

NEW ZEALAND SEED POTATO CERTIFICATION AUTHORITY

NOTICE of a meeting of the NZ Seed Potato Certification Authority, to be held at the Pukekohe Indian Association Hall, Pukekohe on Thursday 11th April 2019 commencing at 11.00am.

AGENDA

<u>Item</u>	<u>Page #(s)</u>
1. Welcome	
2. Apologies	
3. Declarations of interest	
4. Authority-only time to 1pm	
a) Alternative databases and options to be implemented by 1 October 2019	
b) Review of scheme management	
c) Audit of TC & MT facilities	2
Lunch 1-1.30pm AsureQuality and SGS to join the meeting at lunch	
5. Minutes of the Special PMTV meeting 25 October 2018	3
6. Action list (not otherwise covered)	6
7. Biosecurity	
a) Biosecurity update including PMTV (verbal, CEO)	
8. Reports	
a) AsureQuality, SGS and Eurogrow reports	8
9. Scheme management	
a) Proposed rule on sizing	17
b) Proposed Minimum Standard for Field Inspection	18
c) Proposed rule for retesting of material in tissue culture collections	24
d) Other proposed rule changes	
e) Arrangements for upcoming seed inspector training (September 2019)	
10. General business	
a) Report on UNECE meeting of the Specialized Section on Seed potatoes	
11. Next meeting	
Proposed for Wednesday 14th August 2019 in Christchurch.	

4pm Grower meeting agenda

1. Scheme operation – rule changes (Secretary)
2. Discussion on inspection activities for seed potato certification, and what is being done to improve the scheme (Iain Kirkwood)
3. PMTV update (CEO)
4. Refreshments from 5.30pm – 6.30pm.

4(c) Auditing of Tissue Culture and Minituber production facilities

The rules require that all facilities producing tissue culture or minitubers for seed potato certification are produced in facilities approved by the Authority. Three facilities are approved:

Facility Name	Type	Date of Approval
Alps Seed Ltd	Tissue culture laboratory and mini-tuber facility	23 May 2016
Aspara Pacific Ltd	Tissue culture laboratory and mini-tuber facility	3 June 2016
Alex McDonald Ltd PT Scheme	Tissue culture laboratory and mini-tuber facility	16 June 2016

Each facility must be re-audited every 3 years. Currently Potatoes NZ has a contract with AsureQuality to provide audit services. The Secretary has written to AsureQuality to remind them of the upcoming audits, and has asked that reports be available for the August Authority meeting.

The CEO is proposing that Potatoes NZ provides audit services directly to the approved facilities, and terminates the contract with AsureQuality. The Authority is asked to consider the advantages and disadvantages of this proposal.

Advantages of Potatoes NZ doing the audits are that existing resources can be utilised, greater technical skill could be brought to the audits, closer links built with the facility operators, and costs remain with the industry.

Disadvantages are that Potatoes NZ is not an accredited certification body (AsureQuality is) and there is therefore no oversight of the competency of Potatoes NZ's auditors, liability for errors or consequences could lie with Potatoes NZ rather than a third party, and the cost of initially setting up the audit programme (the audits involve 4-5 days work every 3 years).

An alternative to completely taking over the audit function could be for Potatoes NZ to provide a technical expert to accompany the auditor.

Recommendation: That the Authority consider the option of Potatoes NZ undertaking audits of TC and MT facilities for the 2019 audit round.

5. Minutes of the Special PMTV meeting 25 October 2018

POTATOES NEW ZEALAND

MINUTES of a special meeting of the New Zealand Seed Potato Certification Authority held at The George, 50 Park Terrace, Christchurch on Thursday 25th October 2018 commencing at 1pm.

PRESENT: Richard Redfern (Chair), Scott Clelland, Tony Hendrikse, Kerry Hughes, Murray Aarts, Andrew McKay, Reece Balle.

ALSO IN ATTENDANCE: Chris Claridge (CEO), Stephen Ogden (Secretary), Sue Wells and Iain Kirkwood (Potatoes NZ), Ken Small, Justin Salter (ASUREQuality) and Cyril Hickman (SGS).

1. **WELCOME**

The Chair welcomed everyone to the meeting and extended a special welcome to Andrew McKay and Reece Balle as new Authority members, Iain Kirkwood as Potatoes NZ's new Technical Manager, Ken Small from the McCain seed growers group, and Sue Wells from Potatoes NZ.

2. **APOLOGIES**

There were no apologies.

3. **DECLARATIONS OF INTEREST**

No changes in interests were declared. Potatoes NZ will provide Reece Balle and Andrew McKay with interests declaration forms to complete.

4. **MINUTES OF MEETING OF 7 AUGUST 2018**

The Chair took the minutes as read and asked for matters arising. There were no matters arising, other than the correction to Justin Salter's name.

IT WAS RESOLVED that the minutes of the meeting of the 11th April 2018 be confirmed to be a true and correct record subject to the minor correction noted.

K. Hughes / A. Hendrikse

5. **BIOSECURITY**

- **CEO's Potato mop-top virus response update**

The CEO provided an update on the status of the PMTV response. Most notably the status of PMTV has changed to no longer being listed as an unwanted organism, and measures are underway to remove it from the notifiable organisms register. However the CEO noted that PMTV was still under response and cost sharing was in effect.

MPI and Potatoes NZ are working to develop a long-term management plan, the key components of which are to:

- Understand the spread and prevalence of PMTV
- Understand the biology and impacts of PMTV

- Provide information and support to potato growers and processors to enable them to minimise the spread and impacts of PMTV.

A key activity for seed certification is to maintain PMTV free seed lines through the seed certification programme. The CEO requested advice from the Authority on what information it needed, and what actions needed to be taken, to meet the objectives for seed potato certification.

There was considerable discussion and debate regarding the objectives, their feasibility, and impact on growers. It was agreed that the aim of maintaining PMTV free seedlines could be unnecessarily punitive on some growers as, although MPI has tested some seedlines and found them free, we do not yet know the full distribution within NZ. A series of resolutions were passed, and actions were identified.

IT WAS RESOLVED that the Seed Potato Certification Authority requests information from MPI on their investigation of the potential source of PMTV, spread between fields and farms, and seedline testing to enable the Authority to develop management strategies for seed potato crops, and that this information is required by mid-November.

A. Hendrikse / K. Hughes

IT WAS RESOLVED that the Seed Potato Certification Authority wishes to be part of the monitoring and surveillance programme and recommends that fields be monitored and the grower informed of their positive results, and the Authority be notified of overall survey results.

A. Hendrikse / S. Clelland

K. Hughes requested that his opposition to the resolution be noted in the minutes.

ACTION: CEO to convey these resolutions to MPI.

ACTION: CEO to advise MPI that the seed long-term management objective should be to “Manage PMTV levels in seed crops through the seed certification programme to minimise the impact of PMTV”.

- **PMTV management in other seed schemes**
The paper was noted, and the information used in discussion of 5c.
- **Options for changes to the Scheme Rules to manage PMTV**
The paper on this topic was reviewed. It was agreed that a zero tolerance for powdery scab or PMTV was not feasible. In many cases it was noted that more information was needed. There was discussion about testing for potato mop-top virus, and it was agreed that this should be included in the G2 testing.

IT WAS RESOLVED that Scheme Rules should be amended to include the requirement for PMTV testing of G2 seedlines.

K. Hughes / S. Clelland

ACTION: Secretary to amend section 4.6 of the rules. After the first sentence of section 4.6 the words “G2 virus testing must include Potato viruses A, Y, M, X, Leafroll, and Mop-top” will be inserted.

The production of mini-tubers and potential need to use sterile media was discussed. It was noted that there are published reports of powdery scab in peat and growing media. It was agreed that further information was needed before imposing additional requirements on mini-tuber producers.

ACTION: CEO to request that MPI provides advice on the risks associated with the use of sterile media vs compost or peat for mini-tuber production, and to advise on commercially viable methods for media sterilisation.

Pre-plant soil tests were discussed. There were differing views on the potential for the use of SARDI's PredictR in powdery scab/ PMTV management. It was agreed that more information was needed.

ACTION: CEO to request that, as part of the transition to long-term management, an evaluation of PredictR as a tool for powdery scab / PMTV management be undertaken.

Farm biosecurity plans were discussed and it was agreed that these were good initiatives.

ACTION: CEO requested to adopt farm biosecurity planning and training across the industry.

The Secretary asked the CEO whether the question about HSNO Act restrictions on the movement of PMTV infected material had been resolved. The CEO believed it had been resolved by MPI and there were no issues for growers, however he would check.

ACTION: CEO to clarify whether the HSNO Act placed any obligations on growers with regard to movement or propagation of PMTV infected potatoes.

There being no further suggestions for rule changes, the Secretary was requested to update and issue the rules.

ACTION: Secretary to update section 4.6 of the rules, forward the document to Potatoes NZ's designer for publication, and the secretary to update the seed newsletter for publication.

6. **GENERAL BUSINESS**

There were no items of general business.

7. **NEXT MEETING**

Unless further special PMTV meetings are required, the next meeting will be held on 10 April 2019, in Pukekohe, in conjunction with a grower meeting.

There being no further business the Chair thanked everyone for their time and contributions and closed the meeting at 3.20pm.

Read, approved as a true and correct record and signed

This day of

CHAIRMAN

6. Action list

New Zealand Seed Potato Certification Authority Action list – Updated 20 March 2019

ITEM	RESPONSIBLE	DATE OF MEETING	CURRENT STATUS
AUTHORITY-ONLY TIME			
Potatoes NZ investigate alternative databases and present options to the April 2019 Authority meeting and develop a working solution for seed potato certification to be implemented by 1 October 2019.	Iain Kirkwood	7/8/18	Agenda 4a
CEO to report back to the April 2019 Authority meeting with a proposal for restructuring scheme administration, management, and Secretary roles.	Iain Kirkwood	7/8/18	Agenda 4b
Secretary to review field inspection procedures against the rules, the associated MPI Standard, and the Inspection Technical Panel recommendations. Secretary to then draft a Minimum Standard for Field Inspection and review this with the Inspection Technical Panel and present the results to the April 2019 Authority meeting.	Secretary	7/8/18	Agenda 9b
CEO to arrange for the G3-G6 Certified Seedlines Booklet to include a table showing total planted areas by generation and variety	Iain Kirkwood	7/8/18	Done (Secretary)
Advise growers there will be no fee increase this year.	Secretary	7/8/18	Done
Secretary to include on the agenda of the next meeting in Pukekohe a discussion on inspection activities for seed potato certification, and what is being done to improve the scheme.	Secretary	7/8/18	Today's grower meeting
SCHEME MANAGEMENT			
Secretary to confirm to the Administrator that the new G0 form could be used this season	Secretary	7/8/18	Done
Schedule inspector seed training every 3 years	Secretary	15/3/17	Agenda 9e
Secretary to request that MPI adds <i>Ralstonia solanacearum</i> to the Import Health Standard for potato nursery stock.	Secretary	7/8/18	Done – MPI processing
Secretary to confer with Inspectors and draft a proposed rule on size tolerances for consideration at the next meeting.	Secretary	7/8/18	Agenda 9a
Rule changes. Secretary to finalise rules for publication.	Secretary	7/8/18	Done
TECHNICAL PANELS			
Secretary to reconvene the Technical Panel and review the need for retesting of material in tissue culture collections.	Secretary	7/8/18	Agenda 9c
REPORTS			
CEO to arrange for the Virus Survey Report to be put on the Potatoes NZ website.	Iain Kirkwood	7/8/18	Done
PMTV meeting actions			

Requests information from MPI on their investigation of the potential source of PMTV, spread between fields and farms, and seedline testing to enable the Authority to develop management strategies for seed potato crops, and that this information is required by mid-November.	CEO	25/10/18	
Notify MPI that the seed scheme wishes to be part of the PMTV monitoring and surveillance programme and recommends that fields be monitored and the grower informed of their positive results, and the Authority be notified of overall survey results.	CEO	25/10/18	
CEO to advise MPI that the seed long-term management objective should be to "Manage PMTV levels in seed crops through the seed certification programme to minimise the impact of PMTV	CEO	25/10/18	
Scheme Rules should be amended to include the requirement for PMTV testing of G2 seedlines	Secretary	25/10/18	Done
CEO to request that MPI provides advice on the risks associated with the use of sterile media vs compost or peat for mini-tuber production, and to advise on commercially viable methods for media sterilisation	CEO	25/10/18	
CEO to request that, as part of the transition to long-term management, an evaluation of PredictR as a tool for powdery scab / PMTV management be undertaken.	CEO	25/10/18	
CEO requested to adopt farm biosecurity planning and training across the industry.	CEO	25/10/18	
CEO to clarify whether the HSNO Act placed any obligations on growers with regard to movement or propagation of PMTV infected potatoes.	CEO	25/10/18	
Secretary to update section 4.6 of the rules, forward the document to Potatoes NZ's designer for publication, and the secretary to update the seed newsletter for publication.	Secretary	25/10/18	Done
GENERAL BUSINESS			
Recommend to the Potatoes New Zealand Board that it appoint Reece Balle and Andrew McKay to the NZ Seed Potato Certification Authority.	Iain Kirkwood	7/8/18	Done
Reece Balle and Andrew McKay to complete declarations of interest.	CEO	25/10/18	
Secretary to attend March 2019 UNECE meeting	Secretary	11/4/18	Iain Kirkwood attended
Next Meeting – 10 April 2019 in conjunction with grower meeting, Pukekohe.	Secretary	7/8/18	Underway (changed from 10 th to 11 th April)

8. Reports

Seed Potato Certification Inspection Reports

Name of inspection body	SGS New Zealand Ltd	
Report Author	Name	C.Hickman
	Signature	
	Date	25 March 2019 and July 2019

1. Field Inspections

Total number of seedlines field inspected to date			
	<u>Number of seedlines</u>	<u>Number of hectares</u>	
First inspection	TBA approx	400hectares approx	
Second inspection	TBA	383.8hectares approx	
<u>Third inspection</u>	N/A		
Number of seedlines failing field inspection		7 4 withdrawn and 3 rejected	
		16.2 hectares total	
Causes of field inspection failure			
Seedline reference #	G# (planted)	Identity of disease or defect found	Incidence of disease / defects (%)
201953648	Group 1	Mosaic	Withdrawn
201953292	G2	Mosaic	0.4
201954314	G5	Mosaic	Withdrawn
201954315	Group 1	Mosaic	Withdrawn
201953767	G3	Blackleg	Withdrawn
201953714	G4	Mosaic	0.3
201953737	G4	Blackleg	0.4

2. Tuber inspection results

Total number of seedlines inspected to date	<u>8</u>			
Number of seedlines failing tuber inspection	<u>Nil</u>			
Number of tonnes or bins failing tuber inspection (specify)	N/A..... Tonnes ...N/A..... Bins			
Causes of tuber inspection failure for each seedline:				
Seedline reference #	G# (planted)	Cause of failure (type of disease / fault)	Incidence of disease / defects (%)	Type of scab (if found)*

*As per laboratory testing

3. Liberibacter symptoms

<u>Number of seedlines where Liberibacter symptoms recorded</u>	<u>23 suspect approx</u>
<u>Incidence of symptoms (average % in the crop)</u>	<u>1% approx</u>

4. Protective Mesh

<u>Total number of seedlines under protective mesh:</u>	<u>8</u>					
<u>Number by G# planted</u>						
<u>G0</u>	<u>G1</u>	<u>G2</u>	<u>G3</u>	<u>G4</u>	<u>G5</u>	<u>G6</u>
<u>8</u>						
<u>Issues arising with inspection under mesh:</u> No issues						

4. General comments

General observations or comments that may be of interest or relevance to the work of the Authority.

Due to persistent rains over Canterbury from late October to late November, plantings of 2018/19 season crop was segregated either into very early October or late November early December planting. As expected desiccation of production sites planted in early October began early in January followed by the later planted crops around mid to end February.

With the exceptions of four seed lines withdrawn and three seed lines rejected the overall health in Canterbury of the 2018 / 19 production season of seed potato seedlines was excellent. Production sites evidenced minimal new season Psylid infection symptoms, however our inspectors recorded very low counts of LSO presenting symptoms that could only be associated with infection from previous season.

Not unexpectedly by the completion of our first inspections and as we progressed into our second inspections our Field Inspection Reports show minimal incidences of Blackleg at very low levels (1/2000).

In line with last season most production sites were showing varying degrees of weed growth, however we did have two occurrences of rogued plants left on production sites, both of these oversites were remedied with phone calls.

Alex McDonald Ltd – Production site and chemical damage

A production site grown by Alex McDonald Ltd was found to be exhibiting varying degrees of chemical damage. This production site had multiple high generation lines throughout and due to the situation whereby inspectors could not realistically isolate any given area of the site, SGS sought advice from the NZSPCAuthority.

The Authority decided that Iain Kirkwood (Potatoes NZ -Technical Advisor) would visit the production and then advise the Authority and Alex McDonald Ltd the best process to manage the situation.

Following the inspection carried out by Iain Kirkwood it was decided to randomly sample plants showing chemical damage across the production site and carry out a grow out process to establish if any indicators of further chemical damage. The NZSPCAuthority is awaiting results from grow out process.

Production Site – Styrene Plant Pegs

Over the past two seasons we have seen an increasing trend whereby growers are utilising garden styrene plant pegs to show cultivar and generation. The styrene pegs are flexible and can be purchased in different colours and lengths – up to 250mm length at maximum. They also have an area of about 130X75mm at the top for writing crop details.

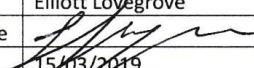
Styrene pegs are by and far the best type of seedline marker we have seen utilised in crops to date with the exception of two minor drawbacks.

- 1) By the second inspection the pegs are completely hidden by crop
- 2) Also by second inspection in some instances the writing has been observed as illegible – due to rain and sun.

Recommendation – Note in the NZSPCAuthority bulletin usually emailed / posted out to growers in early October that if using styrene pegs please place forward of crop and write on the side of peg that would be directed away from direct sunlight.

Eurogrow report

Seed Potato Certification Inspection Report 2018/2019

Name of inspection body	Eurogrow Potatoes Ltd	
Report Author	Name	Elliott Lovegrove
	Signature	
	Date	15/03/2019

Field Inspections

Total number of seedlines entered for certification: 215 (393.45ha)

Total number of seedlines field inspected to date		
	Number of seedlines	Number of hectares
First inspection	200	342.45
Second inspection	198	336.45
Third inspection	183	309.28

Number of seedlines failing field inspection to date: 14 (29.8ha)

Total number of seedlines failing field inspections to date			
Seedline reference No.	Generation planted	Identity of disease/ defect	Incidence of disease/ defect (%)
201953903	G3	PVY	5.8
201953904	G4	PVY	4.2
201953946	G4	PVY	3
201953871	G5	Blackleg	Part fail
201953870	G5	Blackleg	1.4
201953874	G5	Blackleg	3.5
201953875	G3	Foreigners	Part fail
201953876	G4	Foreigners	Part fail
201954140	G1	PVY	1
201953873	G5	Flooded patch	Part fail
201954145	G1	Foreigners	Part fail
201953885	G3	PVY	5.3
201953886	G4	PVY	3.7
201954378	G4	Herbicide	Part fail

General comments

Canterbury experienced very high rainfall throughout planting and early in the season. This year it was commonly noted that early planted crops had a higher incidence of black leg. Typically, the level of black leg did not exceed the tolerance level but was significantly higher than prior seasons. The high rainfall also caused seed plantings to be considerably later, explain why there are still multiple final inspections still to be completed in the middle of March.


Seed borne *Liberibacter* symptoms were visible in all crops. No crops presented seed borne symptoms over the tolerance level. Due to effective rouging the level of seed borne symptoms later

in the season were incredibly low. Overall seed borne Liberibacter symptoms were present at a very similar level to last season. Current season Liberibacter infected plants were noted from mid-January to late-February. Again, the incidence level was very low.

In general, this season the two main contributing factors resulting in partial or whole crop failure has been potato virus Y and foreign varieties (caused by human error). PVY levels in excess of tolerance have been observed in varieties with high susceptibility. In instances where foreign varieties exceeded tolerance levels partial crop failure occurred. Because the area was able to be isolated and marked off for harvest.

AsureQuality report

Seed Potato Certification Inspection Report (North Island)

Name of inspection body	AsureQuality Ltd	
Report Author	Name	Justin Salter
	Signature	
	Date	28.03.2019

1. Field Inspections

Total number of seedlines field inspected to date			
	<u>Number of seedlines</u>	<u>Number of hectares</u>	
First inspection	<u>52</u>	<u>59.82</u>	
Second inspection	<u>52</u>	<u>59.82</u>	
<u>Third inspection</u>			
Number of seedlines failing field inspection		<u>0</u>	
Number of seedlines failing field inspection		# seedlines 0	
		# hectares 0	
Causes of field inspection failure			
Seedline reference #	G# (planted)	Identity of disease or defect found	Incidence of disease / defects (%)

2. Tuber inspection results

Total number of seedlines inspected to date			
Number of seedlines failing tuber inspection		<u>0</u>	
Number of tonnes or bins failing tuber inspection (specify)		0..... Tonnes	
		0..... Bins	
Causes of tuber inspection failure for each seedline:			

Seedline reference #	G# (planted)	Cause of failure (type of disease / fault)	Incidence of disease / defects (%)	Type of scab (if found)*

*As per laboratory testing

3. **Liberibacter symptoms**

<u>Number of seedlines where Liberibacter symptoms recorded</u>	<u>0</u>
<u>Incidence of symptoms (average % in the crop)</u>	<u>0</u>

4. **Protective Mesh**

<u>Total number of seedlines under protective mesh:</u>						
<u>Number by G# planted</u>						
<u>G0</u>	<u>G1</u>	<u>G2</u>	<u>G3</u>	<u>G4</u>	<u>G5</u>	<u>G6</u>
<u>Issues arising with inspection under mesh:</u>						

4. **General comments**

General observations or comments that may be of interest or relevance to the work of the Authority.

North Island

There was a good start to the 2018/19 growing season with favourable conditions in spring for early planting. Seed potato crops were planted 19/10/18 through to 3/12/18, with the majority in the ground earlier than usual. Crops emerged and established well. There were some heavy thunderstorms in late December with significant rainfall then long periods of fine warm-hot weather with a spell of strong Westerly winds. Some crops on heavier soils suffered in the heat but overall most crops grew well and looked to have reasonable yields.

Growers had supplied accurate maps with their entries. Crop identification was excellent with stakes and labelled pegs marking out the crops. There were no isolation issues with the required gap rows between change of varieties and 5 metre clear rows showing the start of each seed class sown.

The first seed crop field inspections commenced on 17/12/18 and most of these were completed by the end of December. The rest were completed by early to mid-January. Crops grew rapidly due to warm temperatures and good soil moisture.

Most of the crops were very clean with few defects found. There was a small incidence of blackleg and two crops with low levels of Acubra virus. All crops passed their first inspection.

Psyllid monitoring has been carried out throughout the season by Fruitfed staff. Psyllid numbers appeared to be scarce this season in the lower North Island. With regular

monitoring and preventative spraying proving to be effective control. They are normally a huge problem in home garden tomatoes in early January but haven't really been a problem all season.

The Second crop inspections were completed by mid-February. Some crops were observed with localised storm damage and suffering from wind damage and heat stress. Low levels of blackleg were observed in some crops but overall the potatoes in general looked magnificent. Growers have done an excellent job of caring for their crops with good weed control and timely moulding.

Seed sets have been good for all the crops and there is an expected increase in yield this season. Crops were sprayed off as they mature.

Southern Star Seed had one seed crops grown at Taupo and a returning past seed grower Ronald Frew had one crop grown at Waiouru These were inspected mid-January and again early February. The Taupo crops also had a favourable growing season with reliable rain and above average temperatures.

All 52 crops entered for certification have passed and all Potato Cyst Nematode (PCN) surveys have been completed and passed for the season.

9(a) Proposed rule on sizing

The August meeting asked the Secretary to liaise with inspectors and draft a proposed rule on size tolerances for consideration at the next meeting.

Section 2.10.2 of the rules currently refers only to a minimum tuber size. However the current Graded Seed Tuber Inspection Report shows a total over/undersize maximum of 3%, and the seed labels specify a size. It seems sensible to include this sizing tolerance in the rules as well as addressing the matter of over-long tubers.

The problem of over-long tubers appears to be limited to length greater than 87mm, the maximum that cup planters can accommodate. It is therefore proposed that a maximum length of 85mm be imposed.

The combined maximum faults may need to be adjusted to allow for the change in sizing tolerances, which may lead to an increased level of faults.

Recommendation: That the Authority considers the proposed size tolerances and amends the rules to include this change effective from 1 October 2019.

Section 2.10.2

SIZING

The minimum size of seed acceptable for certification is 28mm or 30g. Exceptions will be allowed for trial plots or multiplication plots of mini tubers etc. The maximum length for seed is 85mm. No more than 5% of tubers should be over or under the size range to be declared on the seed label, have a maximum length of more than 85mm, or be below the minimum size.

Table 3. Maximum allowable faults in a tuber sample within the group programme and all generations of the pyramid programme (refer also separate tolerances for scab, Rhizoctonia, size and misshapen tubers).

Fault type	Maximum %
Potato Tuber Moth and & insect damage	4
Dry rot (<i>Fusarium</i> /Gangrene)	1
External damage (not infected, as lesions deeper than 2mm into the tuber)	4
Stem end rot	2
Wet rot	0.1
<u>Size (including over-long)</u>	<u>35</u>
Combined maximum faults	5

9(b) Proposed Minimum Standard for Field Inspection

The recommendations of the Inspection Technical Panel were presented to the Seed Potato Certification Authority at the September 2017 meeting. The Authority considered the recommendations and decided to make no change. At its August 2018 meeting the Authority asked the Secretary to:

“Review field inspection procedures against the rules, the associated MPI Standard, and the Inspection Technical Panel recommendations. Secretary to then draft a Minimum Standard for Field Inspection and review this with the Inspection Technical Panel and present the results to the April 2019 Authority meeting”.

In January the Secretary circulated the following proposal to inspectors for comment, only limited feedback was. A teleconference has been scheduled for early April and a verbal update will be provided to the meeting. A final proposal can be put to the August/September Authority meeting.

Field inspection requirements

1. *The Rules*

The NZ Seed Potato Certification Authority Rules do not specify a method for field inspection or a minimum number of plants to be inspected. Instead the rules make use of the MPI export certification system’s standards to establish a basis. The rules state that “Inspectors (contracted inspection service providers and Approved Organisations) must meet the requirements of the MPI Technical Standard: Pest Freedom Survey”.

2. *The MPI Standard*

The MPI standard is designed to provide assurance of pest freedom, whereas the Scheme Rules are intended to provide assurance that tolerances are not exceeded, so some interpretation is required. MPI requires pest surveyors to design survey methods appropriate to the pests involved and to use appropriate statistical methods. The MPI default confidence level for certification is 95% confidence that no more than 0.5% of the units are infested with pests unless specified otherwise. This assumes that the crop being surveyed is homogeneous, something that cannot be assumed to be the case.

The Scheme rules include a range of tolerances for faults across the classes (G#s) of seed crops in the scheme. Based on the MPI standards a confidence level of 95% is the norm.

3. *Alignment of the current field inspection procedures with the rules and technical panel recommendations*

Crop inspection methods do not appear to be aligned with the rules.

Current practices are:

- SGS operates to procedures approved as part of their IVA pest survey procedures. This involves taking a good look at the crop, taking in high and low spots and then determining a pattern to take a good representative 1000 step sample of the crop. This is usually across the rows.
- AsureQuality follows a similar approach to SGS.
- Eurogrow views the entire crop, walking along every 20th row scanning for faults before beginning counts. Counts are only done when faults are seen. The inspector walks 100 x 1m steps along a row counting 5 plants either side (1000 plants) and repeats this 5 times.

Regardless of the patterns, the level of confidence in decisions based on a 1000 plant sample is lower than 95%. For a 0.1% tolerance 3000 plants need to be inspected. The technical panel recommended a number of statistically based sampling plans that would ensure good coverage of the crop and also provide 95% confidence that the Scheme tolerances are not exceeded.

This is illustrated in the following table:

Specified tolerance	Minimum sample size (along with NO disease in sampled plants) required for statistical proof that the true level of disease is less than the specified tolerance, with 95% confidence:
0.01%	30,000
0.1%	3,000
0.2%	1,500
0.25%	1,200
0.5%	600
0.8%	380
1%	300
1.5%	200
2%	150
6%	50

Proposed Minimum Standard for Field Inspection

G1 and G2 crops – scan the entire crop. Because the rules specify a zero tolerance for several faults, the entire crop must be surveyed. Where the tolerance is >0 the inspector must count the number of faults and the number of plants counted and determine whether the tolerance is exceeded.

G3-G6 crops – survey a minimum of 3000 plants using a sampling plan that achieves coverage of the crop. Suggested sampling plans are provided as examples (the work of Dave Saville is acknowledged). Where the tolerance is 0.1% the acceptance number of faults is zero (i.e., none in the 3000-plant inspection sample). Where the tolerance is >0.1% the inspector must count the number of faults and determine whether the tolerance is exceeded.

In G3-G6 crops it is recommended that the Authority changes the tolerance for rogues to 0.1%, and in G3-G4 crops that the Authority changes the tolerance for virus to 0.1%. The current tolerances for these classes would require considerably more than 3000 plants to be sampled (refer table). If the tolerances are not changed then the level of confidence achieved by a 3000 plant (and current 1000 plant) sample are at best:

0.01% = 25% (9.5%) confidence the tolerance is not exceeded

0.025% = 52% (22%) confidence

0.05% = 77% (40%) confidence

In the current 1000 plant sample the confidence level for these tolerances is already very low (for rogues it is possibly meaningless).

Small plots

For G3-G6 crops the 3000-plant sample is based on crops having a large number of plants, as beyond a point the level of confidence changes very little with increasing crop size. The asymptote varies depending on the tolerance being inspected for. The required sample size for a 0.1% tolerance begins to level out at around 50,000 plants in a crop. For smaller crop sizes it would be acceptable for a smaller inspection sample to be taken. For example if there are 5000 plants in a crop, only 2253 plant need to be inspected. If there are only 3000 plants, only 1895 need be inspected. For a higher tolerance, e.g., 0.5%, a much lower sample size is needed, but it is recommended that we do not adopt that approach due to variability across crops. Sample sizes can be determined based on the following table.

Table 1: Table of minimum sample sizes for 95% and 99% confidence levels at varying levels of detection according to lot size, hypergeometric distribution

Number of units in lot	P = 95% (confidence level)					P = 99% (confidence level)				
	% level of detection × efficacy of detection					% level of detection × efficacy of detection				
	5	2	1	0.5	0.1	5	2	1	0.5	0.1
25	24*	–	–	–	–	25*	–	–	–	–
50	39*	48	–	–	–	45*	50	–	–	–
100	45	78	95	–	–	59	90	99	–	–
200	51	105	155	190	–	73	136	180	198	–
300	54	117	189	285*	–	78	160	235	297*	–
400	55	124	211	311	–	81	174	273	360	–
500	56	129	225	388*	–	83	183	300	450*	–
600	56	132	235	379	–	84	190	321	470	–
700	57	134	243	442*	–	85	195	336	549*	–
800	57	136	249	421	–	85	199	349	546	–
900	57	137	254	474*	–	86	202	359	615*	–
1 000	57	138	258	450	950	86	204	368	601	990
2 000	58	143	277	517	1553	88	216	410	737	1800
3 000	58	145	284	542	1895	89	220	425	792	2353
4 000	58	146	288	556	2108	89	222	433	821	2735
5 000	59	147	290	564	2253	89	223	438	840	3009
6 000	59	147	291	569	2358	90	224	442	852	3214
7 000	59	147	292	573	2437	90	225	444	861	3373
8 000	59	147	293	576	2498	90	225	446	868	3500
9 000	59	148	294	579	2548	90	226	447	874	3604
10 000	59	148	294	581	2588	90	226	448	878	3689
20 000	59	148	296	589	2781	90	227	453	898	4112
30 000	59	148	297	592	2850	90	228	455	905	4268
40 000	59	149	297	594	2885	90	228	456	909	4348
50 000	59	149	298	595	2907	90	228	457	911	4398
60 000	59	149	298	595	2921	90	228	457	912	4431
70 000	59	149	298	596	2932	90	228	457	913	4455
80 000	59	149	298	596	2939	90	228	457	914	4473
90 000	59	149	298	596	2945	90	228	458	915	4488
100 000	59	149	298	596	2950	90	228	458	915	4499
200 000+	59	149	298	597	2972	90	228	458	917	4551

Values in Table 1 marked with an asterisk (*) have been rounded down to a whole number because scenarios resulting in a fraction of a unit being infested (for example, 300 units with 0.5% infestation corresponds to 1.5 infested units in the shipment) are not possible. This means that the sampling intensity increases slightly, and may be greater for a shipment size where the number of infested units is rounded down than for a larger shipment where a larger number of infested units are calculated (for example, compare results for 700 and 800 units in the lot). It also means that a slightly lower proportion of infested units might be detected than the proportion indicated by the table, or that such infestation is more likely to be detected than the confidence level shown.

Values in Table 1 marked with a dash (–) refer to scenarios presented that are not possible (less than one unit infested).

9(c) Proposed rule for retesting of material in tissue culture collections

The Secretary contacted members of the Virus Technical Panel (Lisa Ward MPI, Rouke Bakker AQ, Iain Kirkwood PNZ, Scott Clelland McCain) for their recommendation on the need for retesting of material in tissue culture collections. Views on *Liberibacter* and *Dickeya* were also provided by Lia Liefting and Rob Taylor (MPI), respectively.

There was a common view that with testing of material entering collections, and good hygiene practices, the risk of latent infections being harboured in low is negligible.

The Technical Panel recommended that the list of pathogens for testing be reviewed every 1-2 years, and that *Candidatus Liberibacter solanacearum* testing not be restricted to haplotypes A and B as a new, third, haplotype has been detected infecting potato in the USA. Potato mop-top virus has also been added to the list due to the ongoing response. It is noted that mop-top testing will require PCR testing.

It is recommended that points 2 and 3 of Annex 2 of the rules be amended as follows, and implemented for the 2019-20 seed year.

2. The initial stock entering the tissue culture (TC) laboratory multiplication programme must be tested free from at least the following pathogens;

- Potato Spindle Tuber viroid
- *Clavibacter michiganensis* spp. *sepedonicus* (ring rot)
- *Ralstonia solanacearum* (brown rot)
- *Pectobacterium* spp. and *Dickeya* spp. including *Dickeya solani*, *Dickeya chrysanthemi* pv. *chrysanthemi*, *Dickeya chrysanthemi* pv. *parthenii*, *Dickeya paradisiaca*, *Pectobacterium betavasculorum*, *Pectobacterium polaris*
- Potato viruses, X, Y, S, M and A
- Potato mop-top virus
- Potato Leaf roll virus
- *Candidatus Liberibacter solanacearum* ~~(haplotypes A & B)~~

Records are to be kept of testing and sources of original material. Commercial confidentiality is to be maintained.

3. Every ~~five~~ten years all lines being maintained for active production of tissue culture for certified seed production must be subject to laboratory testing for:

- *Pectobacterium* spp. and *Dickeya* spp. including *Dickeya solani*, *Dickeya chrysanthemi* pv. *chrysanthemi*, *Dickeya chrysanthemi* pv. *parthenii*, *Dickeya paradisiaca*, *Pectobacterium betavasculorum*, *Pectobacterium polaris*
- Potato viruses, X, Y, S, M and A
- Potato mop-top virus
- Potato Leaf roll virus
- *Candidatus Liberibacter solanacearum* ~~(haplotypes A & B)~~

Positive detections must be removed from the scheme.