of testing, please refer to NParks website at <https://www.nparks.gov.sg> or contact us at +65-63165168. The total amount payable for the laboratory testing and the Laboratory Report will be confirmed via issuance of an invoice upon receipt of the sample submitted.

Payment shall be made within 30 days from date of invoice or a late payment charge of \$20 per invoice will be levied. NParks accept payment via NETS, Interbank GIRO, PayPal, AXS and online.

Governing law: This Agreement shall be governed by and construed in accordance with the laws of the Republic of Singapore. The parties irrevocably agree to submit to the jurisdiction of the Courts of the Republic of Singapore.