Department of Agriculture and Food
AGWEST Plant Laboratories

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Registered Seed Potato Scheme Production Rules

Western Australian Seed Potato Producers Committee

January 2015
Issue No. 7.1

NOTE: This document is currently under review. For further information, contact DDLS-SPU@dpird.wa.gov.au

Supporting your success

Seed Potato Certification contacts

Scheme Manager, South Perth

Mike Davies michael.davies@dpird.wa.gov.au
+61 (0)8 9368 3505

All paperwork relating to seed potato certification should be submitted to the administration email address. This address is monitored by inspectors to provide continuity.

Seed Potato Unit DDLS-SPU@dpird.wa.gov.au

Local Potato Certification Officers (PCO)

Janine Duncan – A/Senior PCO janine.duncan@dpird.wa.gov.au
Manjimup +61 (0)8 9777 0180
0436 611 316

Glenn Van Der Schaaf glenn.vanderschaaf@dpird.wa.gov.au
Albany +61 (0)8 9892 8419
0459 871 732

Amy Parry amy.parry@dpird.wa.gov.au
Perth +61 (0)8 9368 3311
0428 497 566

This document is authored by the Department of Primary Industries and Regional Development (DPIRD) in consultation with the Western Australian Seed Potato Producers Committee (WASPP), the Potato Industry and growers of seed, ware, and processing potatoes.

Contents

Western Australian Registered Seed Potato Scheme

1. Introduction

The Western Australian Registered Seed Potato Scheme ('the scheme') is an industry cooperative scheme. The Department of Agriculture and Food, Western Australia, through its AGWEST Plant Laboratories business unit, administers the scheme and enforces industry agreed production and marketing guidelines. AGWEST Plant Laboratories inspectors undertake inspections of the growing crop, provide advice and register seed crops which meet the quality standard.

Western Australia is isolated from the rest of the world by sea and eastern Australia by desert. The area was settled by Europeans in 1829. Prior to that time indigenous Australians were nomadic hunters and gatherers with apparently little trading contact with other areas.

As a result of the isolation and the early introduction of quarantine Western Australia is free of many of the world's most serious pests and diseases including those of potato. The serious potato pests and diseases shown in Table 1 have not been recorded in potato seed production districts in Western Australia.

Table 1 Pests and diseases which have not been recorded in WA seed potato production districts

Common name	Scientific name
Potato cyst nematode	*Globodera rostochiensis*
Potato cyst nematode	*Globodera pallida*
Late blight (A1 & A2 mating strains)	*Phytophthora infestans*
Phoma leaf spot	*Stagonosporopsis andigena*
Bacterial wilt (brown rot)	*Ralstonia solanacearum*
Potato wart	*Synchytrium endobioticum*
PVY (necrotic strains)	Potato virus Y (necrotic strains)
Ring rot	*Clavibacter michiganensis* subsp. *sepedonicus*
Rubbery rot	*Geotrichum candidum*
Skin spot	*Polyscytalum pustlans*
PSTVd	Potato spindle tuber viroid
Mop-head or mop-top	Potato mop-top virus
PVV	Potato virus V
BCTV	Beet curly top virus
PVS (Andean strain only)	Potato virus S
Tobacco rattle virus	Tobacco rattle virus
PMV	Potato virus M
Smut	*Angiosorus solani*
Andean potato mottle virus	Andean potato mottle virus
Colorado beetle	*Leptinotarsa decemlineata*
Andean potato weevil	*Premnotrypes solani*
Potato tuber nematode	*Ditylenchus destructor*
Serpentine leafminer	*Liriomyza huidobrensis*

1.1 How the system operates

Registered seed potatoes are produced over a maximum of seven field generations (Table 1) from minitubers, microtubers or plantlets produced in accredited laboratories from pathogen-tested stocks maintained in tissue culture. The term 'Registered' is not restricted to any one generation. Seed from each generation is registered based on the standards set for the relevant generation. Any of the seven generations (G1 to G7) may be sold as Registered seed (e.g. Registered seed generation 4, Registered seed generation 5, and so on).

Table 2 Field generations of registered seed potatoes

Seed planted Year	Growing crop	Seed harvested
Minitubers, microtubers or plantlets (G0)	1	Generation 1
Generation 1	2	Generation 2
Generation 2	3	Generation 3
Generation 3	4	Generation 4
Generation 4	5	Generation 5
Generation 5	6	Generation 6
Generation 6	7	Generation 7*

*In exceptional circumstances generation seven (7) harvested registered seed can be used to produce an eighth generation of registered seed. The generation seven (7) seed source must achieve a crop rating one or two, have a virus level of <0.1% by laboratory test and generation eight (8) must be printed on the seed label.

1.2 Initial stocks

All potato stocks (existing and new cultivars) acquired from whatever source for use as starting material in this scheme must be visually free of all diseases before being pathogen-tested for the presence of the following diseases, either in quarantine, or by a testing authority approved by the ASPC:

- Blackleg and related soft rots caused by Erwinia spp.
- Bacterial wilt, caused by Ralstonia solanacearum (formerly Pseudomonas solanacearum)
- Ring rot, caused by Clavibacter michiganensis subsp. sepedonicus
- Powdery scab, caused by Spongospora subterranea
- Black scurf, caused by Rhizoctonia solani
- Silver scurf, caused by Helminthosporium sp.
- Gangrene, caused by Phoma exigua
- Wilt, dry rot, caused by Fusarium spp.
- Wilt, caused by Verticillium spp.
- Black dot, caused by Colletotrichum coccodes
- Potato leafroll virus (PLRV), potato virus A (PVA), potato virus M (PVM), potato virus S (PVS), potato virus X (PVX), potato virus Y (PVY), tomato spotted wilt virus (TSWV), and potato spindle tuber viroid (PSTV)

- Calico, caused by alfalfa mosaic virus
- Late blight, caused by *Phytophthora infestans*
- Common scab, caused by *Streptomyces* sp.

2 Application for the production of Registered Seed

2.1 Definition of registration

Registration of seed potatoes is strictly limited to the act of endorsing that the seed potatoes have been produced in accordance with these Production Rules for the Western Australian Registered Seed Potato Scheme. The method of determining compliance with standards is visual inspection of the growing crop. No warranties, expressed or implied, of quality factors not specified in the rules of the Scheme or merchantability or fitness for any particular purpose is given by AGWEST Plant Laboratories in respect to G1, G2, G3, G4, G5, G6 or G7 Registered seed produced. AGWEST Plant Laboratories disclaims all responsibility and liability for any incorrectness and inaccuracy caused or contributed to by any circumstances beyond its control.

2.2 Application

Applications for inspection of crops under the Western Australian Registered Seed Scheme must be made on the official form (Appendix 5).

(a) Growers wishing to participate in the scheme must make application giving details of:

  (i) crop area (hectares)

  (ii) variety and generation

  (iii) source of seed (label colour and serial number)

  (iv) date of planting and estimated harvest.

(b) A location plan of plantings must be included with the application. This plan should show the following:

  (i) plot number

  (ii) varieties and generations, plus the number of minitubers sown or hectares of each later generation sown

  (iii) north point

  (iv) identifiable landmarks.

(c) All areas on the property on which potatoes are grown must be disclosed and shown to the inspector at the time of the first inspection.

(d) Labels from seed used to plant seed crops must be returned with the application form when seed is purchased from external sources. Labels of crops sown with retained seed must be available for the inspector to sight during crop inspections.

(e) Where seed crops are grown on leased properties, approval must be obtained from the property owner(s) for AGWEST Plant Laboratories inspectors to enter the property for the purpose of carrying out crop inspections.

(f) Application forms must be returned within one (1) week of first crop sowing. In consultation with an inspector, subsequent plantings can be added to initial application and map.

(g) Application forms are available from local regional inspectors or AGWEST Plant Laboratories at agric.wa.gov.au/agwestplantlabs under potato seed certification.

2.3 Source of seed

Growers may choose the seed generation they intend to grow from any of the following:

(a) Minitubers, microtubers or plantlets — available from accredited laboratories.

(b) Registered 'blue label' or Certified* 'black label' seed of generations 1, 2, 3, 4 or 5 or Registered seed of generation 6 (G6) — which they have produced themselves or purchased from another seed grower. (* See guidelines of the 'Western Australia Seed Potato Certification Scheme' for definition of Certified seed.)

(c) Seed approved by an authorised officer of AGWEST Plant Laboratories.

(d) Where seed to be sown, including minitubers, was produced on another property, labels or the serial numbers of labels must be provided to the Senior Seed Certification Officer with the application for crop inspection.

(e) Where seed sown was produced on the same property, labels must be made available to the inspector on request.

2.4 Isolation

Note 1: Where isolation is expressed in metres below and in Figure 1, the isolation is required to be free from solanaceous species.

Note 2: Isolation distances described below are for crops submitted for inspection under the registered or certified schemes. Crops not submitted for inspection will be considered other crops and are required to meet the minimum isolation requirement for other crops in figure 1.

(a) All crops grown on the property including 'other crops' must be sown with Registered seed (i.e. up to and including G7) or Certified seed unless otherwise approved by an authorised officer.

(b) There must be a gap of at least one (1) metre between varieties when they are planted in the same row.

(c) G0 sown seed crops must be sown at least five (5) metres from G1, G2, G3, G4, G5 or G6 Registered 'blue labelled' sown seed crops and 50 metres from any other crop.

(d) G1 sown Registered 'blue labelled' seed crops must be sown at least two (2) blank rows from G2 seed crops, five (5) metres from G3, G4, G5 or G6 sown seed crops and 50 metres from any other crop.

(e) G2 sown Registered 'blue labelled' seed crops must be sown at least two (2) blank rows from G3, G4, G5 or G6 sown seed crops and 10 metres from any other crop.

(f) G3 sown Registered 'blue labelled' seed crops must be sown at least two (2) blank rows from G4, G5 or G6 sown seed crops and 10 metres from any other crop.

(g) G4 sown Registered 'blue labelled' seed crops must be sown at least two (2) blank rows from G5 or G6 seed crops and 10 metres from any other crop.

(h) G5 sown Registered 'blue labelled' seed crops must be sown at least two (2) blank rows from G6 seed crops and 10 metres from any other crop.

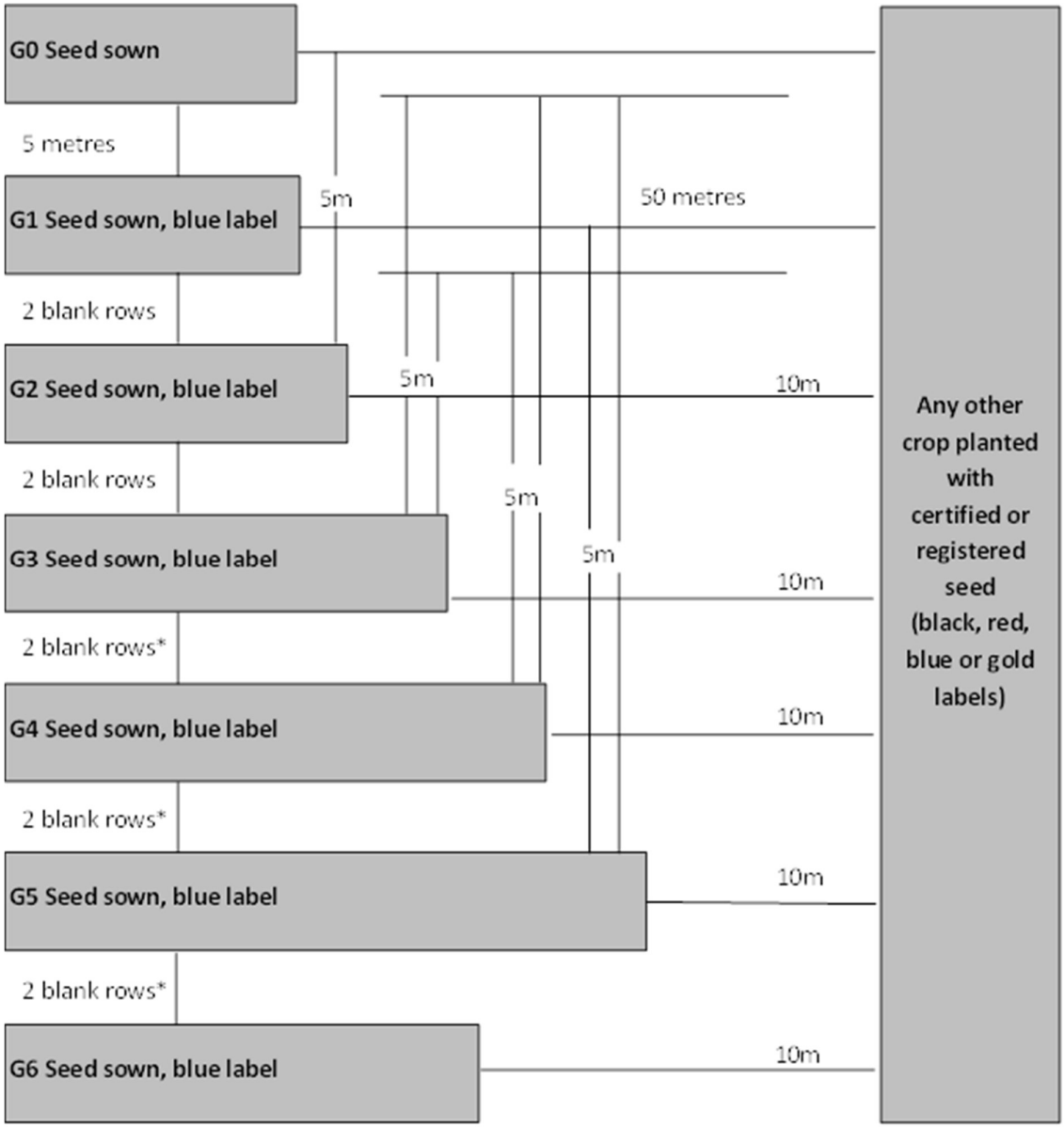
(i) G6 sown Registered 'blue labelled' seed crops must be sown at least 10 metres from any other crop planted with Registered and Certified seed.

(j) Isolation between G3, G4, G5 and G6 sown Registered 'blue labelled' seed crops is not required where three (3) consecutive years of virus testing of Generation 2 sown crops has shown contact viruses, PVS, PVX and PVY, are not present on the property.

(k) All plots must be clearly marked with pegs showing the variety, planting date and the seed class.

(l) Travelling irrigators are not to be used where they would pass from seed crops of a lower status to crops of a higher status unless sufficient unplanted area is left for the irrigator to pass through without contact by wheels or hoses.

(m) Crops failing to be adequately isolated from adjacent crops may be downgraded to the generation of the adjacent crop.



* See rule (j) above.

Figure 1 Summary of isolation rules

2.5 Rotations

(a) Flooding swamps, approved by the certifying authority, do not require rotation.

(b) Dryland sites on which seed generations one to three (G1–G3) harvested material are produced, must not have grown potatoes, or other solanaceous crops for a minimum of five (5) years. Land on which subsequent generations are harvested (i.e. G4 to G7) must not have grown potatoes or other solanaceous crops for a minimum of three (3) years.

(c) The rotation requirements for crops harvested G4 to G7 may be reduced to two (2) years on application to the certification authority provided that an official inspection of the site in the previous year reveals no self-set potatoes exist on the site.

(d) The certifying authority must be satisfied that the land on which the seed crop is to be grown does not have a cropping history which would increase the risk of disease carryover.

2.6 Disease control

(a) There must have been no bacterial wilt (*Ralstonia solanacearum*) inside a 5km radius within the previous five (5) years.

(b) Aphids should be controlled by use of appropriate insecticides.

(c) Prior to the first inspection diseased plants should be removed from the seed crop as soon as they can be clearly identified.

3 Inspections of the growing crop

3.1 Field inspections and tolerances

(a) Growers are responsible for notifying AGWEST Plant Laboratories when their crop(s) are at a suitable stage of growth for inspection, i.e. 10 days prior to row closure of their crop(s). As a guide, inspectors must be able to see the base of plants in the fourth row when looking across the crop.

(b) There will be a minimum of two inspections of the growing crop by inspectors from the certifying authority:

  (i) before row closure (i.e. 3–5 weeks after emergence)

  (ii) close to, but before the crop starts to mature (senescence) or just prior to top removal.

  (iii) Applicants must ensure the inspector has completed these inspections prior to row closure and top removal or crop spray off.

(c) All areas on the property on which potatoes are grown must be disclosed and shown to the inspector at the time of the first inspection.

(d) Crops will be rejected if there is any evidence of bacterial wilt on the property at the time of inspection.

(e) Crops may be rejected if they show poor strike, unthrifty plants, undue growth of weeds, severe hail or frost damage, severe damage caused by or suspected to be caused by chemicals, or are too advanced for inspection. Crops may be rejected if the inspector is satisfied that the incidence of one or more diseases or weeds is such as to adversely affect the quality of the seed regardless of whether the weed or disease is specifically listed in these rules.

(f) Self-sown plants are counted as foreign plants.

(g) Crops that fail to meet the following standards (Table 2) will not be registered.

(h) Aphids

If at the time of inspection, any aphids (green peach aphid, *Myzus persicae* or potato aphid, *Macrosiphum euphorbiae*) are found in the crop, the grower will be advised that aphid control has not been sufficiently effective and that steps must be taken to exert control over the aphids. If aphid numbers are considered excessive, the following action will be taken:

(i) A sample of 100 randomly selected leaves (a middle and lower leaf from 50 plants) will be examined for the presence of aphid colonies. A colony is defined as a leaf containing three (3) or more aphids of which at least two are wingless.

(ii) If more than five colonies are found, the crop will either be rejected immediately, or the grower may choose to submit a sample to test for potato leafroll virus (PLRV) and potato virus Y (PVY).

If excessive aphids are found at the first inspection leaves may be sampled at the second inspection and tested for aphid transmitted viruses. If excessive aphids are found at the second inspection tubers will be sampled at harvest and tested. The number of samples taken must be adequate to determine compliance with the tolerances set out in Table 2.

(i) Crops submitted for inspection may be rejected at any stage of growth.

(j) In certain circumstances, AGWEST Plant Laboratories inspectors may order destruction of foliage to avoid disease transmission.

(k) Samples of plants may be required for laboratory testing for pathogens at the grower's expense. The results of these diagnostic tests can be used as the basis of crop rejection.

(l) In the event of only part of a plot being acceptable as Registered, the Registered part must be harvested, graded, packed and labelled before the harvest of the rejected part.

(m) Irrespective of the generation, crops will be rated from 1 to 4, according to the following tolerances for foreign varieties, viruses, and other diseases:

Table 2 Maximum tolerances for diseases and foreign varieties

% of plants	Rating 1		Rating 2		Rating 3		Rating 4	
at inspection	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Foreign varieties	0.05	0.01	0.10	0.01	0.10	0.10	0.10	0.10
Virus diseases	#0.10	#0.01	#0.25	#0.10	1.00	1.00	4.00	4.00
Other diseases	0.25	0.10	0.50	0.25	2.00	2.00	2.00	2.00
Total diseased plants	0.25	0.10	0.50	0.25	2.00	2.00	6.00	6.00

Note: 0.10% = 1 plant in a thousand; 0.25% = 1 plant in four hundred.
All rating 1 and 2 crops must be 0% for potato virus Y (PVY) at the 1st and 2nd crop inspections.

(n) Any generation of seed intended for further multiplication in a seed scheme must be of a rating that is equal to or higher than that of the next generation. [Seed with a rating of 2, for example, cannot be upgraded to a rating of 1 in the subsequent generation.]

(o) The highest number rating in any category shall determine the overall rating for that crop (e.g. for a foreign variety rating of 1, virus rating of 2 and other diseases rating of 3, then the overall rating = 3).

(p) Any generation of seed may be sold as 'Registered seed' provided it meets the minimum 4 rating. Seed that fails to meet the minimum rating of 2 is not available for further multiplication in the Registered Seed Scheme.

3.2 Access for inspectors

Authorised AGWEST Plant Laboratories officers may inspect crops unaccompanied and without an appointment. However, officers will endeavour to make appointments whenever possible.

3.3 Potato cyst nematode (PCN)

Western Australia has Area Freedom for PCN.

Under no circumstances can seed be grown on land that has previously grown bulbs, corms, or tubers introduced from areas where PCN has been known to occur.

3.4 Roguing

Undesirable plants (self-sown, variety off-types and diseased) must be removed from crops prior to an inspection by an authorised inspector as they are sufficiently advanced to be identified as such. The whole plant, tops and tubers, must be removed from the paddock.

3.5 Virus testing

(a) All generation 2 sown crops will be tested just prior to leaf senescence for the presence of potato leafroll virus (PLRV), potato virus X (PVX), potato virus S (PVS) and tomato spotted wilt virus (TSWV) and potato virus Y (PVY). Approximately 350 leaves will be tested per grower with a minimum of 45 leaves tested per plot per grower.

(b) Generation 2 samples may be taken at first or second inspection at the growers' preference. First inspection samples detecting virus must have a second set of samples taken at the growers' expense to verify roguing has been successful.

(c) Growers opting to have other leaf or tuber samples taken from their crops for laboratory testing must either indicate the crops to be sampled on the application form, or inform their AGWEST Plant Laboratories inspector at the time of the first crop inspection. If requested, leaf samples will be taken during the second crop inspection and for tubers at post spray off or harvest. Laboratory analytical costs will be charged to the grower.

3.6 Registration

If the above tolerances (Table 2) are achieved, the seed crop becomes eligible for registration. In some cases, laboratory testing may be required to confirm quality for registration. Such testing will be at the seed grower's expense. Registration occurs when official labels are applied to containers.

Registration for Rating 4 seed lots will only be finalised upon the presentation by the seller to APL, of a signed declaration from the purchaser acknowledging that they have been made aware of the virus level in the crop and agree to purchase the seed on that basis. At this time official labels may be issued and Registration finalised.

4 Handling, packing and labelling

4.1 Handling and packing

(a) Seed potatoes are to be harvested, graded, packed, transported and stored in such a way as to preserve their identity and prevent any contact with other potatoes.

(b) Containers in which seed is stored and/or sold should be new or clean and not pose a disease or toxicity risk to the seed potatoes.

4.2 Tuber inspections

(a) Registered seed shall be graded.

(b) The Registered Seed Scheme does not prescribe minimum tuber standards for Western Australian markets, however the following applies:

(i) Tubers should be practically free of soil.

(ii) Tubers should be of good characteristic shape for the cultivar.

(iii) Tubers should be relatively free from visible disease and faults.

(iv) Tubers will normally be graded within the limits of 35g to 350g or as otherwise specified by the buyer.

(v) Tubers with sprouts in excess of 20mm length are not eligible for registration.

(vi) Tubers to be inspected by grower/exporter and sold by description recording defects on Form 424 PDF (Appendix 10).

(vii) Seed growers are delegated the responsibility for all post-harvest quality control procedures leading for final certification of seed.

(c) Registered seed exported overseas must meet minimum tuber standards specified in Appendix 9.

4.3 Disease/defect tolerances

(a) If at any time a quarantinable disease is found, the seed lot will be automatically precluded from being registered.

(b) Seed lots may be rejected if the inspector is satisfied that the incidence of one or more diseases or weeds is such as to seriously adversely affect the quality of the seed regardless of whether the weed or disease is specifically listed in these rules.

4.4 Labelling

(a) Seed from a Registered seed crop can be sold as Registered seed. An official Registered seed label must be attached to each container of seed sold and the labelling is to be carried out by the seed grower/exporter on the understanding that the seed grower guarantees the contents of the container to be produce of the crop which complied with the field crop inspection standards prescribed for Registered seed potatoes.

(b) Labels must not be re-used.

(c) All labels are serially numbered for traceability purposes.

(d) A summary of labels assigned to each seed lot must be provided on the Product Description form (Appendix 10) to the Seed Certification Authority within one month of labelling.

4.4.1 Domestic labels

(a) All seed retained for further multiplication within the seed scheme must be labelled with a blue label.

(b) Registered seed intended for the production of ware crops must be labelled with a gold label.

(c) Labels and lettering will be of a standard size and design as determined by the certification authority. It will include the following details:

- variety
- seed grower
- generation
- date harvested.

4.4.2 Export labels

(a) Labels used for export seed (gold labels) must have the following information printed on them:

- EXPORT Seed – Produce of Western Australia
- Lot no.
- Variety
- Seed grower
- Generation
- Crop rating
- Date harvested.

(b) Labels used for export seed (gold labels) may have additional information printed on them to comply with import conditions, Australian Department of Agriculture standards or to provide additional information to end users. Such information may include and is not limited to:

- Month packed
- Size
- Chemicals applied
- Approved certifier
- Endorsement by the certifying authority
- Definition of Certification, and grower's declaration
- Weight.

5 Other general rules

5.1 Records

Detailed records of the seed planted and the crop harvested must be kept for each generation. Separate records are required for each variety.

5.2 Hygiene management

- Access to seed crops should be limited to personnel authorised by the grower.
- All operations to be performed on seed crops of different generations must be ordered such that work commences on the crop of the highest status. Personnel and machinery must not move from a crop of a lower status to a crop of a higher status without sanitary precautions being implemented.
- It is particularly important that all machinery, sheds and bins are cleaned and disinfected between seasons and/or if a disease is found. Clean means free of all soil and debris. Disinfected means that a hospital grade disinfectant (used according to label instructions) has been applied after cleaning and left on the item for a period indicated on the product label.

5.3 Variety selection

Registered seed growers who have a selection program for the maintenance and improvement of varieties may grow small plots of such seed potatoes up to generation 10 providing:

- the plots meet the visual health and varietal purity standards set for G7 Registered seed
- the plots are clearly identified and kept separate by at least 50 metres from all other seed plots
- the area grown and varieties under selection are recorded on the application form
- the produce is not sold as Registered seed.

5.4 Breeding lines

Breeding lines derived from the National Potato Improvement and Evaluation Scheme (NaPIES) may be multiplied for up to two seasons by Registered seed growers for sale as Registered seed provided:

- They are kept separate by two (2) blank rows from G4 and G5 seed crops and 20 metres from G3 seed crops.
- They conform to the standards of visual health and varietal purity set for G5 Registered seed.

5.5 Significant crop failure

Growers will be required to provide evidence of the destination of potatoes from substantial areas of crop that has been rejected from certification.

Required documentation to substantiate approved disposal includes:

- Record of sales with documentary evidence from the purchaser detailing variety and tonnage:
  - fresh market
  - processing
  - export
- Crop maps that include GPS data (i.e. Whelan's)
- Copy of all Potato Marketing Corporation forms (form 19 RCD).

Rejected seed that is to be **dumped or fed to stock** must be done under supervision by the certifying authority (at the growers cost).

5.6 Failure to observe requirements of the National Standard

A grower who is suspected of failing to observe the requirements of the national standards governing the production of seed potatoes is required to provide to the certifying authority an entire set of documentation including the following:

- Seed Works Summary Sheets (see Appendix 8) for the total seed production for the current season including seed sold and kept for own use
- A summary of all non-seed production and sales with documentary evidence from the purchaser detailing variety and tonnage:
- fresh market
- processing
- export
- All TADS forms (see Appendix 7) or Product Description Forms (see Appendix 10) for all seed sold tuber inspections
- Crop maps that include GPS data (i.e. Whelan's)
- Copy of all Potato Marketing Corporation forms (form 19 RCD).

Failure to comply in providing this documentation to the satisfaction of the certifying authority, or where evidence is found of non-compliance, may result in the certifying authority suspending any authorised tuber inspection activities, ceasing any further processing of applications for the production of seed potatoes, withdrawal of official labels and cancellation of tuber inspections.

Growers who fail to observe the requirements of the National Standard governing the production of seed potatoes or, who act in any way against the successful implementation of the standard, may be excluded from the scheme.

Growers whose crops fail to meet the required standards for certification either partly, or wholly, in two successive years may also be excluded from the scheme.

6 Fees

Fees for inspection of seed crops will be determined annually and posted on the AGWEST Plant Laboratories website.

7 Notes on rules

7.1 How the standard operates

Registered seed potatoes are originally derived from minitubers, microtubers, plantlets or other approved planting material produced in accredited laboratories from pathogen-tested stocks maintained in tissue culture.

Seed potatoes can only be multiplied for up to a maximum of seven (7) generations, of which any generation may be sold as 'Registered' seed provided it meets the standard.

7.2 Initial stocks (Rule 1.3)

Potato stocks may originate from a number of sources, including:

- new material imported either as tubers or in tissue culture from overseas which has been pathogen tested by the Australian Department of Agriculture
- new potato varieties either selected or bred by agencies in Australia.

7.3 Pathogen-tested stocks (Rule 1.3)

Principle of pathogen testing

The production of high quality horticultural planting material is dependent on the use of pathogen-tested stocks to ensure that only high health material is released for further multiplication. The benefit of using pathogen-tested material is that it ensures a constant source of disease-free stock as the basis for further multiplication.

Pathogen-tested stocks of all the varieties in the scheme are maintained in vitro at either the Institute for Horticultural Development (IHD) at Knoxfield, Victoria, or at the Tasmanian Institute of Agriculture. This in vitro collection is derived from stock tested for the diseases listed on page 2.

Tubers are microscopically inspected for the presence of powdery scab before being tissue cultured.

The in vitro collection is not retested again for specific pathogens. The presence of contaminating fungi and bacteria is tested for annually on non-selective media when the material is multiplied for release to accredited laboratories.

Accredited laboratories (Appendix 2)

Pathogen-tested stock may be multiplied to produce plantlets and/or minitubers and microtubers in any laboratory accredited by the ASPC or its agents.

Laboratories in four states (New South Wales, Victoria, South Australia and Tasmania) are currently accredited to produce minitubers, microtubers, and plantlets. These are listed in Appendix 2.

Protocol for accreditation (Appendix 3)

Protocols for accreditation of laboratories are detailed in Appendix 3.

7.4 Disease status of selected paddocks (Rules 2.6 or 2.5)

Seed can only be produced on properties where the certifying authority is satisfied that there is no apparent risk of serious diseases. This will be established from historical records, appropriate soil sampling surveys (where required), and detailed knowledge of production practices on the farm and the surrounding catchment area and district.

7.5 Crop isolation (Rule 2.4)

The isolation requirements for each Registered seed generation are as presented in Figure 1.

All plots are to be clearly marked with pegs showing the variety, planting date and the seed generation.

There must be clear separation of at least one (1) metre between varieties when they are planted in the same row.

7.6 Field crop inspections (Rule 3.1)

Growers are responsible for notifying the certifying authority when their crop/s is/are at a suitable stage of growth for inspection. As a guide, inspectors must be able to see the base of plants in the fourth row when looking across the crop at the first inspection.

Registered seed crops must be inspected by an officer of the certifying authority at least twice during their growth:

- close to, or at flowering, and preferably before row closure
- close to, but before the crop starts to mature, or just prior to top removal.

The sample size is:

Crop area (ha)	Sample size
<4	A minimum of 2000 plants or where there are fewer than 2000 plants in the crop, inspect all plants.
>4	500 plants per hectare, with a minimum of 2000 plants.

Counts should include a traverse across the crop as well as along the rows.

All areas on the property on which potatoes are grown must be disclosed and shown to the inspector at the time of the first inspection.

All plots should be clearly labelled to define variety, planting date and generation.

Crops will be rejected if there is any evidence of bacterial wilt, potato cyst nematode (PCN), or spindle tuber viroid or other disease where the tolerances exceed Table 2.

Crops may be rejected if they show poor strike, unthrifty plants, undue growth of weeds, severe hail or frost damage, severe damage caused by or suspected to be caused by chemicals, or are too advanced for inspection.

Self-sown plants are considered to be foreign plants.

At the time of inspection crops must not exceed the listed permitted tolerances. Crops submitted for inspection may be rejected at any stage of growth.

In certain circumstances the certifying authority may order destruction of foliage to avoid transmission of diseases.

Plant samples may be required for laboratory testing for pathogens, and these may be at the grower's expense. The results of these tests can be used as the basis of crop rejection.

In the event that only a part of a paddock is accepted as Registered, then the rejected plants must be removed from the property before the harvest of the remaining crop. Alternatively, the Registered part must be harvested, graded, packed and labelled before the harvest of the rejected part with the approval of the certifying authority.

Undesirable plants (self-sowns, variety off-types and diseased) must be removed from crops as soon as they are sufficiently advanced to be identified as such. The whole plant, tops and tubers must be removed from the paddock.

7.7 Labels (Rule 4.4)

Growers must contact the certifying authority before grading and packing to request Registered seed labels. All generations of Registered seed must be labelled with official Registered seed labels.

Labels must be attached to each container of seed intended for Registration, at the time of grading and packing.

Sacks of seed potatoes must be sealed by sewing an official Registered seed label into the mouth of each sack in such a way that other seed cannot be introduced or substituted without damaging the label.

When Registered seed is packed into bulk containers and then loaded into a bulk truck the following conditions apply:

- Each container of seed potatoes must be labelled with a signed and dated (date packed) official label.
- Truck cleanliness — the bulk truck should be treated as a bulk bin and have a signed cleanliness declaration certificate.
- At loading of the bulk truck the labels are to be removed from the containers and only one label is to be given to the driver, to represent that lot of Registered seed. The seed grower keeps a record of the label numbers used.
- All labels removed from the containers are to be retained for audit purposes then destroyed.

Registered seed labels must be securely attached to prevent loss during transport. Records must be kept of label numbers used for each seed lot.

Labels must include all the details listed.

Growers are responsible for the safe storage and correct use of official labels. The use of official labels for other purposes than those intended may result in exclusion of the grower from the registration process.

7.8 Storage of seed (Rule 4.1)

Seed potatoes must be isolated from any ware tubers, and stored under conditions which are approved by inspectors of the certifying authority.

The Registered Scheme is predicated on the maintenance of high health status between generations of seed. It is important that seed generations be physically separated and that, wherever possible, bin covers be employed where bins are stacked to minimise contamination between upper and lower bins. Ideally, different generations/varieties should be held in separate storages.

Seed that has been repacked will not be recognised as Registered seed unless such packing maintains the identity and integrity of the seed as approved by the certifying authority.

8 General operational procedures

8.1 New growers

New growers must demonstrate their ability to meet the requirements of the Registered seed Scheme to the satisfaction of the certifying authority.

8.2 Access for inspectors

Inspectors from the certifying authorities may inspect crops unaccompanied and without an appointment. However, inspectors will endeavour to make appointments whenever possible.

8.3 Area Freedom for potato cyst nematode (PCN)

8.3.1 Phytosanitary measures to maintain PCN freedom

Regulations. The Biosecurity and Agriculture Management (Quality Assurance and Accreditation) Regulations 2013 prescribe conditions under which potatoes may enter WA from other Australian states and territories. Seed potatoes are prohibited from Victoria where PCN has been found and subject to restrictions from other states and territories other than Tasmania. Only seed from Tasmania, which has Area Freedom from PCN, is approved to enter Western Australia subject to quarantine conditions.

Extension advice to producers. Information relating to PCN symptoms available at: agric.wa.gov.au/potatoes/potato-cyst-nematode-western-australia

Information advising growers on appropriate farm biosecurity measures to prevent the introduction of pests, diseases and weeds onto their property is contained in Appendix 4.

8.3.2 Checks to verify PCN freedom is maintained

In line with Standard ISPM 8 of the International Plant Protection Convention the following checks to verify Area Freedom of PCN are carried out:

- Ad hoc inspection of exported consignments.
- Seed potato crops undergo two field inspections. The second inspection is in the later growing period when symptoms of PCN infestation can be seen by trained inspectors.
- Targeted fork testing of unthrifty plants is undertaken at the final field inspection of seed crops.
- Inspectors are required to notify DAFWA Plant Biosecurity to inform the NPPO of any occurrences of PCN.

8.4 Grading and packing

Seed potatoes intended for registration must be harvested, transported, graded, packed, and stored in such a way as to preserve their identity and limit cross contamination by diseases or varieties.

Seed graded on a harvester may be presented for inspection for registration if the tubers are practically free of soil. Paddock picked and hand-graded seed potatoes are only eligible for registration if approved by the certifying authority.

8.5 Grading seed off-farm

Where Registered seed requires a tuber inspection, approval to grade seed off-farm may be granted by the certifying authority if the following requirements are met:

- Each container of potatoes that is to be moved to the other grower's packing shed must be clearly labelled showing the grower's name, the variety, and the generation. See Appendix 6 for full list of grading sheds.
- The grader (all parts thereof) and surrounding floor area be cleaned of all loose soil, debris and potatoes prior to and after grading of the other grower's produce.
- The grader is to be washed and disinfected prior to and after grading the other grower's produce.
- All grading waste and soil collected under the grader are to be returned to the grower.
- Floor sweepings are to be disposed of in a dedicated pit or refuse tip.
- QA growers who are given permission to grade potatoes from another grower are to present such lots for normal tuber inspection.

8.6 Records

Detailed records must be kept and made available to the certifying authority as required. The produce may not be accepted for registration if accurate records are not maintained. These include such details as; source of seed and proof of purchase, variety, time of planting, paddock history, fertiliser and chemical applications, and harvest date.

8.7 Hygiene management

Seed growers and Certification Officers must ensure that a level of hygiene is adopted which will facilitate the production of high quality Registered seed.

- Access to seed crops should be limited to personnel authorised by the grower.
- All operations to be performed on seed crops of different generations should be undertaken such that work commences on the crop of the highest health status (i.e. G2 before G4). Personnel and machinery should never move from a crop of lower status to a crop of higher status without hygiene precautions being implemented.
- Travelling irrigators should not be used where they would pass from seed crops sown with G3, G4, or G5 seed to seed crops sown with G1 or G2 seed, unless sufficient unplanted area is left for the irrigator to pass through without contact by wheels or hoses.
- The headlands normally left for machinery movement must not be planted, and must be kept free of weeds.
- The packing shed should have a concrete floor.
- Lighting over the grading table should be to the satisfaction of the certifying authority.
- Agricultural chemicals and produce are not to be stored in the same area.
- Sprout suppressants are not to be used or stored in or near the potato grading or storage areas.
- The shed surrounds are to be kept tidy, free of rubbish and weeds.
- Soil and crop debris is not allowed to accumulate in sheds. Waste potatoes, soil and crop debris are to be regularly removed from the shed and surrounding areas and disposed of in a dedicated pit or waste disposal facility.
- Waste should not be returned to potato paddocks.
- All containers used for storage (e.g. bins) of seed should be washed between seasons, or more frequently as required.

- Machinery should be cleaned with a hospital grade disinfectant (approved sterilant) as required.
- A designated area should be provided for cleaning and disinfection of machinery and equipment.
- Packing sheds and machinery should be thoroughly cleaned between seasons.

Biosecurity measures to minimise pest and disease spread onto seed properties should be followed. Guidelines are outlined in Appendix 4.

Appendices

Appendix 1. Definition of terms

Accredited laboratory

Accredited laboratory means a laboratory approved by the ASPC to produce minitubers, microtubers and plantlets for further multiplication.

ASPC

Australian Seed Potato Council (ASPC) is the peak industry body ultimately responsible for the administration and operation of the Australian **National Standard**.

Defect

Defect means a non-infectious tuber abnormality caused by such things as insects, mechanical damage, or other factors causing abnormal features.

Disease

Disease means a condition caused by an infectious agent such as a fungus, bacterium, nematode, or virus.

Disease/defect tolerances

Disease/defect tolerances means the maximum permitted incidence of disease, or plant defect present in either the growing crop, or on harvested tubers, to meet a defined quality standard.

Field tolerance

The visual assessment of the health and varietal purity of the growing crop at the times of inspection by the certifying authority.

Inspector

Inspector means a designated and appropriately accredited officer of a certifying authority responsible for undertaking inspection of crops and seed.

In vitro

In vitro means potatoes grown in tissue culture in the laboratory.

Label

The official registration tag attached to each unit of Registered seed.

Other crop

Other crop means potato crops sown with Registered (i.e. up to and including G7) or Certified seed and not grown under the Certified or Registered seed schemes.

Pathogen

Pathogen means a disease causing agent (e.g. fungus, bacterium, nematode, virus).

Pathogen-tested

Pathogen-tested means tested for, and found to be free of disease causing agents as listed.

Plot

A crop sown with a unique seed source, on land with a common history, through the rotational period specified, and sown within a 10 day period.

Quality assurance

The systematic control of quality factors of a product through the whole production process to ensure that it meets market specifications. It applies to the growing, harvesting, grading, packing, transporting and marketing of Registered seed potatoes to satisfy the needs of the customer.

Scheme

Scheme means the procedures whereby the Registered Scheme is implemented.

Seed crop

Seed crop means a potato crop intended for further seed multiplication and sown with eligible Registered or Certified seed. Seed crops must be entered for inspection within the Certified or Registered seed schemes

Appendix 2. Laboratories accredited to produce minitubers, microtubers and plantlets

Solan Pty Ltd
PO Box 578
Waikerie SA 5330
Ken Morley
Phone: +61 (0)8 8541 2802
Fax: +61 (0)8 8541 3108
Email: morleyk@riverland.net.au

Agronico Pty Ltd
175 Allport St
Leith Tas 7315
Stewart McKay
Phone: +61 (0)3 6428 2519
Fax: +61 (0)3 6428 2049
Email: agronico@trump.net.au

PG & SL Scott Pty Ltd
150 Seven Bridges Rd
Gerangamete Vic 3243
Peter Scott
Phone: +61 (0)3 5236 6287
Fax: +61 (0)3 5236 6019

Vegetable Centre – Tasmanian Institute of Agricultural Research
Stony Rise Centre
PO Box 303
Devonport Tas 7310
Leonie White
Phone: +61 (0)3 6421 7648
Fax: +61 (0)3 6424 5142
Email: Leonie.White@dpiwe.tas.gov.au

L & J Shaw
575 Denherts Track
Beech Forest Vic 3237
Laurie Shaw
Phone: +61 (0)3 5235 9231
Fax: +61 (0)3 5235 9231
Email: lgshaw@primus.com.au

Hills Transplants Pty Ltd
RSD 947 Dons Heads Rd
Devonport Tas 7307
John Hill
Phone: +61 (0)3 6424 8796
Fax: +61 (0)3 6424 6293
Email: jhill@tassie.net.au

Department of Primary Industries
1015 Myers Creek Road
(PMB 1, Healesville 3777)
Toolangi Vic 3777
Corina Horstra
Phone: +61 (0)3 5957 1200
Fax: +61 (0)3 5957 1210
Email:Daniel.isenegger@toolangielite.org.au

D & B Carter
'Cottle Wolly'
Crookwell NSW 2583
Phone: +61 (0)2 4832 1495
Fax +61 (0)2 4832 1495
Email: cottlewolly@harboursat.com.au

Hilltop Crop
Mirko Milinkovic
1 Peregrine Drive
Kinglake West Vic 3757
Phone: 0437 583 244

Abel Agronico
160 Thurlows Road
Shady Creek Vic 3821
Phone: 0419 509 857
Email: agrico@dcsi.net.au

Appendix 3. Protocol for laboratory accreditation

The authority for accreditation of laboratories which produce initial stocks for further multiplication in the scheme is currently vested in ViCSPA, whose responsibilities include annual inspection of laboratories and auditing of procedures as outlined below.

1. Maintenance of in vitro nucleus stock

Nucleus stock is primarily maintained by the Authorised Laboratory/s and is subject to the specified conditions outlined in the contract between the ASPC and the Authorised Laboratory/s. A similar agreement would be required by the ASPC before approval is granted to supply plantlets for the production of minitubers or other products to accredited laboratories from sources other than the Authorised Laboratory.

2. Production of minitubers/plantlets

2.1 Care of in vitro plantlets

- Maintain in sterile sealed containers on a sterile growth medium.
- Hold under hygienic conditions in a suitable growth room or cabinet which is regularly cleaned and disinfected.
- All subdivision and transfer of in vitro plantlets must be done in a laminar-flow contamination control cabinet using aseptic techniques.
- Clearly label all containers.
- Replace annually with plantlets derived from pathogen-tested nucleus stock or from cultures maintained in accordance with item 2.2(C) of the agreement.

2.2 The laboratory

- Restrict access to authorised staff and supervise visitors.
- Keep clean and tidy at all times.
- Dust must not be allowed to accumulate.
- Wash floors and wipe benches regularly with a hospital grade disinfectant at the rate recommended on the label.
- Change outdoor footwear to clean laboratory slippers or overshoes before entering the laboratory.
- Wear clean, regularly laundered coats which are used exclusively in the laboratory area.
- Wash hands with soap and water on entering.
- Remove and sterilise contaminated cultures immediately.
- Keep sterile, unused culture tubes containing growth medium in a dedicated cold room or refrigerator if storing for more than two weeks.
- Smoking is not permitted in the laboratory.

NB: No plant material or cultures of any species which has not been pathogen-tested, is permitted to be processed, multiplied, or stored in an ASPC accredited laboratory.

2.3 Polyhouses or glasshouses

- Must be aphid-proof and houses constructed after 1 January 1998 must have thrips-proof net on all meshed areas.
- Must have an anteroom entry with outer and inner doors which seal adequately to exclude insects.
- In high use facilities (hydroponic systems) floors must be concrete with adequate drainage to allow regular cleaning. Weedmat over a 75mm layer of crushed rock may be approved in low traffic systems, providing all pathways and work areas are concreted. The accreditation officer or agent may direct the accredited laboratory to repair and/or replace damaged weedmat.
- Each poly/glasshouse must have two footbaths of a hospital grade disinfectant (changed weekly), one located in the anteroom, adjacent to the inner door and the second outside the entrance door.
- Prior to planting, the floors, walls, and benches must be thoroughly hosed with water and then drenched with a hospital grade disinfectant.
- Staff are forbidden to enter poly/glasshouses after field work unless they have showered and clothing and footwear is changed.
- Dedicated clean footwear and laboratory coats are also recommended in the poly/glasshouse locations.
- Hands should be either thoroughly soap washed, or clean surgical gloves worn before handling plants or minitubers.
- Plant debris or potting mix must not be allowed to accumulate on floors or benches.
- Smoking is not permitted.

2.4 Potting mix

- Potting mixes containing soil or river sand must not be used.
- An open well-drained mix such as pine bark/sand or perlite/peat is preferred.
- Potting mix must be steam/air pasteurised at 60°C for one (1) hour, preferably just prior to use. Live steam may be used but care should be taken to avoid nutritional disorders caused by overheating.
- Organic soil-less potting mixes which are composted to a minimum temperature of 65°C for a minimum time of three (3) weeks may be substituted for steamed mixes, providing they are hygienically handled and pre-packaged in plastic before leaving the manufacturer and contain no non-sterile additives. The potting mix must be used immediately the package is opened. Peat or peat substitute additives must conform to current Australian Department of Agriculture health and quality standards. Accredited laboratories that are using composted potting mixes must provide to the ASPC a written assurance from the suppliers to indicate that the potting mix complies with the ASPC standard.
- Purchased potting mixes must be in new containers.
- An appropriate fertiliser program or nutrient solution must be used to ensure adequate plant growth.
- Pots, boxes, trays or troughs must be either new or disinfected by steam or a hospital grade disinfectant, just prior to use.
- The potting mix is to be stored in clean, hygienic and dedicated receptacles that can be

disinfected.

2.5 Planting and maintenance

- In vitro plantlets must be handled hygienically when de-flasking and planting.
- Label all plant containers clearly with cultivar name and planting date.
- Pots, boxes, trays or troughs must be raised as high as practicable above floor level (preferably on one (1) metre high bench with mesh top).
- Minimise physical contact with plants during the growing period (e.g. staff, hoses, etc.).
- Care must be taken to provide optimum watering regimes — over-watering must be avoided, particularly in the cooler months.
- All plants should be carefully examined at least once a week for aphids, thrips and other insect pests and any unthrifty, off-type or diseased plants removed immediately.
- Appropriate disease and insect control programs must be implemented and the ASPC notified of any disease or insect problems which may affect either the health of minitubers or subsequent seed generations.
- The use of yellow card sticky traps in the houses for insect monitoring is highly recommended, and these should be checked for the presence of insects on a weekly basis.
- Water supply must be from a clean source and regularly tested or treated to minimise risk from water-borne pathogens.
- Recirculated nutrient solutions used in hydroponic minituber production must be treated and tested to minimise risk from water-borne pathogens.

2.6 Leaf sampling

- In the case of minituber production, leaf samples for ELISA testing for viruses, will be collected by the ASPC Accreditation Officer or an authorised agent after three months growth (but before senescence) and consist of one mature leaflet taken from every 20th plant which is bulked into batches of no more than 20 leaflets per sample bag.
- Each sample bag of each batch is numbered and dated and its location noted on a bench plan, so that trace back can occur if an infected plant is found.
- The leaf samples are ELISA tested for viruses and the results of these tests and observations of the Accreditation Officer will be forwarded to the laboratory and to APIC.
- In the case of plantlet production, leaf samples will only be collected for virus testing if aphids or thrips have been detected in the poly/glasshouse, or if the plantlets remain in the poly/glasshouse for more than one month from de-flasking.

2.7 Harvesting (not applicable to plantlet production)

- Where applicable, remove haulms by cutting with a sterile knife or secateurs or by pulling with clean gloved hands, at least two (2) weeks before harvest to allow the tuber skins to mature.
- When harvesting minitubers from hydroponic systems, use clean gloved hands and ensure that tubers are correctly labelled and allow them to dry in the shade in a well-ventilated area.
- Remove and discard all defective tubers (notify the Accreditation Officer if any

diseased tubers are found).

- Grade into groups of similar sized tubers.
- Leave to cure for at least one (1) week before storage.
- Pre-condition before dispatch to ensure tuber dormancy is broken.

2.8 Storage (not applicable to plantlets)

- Store at 4-5°C in a dedicated coolroom.
- Pack for storage in either new or disinfected plastic mesh bags (e.g. orange or onion bags), or in clean disinfected mesh bottom trays or boxes.

2.9 Transport (as appropriate for the product)

- Place minitubers in their mesh bags in strong, new and clean containers to prevent disease contamination or damage in transit − avoid extremes in temperature.
- Plantlets should be transported in stratified trays to minimise damage in transit − avoid extremes in temperature.
- Ensure each batch is clearly labelled with cultivar name and line or clone (if applicable) and the number of minitubers or plantlets.

2.10 Records

- Accurate records of all significant laboratory and poly/glasshouse observations should be maintained.
- Records are to be available for scrutiny by the ASPC Accreditation Officer, or authorised agent prior to the dispatch of minitubers or plantlets.

3. Varietal purity

The methods for the handling and storage of cultures, plantlets and tubers must be such that the identity of each cultivar, line and clone is maintained at all times.

4. Verification

- A sample of 6 to 10 minitubers per production batch is to be provided for the purpose of verification of variety type and checking for mutations or off-types.
- These tubers are to be at least 15mm in size and are to be delivered to the responsible ASPC officer before 10 December each year. The tubers are to be ready for immediate planting.
- It is expected that the tubers will be field grown at selected locations, in plots of similar varieties with a different coloured variety as a spacer. An appropriate officer will be responsible for regular inspections of the plots. Accredited laboratories will be promptly notified of any discrepancies in the growing plots.

5. Supply of in vitro cultures to other laboratories

The ASPC is the custodian of the Certified public potato variety collection on behalf of the potato industry. The in vitro cultures derived from this collection are not to be sold or provided to other laboratories, companies or countries without the ASPC's written consent.

Appendix 4. Guidelines to minimise pest and disease spread for potatoes from the Potato Industry

Biosecurity Plan Perpetual Draft Third Edition:

- The property from which produce is to be taken and transported to another property or region for processing should maintain an effective monitoring/pest management program.
- All properties supplying produce should have access to high-pressure wash down facilities associated with a concrete or tarmac pad. It is preferable that this facility be located on the property. If the facility is not on the property then it should be in close proximity to the property and definitely within the region from where the produce is being supplied.
- When new pest and disease outbreaks are likely all waste emanating from the produce, should not be disposed of in the growing area but should be taken to a site at least 100m from the nearest potato plant.
- All waste emanating from the produce may alternatively be hot composted.
- Trailers, crates and bins must be cleaned of all soil and vegetable matter before being taken onto a property. They should also be cleaned to remove soil if they are transporting produce to another property or region.
- The water and soil from cleaning should not go into the property or the property irrigation water supply but away from the property and irrigation water supply.
- To avoid a chemical residue issue all property personnel undertaking spraying activities should complete the 'Farmcare – chemical users course'. All property spray operations should be recorded in a spray diary and accompany each consignment of produce. All properties should contact their local re-seller, chemical company, or the Department of Agriculture and Food if they are unsure about chemical residues.

People movement

- All persons entering the property should have a clear view of the informative signs to the entrance of the property that outline the property's basic biosecurity requirements (e.g. not to wander through the plants without prior approval).
- All visitors to the property should park their cars in an area designated specifically for this purpose or remain on farm roadways.
- All employees should have a designated parking area.
- All employees should be transported around the property in vehicles based permanently on the property.
- All visitors and employees should be made aware of the importance on ensuring their footwear and clothing are free from any 'loose' dirt and vegetable matter if they have been amongst the plants before leaving the property.
- All properties should provide washdown facilities (e.g. scrubbing brushes and footbaths) for persons entering or exiting the property.
- The water and soil from this washdown facility should not go into the property or the property's irrigation water supply, but away from the property and irrigation water supply.

Machinery and equipment

There are some restrictions imposed on machinery and equipment from interstate or overseas. If there is any uncertainty contact the Australian Department of Agriculture (+61 (0)8 9311 5333) for the latest requirements.

- Small items of equipment (e.g. hand post hole rammers) should be cleaned of all soil and vegetable matter before being taken into and leaving a property.
- All equipment and tools used on a property should be washed down with high pressure to remove soil and vegetative matter on a concrete or tarmac pad before the truck leaves the property. If there is no washdown facility on the property then it should be in close proximity to the property and definitely within the region from where the machinery and equipment is being moved.
- Water from the washdown should not go into the property or the property irrigation water supply but away from the property and irrigation water supply.
- All property owners/managers should visually inspect machinery or equipment before it comes onto their property to ensure it is in accordance with their biosecurity standards and access should be denied if it is not in accordance with their standards.

Appendix 5. Application for inspection of potato crops

Department of Agriculture and Food
AGWEST Plant Laboratories

PLEASE USE A SEPARATE FORM FOR EACH DISTRICT

Application for inspection of potato crops for certified and registered seed production

FULL NAME OF APPLICANT: _____

POSTAL ADDRESS: _____ POSTCODE _____

PROPERTY ADDRESS: _____ POSTCODE

TELEPHONE NO.: _____ FACSIMILE NO.: _____ EMAIL: _____

(NOTE: All correspondence and invoices will be forwarded to the applicant unless otherwise advised.)

Plot No.	Variety	Plant date	Est. harvest date	Area in hectares or number of mini tubers	Seed sown: Crops to be inspected as Certified or Registered Seed (✓) Cert	Seed sown: Crops to be inspected as Certified or Registered Seed (✓) Regist.	Seed sown: Gen.	Seed sown: Official Label on container from seed sown: Colour	Seed sown: Official Label on container from seed sown: No.	Property location name and number (i.e. HAY, 12455)	Farm paddock name	Not to be released for publication (✓)

EXAMPLE ONLY

Virus testing G2 sown crops will be sampled for virus testing at the second inspection unless otherwise indicated.

Sample my G2 sown crops at the first inspection

THIS APPLICATION MUST BE RETURNED WITHIN ONE WEEK OF FIRST SOWING TO:

Dale Spencer
Manjimup Horticultural Research Institute
Locked Bag 7
MANJIMUP WA 6528

Fees: Including GST

Available from the APL website www.agric.wa.gov.au/agwest/plantlabs or contact Dale Spencer.

Invoice for payment will be forwarded after inspections are completed.

Enquiries:

Dale Spencer
Telephone: +61 (0)8 9777 0000
Facsimile: +61 (0)8 9777 0001
Mobile: +61 (0)419 950 725
Email: dale.spencer@agric.wa.gov.au

DECLARATION

I declare that the above listed varieties have been sown to meet the rules of the Certified and/or Registered Seed Potato Schemes, and agree to the required inspections being made. Unless otherwise indicated on this form, I consent to the release of inspection results for publication.

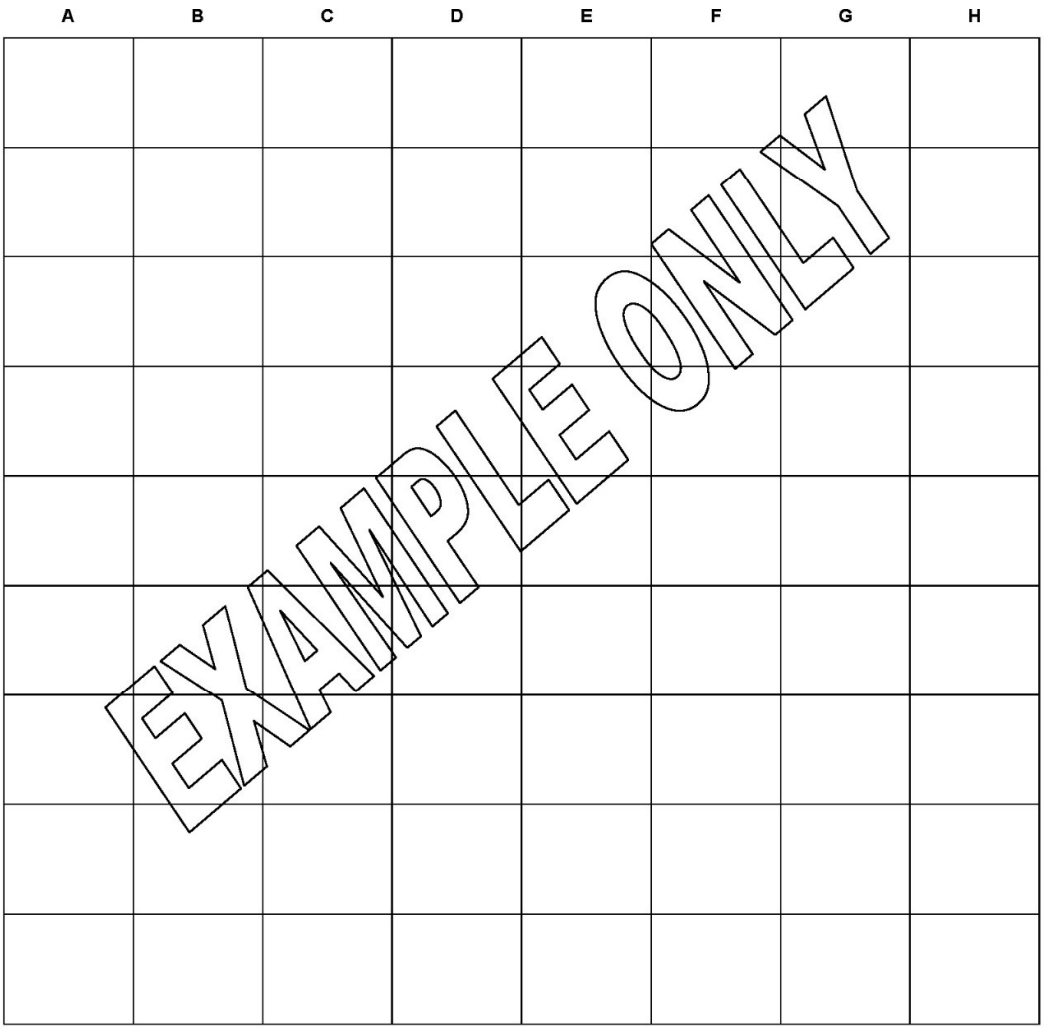
Signature: _____ Date: _____/_____/_____

PLAN OF PROPERTY: AREAS TO BE INSPECTED

The areas of each cultivar to be inspected should be enclosed by a fence. Alternatively, closely spaced obviously visible pegs are acceptable, providing they clearly define the area.

PLEASE DEFINE CLEARLY:

- Farm paddock name
- Indicate North
- Adjoining crops
- Gates and fences
- Roads and tracks
- Distances to Towns



G:\DOCUMENTSBYAUTHORS\AGWEST PLANT LABORATORIES FORMS\FORMS WITH NEW LOGO\FORM 401 APPLICATION I5 210909.DOC

Appendix 6. Grading shed ciphers

Code	Grading plant	District
AP	A Parker	Manjimup
AY	GP Ayres & Sons	Albany
BH	Topline Potatoes	Quininnup
BK	TA Barker	Albany
BO	J Bocian	Albany
BT	D Bendotti	Pemberton
DL	AH Darnell	Rosa Brook
FR	JA Forrest	Busselton
KT	KR & PH Taylor	Busselton
MB	GB Bendotti	Pemberton
NL	NR Lee	Albany
PA	L Eldridge	Albany
PB	Ackley & Westcott	Albany
RH	RH Omodei & Sons	Pemberton
SE	S. Moltoni	Pemberton
SM	D. Smith	Busselton
SP	Southern Packers	Manjimup
YLP	Fox Farming	Yarloop

Appendix 7. Delivery note (TADS)

Department of Agriculture and Food
AGWEST Plant Laboratories

TADS Form **Serial Number**

Part 1. Full name and address of applicant

Name: .....

Address: .....

..... P/code: .....

Phone: .....

Fax/Email: .....

Signature: ..... Date: .....

Part 2. Grower declaration

Note: To be completed and signed by the Owner/Manager/Leasee of the property on which the seed was grown.
I declare that the seed described was harvested from the Registered Area Number indicated:

Name: .....

Phone: .....

Fax/Email: .....

Signature: ..... Date: .....

Reference No.: .....

Part 3. Seed grader's declaration

(Where the tubers are graded by a third party) I declare that the seed described on this form was processed from seed delivered by the Grower outlined above.

Name: .....

Phone: .....

Fax/Email: .....

Signature: ..... Date: .....

Certified Quality Assurance Officer Y ☐ N ☐

Part 4. Carrier declaration

Name: .....

Signature: ..... Date: .....

Transport type (Circle)
Refrigerated / Bulk / Taut liner / Tarped

Part 5. Inspection details

APL SCO ☐ Authorised Tuber Inspector ☐

Name: .....

Signature: ..... Date: .....

1st copy (white) – grower/packer; 2nd copy (white) – APL;
3rd copy (yellow) – buyer; 4th copy (blue) – retain in book

Seed lot details	Seed lot 1	Seed lot 2	Seed lot 3
Registered area number			
Variety			
Generation			
Top removal month			
Irrigated or dryland			
Harvest date			
Crop rating			
Chemical (i.e. fungicide)			
Seed lot code			
Packing date			
Tuber size (mm or grams)			
Container type (i.e. bag, bin, bulk bin)			
Number of containers			
Mass of container			
Total mass			
Label colour			
Label numbers	to	to	to
	to	to	to
Invoice number			

Defects	Defect style	Max % tolerance	Numbers found	% found	Numbers found	% found	Numbers found	% found
1. Soft rot (*Erwinia carotovora*)		0.25%						
2. Dry rot (*Fusarium* sp., *Phoma* sp.)		2%						
3. Pink rot (*Phytophthora erythroseptica*)		0.25%						
4. Eelworm (*Meloidogyne* spp.)	A	2%						
5. Powdery scab (*Spongospora subterranea*), Common scab (*Streptomyces scabies*) together @ < 1% of tubers > 5 lesions per tuber		2%						
Total of faults 1-5		2%						
6. Insect, bird and rodent damage* -		2%						
7. Potato tuber moth (*Phthorimaea operculella*)		1.5%						
8. Malformed, growth cracks/constriction	B	2%						
9. Mechanical damage – shatter, splitting, cuts, cracks, bruise (damage < 3 mm deep)	B	2%						
10. Foreign cultivars		0%						
11. Oversize *		1%						
12. Undersize *		2%						
13. Miscellaneous (e.g. sunburn, sprouting shriveling)	C	2%						
14. Soil adhesion	A							
15. Stem end browning (cut 5% of inspected tubers for internal defects)	B	2%						
16. Hollow heart	C	5%						
17. Black heart		0%						
18. Black scurf (*Rhizoctonia solani*) -		2%						
Total of faults 6-18		2%						
Number of tubers assessed								
PASS/FAIL								

*The tolerances for *Rhizoctonia* and size may be negotiated between seed grower and seed buyer. **An additional 2% of tubers may show minimal insect feeding damage (i.e. where these tubers have no more than two feeding holes/tuber, not more than 3 mm deep, containing no soil, damaged skin is healed, and tuber eyes are not damaged).

Tuber inspection valid for a period of 28 days from the date of inspection.

Appendix 8. Seed Works Summary Sheet

Department of Agriculture and Food
AGWEST Plant Laboratories
GOVERNMENT OF WESTERN AUSTRALIA

Seed works summary sheet

Serial Number

Name of Seed Works: _____

Inspection date	Seed sold or kept	Cultivar	Harvest date	Gen	Registered area number	Seed lot code	Number of containers	Seed lot weight (kg)	Label colour	Label numbers range	Line pass or fail	TADS No.

To be completed and signed by manager of the Seed Works

I declare that the seed described on this form was grown and/or received, packed and officially labelled in accordance with the appropriate Western Australian Seed Potato Scheme Rules.

Name: _____ Signature: _____ Date: _____

Email white copy to dale.spencer@agric.wa.gov.au or fax to 08 9777 0001 and retain yellow copy in book.

Issue No. 6 Form No. 404

Appendix 9. Export tuber standards

All Registered seed being exported interstate or overseas will meet the following tuber standards. Irrespective of the generation assessed, seed will be registered provided it does not exceed the maximum prescribed tolerances.

Disease/defect tolerances

Three groups of diseases/defects are recognised for the purposes of tuber inspections:

Group 1: Excluded diseases
Group 2: Diseases/nematodes
Group 3: Insect damage/defects.

The following tolerances apply to each group of diseases/defects:

Group 1.

Zero tolerance will apply to the following diseases, which automatically precludes the crop from being registered.

- Potato cyst nematode (PCN) (Globodera rostochiensis or G. pallida)
- Bacterial wilt (Ralstonia solanacearum)
- Potato spindle tuber viroid.

The discovery of any quarantine disease automatically rejects the crop from registration.

Group 2. Tuber diseases/nematodes

Tolerances are based on the sample as inspected. Assessment of Group 2 diseases by visual inspection of unwashed tubers to include where applicable Styles A to C in the publication 'Product Description Language Potatoes' (ISBN 0 7311 4357 4).

Disease/nematode tolerances

	% by tuber count	Style
Dry rots (*Fusarium*, *Phoma* spp.)	2.0	
Black scurf (*Rhizoctonia* sp.)	2.0	
Silver scurf (*Helminthosporium* sp.)/ Black dot (*Colletotrichum* sp.)	*	
Common scab (*Streptomyces* sp.)	2.0	
Powdery scab (*Spongospora subterranean*)	2.0	
Eelworm (*Meloidogyne* spp.)	2.0	A
Soft rots (e.g. *Pythium*, *Erwinia* sp.)	0.25	
Pink rot (*Phytophthora* sp.)	0.25	

* The tolerance for these diseases may be negotiated between the seed grower and the seed buyer.

The maximum permitted tolerance for all diseases in Group 2 is 2 per cent.

Group 3. Tuber defects

Tolerances are based on the sample as inspected. Assessment of Group 3 defects by visual inspection of unwashed tubers to include where applicable Styles A to C in the publication 'Product Description Language Potatoes' (ISBN 0 7311 4357 4).

Defect tolerances

	% by tuber count	Style accepted
Insect damage	1.5*	
Malformed, growth cracks, root constriction	2.0	B
Mechanical damage – shatter, splitting, cuts, cracks, bruise (damage >3mm deep)	2.0	B
Stem end browning (cut 5% of inspected tubers for internal defects)	2.0	B
Miscellaneous (e.g. sunburn, sprouting shrivelling)	1.0	C
Foreign cultivars	0	
Oversize	1.0	
Undersize	2.0	
Hollow heart	5.0	C
Soil		A
Black heart	0	

* An additional 2% of tubers may show minimal insect feeding damage (i.e. where these tubers have no more than two feeding holes/tuber, not more than 3mm deep, containing no soil, damaged skin is healed, and tuber eyes are not damaged.

- Tubers shall be **practically free** of soil. Tubers with sprouts in excess of 20mm length are not eligible for certification.
- The maximum permitted tolerance for all defects in Group 3 is 2 per cent.

Appendix 10. Product description form (PDF)

Seed potato product description
(SPD form)
Serial Number

Part 1. Grower declaration
(To be completed and signed by the grower of the seed)

I declare that the seed described on this form was produced under the Registered Seed Potato Scheme and met all the requirements of the Scheme.

Name:

Signature: .....

Date:

Part 2. Seed grader declaration
(To be completed where the tubers are graded by a third party)

I declare that the seed described on this form was processed from seed delivered by the Grower described above.

Name:

Signature: .....

Date:

Part 3. Inspection details

DAFWA Inspector: .....

Authorised Tuber Inspector: .....

Name:

Signature: .....

Date:

1st copy (WHITE)–buyer;
2nd copy (BLUE)–grower/packer

Seed lot details	Seed lot 1	Seed lot 2	Seed lot 3
Variety			
Generation			
Harvest date			
Storage temperature since harvest			
Seed dressing (i.e. fungicide)			
Seed lot code			
Packing date			
Tuber size (specify mm or grams)			
Container type (i.e. bag, bin, bulk bin)			
Number of containers			
Mass of container (approximate)			
Total mass			
Label colour			
Label numbers			
Last number			
First number			
Last number			
Invoice number			

Details	Style assessed	Seed lot 1 No.	Seed lot 1 %	Seed lot 2 No.	Seed lot 2 %	Seed lot 3 No.	Seed lot 3 %
1. Soft rot (*Erwinia carotovora*)							
2. Dry rot (*Fusarium* sp., *Phoma* sp.)							
3. Pink rot (*Phytophthora erythroseptica*)							
4. Eelworm (*Meloidogyne* spp.)	A						
5. Powdery scab (*Spongospora subterranea*), Common scab (*Streptomyces scabies*) together @ <1% of tubers > 5 lesions per tuber							
6. Insect, bird and rodent damage **							
7. Potato tuber moth (*Phthorimaea operculella*)							
8. Malformed, growth cracks, root constriction	B						
9. Mechanical damage – shatter, splitting, cuts, cracks, bruise (damage > 3 mm deep)	B						
10. Foreign cultivars							
11. Oversize *							
12. Undersize *							
13. Sunburn, sprouting shrivelling	C						
14. Soil adhesion	A						
15. Black scurf (*Rhizoctonia solani*) *	C						
16. Stem end browning	B						
17. Hollow heart	C						
18. Black heart							
No. of tubers assessed Items 1–15							
No. of tubers assessed Items 16–18							