

Australian Plant Production Standard (APPS)



Avocado Nursery Stock Specification

Nursery production of high-quality avocado plants to a set industry specification is recognised within Australia as playing an important role in supporting the Avocado industry. The Avocado Nursery Voluntary Accreditation Scheme (ANVAS), administered by Avocados Australia Limited (AAL), is recognised as the Australian avocado industry's scheme to provide superior planting material to industry members.

The NIASA Avocado Nursery Stock Specification is a prerequisite to being granted accreditation to the ANVAS scheme. Since January 2020 administration and auditing of the technical aspects of avocado nursery production, leading to ANVAS Accreditation, were incorporated into the Nursery Industry Accreditation Scheme Australia (NIASA) program. Avocado best practice requirements have been incorporated into the 8th edition of the NIASA BMP Guidelines in the new Appendix 13.

Avocado Nursery Stock Specification Accreditation:

The stamp of assurance that provides businesses with:

- A systematic approach for producing 'superior' avocado planting material
- Consistent product quality meeting the industry standard
- Protection of the production environment from serious pests and pathogens
- Independent audits, guidance and technical support from GIA Auditors and Technical Officers

What is NIASA?

NIASA is the national nursery industry's Best Management Practice (BMP) program for production nurseries, growing media manufacturers and greenlife markets. It is supported by the NIASA BMP Guidelines and a Checklist incorporating more than 140 elements. Businesses may use the Guidelines as a reference or guidance document to improve their cropping systems without formal accreditation. HOWEVER, a business may also consider formal, annually externally audited, NIASA accreditation to demonstrate to customers that they meet industry best practice standards.

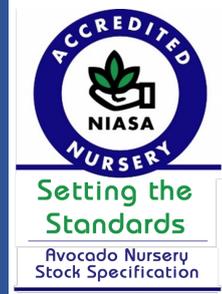
Assessment

To be eligible to hold NIASA Avocado Nursery Stock Specification accreditation a business must **ALSO** hold NIASA Production Nursery Accreditation which includes:

- passing a NIASA Production Nursery audit
- passing a NIASA Avocado Nursery Stock Specification audit.



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Requirements for ANVAS accreditation:

The incorporation of this Avocado Nursery Stock Specification into the NAISA program does not mean a business will be automatically granted ANVAS accreditation upon compliance to the NAISA BMP Guideline requirements. To be eligible to apply to Avocados Australia for ANVAS accreditation, the production nursery must be:

- NIASA accredited with Greenlife Industry Australia
- Implement the requirements specified within the NAISA Appendix 13 – Avocado Nursery Stock Specification; and
- Be found at audit to have implemented the procedures within the Appendix to a Satisfactory standard; and
- Demonstrate this through the provision of a NIASA Avocado Nursery Stock Specification accreditation certificate.
- And upon meeting these ANVAS requirements, apply for accreditation under the scheme as below.

Application and enquiries on ANVAS Accreditation should be made to AAL:

- ANVAS Accreditation Application Form and ANVAS Terms and Conditions Avocados Australia Limited (AAL) website <https://www.avocado.org.au/>
- Or contact AAL by phone or email - Phone: [\(61\) 07 3846 6566](tel:610738466566) or toll free [1300 303 971](tel:1300303971) or send an email to admin@avocado.org.au

Application for NIASA Avocado Nursery Stock Specification accreditation:

Complete and submit an application for NIASA accreditation form to GIA. Tick the appropriate checkboxes and complete the form in accordance with the instructions provided. To apply for NIASA, or for further enquiries on NIASA Avocado Nursery Stock Specification accreditation please contact:

- email: biosecure@greenlifeindustry.com.au Phone: (02) 8861 5100

Greenlife Industry Australia

Phone (02) 8861 5100
Email biosecure@greenlifeindustry.com.au
Web <https://www.greenlifeindustry.com.au/>



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Extract from NIASA Best Management Practices Guidelines

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A.13.2.2 Growing media/propagating media

Growing media is managed in accordance with requirements provided in NIASA Section [1.1.2 Growing media/propagating media](#).

Key requirements for Avocado Production – Media.

- Growing media/propagating media that is sourced from a NIASA accredited growing media supplier does not require additional pathogen testing and treatment prior to use.
- Growing media/propagating media that is sourced from a non-NIASA accredited growing media supplier requires treatment, or pathogen testing and where pathogens are detected – treatment, prior to use.
- Growing media/propagating media prepared on-site which includes components that pose a risk of contamination, for example river sand, **must** be disinfested using an approved NIASA disinfestation procedure.
- Growing media/propagating media **must** be stored in a manner to prevent contamination prior to use.

A.13.2.3 Seed, budwood and scion material

Use of infected propagation material can result in infection of propagated plants.

Steps **must** be taken to minimise the risk of sale of propagated plants that are infected with Group 1 and 2 viroids and other pathogens.

See [SCHEDULE 1](#) for information on Group 1 and 2 viroids and non-viroid pathogens.

A.13.2.3.1 Seed

Minimising the risk of Group 1 viroid infection from seed

In order to minimise the risk of sale of propagated plants infected by Group 1 viroids, seed **must** be sourced from:

1. An area or a place that has been declared free of Group 1 viroids, as evidenced by a government phytosanitary certificate or government area freedom declaration; **OR**
2. from trees ('multiplication trees') that have been tested and found to be free of Group 1 viroids; **OR**
3. propagated plants **must** be in-line tested prior to consignment and found free of Group 1 viroids.

See section [A.13.4 Testing for the presence of Group 1 viroids in multiplication trees or propagated plants](#).

Further information

- Testing of multiplication trees for Group 1 viroid infection prior to material use minimises the risk of infected plants being produced and detected well into the production cycle and batches of plants using an infected source material being rejected for certification.

- In-line testing is required where a plant is to be propagated using nurse seed for clonal rootstock, or seed used directly as rootstock, or includes budwood or scion material from a multiplication tree that has not been tested for Group 1 viroid infection.
- Trees that are infected with avocado sunblotch viroid (a serious Group 1 viroid) do not always show symptoms of infection. Seed collected from infected trees that do not show symptoms of infection poses a greater risk of disease transmission to propagated plants.

Minimising the risk of Group 1 and Group 2 non-viroid pathogen infection from seed

Phytophthora cinnamomi (*Phytophthora*), a serious Group 1 non-viroid pathogen, can enter wind-fallen fruit through prolonged ground contact and grow into the seed.

To address the risk of *Phytophthora* infection, it is recommended that seed to be used for plant propagation should either originate:

1. from fruit that is collected while still attached to the tree;

Further information

- Care must also be taken to prevent seed decay from fungi belonging in the *Botryosphaeriaceae* (a Group 1 non-viroid pathogen), the *Colletotrichum* species complexes (Group 2 non-viroid pathogens), or the *Rhizoctonia solani* complex (a Group 2 non-viroid pathogen). Therefore, only take seed from fruit that is free from symptoms of disease.
- Only select material that is present at a height greater than 100cm from the ground surface. This will reduce the risk of infection by *Phytophthora* (a Group 1 non-viroid pathogen) from contamination by rain splash from the soil surface.

OR

2. be heat treated prior to use in a way that addresses the risk of infection.

Further information

- Treatment is by immersion in hot water at 50°C for 30 minutes to eliminate any infection by *Phytophthora*. Temperature control must be precise as seed will lose viability at 52°C. Poor germination may occur if overheating occurs.
- It is recommended that after seed extraction and heat treatment, seed is immediately cooled by immersing in clean, cold water.
- Chemical dips are not a suitable disinfestation method as they do not eradicate pathogens that may be present within the seed.

Extracting and storing seed

Seed is best extracted when fruit is hard green, which will also remove the soft seed coat. Seed from immature fruit can cause the newly emerged leaves to be white and malformed (albinism). Using ripe (ready to eat) fruit makes the seed coat very difficult to remove.

SCHEDULE 2: EXAMPLE RECORD SHEETS

The following recording sheets are examples of how the mandatory record keeping for NIASA can be achieved.

There is no requirement to use these sheets but they indicate the information that **must** be kept in accordance with the NIASA Avocado Nursery Stock Specification Appendix.

Records must be made available to the Auditor when requested.

- Avocado Nursery Stock Specification Propagation Material Record - (Example 1)
- Avocado Nursery Stock Specification Propagation Material Record - (Example 2)
- Avocado Nursery Stock Specification Propagation Material Source Material Supplier Record - (Example 1)
- Avocado Nursery Stock Specification Propagation Material Source Material Supplier Record - (Example 2)
- Avocado Nursery Stock Specification Multiplication Block Record (Group 1 viroid tested block) - (Example)
- Avocado Nursery Stock Specification Crop Monitoring Record - (Example)

Avocado Nursery Stock Specification Propagation Material Record

Example 1

Accredited Business name: _____

Collection Details						
Collection date	Site address	Block name/Code	Viroid tested Multiplication Block?	Type of Material collected	Cultivar	Material amount and batch code
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		
			<input type="checkbox"/> Yes OR <input type="checkbox"/> No	<input type="checkbox"/> Seed OR <input type="checkbox"/> Budwood/scion		



Avocado Nursery Stock Specification Propagation Material Record

Example 2



Accredited Business name: _____

Propagation Material Site Address: _____

Collection details					
Collection Date	Block Name/Code	Viroid tested Multiplication Block?	Type of Material collected	Cultivar	Material Amount and Batch Code
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Seed <input type="checkbox"/> Budwood/scion		

CHECKLIST: Avocado Nursery Stock Specification

Applicable to businesses seeking Avocado Nursery Stock Specification accreditation **in addition** to meeting other NIASA production nursery accreditation requirements

SEED, BUDWOOD AND SCION MATERIAL

Seed

A *propagation material record* is maintained that identifies the source/s of seed for plant propagation, and its cultivar

Seed is stored under appropriate storage conditions

Batches of seed are labelled in a manner that allows traceback to the *propagation material record*

The production nursery has a system in place to identify the Group 1 Viroid test status of the seed

Needs Attention	Being Upgraded	Satisfactory	Complies Fully	Doesn't Apply

Records must be sighted by the Auditor

Comments:

Scion and budwood material

A *propagation material record* is maintained that identifies the source/s of scion material or budwood used for plant propagation, and its cultivar

Material is stored under appropriate storage conditions

Batches of material are labelled in a manner that allows traceback to the *propagation material record*

The production nursery has a system in place to identify the Group 1 viroid test status of the material

Needs Attention	Being Upgraded	Satisfactory	Complies Fully	Doesn't Apply

Records must be sighted by the Auditor

Comments:

CHECKLIST: Avocado Nursery Stock Specification *Continued*

Labelling of propagated plants

Each propagated plant carries a label or code that links the seed/budwood/scion material used back to the *propagation material record*

Each propagated plant carries a label or code that identifies the plant's rootstock and/or scion

Propagated plants which require in-line testing for Group 1 Viroids are identified

Needs Attention	Being Upgraded	Satisfactory	Complies Fully	Doesn't Apply

Comments:

TESTING FOR GROUP 1 VIROIDS

Propagated Plants

(Tick which box or boxes apply)

Propagated plants are entirely comprised of materials sourced from a place that has been declared free of Group 1 Viroids

Propagated plants are entirely comprised of materials from Group 1 Viroid tested Multiplication Blocks

Propagated plants are entirely comprised of material from a place that has been declared free of Group 1 Viroids and material from a Group 1 Viroid tested Multiplication Block

Propagated plants contain material that has not been sourced from a Group 1 Viroid tested Multiplication Block or a place that has not been declared free of Group 1 Viroids

Tick	Action
	Maintain evidence of declaration of freedom
	Multiplication block testing for Group 1 Viroids <i>(or In-line testing of propagated plants for Group 1 Viroids)</i>
	Multiplication block testing for Group 1 Viroids and evidence of declaration of freedom <i>(or In-line testing of propagated plants for Group 1 Viroids)</i>
	In-line testing of propagated plants for Group 1 Viroids.

Comments:

CHECKLIST: Avocado Nursery Stock Specification *Continued*

Evidence of area freedom from Group 1 Viroids

The production nursery relies upon materials sourced from a place that has been declared free of Group 1 Viroids and maintains evidence of declaration of freedom

Needs Attention	Being Upgraded	Satisfactory	Complies Fully	Doesn't Apply

Comments:

Multiplication block testing for Group 1 Viroids

A Group 1 Viroid tested *multiplication block record* is maintained for each multiplication block that identifies:

- the name of the owner of the property
- the property address
- a unique name or code for block
- an aerial or satellite image of the block on the source property with a GPS coordinate
- the type of trees present to cultivar
- the number of trees on the block with the number of rows present and number of trees per row

The production nursery has a system in place to identify each tree in the block for sampling and testing purposes

The production nursery maintains records of testing of all trees present in the multiplication block which can be linked to the *multiplication block record*

All trees in each block have been tested and found free of Group 1 Viroids within the past 5 years

Needs Attention	Being Upgraded	Satisfactory	Complies Fully	Doesn't Apply

Records must be sighted by the Auditor

Comments:
