NATIONAL PLANT BIOSECURITY DIAGNOSTIC NETWORK

Guidelines for National Diagnostic Protocol Development Applications

The National Diagnostic Protocols are an integral component of Australia's plant biosecurity system. The process of development is managed by the Subcommittee on Plant Health Diagnostics (SPHD).

National Diagnostic Protocols (NDPs) provide the minimum requirements for diagnostic procedures and methods for the detection and identification of plant pests. Information is provided on the pest, its host and taxonomic status and the methods to detect and identify it based on the best available information. NDPs may cover a species, an intra-specific taxon, several species within a genus or multiple genera of related pests.

In addition, NDPs now contain a section on diagnostics to support surveillance (Section 9). This provides information on the in-field and laboratory procedures utilized in the screening, detection or identification of plant pests in a surveillance situation. These procedures are to be used to support surveillance activities and are NOT to be used for a definitive identification in an initial detection.

When a protocol is developed, it is peer reviewed by a recognised plant health expert and verified by an independent laboratory.

The aim is to provide National Diagnostic Protocols for all identified priority pests for Australia, including those on the High Priority Pest (HPP) lists in Biosecurity Plans and the National Priority Plant Pest (NPPP) list developed by Australian governments.

It has been recognised that development of protocols and the subsequent review processes are time consuming to undertake in isolation. Therefore, SPHD has provided the option to amalgamate NDP development for pests with similar biology into Diagnostic Protocol Development Projects as outlined in Appendix 1.

A Diagnostic Protocol Development Project involves a plant biosecurity diagnostician or research scientist undertaking a project to either develop NDPs for one or more high priority pests, or to review and verify a collection of NDPs for multiple high priority pests. This work can be undertaken in conjunction with a Diagnostic Residential, also offered by SPHD. Information about Diagnostic Residentials can be found in the NPBDN website (**plantbiosecuritydiagnostics.net.au/news-events/professional-development/current-activities/**).

The Diagnostic Protocol Development Program and the Diagnostic Residential Program are funded through grants to Plant Health Australia and the South Australian Research & Development Institute from the Australian Government Department of Agriculture and Water Resources under the Plant Biosecurity and Response Reform programme.

Eligibility

To be eligible for a Diagnostic Protocol Development Project, you must be employed in a plant health laboratory or similar, in an organisation in Australia or New Zealand, and be a member of the National Plant Biosecurity Diagnostic Network (NPBDN)[1].

Application process

To apply for a Diagnostic Protocol Development Project, download the application form from the NPBDN website (**plantbiosecuritydiagnostics.net.au/news-events/professional-development/current-activities/**), complete the required fields, and submit to the SPHD Executive Officer at **sphd@agriculture.gov.au**.

[1] To join the NPBDN complete the form at **plantbiosecuritydiagnostics.net.au/about-npbdn/membership-form/**

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Assessment of applications

All applications will be assessed by SPHD, based on the following criteria:

1. Project will develop new NDP(s) for HPPs or NPPPs, complete the review and verification of draft NDPs, and/or enhance a current NDP (e.g. through peer review of a current NDP or the addition of a Section 9).
2. Demonstrated experience and expertise in the pest group(s) or related pest(s) to be covered by the NDPs.
3. Clear and beneficial outcomes and outputs articulated.
4. Value for money.
5. Potential for maintenance of laboratory expertise in the procedures.
6. Consideration of provision of resulting materials and controls for appropriate storage and/or lodging in a reference collection.
7. Building linkages within and external to the NPBDN through the development process.

Successful applicants will be contacted by the SPHD Executive Officer and provided instructions on how to progress.

Guide to budgets

It is anticipated that projects in the range of $30,000 to $50,000 will be funded, however applicants may propose budgets outside this range with appropriate justification.

It is anticipated than 4-5 projects will be funded in this round, with potential for additional projects in future years depending on funding availability.

The program encourages a collaborative approach between participating agencies if required. In kind support from participating organisations is expected, and can include wages, bench fees, etc.

Timelines

Applications close at 5 pm AEST on the 30th November. Successful applicants will be informed within two weeks.

Key contact and further information

If you would like further information, please contact the NDP Development Project Coordinator Barbara Hall at **barbara.hall@sa.gov.au**.

Reference standards which outline instructions to authors and review processes can be found on the NPBDN website (**plantbiosecuritydiagnostics.net.au/sphd/sphd-reference-standards/)**

Appendix 1: National Priority Plant Pest Diagnostic Protocol Gaps

The following tables include all protocols currently in development and the work required to progress them to endorsed NDP status.

These pests have been grouped. While it is expected that the projects submitted should cover a group of similar organisms, they are not restricted to the groupings suggested and can be selected from any of the pests listed in any of the tables.

There is also a list of NPPPs where no draft document exists and that require full development. It is expected that these may require additional funding, which should be discussed with the project manager (Barbara Hall) before submission.

NPPPs are highlighted in grey.

A9 = appendix section 9, Diagnostics to support surveillance.

PR = peer review; V = lab verification; NDP review = peer review needed for currency

Bacteria

Scientific name	Common name	NDP requirements
Erwinia amylovera	Fire blight	New - PR & V
Pantoea stewartii	Stuarts wilt of maize	Reviewed: Needs updating with new procedures plus A9
Pseudomonas papulans	Blister spot of apple	PR & V plus A9 – may need updating with new procedures
Xanthomonas fragariae	Angular leaf scorch of strawberry	Reviewed: Needs updating with new procedures plus A9
Xylophilus ampelinus	Bacterial blight of grapevine	Reviewed: Needs updating with new procedures plus A9

Virus collation 1

Scientific name	Common name	NDP requirements
Plum pox virus (Potyvirus)	Sharka	A9
Cotton leaf curl begomovirus	Cotton leaf curl disease	PR & V plus A9
Cotton leaf roll dwarf virus	Cotton leaf roll dwarf virus	PR & V plus A9
Maize dwarf virus	Maize dwarf virus	Reviewed: Needs updating with new procedures plus A9
Potato mop top virus		NDP15 review plus A9
Red clover vein mosaic virus	Red clover vein mosaic virus	V (molecular) plus A9
Wheat spindle streak mosaic bymovirus	Wheat spindle streak mosaic virus	Reviewed: Needs updating with new procedures plus A9

Virus collation 2 (group protocols)

Scientific name	Common name	NDP requirements
Fuvovirus	Wheat soil borne virus group	New - PR & V plus A9
Hordeiviruses	Wheat soil borne virus group	New - PR & V plus A9
Pecluviruses	Wheat soil borne virus group	New - PR & V plus A9
Bymovirus	Wheat soil borne virus group	New - PR & V plus A9

Banana collation

Scientific name	Common name	NDP requirements
Ralstonia solanacearum race 2	Moko & Bugtok	Old – may need updating
Xanthomonas vasicola pv. *musacearum*	Banana bacterial wilt (BXW)	Old – may need updating
Giberella fujikuroi	Bakanae	Old – may need updating
Mycosphaerella eumusae	Eumusae leaf spot	Old – may need updating
Banana bract mosaic virus	Banana bract mosaic disease	Old – may need updating
Fusarium oxysporum f. sp. *cubense*	Panama disease	Updated recently

Fungi

Scientific name	Common name	NDP requirements
Pseudopezicula tetraspora	Angular leaf scorch grape	New - PR & V plus A9
Raffaelea lauricola	Laurel wilt & vector beetle	Reviewed – needs updating from review and A9
Synchytrium endobioticum	Potato wart	NDP16 review &A9
Fusarium oxysporum f. sp. *vasinfectum* (exotic races)	Fusarium wilt	No current draft
Neonectria ditissima	European canker	NDP21 – review &A9
Ophiostoma novo-ulmi	Dutch elm disease	NDP37 A9
Puccinia graminis f. sp. *tritici* (exotic strains)	UG99	No current draft
Puccinia psidii (exotic strains)	Guava (Eucalyptus) rust	Pre incursion – needs updating and review
Puccinia striiformis f. sp. *hordei*	Barley stripe rust	No current draft
Tilletia indica	Karnal bunt	NDP19 review &A9
Tilletia controversa	Dwarf bunt of wheat	Old – needs updating
Tilletia horrida (nee *barclayana*)	Kernel smut of rice	Old - PR & V

Nematodes

Scientific name	Common name	NDP requirements
Bursaphelenchus cocophilus	Red ring disease	
Bursaphelenchus xylophilus	Pine wilt nematode	Protocol reviewed. May need updating post incursion
Globodera pallida *Globodera rostochiensis*	Potato cyst nematode	Reviewed and needs editing. May need checking again?
Heterodera avenae (exotic strains) *Heterodera carotae* *Heterodera ciceri* *Heterodera filipjevi* (exotic strains) *Heterodera glycines* *Heterodera latipons* (exotic strains) *Heterodera zeae*	Cyst nematodes	No current draft

Snails

Scientific name	Common name	NDP requirements
Lissachatina fulica	Giant African snail	No current draft
Pomacea canaliculata	Golden apple snail	Old draft – reviewed and needs work

Thrips

Scientific name	Common name	NDP requirements
Scirtothrips aurantii	South African citrus thrips	Old – may need work
Echinothrips americanus	Poinsettia thrips	NDP3 review & A9
Scirtothrips perseae	Avocado thrips	NDP4 review & A9

Insects

Scientific name	Common name	NDP requirements
Dysaphis plantaginea	Rosy apple aphid	Old draft – reviewed and needs work
Sitobian avenae	English grain aphid	For review &A9
Leptinotarsa decemlineata	Colorado potato beetle	NDP22 &A9
Lissorhoptrus oryzophilus	Rice water weevil	For review & A9
Sternochetus frigidus	Mango pulp weevil	For review & A9
Agrilus planipennis	Emerald ash borer	For review & A9
Citripestis eutraphera	Mango fruit borer	For review & A9
Citripestis sagittiferella	Citrus fruit borer	For review & A9
Hyalensthes obsoletus	Cixiidae plant hopper	For review & A9
Deanolis sublimbalis	Red-banded mango caterpillar	For review & A9
Lobesia botrana	European grapevine moth	For review & A9
Diaphorina citri	Asian citrus psyllid	Being edited – may need updating & A9
Homalodisca vitripennis	Glassy winged sharp shooter	NDP23 – A9

NPPs – new protocol needed

Scientific name	Common name	NDP requirements
Acrogonia terminalis *Dilobopterus costalimai* *Draeculacephala Minerva* *Graphocephala atropunctata* *Oncometopia fascialis* *Philaenus spumarius* *Xyphon fulgidum*	Other vectors of *Xylella fastidiosa*	
Anoplophora chinensis *Anoplophora glabripennis* *Anoplophora malasiaca*	Longhorn beetles	
Cephus cinctus *Cephus pygmeus*	Wheat stem sawfly	
Coptotermes formosanus *Coptotermes gestroi*	Subterranean termites	? draft termite protocol
Cryptotermes brevis *Cryptotermes dudleyi* *Incisitermes minor*	Drywood termites	? draft termite protocol
Eurygaster integriceps	Sunn pest	
Halyomorpha halys	Brown marmorated stink bug	
Hylesia nigricans	Burning moth	
Lepisiota frauenfeldi *Nylanderia fulva* *Solenopsis invicta* *Wasmannia auropunctata*	Exotic tramp ant	
Liriomyza bryoniae *Liriomyza cicerina* *Liriomyza huidobrensis* *Liriomyza sativae*	Tomato, chickpea, serpentine and vegetable leaf minor	Old draft of *L. huidobrensis.* NDP of *L. trifolii*
Lygus hesperus *Lygus lineolaris*	Plant bugs	