



Australian Citrus Nursery Certification Scheme

Nursery Operators Manual

Version 1.0

Australian Citrus Propagation Association Incorporated





Australian Citrus Nursery Certification Scheme

Nursery Operators Manual

Introduction	1
Certification overview.....	2
Rootstocks	3
Scions	3
Tree Separation/hygiene:	4
Aphid control.....	4
Dispatch.....	5
Tree Certificates	5
Audit Process:	6
Recommendations	7
Basic checklist for certification	8
Certified propagule sources	9
Approved budwood source	11

Introduction

The Australian Citrus Nursery Certification Scheme has been formed to provide an auditable system to identify the source of propagation material in trees sold to citrus growers and retailers. This system will enable a purchaser to have a reasonable assurance that the trees have been grown using the cleanest propagation material available.

The primary goals of certification are to:

1. Provide a traceable path from the end product (a tree ready for planting) back to the source of the propagation material
2. Ensure the health status of the tree is not compromised between receiving the propagation material and dispatching the tree

Certification does NOT regulate tree quality parameters. It purely monitors the usage of certified propagation material used in the production of the tree(s). Purchasers must make their own decisions on the quality of the tree based on tree physical characteristics and nursery operations. The Nursery Industry Accreditation Scheme (NIASA) is well suited to assure other quality parameters are met. Ideally all trees would be ACNCS certified and grown in a NIASA accredited nursery.

As many graft transmissible citrus diseases are symptomless in certain hosts, and/or may not show symptoms for some years (eg reduced vigour and yield), the only way to ensure freedom from these diseases is to certify the source of the propagation material. All certified suppliers of propagation material must meet minimum requirements to prove the propagation material has been tested for the major citrus pathogens.

Inclusion in the Certification scheme will initially be voluntary for nurseries, however it is expected that demand for trees grown using certified propagation material under a regulated system will ensure most nurseries register with the scheme. The Australian citrus industry will be actively promoting the use of certified material for all plantings, and increasing awareness of the biosecurity issues surrounding citrus trees (eg Citrus Greening disease, Orange Stem Pitting tristeza, Citrus Canker etc) will make the purchase of certified trees a sound commercial decision for citrus tree retailers.

The ACNCS will be operated by the Australian Citrus Propagation Association Inc, which has been responsible for ensuring the best available source of citrus seed and budwood has been available to Australian nurseries since 1928.

This manual outlines the minimum procedures required to produce certified trees.

Certification overview

- A nursery will be registered as a certified nursery if it complies with the requirements listed in this manual
- A registered nursery may produce both certified and non-certified trees, provided they follow the appropriate separation protocols
- A registered nursery can apply for a tree certificate at time of sale. This is provided by ACNCS as detailed below
- Certified trees can be sold without a tree certificate; however ACNCS will be encouraging citrus growers and retailers to request tree certificates when purchasing trees to prove the trees are certified.

To achieve **certified nursery status** the following must be complied with.

1. Documentation systems must be compliant with certification requirements, and kept in a professional and organised manner to enable yearly auditing.
2. Separation systems must be in place for trees in the nursery, to prevent the mixing of certified and non-certified trees.
3. ALL staff working with certified trees must be trained in the procedures relevant to certification, as appropriate for the tasks they perform.
4. Access to certification records must be given to an auditor as required, on an annual basis and occasionally at random.

To obtain a **tree certificate** the following must be complied with

1. The nursery must be registered as a certified nursery
2. The request for a certificate must be made on the appropriate form.
3. The numbers of seed and buds purchased from certified sources must match the numbers of trees being certified. Proof of purchase will be required.
4. The records associated with this certificate will be audited to ensure compliance.

Rootstocks

The following procedures must be adhered to:

1. All seed for certified and approved trees must be sourced from a certified supplier.
2. Seed order forms must be retained as proof of order.
3. File the suppliers dispatch note for the seed when received as proof of seed source.
4. Allocate a batch number to each batch of seed sown to identify it as it moves through the nursery process. The format of this code is up to each operator, but it must be clearly legible, and provide a discrete identification for each batch.
5. Record details of the number of seedlings potted up for each batch on the Rootstock Propagation Record.
6. Each batch of trees must be distinctly labelled to identify the batch code.

Scions

1. Certified trees must be budded using budwood from a certified source.
2. Approved trees must be budded using budwood from an approved source.
3. Copies of budwood order forms and invoices should be kept to prove the source of budwood.
4. At budding rootstock batch identification must be transferred to the Scion Propagation Record.
5. Budwood invoice numbers must be recorded on the Scion Propagation Record to allow traceability of the bud source.
6. Each scion batch must have a discrete batch number to clearly identify it.
7. This batch number must be clearly marked on durable, legible labels which clearly identifies the batch.

Tree Separation/hygiene:

1. Each batch of trees for certification must be physically separated by at least 0.5 metres and/or a physical barrier to ensure batches are not mixed up.
2. All trees for certification must be physically separated from all non-certified trees by at least 2m, preferably in a separate structure or area of the nursery.
3. All cutting equipment (secateurs, budding/grafting knives, knives used for cutting planting bags etc must be sterilised with a sodium hypochlorite solution as follows:
 - a. Equipment must be sterilised before use, between each discrete batch of trees, and approximately every two hours while working.
 - b. A mixture of liquid sodium hypochlorite (swimming pool chlorine) 12.5% diluted 1:10 with clean water is to be used.
 - c. The equipment must be free of excess plant matter prior to dipping.
 - d. A minimum 10 second dip is required.
 - e. The equipment may be rinsed in clean water following the sterilisation process.
 - f. The chlorine solution should be changed at least every 4 hours or when it is visibly dirty, and must be kept out of direct sunlight as much as possible to prevent deactivation of the active ingredient.

Aphid control

Aphids can carry citrus tristeza virus from non-certified trees or nearby citrus into certified trees. A routine pest monitoring system (weekly or more frequently) must be in place for certified trees – monitoring must be recorded. Any aphid infestations must be immediately eradicated.

Dispatch

A Dispatch pro-forma has not been supplied as most nurseries will have their own internal dispatch forms or stationery. To comply with the certification requirements however, this dispatch note must specify:

1. Scion and rootstock batch numbers
2. Full variety names for scion and rootstock
3. Name and delivery address of customer
4. Number of trees
5. Dispatch date
6. Dispatch note number

Tree Certificates

Once a dispatch note has been created, fax/email a copy to the ACNCS office with a Tree Certificate request form (Appendix 1). If the details of the request comply with ACNCS records, a Tree Certificate (Appendix 2) will be issued and faxed/emailed back to the nursery.

ACNCS will charge a fee for each certificate. All fees will be set annually and posted on the Certification page of the ACNCS website and to each registered nursery.

Audit Process:

- A scheduled audit of each certified nursery will take place once a year. The auditor will book a time for the audit in advance.
- In addition, a number of certified nurseries will be selected at random for an unscheduled second audit.
- If ACNCS suspects for any reason that a breach of the Certification conditions has occurred, it may schedule a surprise audit.
- The audit will take the following format:
 - Prior to arrival the auditor will select a tree certificate at random from the copies held in ACNCS files
 - The nursery must be able to produce all records associated with this tree certificate, proving the source of the seed and budwood, including
 - Dispatch note
 - Scion propagation record
 - Budwood order form
 - Rootstock propagation record
 - Rootstock seed order form
 - Inspections of the nursery will take place to determine the requirements for segregation are being satisfied
 - The auditor will interview the main staff of the nursery to ascertain the methods used to ensure compliance with certification are being carried out.
- If all is compliant, the nursery will receive certified status for another year, until the date of the next audit.
- If a significant non-rectifiable breach in traceability or other conditions is found, the recipient of the trees affected by the breach will be notified by ACNCS. An additional 3 tree certificates will be selected for audit - if any one of those fail to comply certification will be suspended for 12 months. No trees currently in the nursery will be eligible for certified status.
- A list of all certified nurseries will be posted on the ACNCS website and in the Australian Citrus News.
- All scheduled audits will be at full cost to the nursery.

Recommendations

1. Record the invoice number on seed sowing records. This will prove the number of seedlings matches with the certified seed purchased. The seedlings can be identified by unique batch number, provide this is also recorded on the sowing record.
2. Keep records of any movements of this batch of seedlings, including number of seedlings obtained, trees discarded/died, and location in nursery.
3. Record the budwood invoice number and rootstock batch number on budding records. Again, a batch number can be used, provided it can be matched up with the invoice number.
4. Keep records of any movements of this batch of trees, including number of successful/failed buds, rebuds, trees discarded/died, and location in nursery.
5. Physically separate certified and non-certified trees. Ideally, use a different coloured label for certified and non-certified trees, and keep them in a completely separate section of the nursery if possible.
6. Keep all paperwork in lever arch folders and neatly organised. This makes the audit process easier, and creates less chance of lost paperwork compromising certification status. Keep copies of tree certificates in the same folder as the other records.

Basic checklist for certification

To obtain nursery/tree certification the following basic requirements must be met:

- Documentation systems orderly, legible and complete
- Records kept of all seed and budwood ordered and received
- Seed and budwood order/invoice number traceable to each batch of trees
- Certified and non-certified trees kept physically separate
- Cutting tools sterilised between batches of trees
- Aphid control program in place and effective
- Staff training program in place and effective
- Access given to auditor to check traceability system

Certified propagule sources

Only seed and budwood sourced from suppliers approved by the ACNCS may be used to produce certified trees.

Seed

A certified seed source must meet the following conditions:

- Trees must be clonally propagated from a proven seed clonal line
- Trees must be grown in a dedicated area specific to the production of citrus seed.
- Trees must be managed for premium seed production
- All trees must be routinely tested for trueness to type
- All trees must be indexed for Psorosis by an experienced citrus virologist/pathologist once every 10 years by biological indexing on Symons sweet orange indicator plants. Trees testing positive must be removed.
- All cutting equipment must be sterilised between varieties and before coming into the seed block.
- Once harvested and extracted, seed must be hot water treated at 51.6 degrees Celsius for 10 minutes, followed by a sodium hypochlorite dip at 5000ppm for 2 minutes.
- Following drying to suitable storage levels, the seed should be treated with an appropriate fungicide to prevent storage moulds.
- All seed batches must be sampled and the samples germination tested to ensure trueness to type and satisfactory germination percentages.

Certified seed sources

Auscitrus

Silver City Hwy and River Road
Dareton NSW

SACIS

Monash Vine Improvement Block
Monash SA

QCIS

Bundaberg/Mundubbera Qld

Budwood

A certified budwood source must meet the following conditions:

- Trees must be clonally propagated from a known clonal line
- Trees must be grown in a dedicated area for the production of citrus budwood. Harvesting from commercial orchards is not acceptable.
- All trees must be routinely tested for trueness to type by a qualified person experienced in citrus varieties.
- All trees must be indexed by a qualified and experienced citrus virologist/pathologist as follows:

Pathogen	Budwood varieties tested	Frequency of testing	Method
Citrus viroids	All	Every 3 years	Biological indexing on Etrog citron indicator plants Suspects from biological indexing tested by sequential PAGE or RT-PCR,
Citrus tristeza virus	Grapefruit	Annually	Biological indexing on WIL, / Molecular testing - alternate years
Citrus psorosis virus	All	Every 10 years	Biological indexing on Symons sweet orange indicator plants
Citrus tatterleaf virus	Lemon + varieties on tolerant rootstocks	Every 10 years	Biological indexing on rusk citrange indicator plants

- Trees testing positive for any of these pathogens must be removed.
- All cutting equipment must be sterilised with sodium hypochlorite before entry to the block and between varieties and patches.
- A monitoring and control program for citrus aphids must be in place to minimise the risk of infection with Citrus Tristeza virus by aphid vector transmission.
- High level biosecurity protocols must be in place to minimise the risk of pathogen infection. Access must be limited to essential personal only, no plant material is to enter the source blocks, equipment entering is to be clean and free of plant material, fencing for public access control is to be erected where appropriate.

Certified budwood sources

Auscitrus
Silver City Hwy and River Road
Dareton NSW

Approved budwood source

Where insufficient budwood is available from a certified source for a particular variety on a particular date, it will be permissible for the nursery to use budwood from existing nursery trees under the following conditions:

1. An official written order was placed for the certified budwood and notice received in writing of the inability to supply.
2. The budwood must only be sourced from trees that can achieve full certified status (removing the budwood will not affect the certified status of these trees). As with all work on these trees, secateurs must be sterilised before use and between batches.
3. Budwood can only be harvested from batches of trees that are no older than two years from budding.
4. The source of the budwood (ie nursery trees - batch number) is to be recorded on the Scion Propagation record.
5. Trees propagated using this budwood must be physically separated from fully certified trees
6. The application for a Tree Certificate states the budwood came from nursery trees (including batch numbers of the source trees).
7. ACNCS will provide a Tree certificate clearly stating the trees are propagated from approved grade budwood.



Australian Citrus Nursery Certification Scheme

Application for Nursery Tree Certificate

Nursery:

Certified Nursery number:

Purchaser:

Address:

.....

.....

Variety	Invoice #	Rootstock	Invoice #	Quantity	Grade

Grade A: Produced using certified budwood that has been tested for known graft transmissible diseases

Grade B: Produced using approved budwood produced in the nursery, and NOT tested for graft transmissible diseases.

.....
Applicant name (please print)

.....
Date

.....
Signature



Australian Citrus Nursery Certification Scheme

Nursery Tree Certificate

Certificate Number YEAR-XXXXXX

This document certifies that the following trees have been produced under the guidelines of the Australian Citrus Nursery Certification Scheme:

Nursery: Nursery Name
Address: Street address
Address
Town State Postcode

Certified Nursery number: STATEXXXX

Purchaser: Growers Name

Variety	Rootstock	Quantity	Grade

Grade A: Produced using certified budwood that has been tested for known graft transmissible diseases

Grade B: Produced using approved budwood produced in the nursery, and NOT tested for graft transmissible diseases.

.....
Authorised administrator

.....
Date



Australian Citrus Nursery Certification Scheme
Registered Nursery Certificate

This document certifies that

Nursery Name

Nursery address

Nursery address

Registered nursery no. XXXX

Is a registered citrus nursery under the guidelines of the Australian Citrus Nursery Certification Scheme.

Period of registration:

From

To.....

.....
Certification auditor

.....
Date