

Finalisation of the PCN National Management Plan

Richard Mulcahy
AUSVEG Ltd

Project Number: PT10024

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Project Number: PT10024

15 May 2011

The purpose of this final report is to communicate the successful delivery of project PT10024.

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1. Media summary

A National Potato Cyst Nematode (PCN) Plan will demonstrate that PCN is under official control in Australia and that the overall aim is to eradicate the pest. It will prevent uncontrolled spread of the pest and associated economic losses to the industry. The Plan will ensure that the occurrence of new strains of *G. rostochiensis* (golden cyst nematode) or *G. pallida* (pale cyst nematode) will be detected and controlled before having a chance to spread. Compulsory PCN testing of potato seed sold in Australia will be a critical step in preventing the spread of PCN.

The key advantages for industry adopting a Plan will be:

- Good overall management of PCN in Australia with the ultimate aim of eradication and risk based mitigation to prevent its spread and
- Recognition of area freedom zones within Australia by all jurisdictions and overseas trading partners.

A Plan will be the basis for harmonised PCN legislation and codes of practice in Australia and therefore less bureaucratic processes for dealing with new detections and across border tuber movements, especially between PCN area free zones once they are recognised.

During March 2011, industry consultation on the current Draft National PCN Plan took place in major potato production regions across Australia on behalf of AUSVEG through Horticulture Australia Limited.

The concept of a National PCN Plan was generally well received during consultation meetings, with a significant level of support from industry and state government representatives for having a national approach to PCN management.

The major questions raised at all meetings were about how the Plan would be executed and ‘policed’, i.e. which elements would be taken into state legislation and which would become an industry code of practice.

The next steps in the process of accepting the Plan will be the amendment and consolidation of the Draft PCN Plan based on the national consultation with industry described in this document. The feedback from industry and content of a draft amended Plan were presented at a levy payers meeting on April 17, 2011. The process for a final industry and government review and endorsement is still to be decided.

2. Summary of recommendations

1. Update the Plan to improve clarity and accommodate issues and answer questions raised during consultation.
2. Ensure the Plan explains all requirements of industry and government agencies clearly and concisely and is applicable to all types of production practices and tuber movements.
3. Clearly state whether the implementation date is the date from which onwards linkages via potentially infested seed can be established or whether there is a different start date for establishing linkage.
4. Review surveillance requirements based on risk. There should be no concession on area as cost/tonne would be the about same for all. For this, all risks and a risk hierarchy need to be clearly documented, including potato production on virgin land, soil temperature and other climatic effects, rotation, management of volunteer potatoes (ground keepers), rotational host crops and resistant varieties. Testing should ideally take place within a certain interval after harvest rather than just prior to planting.
 - a. Surveillance protocols should be based on risk and refer to those adequately researched and accepted in other countries.
5. Prepare an implementation plan which should address:
 - a. process of endorsement and stepwise implementation of the Plan e.g. immediate inclusion of seed certification, followed by implementation of tuber movement rules and surveillance on a risk basis
 - b. how the required industry 'Codes of Practice' will be put together and implemented in each state
 - c. who will be the 'caretaker' organisation of the endorsed Plan
 - d. what is the process for Plan revisions and amendments to the Plan, e.g. if improved surveillance methods have been identified
 - e. what are the 'policing' requirements and options
 - f. development and logistics of efficient surveillance based on a review of potential sample volumes throughout the year by state (area of seed, ware, processing) and availability/costs of current PCN testing services in Australia. The implementation plan has to ensure that surveillance can be delivered alongside the implementation of other aspects of the Plan
 - g. if laboratory capacity is lacking;

- i. the cost and optional use of high throughput labs in the EU should be investigated, especially during the EU winter, when these labs may not be busy with domestic samples,
 - ii. technology, space, labour requirements and costs of a new, high throughput Australian laboratory service should be investigated; a financial analysis on requirements, establishment costs and the potential sample throughput for a PCN testing service should be made available to suitable commercial laboratories in Australia,
- h. potential laboratory and sampling service accreditation requirements should be documented.

New results from biological control experiments may be reviewed as part of a discussion paper supporting the Plan to understand the potential for using them as part of risk management.

This paper should also identify knowledge gaps about PCN management and eradication in Australia and how to address these.

3. Overview

3.1 Introduction

3.1.1 Why does Australia need a PCN Plan?

One of the main purposes of the Potato Cyst Nematode (PCN) Plan is to harmonise state regulations around Australia so that PCN eradication and management follows uniform rules.

Protecting the industry from economic loss

PCN spread, if unmanaged, could eventually lead to serious production losses. For example, even before the disease can be seen or detected, there is approximately a 9% drop in yield due to PCN. Heavy infestations may result in 60% yield loss. Once an infestation occurs, eradication is a long process, taking up to 20 years.

If Australia does not have an adequate PCN management plan, one consequence may be that market access, both within Australia and to overseas markets, may be heavily regulated or lost.

The golden PCN strain (*Globodera rostochiensis Ro1*) found in Australia, has so far been successfully managed using resistant cultivars, long crop rotations (5-9 years), hygiene protocols and good control of volunteer potatoes ('ground-keepers').

Managing the second type of PCN (pale PCN, *Globodera pallida*, currently classified as an exotic pest) is hard as there are currently very few resistant varieties. Implementation of the Plan will set up systems to quickly find pale PCN or exotic strains of golden PCN and activate eradication programs to prevent their spread, should they occur.

In Europe, where five strains of *G. rostochiensis* and *G. pallida* occur, losses from PCN are in the order of \$300 million each year.

Protecting individual businesses from economic loss

Without a Plan that provides an effective way to respond to PCN outbreaks on individual properties, individual businesses may suffer greater economic loss under current state regulations than under the Plan. This refers to businesses whose land is affected, directly linked businesses and those who may be in a surrounding pest control area, if required, even if not directly linked.

The Plan has the side effect of preventing the spread of other soil borne diseases.

Protecting the industry from potato imports from infested countries

Currently, Australia cannot use New Zealand's PCN infection status with all *G. rostrchiensis* strains and *G.pallida*. (or that of other countries wanting to export to Australia) to prevent potato imports. One reason for this is that much of eastern Australia has not yet conducted structured surveillance as described by the 'International Sanitary and Phytosanitary Measure 4'. Without the surveillance, Australian states currently considered as free of PCN may not be able to continue to claim official 'area free status' as a way of preventing imports.

Market access to overseas markets for the industry

To gain market access to PCN free countries e.g. Korea, Australia will eventually need official proof of absence of PCN from areas where it does not occur, based on monitoring. Currently only WA can officially meet this requirement. Tasmania has most likely conducted sufficient testing for an area free claim. Other states, apart from Victoria, currently are considered PCN free but due to a lack of testing have an indeterminate status, which can be questioned.

3.1.2 History of the Plan

The current Draft National PCN Management Plan was prepared following government and industry consultation. During initial consultation, the Australian industry had opted for a risk-based approach to PCN management in 2005. A scientifically based PCN pest risk analysis was completed in 2008 by DPI Victoria and has been used as the basis for the risk mitigation steps in the Draft Plan. This Plan was submitted to AUSVEG and the Commonwealth in October 2010.

3.1.3 What is in the October 2010 Draft Plan?

The Draft Plan sets out a national, harmonised protocol for the control, management and mitigation of PCN. The Plan will ensure that PCN remains a pest of quarantine concern under official control.

Below is a summary of the main areas addressed in the Plan.

Surveillance

A PCN surveillance program to determine the PCN status of all Australian production areas, apart from known infestations and known regions where area freedom is critical. A major goal of structured surveillance using official protocols for establishing high PCN health status for paddock, property and area freedom is the confirmation and maintenance of Australia's status of being largely free of PCN.

Claiming to be free of PCN without justification on an international phytosanitary basis is considered a serious vulnerability.

- The Draft Plan recommends a national surveillance program of 10% - 30% of land each year, depending on risk, to eventually prove area freedom (once all land has been tested with negative results).
- The Draft Plan recommends higher surveillance levels for high-risk land and seed certification (i.e. increased percentage and / or increased intensity of testing).
- The recommendation in the Draft Plan is to subsample on a 10 x 10m grid to collect a 2kg composite sample per each two hectares of land to be surveyed. A 0.5kg subsample of each composite sample is to be analysed for presence of PCN cysts.
- The maintenance program suggested in the Draft Plan is to re-sample 20% of potato production land after five years of initial sampling.

If PCN is not detected in a region, the surveillance will provide official evidence of area freedom to justify access to PCN sensitive markets and to prevent imports from countries with PCN (especially currently exotic strains and species). Appendix 3 shows a summary of the basic surveillance requirements in the Draft Plan.

New detections

The Draft Plan provides direction for managing new PCN outbreaks including for exotic strains of *G. rostochiensis* (golden PCN strains) and *G. pallida* (pale PCN). If PCN is detected, the Plan provides risk mitigation processes that will allow individual growers to continue production without the prohibitions (i.e. large control zones and severe trade restrictions) as per most current state legislations.

Restrictions on infested and linked land

The Draft Plan provides guidelines on how to register all infested and linked land.

The Draft Plan provides recommendations for managing PCN infested land, linked land and non-linked land with the aim of reducing levels, preventing further spread and ultimate eradication. It recommends that infested land should only be planted with PCN resistant cultivars and must not be used for seed production. It recommends control of self-sown potatoes and other hosts on infested land.

The Draft Plan sets out the appropriate risk mitigation strategies for PCN, which include soil minimisation on tubers. It states that seed movement is not to be allowed from infested and linked properties once infestation has been first confirmed. After that, seed production has to cease.

Appendix 2 contains a summary of basic requirements in regards to tuber movements from different land infestation categories in the Draft Plan.

PCN testing of seed for off farm planting

Since the highest risk of spread is on infested seed, the Plan includes a requirement for PCN testing and certification of seed. The aim is to eliminate the trade and use of potato seed, which has no record of PCN testing. Seed potatoes must not be grown on infested or high-risk land.

Farm hygiene and PCN management in the processing/marketing chain

The Draft Plan provides a comprehensive PCN hygiene strategy for on-farm biosecurity to minimise the risk of soil borne pests and diseases including PCN from entering and leaving farms. These are to:

- minimise soil attachment by providing grading/brushing and washing standards for ware and processing potatoes
- provide identification and traceability in the market chain for high risk fresh market potatoes from linked and infested land (bags labelled “Not for Planting” or “For Table Use Only”)
- implement certification guidelines for cleaned equipment, bins
- secure the processing potato pathway
- safely manage waste disposal on farm, in pack houses and from processing facilities.

3.2 National Consultation, March 2011

National consultation was conducted with industry in all major potato growing regions in March 2011. This was essential for understanding how a National Plan can work for industry and be implemented by state government authorities. The consultation process was facilitated by Dr Doris Blaesing from RMCG and Dr David Beardsell from the Victorian Department of Primary Industries, who presented the Plan. Both attended each of the consultation sessions conducted around Australia.

Consultation was managed by AUSVEG. Feedback from the consultants was compiled and used in the completion of this report.

Industry and state government input was required to establish which areas of the Draft Plan needed revision or clarification, and how a Plan could be implemented efficiently considering:

- current industry practices
- trade
- the industry's economic position and
- structures and services required to implement the plan.

The following sections provide details of feedback from the industry consultation meetings for each state and region. It lists participants present at meetings and a record of their comments. Contributions have been recorded depending on whether they came from industry, government or other participants. They have been recorded with reference to the main areas addressed in the Plan as listed in section 1.3 above. Some replies to questions or comments from the presenters / facilitators have been included in italic font. The initials DBe were used to denote a comment from Dr David Beardsell, DPI Victoria who presented the Plan, and DBI was used to identify comments from the facilitator (Dr Doris Blaesing, RMCG).

On April 17 2011, a potato levy payers meeting was held in Brisbane. During this meeting, the findings from the national consultation described in this document and the contents of the Draft Plan to which some amendments and changes had already been made based on the consultation, were presented. The presentations and comments from this meeting have been included in this report.

3.2.1 Australian potato industry information

A brief overview of potato production statistics in Australia is provided in Figures 1-1 and 1-2. The 2008-09 data used was sourced from the Australian Bureau of Statistics (ABS) website.

Production area (ha) for seed, fresh market and processing potatoes is described in Figure 1-1 for each state. Number of businesses growing seed, market and processing potatoes for each state is presented in Figure 1-2.

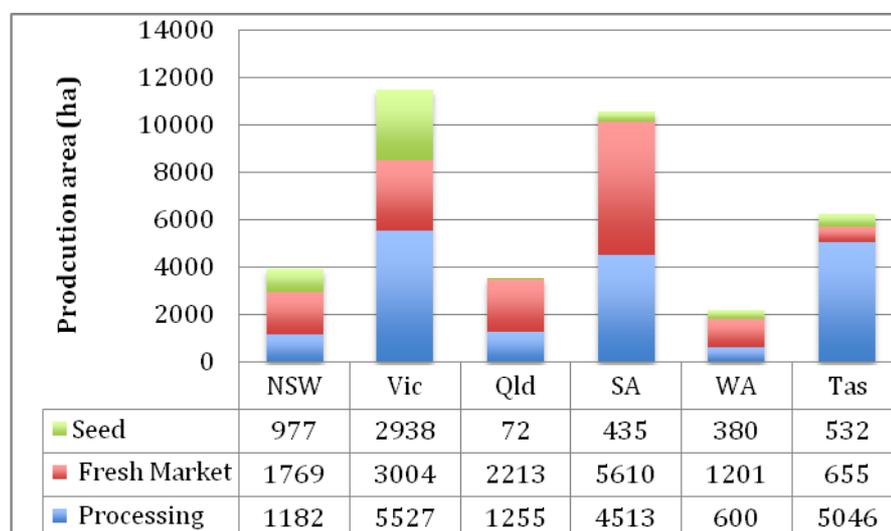


Figure 1-1 Potato production areas (ha) by state and type of production

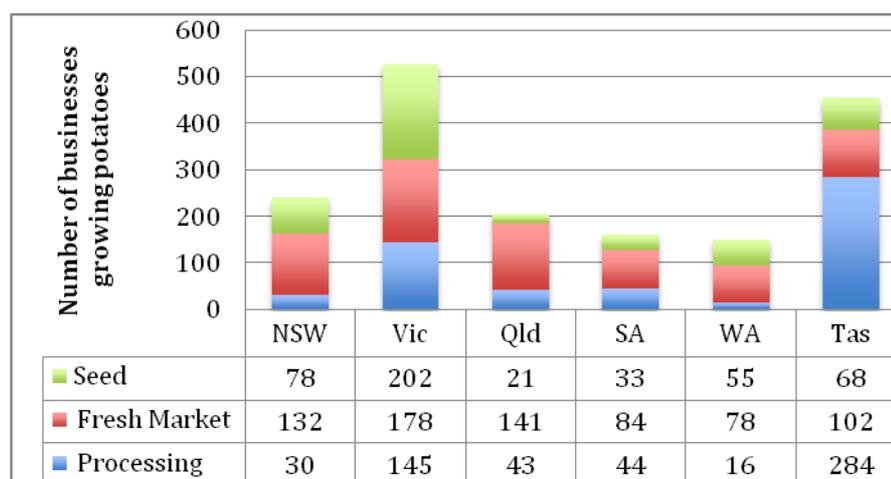


Figure 1-2 Number of businesses growing potatoes by state and type of production

A summary of area, number of businesses and volume of production (tonnages) (Figure 1-3) and the predominate type of production (processing, seed or fresh market potatoes) in each state ensures that comments made at consultation meetings in different regions are contexted. It may also help in judging the significance for each state in becoming part of a National Plan. Production areas in each state provide basic information on the extent of potential surveillance requirements.

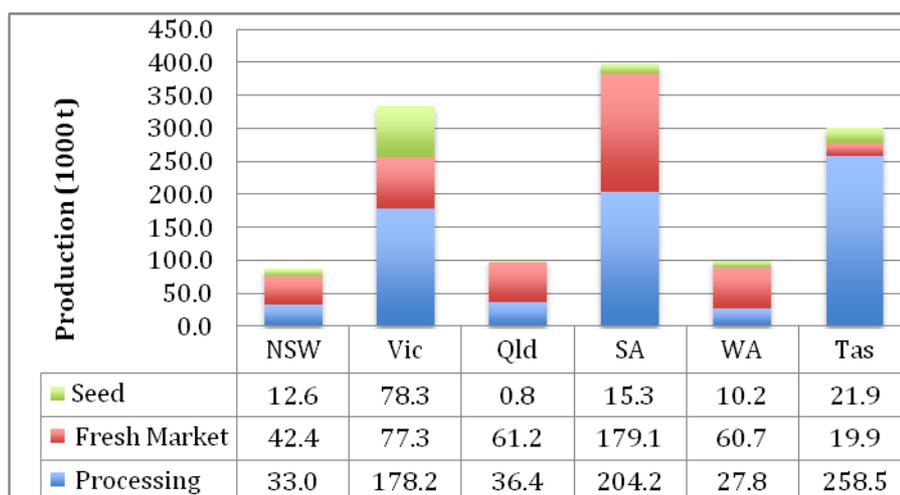


Figure 1-3 Potato production volumes (t) by state and type of production

Figure 1-4 shows average yields (t/ha) for each state as an indicator of how much impact a hectare charge on surveillance may have on profitability, i.e. the higher the average yield, the lower the average surveillance cost per tonne of tubers (presuming \$ returns per tonne are at around the same level).

More detailed information on individual production regions can be found on state government agriculture departments' websites.

Trade relationships within and between states are complex and have influenced how the Draft National PCN Plan has been viewed. Opportunities for maintaining or accessing overseas markets and protecting the Australian market from potato imports also impacted views voiced at different meetings. Naturally, discussions also reflected differences in the PCN status (free, indeterminate, infested) between states.

However, it is beyond the scope of this report to analyse and interpret these relationships and their effect on the in-principal acceptance or criticisms of the Draft National PCN Plan.

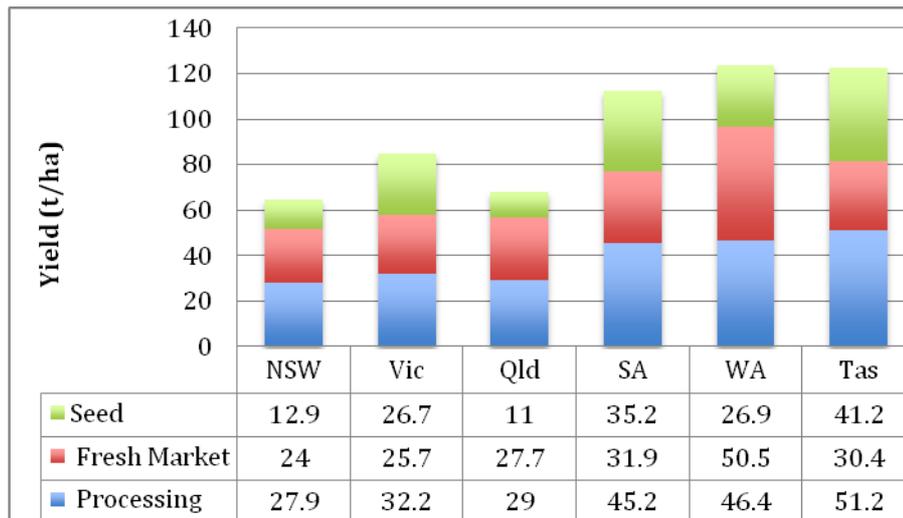


Figure 1-4 Average potato yields (t/ha) by state and type of production

3.3 Consultation in New South Wales

Details of potato production in NSW can be found in section 3.2.1 of this report.

3.3.1 Industry meeting – Wagga Wagga, 1 March 2011

Participants who attended the Wagga Wagga meeting are listed in (Table 3.3-1).

Table 3.3-1: Industry Participant Details – Wagga Wagga

Name:	Organisation/Farm:
Paul Rennie	Lachlan Produce
Geoff Moar	GR & C Moar
John Rennie	Pacific Ag
Chris Anderson	I&I NSW
Jason Menegazzo	G.M.Menegazzo & Co
Tony Napier	I&I NSW
David Troidahl	I&I NSW
Michael Hicks	Snackbrands Australia
Susanna Driessen	I&I NSW
John Doyle	Doyle's Farm Produce
John Tippett	Tippett's Scrubhill

3.3.2 Feedback from Wagga Wagga Participants

General

A number of participants indicated that they had expected that the Plan would be complete and that they could vote on accepting or not accepting it at the meeting. There was a feeling amongst some participants that the completion of the Plan was progressing too quickly, however, the main feedback was that industry wanted a clear understanding of what it would mean for their business and how the final endorsement and implementation processes would be handled in future. The purpose of the consultation was to give growers this opportunity to provide feedback on the Plan and to provide an understanding of the future pathway for its acceptance and implementation.

The general consensus was that the Plan needed to have more clarity around some key issues such as sampling and testing and associated costs, as well as tuber movement requirements for land of different classification under the Plan. Without

the additional information it will be difficult for industry to judge the Plan's implications, both benefits and associated practice changes and costs.

Government attendees needed clarity about legislative changes required under the Plan.

The cost of testing and perceived unreliability of PCN testing, if field testing was to be done at an affordable cost, was considered a major issue. The point was made that implementation of the Plan had to be economically viable for industry.

Participants would like to see a summary of the Plan explaining tuber movements and testing requirements to participants in more details.

Questions and comments concerning implementation and implications of the Plan

If the Plan were adopted, who would regulate it? (*DBe: some parts would become part of state legislations, others industry Code of Practice*)

Which parts of the Plan will become 'Code of Practice', which state or federal legislation / regulation?

The question was raised whether only part of the plan can be accepted, other parts rejected.

Is endorsement from all states required?

What is the state legislation status for seed certification and movement, how does the Plan differ?

What is the timeframe for implementation?

Summary of the Plan and information on what has to change from current production practices. How would 'Code of Practice' fit in with current QA systems e.g. FreshCare / ISO?

Is it possible to accept parts of the plan and reject others?

Is it possible to distribute a questionnaire to industry to vote on the plan?

Would the Plan be internationally recognised e.g. testing procedures, area freedom and control / eradication measures for infested land?

What are requirements from importing countries? Would they accept testing procedures and area freedom as per the Plan? *(DBI: could use published NZ export protocols as a guide to what is accepted by importing countries)*

How long would it take to get area freedom under the Plan?

Growers' comments at the Wagga Wagga meeting

Restrictions on infested and linked land

There were no specific comments regarding the proposed restrictions on infested or linked land. Growers were concerned about potentially infested seed that had been distributed from a Victorian farm prior to disease detection on that farm.

PCN testing of seed for off-farm planting

One attendee questioned whether certified seed would need to be PCN tested and, if not all seed was certified and tested, would there be a point in having a certification scheme at all.

Surveillance

Cost of 10 x 10m grid testing over a 2ha area for one sample as per current Plan is considered too high under the existing cost structure (e.g. minimum of \$200/test according to DPI Victoria and up to \$1000 according to I&I NSW).

Who will pay for testing? *(DBe: industry unless detection of a new *G. rostochiensis* strain or *G. pallida* is detected which then would activate procedures for the control of exotic pests under Biosecurity regulations).*

How can large areas be tested efficiently with the currently available services (for sampling and testing)? Who would be able to do this?

Who is going to administer testing?

What is the capacity of e.g. DPI to conduct the surveillance / which alternatives do exist for cost effective sampling?

What is the turnaround of current testing services?

Growers would prefer under-grading-line testing (UGL test) even if it needed to be validated against field-testing for Australian conditions *(the Draft Plan refers to US research that showed a good correlation between field and UGL samples. UGL sampling procedures would have to be specified in the Plan).*

If UGL test is well correlated to field-testing, how will that be made acceptable to O/S markets?

If under grading line testing requires more work to correlate it to field testing, what would that cost and what would be the benefits and timeframe for completion? Who would have the capacity to do the R&D?

New detections

Growers were concerned about the implications of testing and finding PCN. It was felt that this could be potentially devastating for growers and the production area. The issue was to weigh up what would be more damaging economically to not routinely test (no Plan) and potentially be affected by the pest via yield reduction and eventual detection, which would lead to restrictions as per the current state legislation, or to find PCN in a routine test under the Plan and deal with the consequences under the Plan.

Farm hygiene and PCN management in the supply chain

QA protocols could cover PCN farm hygiene procedures.

Processor comments at the Wagga Wagga meeting

New detections

Not keen on implementing a Plan that may lead to detections with all the costly consequences for processors.

Farm hygiene and PCN management in the supply chain

Cost of dealing with potatoes from infested and linked land is too high under the current arrangement.

The Plan bears the risk that current procedures and associated costs to prevent PCN spread will be increasingly required. Therefore the preference from the represented processor would be to not have a national Plan.

Government representatives' comments at the Wagga Wagga meeting

The government representative did not voice major concerns during the meeting but assisted with comments to clarify issues but needed more clarity around the issues raised by industry.

3.3.3 Industry meeting – Dorrigo, 1 March 2011

The potato growers who attended the Dorrigo meeting came from the Gyra and Dorrigo region (Table 3.3-1).

Table 3.3-2: Industry Participant Details - Dorrigo

Name	Organisation/Farm
Dale Miller	Cedar Park Partnership
Ian Holmes	J.S. Holmes & Co
Laurie Smith	L.A. Smith
Digger Guest	Plateau Farms
Des Humphrey	W.H.Boiling
Peter Newley	NSW DPI
Mick Tyler	Tyler Farms - 8542 Armidale Rd, Tyringham via Dorrigo NSW
Neville Beaumont	3954 Waterfall Way, Dorrigo NSW

3.3.4 Feedback from Dorrigo / Gyra Participants

General

Gyra is a ‘protection district’ i.e. movement of seed is prohibited into the area apart from mini tubers. Seed certification is currently not common in Gyra. Growers rely on the remoteness, rotation practices and the protection district status for seed health.

Growers would like to better understand economic benefits of resistant PBR varieties that may outweigh the PBR licence costs (e.g. resistance to some other diseases, greater water & nutrient uptake efficiency, yield potential). Supermarkets may not accept some resistant varieties e.g. Woolworths have their suppliers growing the resistant PBR varieties they accept. Coles is said to request certain varieties that are not resistant.

Growers would like to see a comprehensive summary of the revised Plan that provides answers to their questions. They need to understand advantages and disadvantage for their businesses and area, especially financial implications.

Questions and comments concerning implementation and implications of the Plan

What is the timeframe for finalisation and implementation of the Plan, will it be compulsory i.e. part of legislation?

What would be the consequences if PCN was found somewhere in NSW (restrictions, testing, costs, trade). What are the effects on neighbours under the Plan if PCN is found?

Can there be a national scheme if WA is declared area free and Tasmania may be getting the same status and thus they do not want to be part of a national scheme?

Which markets will be more or less accessible when the plan is implemented?

What is the status of access to public varieties (no PBR), what are the procedures for importing new varieties?

Growers' comments at the Dorrigo / Gyra meeting

Restrictions on infested and linked land

Why are blanket restrictions put on linked land rather than testing as a matter of course to be sure about the status? Plan needs to be clearer about requirements.

PCN testing of seed for off-farm planting

Why buy certified seed if currently there is no requirement for PCN testing and the seed could carry the pest?

Need to clearly understand certified seed testing requirements and costs under the Plan.

Surveillance

The soil testing requirements need to be clearer for each risk category.

Resourcing of sampling and testing need clarification.

After getting area freedom, what would the testing regime look like (including for WA)?

Who is going to conduct and administer sampling and testing? Growers should not sample themselves but who would and at what cost.

What is the capacity of e.g. DPI to conduct the surveillance and which alternatives do exist for cost effective sampling.

What is the capacity / turnaround of current testing services? What is the cost?

Growers want under-grading-line testing (UGL test) validated against field-testing if required but are interested to understand timeframes and costs.

If UGL test is well correlated to field-testing, how will that be made acceptable to O/S markets?

If under grading line testing requires more work to correlate it to field testing, what would that cost and what would be the benefits & timeframe?

Are there ways to reduce testing costs?

Is Western Australia conducting maintenance testing?

On leased land, who is responsible for proving and maintaining PCN freedom?

Farm hygiene and PCN management in the supply chain

Availability of resistant seed seems restricted and controlled by companies that hold PBR. The retailers also often demand varieties that are not resistant.

How can the access to and market acceptance of resistant cultivars be improved?

3.4 *Consultation in Queensland*

Details on potato production in Queensland can be found in section 3.2.1 of this report.

3.4.1 **Industry meeting – Bundaberg, 2 March 2011**

Participants from the Bundberg meeting are listed in Table 3.4-.

Table 3.4-1: Industry Participant Details - Bundaberg

Name	Organisation/Farm
E Pickering	
Dave Richards	Elders
Russ McCrystal	QLD DEEDI
Darren Zinker	Windhum Farms
Linda Pickering	G & L Pickering
Mark Fritz	M & J Produce
Mitchell Faint	Bayer CropScience
Tim Fischer	Biosecurity Queensland
Cameron Tree	Biosecurity Queensland
Jack Milbank	Hortus
Phil Brown	CQ University

3.4.2 **Feedback from Bundaberg Participants**

General

The Bundaberg region has only eight growers; they would like to obtain area freedom. For that they need to clearly understand testing requirements and how to get and maintain it under the Plan. They would like to know whether they have to wait for the Plan to gain area freedom or if they can do this under the current state legislation. They are not clear about the official biosecurity status in Qld in regards to PCN.

They need to know the potential spread of PCN from Victorian seed sent to Qld over the past years prior to PCN detection in a seed crop. They are interested in trace forward information about seed from Vic to Qld and what this would mean for Bundaberg growers under the Plan.

It was discussed that it may be of advantage to already move forward as per the Plan in regards to area freedom.

Growers expressed concern about effectiveness of PCN management in Victoria i.e. in regards to dirt from Koo Wee Rup spreading to non-infested areas in Vic via streams.

Questions and comments concerning implementation and implications of the Plan

There was concern that some smaller scale and or less disciplined growers may create serious issues especially if they do not care about spreading PCN, even under the Plan. How can small growers who sell 'here & there' be 'policed' under the Plan?

The Plan could be a good way of stopping the spread of other soil borne diseases as well as PCN.

Growers would like to see local variety trials of resistant varieties and know more about acceptability of these varieties to markets – especially supermarkets.

Growers need to know temperature effects on PCN – does it survive in high soil temperatures, do high temperatures break the cycle, if yes what temperature is required for how long. (Indonesia has PCN issues – comparison possible? Is published data available?)

What are the chances of PCN surviving in water (such as the Koo Wee Rup floods)?

To get area freedom, does everyone in the area need to be tested? What happens if a region wants to have area freedom and one grower does not want to participate?

How long would it take to prove PCN area / property freedom (with and without previous infestation)?

What are the requirements for areas / growers that are considered PCN free now compared to when the Plan gets up? What does need to be done? (*DBe: rules would be as for 'areas with indeterminate status'*)

Does the Plan prevent the home gardener from passing on PCN-infested seed? (*DBe: risk considered to be insignificant*)

How can growers that want a Plan give feedback?

Growers' comments at the Bundaberg meeting

PCN testing of seed for off-farm planting

Growers agreed that all seed should be certified.

Surveillance

There was a general uncertainty about testing requirements and implementation - who will undertake surveillance? If the Plan comes in, will the growers need to be surveyed whether they want to or not?

Is it possible to use a risk rating for farms based on management practice, potential pathways / traceability so that low risk farms do not need testing?

What is the operational plan for implementation of surveillance?

Researchers' and service providers' comments at the Bundaberg meeting

Laboratory capacity and training and certification requirements of sampling and testing services need to be known. Hortus (analytical services) is interested in investigating setting up lab services for PCN testing.

Researchers were present to understand R&D requirements. Service providers were present to understand how they can support their clients under the Plan.

Government representatives' comments at the Bundaberg meeting

Lockyer Valley / Gatton area have not been included in consultation – they comprise 30% of the industry and should be consulted.

Qld state legislation has not been reviewed as regulators were aware of the development of a national Plan and decided to wait for that.

3.4.3 Industry meeting – Atherton, 2 March 2011

The participants from the Atherton meeting are listed in Table 3.4-1

Table 3.4-1: Industry Participant Details – Atherton

Name:	Organisation/Farm:
Tony Pattison	DEEDI/H&FS
Rhiannon Evans	Biosecurity Queensland
Rosalie Anderson	Biosecurity Queensland
Bruno Cuda	139 Tinaroo Farm, Falls Dam Rd, Atherton
David Nix	IAC HAL & Nix
Helen Rockley	(Grower)
Frank Rockley	-
Michael Penna	(Grower)
Ed Thistlethwaite	Smiths
Klinton Cuda	(Grower)
Adam Cuda	(Grower)
Nick Cuda	(Grower)
Pompey Pezzolato	(Grower)
Tony	(Grower)
John V	Farm
Michael Hughes	DEEDI
Guido Poggioli	(Grower)
Peter Penini	P3 Farms
Peter Serra	(Grower)

3.4.4 Feedback from Atherton Participants

General

Atherton growers highlighted that the Plan has to consider international trade requirements i.e. that O/S markets will accept regulations. They conceded that, if the Plan can be used to stop imports and open up markets, it would be an advantage. There was concern about imports from countries with PCN infestations. The concern was not only raised in regards to potatoes but also other plant material and machinery / equipment that could bring in infested soil. *(DBe: Australia does not allow potato imports from infested countries and has strict quarantine requirements for soil removal from plant material or machinery / equipment.)*

Growers want to better understand how to become a PCN protection area / PCN free area or property (initial surveillance program for different risk levels) and maintain this (re-testing for different risk levels). This needs to be clearly set out in the plan.

The concept and definition of “linked land” was discussed in detail, as growers were concerned about having used seed from Victoria, which potentially was infested. They wanted to know whether linkage would be established based on movement of this seed or whether the linkage rule would only apply from the date of ratifying the Plan onwards.

Queensland does not have a commercial seed industry. It was felt that if all incoming seed would be PCN certified, the Qld industry would not be at risk and would not need intensive and ongoing testing.

It was stressed that it is important to have easy access to (develop / bring in) a good range of resistant varieties and that these have to be accepted by the market (it seems supermarkets ask for varieties that are not resistant and there are preferences for certain resistant varieties - not all processing varieties are resistant and markets for e.g. French fries may prefer established, non-resistant varieties). There is a need for lobbying supermarket buyers to accept / support resistant varieties.

Questions and comments concerning implementation and implications of the Plan

Growing of susceptible varieties should be strongly discouraged.

“Why does Australia need a Plan? Queensland is not particularly interested in knowing if they have PCN before it has a real effect on farms”.

The Plan needs to include a clear explanation on how to become a protection district.

What is the epidemiology of PCN under different climatic conditions and rotational practices?

Which role does water play in PCN cysts surviving and then spreading with run-off of water?

What are the costs of managing the disease vs. economic loss from PCN and its management? (*CSIRO has investigated and published data on this*)

What is the difference between susceptible, tolerant and non-susceptible varieties? Does PCN in the soil affect resistant varieties?

What is the procedure for importing resistant varieties?

The region needs to understand the potential effect of PCN on other *solanaceous* crops. What is the host range?

Are growers of other *solanaceous* crops (than potatoes) or their representative bodies informed / consulted / included?

How effective will a Plan be if some areas do not want to be involved?

Will the Plan override states' legislation that prevents some produce entering?

Whose responsibility would it be to ensure produce is washed or brushed as per the Plan (e.g. for processors or the ware market)?

Are current washing / brushing standards in Victoria implemented, enforced and checked by government, or are they governed by industry code of practice?

If PCN was found on a farm for how long before that would PCN have been there?

Who bore the cost of testing in Thorpdale?

Growers' comments at the Atherton meeting

Restrictions on infested and linked land

What would be the start date for establishing linkage through seed, e.g. implementation date of the Plan or a date set in the past such as 1-1-2000? This question refers to the seed movements from Victoria to Atherton since 1999/2000, prior to detection of PCN in a seed crop. If the start date would be set at e.g. 2000, all of Atherton would be linked to PCN.

How are farms unlinked?

PCN testing of seed for off-farm planting

Seed was considered a big risk for spreading PCN and the question was raised how to police testing of all seed.

How would the Plan affect seed growers?

Testing of 100% of seed area may be cost prohibitive (cost of testing impacting on cost of seed).

Surveillance

Why test areas currently considered free of PCN? – *DBe: the status is unknown and PCN could have been spread through seed, other plants or equipment.*

High level of testing costs per tonne could stop acceptance of the Plan. Testing costs and procedures need to be better understood.

If area freedom has been achieved and only certified seed is used alongside other management practices that reduce risk including resistant varieties, why is re-testing required to maintain area freedom?

Policing the testing is important; the cost of testing was an issue.

Is it possible to only survey paddocks that are linked e.g. through seed?

Would it be possible to plant susceptible varieties ('sentinal plants') e.g. Sebago into 'risk paddocks' (i.e. those that grew crops from a potentially infested Victorian seed source), and then test soil from around these plants. That may be a more sensitive and cheaper risk assessment than routine grid testing.

Are growers of other host crops affected by the Plan? If yes, how and are they being consulted?

Is under grading line testing (UGT) possible and how would it be practically done?

Under grader testing has been researched in US, does Australia have to repeat this work before using this type of testing under the plan? UGT is seen as essential in reducing costs of testing and getting good results on PCN occurrence under the Plan.

How long until under grader testing can be used?

Why is maintenance testing required once area freedom / protection district status has been achieved? Why should growers have to continue proving they do not have PCN if they have been tested and are considered PCN free and they are using 'safe' seed (and resistant varieties)?

If a single grower wanted to be tested now, how would he go about it?

New detections

Under the Plan, who carries costs of high level testing in the case of new detections, growers, state, levy?

Farm hygiene and PCN management in the supply chain

Which other crops or weeds are confirmed as hosts and are they affected and / or show yield decline? Atherton growers grow other solanaceous crops (tomato, eggplant, capsicum) in rotation with potatoes and thus need to know.

Processors' comments at the Atherton meeting

Compliance to current state restrictions when using processing potatoes from PCN positive areas (control zone) is very expensive (\$100/t) – will this change under the plan? – *Under the plan linked land can be tested and if free of PCN measures such as deep burial of waste are not required under the plan.*

Government representatives' comments at the Atherton meeting

Government representatives supported growers in their questions. They were interested in hearing industry comments to make a judgement on the potential acceptance of the Plan.

3.5 *Consultation in South Australia*

Details of potato production in South Australia (SA) can be found in section 3.2.1 of this report.

3.5.1 **Industry meeting – Mt Gambier 7 March 2011**

The Participants from the Mt Gambier meeting are listed in Table 3.5-1.

Table 3.5-1: Industry Participant Details – Mt Gambier

Name	Business
Peter Lyons	Lyons Seed Potato
Ben Dowling	Dowling Agritech
Ross Young	GA Young and Sons
Tim Heysen	Heysen Partners
Terry Buckley	J & FL Buckley & Sons
Graeme Henman	Safries Pty Ltd
David Cartwright	PIRSA (Biosecurity (SA))
John Hannay	PIRSA
Tony Kourmouzis	Red Earth Ag Co

3.5.2 **Feedback from Mt Gambier Participants**

General

It was highlighted that cooperation from all states is required to successfully implement the Plan.

The group had concerns about inconsistencies in the Draft Plan and uncertainties about requirements and how they would affect the industry. They also felt that SA specific production and handling conditions were not covered well in the Plan. Surveillance requirements, the lack of sufficiently risk based approach to surveillance, implementation and associated costs were a major point of discussion.

There seemed to be an agreement with the need to have a sensible Plan and advantages it could have for SA growers, especially for those who use land on both sides of the SA-Vic border.

Questions and comments concerning implementation and implications of the Plan

The Plan must not impose any restrictions on trade as it currently occurs. It should make life easier for cross border properties.

The Plan must allow for SA production practices such as large pivot areas and that not all of a pivot may be under potatoes; there are no fences in and around pivots.

It is not economical for SA growers to wash on farm i.e. if washing facilities have to set up specifically for PCN management, can a central washing plant be used? How would transport between the farm and washing facility be regulated?

The Plan needs to spell out how areas that are connected but go over state borders would be regulated under the plan (e.g. define area as shire, catchment or logical potato production district boundaries) – Glenelg Shire e.g. could be a potato protection district.

The Plan should be more based on risk and not only on broad scale testing.

What is the Plant Health Committee (PHC) – who is represented - and what is its function? – *State regulators make up the PHC, there is no industry representation.*

What are PCN trap crops? – DBI: *Solanum sisymbriifolium* (Lam.) is a trap crop used in NL but occurs as a weed in some areas of Australia. It is listed as a global invasive species.

Would there be a yield penalty from resistant varieties? – *DBI: not likely, resistant varieties may be resistant to other soil borne diseases and efficient users of fertilisers and water.*

PCN resistant varieties – does that mean PCN does not multiply? (*DBe: yes, there will be a decline in cyst numbers.*)

What is expected to happen to the spread of PCN after the Victorian flooding?

Does the Plan need to be accepted by the entire industry?

Will the Plan stop the paperwork and other hassles for properties that go over the Vic / SA border?

Will the Plan be legislated?

Will WA have to sign up? What happens if WA doesn't want to get involved?

What is the difference between Property Freedom, Paddock Freedom and Area Freedom?

What is the life cycle of PCN? Are the cysts randomly distributed through the soil? Is there more information available on the pest?

What happens to someone who thinks they are PCN free without testing and does not want to be tested under the Plan?

Growers' comments at the Mt Gambier meeting

PCN testing of seed for off-farm planting

There should be a clear sampling protocol and procedures that consider practical aspects of sampling and testing e.g. seed is directly graded into buyers bins and leaves the farm as inspected, certified seed within about one week of harvest. If a postharvest PCN test were required for certification, this would not be possible. - *Seed testing may have to accommodate this issue. It would be best for detection to test as close to harvest as possible. Maybe sampling has to be from risk areas in the field prior to harvest.*

All seed for use on virgin land should definitely be tested.

Surveillance

Testing regimes have to be brought into existing QA schemes as much as possible.

Who is going to do the testing and who is going to pay for it? *(DBe: currently there are four government testing labs; industry will pay).*

Which laboratories have the capabilities to do the testing at the moment?

Which is the most cost effective way to test? How long does the testing take? What about DNA testing of soil? *(DBe: more cost effective ways of testing need to be found, currently the testing takes about three weeks – one week in Europe – DNA testing of soils is not effective but DNA testing of cysts is.)*

Would the Plan recommend 100% testing of the production area straight away or testing of proportions? Can certain target area on the farm be monitored only?

Land with no history of potatoes or hosts or movement of soil from risk areas should not need testing prior to be taken into production as long as machinery & equipment is clean.

The Plan should allow for targeted surveillance to enable efficient testing of large areas / paddocks and also consider risks including paddock /farm history, rotation management when deciding about testing intensity.

Large areas / paddocks could be divided into management units for testing

Only a percentage of the total potential potato production area is under potatoes in any one year. The plan needs to clearly identify the initial and ongoing surveillance requirements for this and consider different lengths of rotation. “If you have 10 or 12 different pivot circles out of 70 under potatoes each year, is it 10% of each circle or 10% of the entire land under potatoes or 10% of the entire production land in a potato rotation that needs testing?”

Many crops are grown with a six to seven year rotation, together with high soil temperatures, the risk of PCN thriving is considered low. Can that be considered in the Plan?

When does the testing end? Why maintenance testing?

Farm hygiene and PCN management in the supply chain

The Plan should include a list of host plants.

Hygiene requirements can be handled as part of QA procedures.

Processors comments at the Mt Gambier meeting

Surveillance

Is there a need to do soil testing for processing varieties, if certified seed is used, resistant varieties planted, washing / brushing standards are met and PCN is unlikely to ‘escape’ (*if infection occurs, what about yield reduction, machinery, bin movements, linked land*)

Maybe sampling for processing potatoes should be done during harvest rather than from under grading lines – issue: if test is positive at harvest or grading, this result may not be available before tubers are moved.

Density of potato production in a state or area should be considered as part of a risk analysis – high density of production = high risk

Farm hygiene and PCN management in the supply chain

Potato waste from virgin land should not need extra treatment.

Government representatives' comments at the Mt Gambier meeting

SA government requires industry support to implement a PCN Plan

It would be good to have a Code of Practice / Risk Mitigation Protocol alongside the Plan (part of QA?) covering:

- washing
- rotation
- certified seed use
- use of resistant varieties
- hygiene procedures for all production steps (part of QA).

The Plan has to fit with the Potato Industry Biosecurity Plan and existing QA systems.

3.5.3 Industry meeting – Murray Bridge 8 March 2011

Participants at the Murray Bridge meeting are listed in Table 3.5-2. The meeting had 18 participants, five of which did not sign the attendance list.

Table 3.5-2: Industry Participant Details – Murray Bridge

Name	Business
Ross Trimboli	GTS Farms
Ian Zadow	Kaluna P/L
Ben Hill-Ling	Peracto SA
Julian Marcuant	Peracto SA
Andrew Hayton	VICSPA
Jeff Raven	PIRSA
John Fennell	PIRSA
Douwe Anema	Seed Grower- Netherlands
Denis Leonned	Grow SA
Mark Rye	Parilla
Nick Pserdos	
Peter McFarlane	
Gary O'Neill	Comit Farm Produce

3.5.4 Feedback from Murray Bridge Participants

General

Participants in Murray Bridge were interested in finding out how the Plan compares to NZ, EU and US/Canada regulations. Even though they could see the benefits of a national Plan, they thought that compulsory testing may be prohibitive due to costs and that growers who had received potentially infested seed from Victoria may reject mandatory testing.

One concern mentioned was that once the Plan was implemented, it may open the door for New Zealand to export potatoes to Australia under the same conditions as listed in the Plan for movement of tubers from infested land. This would leave the industry vulnerable to Zebra Chip and other diseases. (*DBe: The fact that NZ has several *G. rostochiensis* strains and especially *G. pallida* will prevent that they can follow the Plan's procedures*).

It was highlighted that the Plan must include a process that captures and acknowledges testing already done in SA. This information is currently not in a consolidated database but can be collated from laboratory and VicSpa records.

The Plan may be prohibitive for smaller size operations growing in more than one region or state (rules could differ) e.g. if that means a washing facility is required at each site. Growers often use a central washing facility (e.g. Virginia), which needs to be accommodated under the plan.

Questions and comments concerning implementation and implications of the Plan

Who is in charge of the Plan: *DBe: The Commonwealth currently is the guardian of the Plan, it will become State legislation once accepted by the Plant Health Committee.*

It would be useful to have examples (diagrams, flowcharts or tables) as part of the Plan to illustrate what would happen if there were PCN detections.

States regulate quarantine across state borders, are there special rules for across border farms in the Plan?

Who is going to monitor and manage / police the Plan in each state ‘Plan needs to have teeth’?

A Code of Conduct could be used within states (e.g. Australian Standard).

The Plan needs to consider industry practices, conditions and supply chain (tuber movements) in each area and for different business types. “Need a ‘virgin land clause’ in the plan.”

How many accredited PCN testing labs does Australia have? - Vic, Tas, Qld, WA, any others? What is their testing capacity?

What is the standard soil sampling and testing procedure (is there an internationally accepted standard)?

PCN area freedom should accommodate paddock history and risks more strongly and not be based on testing only.

How many seed protection districts exist? Where are they? Can they be listed in the Plan?

Can Authorities work with industry to get area freedom for districts? How will district boundaries be defined and identified?

“The plan could not provide protection from NZ imports as the rules established under the Plan could be used as an argument for allowing imports i.e. if NZ complies to washing and brushing standards for processing varieties, imports cannot be denied with the argument of PCN protection.”

‘Golden Delight’ is a trademark for 3 varieties with different resistance profiles; growers need to know which one they are getting when buying the seed.

Industry needs official list of resistant varieties including rating of resistance. Dutch participant explained that in the EU resistance rating eight out of ten is required for resistant varieties.

What testing has WA done to get area freedom? What is the current range of testing in WA? How is area freedom maintained there?

What are requirements for processing potatoes from SA going to Vic – any changes under the plan? What requirements does McCain have?

What is required under the Plan for sending potatoes to a washing plant e.g. grower use a central washing plant for potatoes from their production areas throughout the state?

Brushed and washed potato industries should have different requirements as washing results in lower risk.

“Rules need to be the same for everybody, independent of size of production.”

Growers’ comments at the Murray Bridge meeting on sections of the Plan

Restrictions on infested and linked land

Seed from Vic infected site went all over Australia; will growers properties that received the seed be considered linked under the Plan? A clear answer (start date) on linkage is required. “SA growers do not want Vic to ask them to test because they grew their seed” (*DBe: a trace forward was conducted on 500m of this seed and PCN was not found*).

The clause that land with indeterminate status needs testing (10-30% of land) to be determined “free of PCN’ under the Plan otherwise tubers need washing / brushing prior to leaving the property (or area), will be prohibitive.

If SA has an outbreak, all potato production may end up being linked.

Regulations for washing plants and brushing need to be clear.

Why is PCN testing of soil for ware and processing potatoes required, if tubers are routinely washed?

Potatoes should not have to be washed twice (on location i.e. pivot and in a washing plant). Washing on location i.e. at each individual pivot before transport to the central packing facility is cost prohibitive.

The Plan needs to include a start date from which onwards linkages will be established. It needs to be practical and cost effective.

PCN testing of seed for off-farm planting

Seed certification would be good to regulate seed health and spread through seed, which is highest risk.

SA seed growers test all seed (exported to WA or all?)

What will happen with the 'registered' scheme in WA – this is not certified seed – there needs to be a requirement for all WA seed to be tested.

Surveillance

SA participants at the meeting made the visitors aware that SA has been conducting PCN tests for tubers going to Victoria over the past years.

How high are testing costs? Could there be a not-for-profit testing service? What is the minimum amount of testing required?

Example: If SA has about 10,000ha of potatoes – at one sample per 2ha over 10% of the area, testing requirements would be 500 samples per year. At \$200 per sample this would amount to \$100,000 or \$100/ha; at 50t/ha, this equals \$2/tonne

In the Netherlands the Dutch General Inspection Service (NAK) processes about 70 samples per day. Analytical costs are about \$30/ha or \$0.30 per tonne.

Who is going to monitor that testing has been conducted as per the Plan?

Definitions for high and low intensity testing required in the Plan. The procedure in the back of the Draft Plan needs to be reviewed.

Testing before planting would be easiest.

OH&S issues to be considered for sampling during grading or harvesting.

Sensitivity of under grading line testing / testing during grading was questioned (*DBI: UGT is a recommended NAK procedure in the Netherlands for high sensitivity testing / screening*).

How good is testing from samples taken during grading when resistant varieties are grown?

The Plan should recognise previous testing if data is on file and can be related back to paddocks (GIS or otherwise – data held by VicSpa, laboratories or AQIS).

Processors' comments at the Murray Bridge meeting

Farm hygiene and PCN management in the supply chain

McCain and some other processors do not require washed potatoes, which needs to be accommodated in the Plan.

Government representatives' comments at the Murray Bridge meeting

Restrictions on infested and linked land

SA Authority knows which SA properties received potentially infested seed. Under the current risk profile in the plan they would be considered as linked – is that correct?

Surveillance

Current SA regulation allows for Pivot freedom. Is that correct?

Service Providers' comments at the Murray Bridge meeting

Who does the testing?

Can the costs of the tests be covered by a levy?

3.6 *Consultation in Western Australia*

Details of potato production in Western Australia (WA) can be found in section 3.2.1 of this report.

3.6.1 **Industry meeting – Bunbury 9 March 2011**

The participants of the Bunbury meeting are listed in Table 3.6-1.

Table 3.6-1: Industry Participant Details – Bunbury

Name	Business
Rod Francis	Landmark
Jam Taylor	Landmark
John Bocian	
Michael Bocian	
Chris Payne	Grower
Andrew Taylor	DAFWA
Darryl Smith	Grower
Simon Moltoni	Seed Grower
Michael Omodei	Grower
Tom Fox	Seed Grower
Lance Stubberfield	Elders
Tammy Eckerseley	Elders agronomist

3.6.2 **Feedback from Bunbury Participants**

General

Attendees agreed with a need for a Plan to control PCN in other states, however, they did not want to get involved with the National Plan. The reason is their understanding that the WA standard of testing in the early and later stages of their eradication and surveillance program was much more intense and thorough than what the Draft Plan is proposing. They worked hard for area freedom and do not want to be seen to go backwards to the same level as the other states as this would not look good to countries overseas.

Participants made it clear that for the plan to work, or for them to ever consider endorsing it, it would need to specify more thorough testing. For WA to cooperate with other states they want them to do better than just manage the problem (which is what is happening at the moment in Victoria and is proposed in the Draft Plan).

WA participants voiced that a National PCN Plan should use the same eradication and surveillance methods as those used in WA to achieve state area freedom. To better understand that approach, a summary of work conducted in WA is given below.

Summary of information on PCN management in WA¹

WA has area freedom; this has been achieved through an eradication program in infested and linked land and testing of the remaining production area.

1. Detection and eradication (1986-1989): quarantine measures, state-wide survey and eradication program.
2. Verification of eradication (1989-2010): 31,000 tests since 1989/90 during annual PCN surveys to verify eradication, continued quarantine measures.¹
3. Confirmation of area freedom (2006-2010); surveillance (high sampling intensity to give 96-100% detection probability) to prove area freedom conducted:
 - collation of data from soil sampling, fork testing and machinery and bin inspections conducted regularly
 - stratified soil sampling intensive soil sampling carried out for:
 - original infested sites
 - all properties in the metropolitan zone
 - “high risk” sites in country areas
 - bioassays of soil from the original PCN infested sites¹

To confirm area freedom a total of 61,400 soil cores were collected¹ (5x5m grid = high sampling intensity = about 360 cores per ha = approx. 170ha sampled intensively, = about 10% of the total production area in all regions), in addition bioassays were conducted over two seasons in originally infested areas.

In 24 years of testing 2,901 negative PCN tests were conducted in WA and >28,000 inspections of equipment & machinery¹.

85% of the production area in WA is planted with resistant varieties².

WA has a PCN testing protocols as part of its seed certification and regulated seed schemes. The WA protocol for seed testing is based on recognised international

¹ Dr Shashi Sharma, Canberra, October 2010: Potato Cyst Nematode (PCN) Eradication from Western Australia, PowerPoint presentation

² Note: Fork testing is not considered a suitable method to monitor cyst numbers if resistant varieties are used, as PCN in the soil does not lead to cyst formation on roots which is checked with this test. While new cysts are not formed, viable cysts can still exist randomly in the soil.

procedures and is currently accepted by Australian certifying authorities. The sampling intensity is:

Soil will be collected on a 10m x 10m grid. The soil collected from 2he will be aggregated and assessed as one sample. The preferred sampling time is just before, or soon after planting. All areas of generations G1 to G5 (i.e. G2, G3 and G4) must be sampled. 25% of the total area of generation five intended for sale must be sampled.

The current publications of the schemes on the Agriculture WA site (updated June 2010, showing issue 3, September 2009) states that WA has no current requirement of PCN testing for seed potato crops.

Questions and comments concerning implementation and implications of the Plan

“Every single grower in WA has been surveyed for PCN.”

WA participants felt that underwriting of the National Plan would put WA backwards in the eyes of overseas clients. WA would lose its competitive advantage. PCN detections in the other states would not be an issue for the WA image as there is a physical buffer (Nullarbor) between WA and production areas in other states and tuber movements are tightly controlled. “Considering our protocols are so much stricter than to those in the plan. If we were to just stick with the testing outlined in the plan, it would be a big step backward.”

“The surveillance cost in WA was worth it for us because now we have freedom to trade.”

“I don’t see how WA can be a part of it. It’s going to be a long process to change the plan (to WA standards / to be acceptable to WA) and I don’t think it will even change. “

“Mentalities need to change –the plan needs to be tough. The plan at the moment is weak.”

“All (*risky? infested?*) land needs to be tested 100% just like ours was in the beginning.”

“Anything we export is soil tested.”

“We have a seed certification document that is above the national standard.”

“Vic SPA seems to be more than happy to get the Plan up but I don’t want their seeds anywhere near WA.”

The main driver for WA is to protect its industry and investment into it. Little overall testing is done in most other states, which is of concern. Therefore it would be good to have a Plan for the rest of the country but WA wants to maintain its unique status of state area freedom and maintain it using its own regulations.

“The national industry and Plan need a long-term vision and approach to eradicate PCN. It needs to be based on an understanding of the value of each sector to the economy and investments should be based on that value.”

What is the timeline of PCN Plan implementation? Who will eventually decide on whether the Plan will be endorsed?

“What testing has been done to know how widespread PCN is in Victoria and how widespread it is in the eastern states where the contaminated seed has travelled to from Victoria?”

Is it a possibility that Victorian potatoes (from infested areas) sold to supermarket chains can be shipped to stores in other states and pose a risk?

Has fork testing been done in Victoria?

Is DNA testing effective for PCN? – *DBe: yes, testing of cysts done in Europe.*

What happens if a high-risk area is applying for area freedom?

Is there a definition of what a brushed potato is in the plan? *Yes*

Growers’ comments at the Bunbury meeting

Restrictions on infested and linked land

How good is washing or brushing? Are standards in the Plan adequate?

The timeline for eradication seems to be around 20 years if groundkeepers are controlled (does this differ depending on management?); is that considered in the Plan?

What are Vic’s controls in high-risk areas? Are they as good as the ones used in WA’s?

PCN testing of seed for off-farm planting

What testing has been done on seed that was sent from Vic in the past 10 – 12 years?
Where did it come from? Where did it go?

WA is not and does not want to be associated with VicSpa as this may look like an association with PCN. VicSpa should use the WA seed certification scheme.

Clean seed is the most important factor in managing PCN; there should be a National certified seed scheme including PCN testing.

All seed should be PCN certified. “We cannot go the way the Scotts, Dutch and Germans have gone. We have the world’s best seed certification and should stick with that.” “In WA standard cost for seed certification includes a PCN test charge.”

Surveillance

High intensity grid testing is the best way of detecting PCN early.

WA growers do not agree with the concept of property freedom or even area freedom as it seems risky, would like to see state freedom as per WA’s approach.

Growers believe fork testing (as per NZ protocol?) is comparable to soil core testing in detecting infections (*have the two methods been compared and results published?*

DBe: fork testing is not suitable for resistant varieties as there is no cyst formation on roots but viable cysts may still be present in the root zone and would be missed by the test; sampling has to be done during a defined physiological stage close to harvest maturity which would make it not practical for surveying large areas).

Growers are wondering whether soil sampling during grading would dilute the cyst number in a sample rather than concentrating it and thus being comparable to high intensity soil testing.

Growers feel that the methods and approach used in WA over the past 20+ years are the best and should be the standard.

Growers suggest 100% of potato production area needs testing over the next seven or so years in other states as per WA procedures.

Details about the current maintenance program and database systems in WA were not available at the meeting.

Farm hygiene and PCN management in the supply chain

Which climatic conditions aggravate or suppress PCN? Does PCN decline faster under high soil temperatures?

Government representatives' comments at the Bunbury meeting

WA will not support the National Draft PCN Plan as it stands; its rules and regulations would not meet the same standards (sampling intensity, eradication program) the WA industry has used to achieve area freedom. WA wants the Plan to have the same standards as WA.

WA believes that a Management Plan is not sufficient. A Plan would have to aim at eradication and prove PCN freedom in the same way WA has done.

A market access based approach is needed, requirements of importing countries should be considered in the plan.

“We’re not supporting the national plan. Graham Lucas will make an official statement on behalf of the WA government.”

3.7 *Consultation in Victoria*

Details of potato production in Victoria (Vic) can be found in section 3.2.1 of this report.

3.7.1 **Industry meeting – Warragul 10 March 2011**

Participants in the Warragul meeting are listed in Table 3.7-1.

Table 3.7-1: Industry Participant Details – Warragul

Name:	Organisation/Farm:
Frank Rovers	Grower
Sean Durkin	Grower
Gary Willis	Grower
Dot & Graeme Chapman	Grower
Luke James	ViCSPA
Pauline McPherson	T & D Jennings
George Lineham	Grower
Richard Scamporlino	Grower
John Todars	Grower
Wayne Tymensen	Grower
Peter Abel	Grower
Barry Hester	Grower
David Hawkes	Grower
Gordon Jones	Grower
Sharon Elphinstone	Elders
Bruce Ure	Grower
Joe Firrito	Grower
Sam Faillo	Grower
Mike Durkin	Grower
Matt Steendam	Durkin Produce
David Hotchkin	Hotchkin Potato Growers
James Fahey	J&A Fahey
David Blackshaw	Roanda Farms
Olivia Lineham	Grower, Cora Lynn
Anthony Failla	Red Mountain Industries/Gembrook
Rudolf de Boer	DPI Victoria
Laura Bowles	Ag-Challenge Consulting

3.7.2 Feedback from Warragul Participants

General

In Warragul, the necessity of a National Plan was not under question. It was seen as a way of harmonising protocols, reducing paperwork and general restrictions for trade imposed by other states due to the infestations detected in Victoria in the past. Some attendees were keen to see testing done in other states with unknown status.

The question was raised as to why HAL funded PCN consultation was conducted (again). On the other hand it was voiced that growers were not consulted sufficiently before the Draft Plan was drawn up.

Questions and comments concerning implementation and implications of the Plan

How long will it take until the Plan is approved? Will the plan be operational by this time next year? What is the time frame for implementation?

Is it possible to have a stepwise implementation, i.e. start with seed certification, followed by surveillance of high-risk land?

Under the Plan, what paperwork is required for growers with infested and linked land? Will the Plan ease paperwork for growers? Will Plant health certifications still be required for all movement of tubers?

If the Plan comes in, would past testing results be considered?

What is the final consultation process for the Plan?

How will growers who do not want to have PCN tests done on their farms be treated under the Plan?

Do resistant varieties drive down PCN levels?

Is there a chance of increasing the availability and production of resistant varieties and decreasing non-resistant varieties?

Growers' comments at the Warragul meeting

Restrictions on infested and linked land

Under the Plan, is it possible to grow on an infested farm, wash the potatoes and then send them out to any market?

Why is short rotation an issue in regards to risk if/when growing resistant varieties? Risk levels need to be well defined and testing should be done accordingly. E.g. it is considered a lower risk if the rotation between potato crops is five years (i.e. five years without a potato crop). However, growing resistant varieties in a closer rotation may actually pose a lower risk as resistant varieties lead to a decline in cyst numbers (this would not be the case if *G. rostochiensis* strains other than strain Ro1 or *G. pallida* were present). This needs to be considered in the Plan.

PCN testing of seed for off-farm planting

Will a seed certification PCN test under the Plan involve negotiations between current seed certification schemes?

Surveillance

How many successive negative tests will be required to prove area freedom? How long does it take to get property freedom? How long can PCN survive?

What is the maintenance-testing program?

International standards need to be considered in the Plan so we are on a level playing field with other countries and get market acceptance.

Is there going to be mandatory soil testing?

Under the Plan, will the testing involve egg counts per gram of soil, i.e. viability test as done in the UK?

“Viable” eggs should be the focus of in soil testing not the total count.”

New detections

How will the control zone around an infested paddock / farm be determined?

3.7.3 Industry meeting – Ballarat 11 March 2011

The participants from the Ballarat meeting are listed in Table 3.7-2.

Table 3.7-2: Industry Participant Details - Ballarat

Name	Organisation/Farm
Rod Stewart	Prime Super
Peter Lyon	Lyons Potatoes (seed)
Nigel Crump	ViCSPA
Rod Lay	McCain Foods
Ken Labbett	Grower
Tony Slater	Vic DPI
Scott Williams	SED Consulting (APRP2)
Greg Murphy	Grower
Russell McKay	Grower
Rod Fraser	Grower
Con Powell	Seed grower
Dave Antrobus	McCain
Peter Britt	J. C. Cutbush & Co

3.7.4 Feedback from Ballarat Participants

General

There was a general concern about trade restrictions for Victoria due to detections and also in regards to the range of resistant varieties that currently can be grown and sold.

Growers feel that at the moment there are no rewards for growers in Western Victoria who have undergone testing as compared to growers across the SA border that have had no testing regime imposed on them. “Until other states are forced to test, some people in Ballarat will suffer.”

50% of the total Ballarat production area has been tested with negative results for PCN. (This is an average as some farms had more than 50% of land tested; at least one farm was not tested at all as grower would not cooperate). Attendees questioned the fairness and sense of the fact that some farms in the region have been tested intensively, and others barely at all.

Ballarat participants wondered whether NSW, Qld and SA Authorities have been writing area freedom certificates for their industry without surveillance.

Questions and comments concerning implementation and implications of the Plan

Are all state governments going to agree to the Plan? “Not worth the effort of rewriting the Plan if they do not.”

What is the process for accepting the Plan? *DBe: State Authorities will be very reluctant to underwrite the Plan if they find that the bulk of a state’s growers do not agree with it.*

It may be worthwhile looking at risk analyses approaches used in other areas, e.g. Phylloxera or animal diseases (e.g. OJD, it was mentioned that talking to Meat and Livestock RDC regarding management of the disease may be of value).

Growers’ comments at the Ballarat meeting

Restrictions on infested and linked land

What is the definition of seed from infested land? – *DBe: no seed production for sale on infested land.*

What is the advantage in area freedom? – *DBe: Advantage in the Plan is that it opens up state borders for trade*

PCN testing of seed for off-farm planting

There are five definitions of seed in the Plan currently. This needs to be fixed.

Seed coming into Victoria now has to be PCN tested already, however seed moving around the state is not all under certification and PCN tested.

If seed growers are in an approved PCN free area, can the testing regime under the certified seed scheme be reduced?

It is a concern that if a seed business asks for PCN testing before accepting seed for cutting / storage, as growers who do not want to comply will then go to a competing seed business that does not have the same requirement.

Could we in Vic continue testing of infested land to know whether levels are declining, either with or without resistant varieties? This requirement does not seem to be currently in the Plan and it is not happening (at Gembrook) at the moment.

Surveillance

“Growers in Victoria mainly pay for testing, this should be the same in other states.”

Testing is considered important as without it, PCN can spread.

It would be good to reduce sampling and testing costs. However, growers should not sample themselves.

Have all properties in Gippsland been tested?

Is the testing sensitive enough?

How can testing be policed?

How will it be decided in practice when and where to test on a farm?

Can surveillance target high-risk areas / paddocks rather than be blanket testing?

Would a grower in “low-risk Ballarat” need to test to the same level as a grower in “high-risk Thorpdale”?

Can we introduce three (risk or testing?) level protocol to make it cheaper? – *DBI: In Europe three test procedures are used – PCR for routine high volume throughput, microscopic investigation for positive results and bioassay.*

How many years of area testing does it take to be area free? Is it one test per paddock?

Why is maintenance testing required? – *It is important to determine a decline in infestation and also determine whether other species of *G. rostochiensis* or *G. pallida* are present. About 68,000 PCN tests have been conducted in Victoria since 1991.*

It appears that there has been resistance (from SA?, from local merchants / processors?) to have Ballarat declared a PCN free area as this would mean that all incoming seed (and other tubers) would have to be tested.

What is the advantage of area freedom? – *It can go across state border under the Plan.*

Is Western Victoria officially a PCN free area?

Under a Plan trading should be done between PCN free areas without restrictions and paperwork.

The costs of testing to achieve 90-100% certainty of PCN freedom for all potato producing areas is seen as prohibitive and there should be little need to do this in low risk areas.

Processor / Packers' comments at the Ballarat meeting

PCN testing of seed for off-farm planting

What is the risk of packing sheds bringing infested tubers (ware / seed) into a PCN free zone e.g. risk of ware tubers being planted? How is this going to be managed under the Plan? *(At the moment the Portland Protection District allows in washed ware tubers in small bags).*

Would a fresh pack shed have to deal with the same legislation as a processing company?

If Ballarat had area freedom under the Plan, it would be restrictive for e.g. seed merchants if they wanted to bring in seed from areas with unknown or infested status for re-packing and sale.

3.8 *Consultation in Tasmania*

Details of potato production in Tasmania (Tas) can be found in section 3.2.1 of this report.

3.8.1 **Industry meeting – Deloraine 15 March 2011**

Participants in the Deloraine meeting are listed in Table 3.8-1.

Table 3.8-1: Industry Participant Details - Deloraine

Name	Organisation/Farm
Peter Harman	Simplot
Fraser Mearns	Harvest Moon
Frank Mulcahy	Simplot
Ian Young	IM & LF Young
Nathan Richardson	Brookfield Farming P/L
Leonie White	TIAR
Andrew Bishop	DPIPWE Tasmania
Nick Steel	TFGA
Keeton & Beth Miles	KH & EV Miles
Colin Birch	TIAR
Andrew Heap	TFGA
Peta Davies	Roberts Ltd
Andrew Craigie	TFGA Veg
Max Baker	M & J Baker Farms

3.8.2 **Feedback from Deloraine Participants**

General

Tasmania has submitted a case for area freedom. Currently there are no national rules for how to achieve area freedom without eradication of previous infestations (e.g. as in WA), therefore Tasmania may not get official acceptance of this status without a Plan. It was discussed whether it would be an advantage or disadvantage for Tasmania to stay with its current approach and not join a national Plan. It was felt that at the moment it is hard to compare processes and costs of both options.

It was felt that the ultimate aim of the Plan should be eradication i.e. PCN should not be accepted as endemic in Victoria³.

It was stressed as being important to keep up the import / selection of resistant varieties, also with resistance to other strains of *G. rostochiensis* and *G. pallida*, and that retailers and processors accepted these varieties. Growers needed to be able to access information on resistant varieties easily and know the strength of resistance.

It was felt that growers in production areas i.e. the North East and West should have been consulted. “It would have been good to have at least one other meeting in Scottsdale (north-east).”

Questions and comments concerning implementation and implications of the Plan

Is there something to be learned from Tasmania’s 19 years of testing – how can we get experience and acknowledgement of it into the Plan? “Disappointing that developing of draft Plan didn’t take into account Tasmania’s 19 years of testing.”

Who ultimately signs off on the Plan for each state? *DBe: Plant Health Committee with reps from each state’s quarantine authority once they are sure their industry supports the plan.*

What if a state doesn’t agree to proceed e.g. If WA and maybe Tasmania do not underwrite the Plan? *DBe: Plan hopefully still implemented in the remaining states – others may join later once the benefits are clear.*

Can states still have a level of own regulation under the Plan e.g. in regards to trade with regions that have or have not area freedom (e.g. can they accept or reject area freedom)?

Can parts of the Plan be rejected?

How will the Plan be implemented, administered and policed e.g. the testing of all seed and testing of cropping land?

What would it cost industry to implement the Plan on a national basis? What will it cost then annually to run testing schemes and administer the Plan e.g. a national database, state activities?

³ *D. Beardsell: no new detection in Vic since 2006, Gembrook is still an infested area as not all growers are using resistant varieties and there has not been a strict eradication program. Infested land in other areas has been taken out of production and linked land is managed with resistant varieties.*

What would be the costs to Tasmanian growers if Tas becomes part of the national program?

How can the knowledge about and access to resistant varieties be improved?

What is the Gembrook sampling regime? – *DBe: testing done on demand for growers asking for a test, no regular testing regime enforced.*

Are home gardens a risk? *DBe: considered very low risk and therefore not covered in the Plan.*

Once the Plan has been updated, can industry and a government representative review it? Can it be voted on? Can this be done through TFGA? Can there be an insert in Potatoes Australia with a summary of relevant Plan contents?

Growers' comments at the Deloraine meeting

Restrictions on infested and linked land

PCN testing of seed for off-farm planting

The Tasmanian seed certification scheme asks for a six year rotation (five years without potatoes).

Only 30% of Australian potato seed is certified nationally – how can we control / manage PCN with such a low uptake of a certification scheme? (*e.g. Tas uses 90-95% certified seed*)

Surveillance

How will the national database be set up and maintained?

Will the testing cost based on truckload / paddock / percentage of production?

Is the testing regime used in Tas over the past 19 years good enough under the Plan to achieve area freedom (i.e. numbers of subsamples per hectare and percentage of production area tested each year)?

Does low risk rating and history of production (rotation) justify lower level testing?

What are the requirements for maintenance of area freedom?

DBe: Cost of testing will be carried by industry apart from the unlikely event of detection of G.pallida.

New detections

How good is traceability (under the Plan) when infestation is detected – bins, bags, machinery, tuber?

Farm hygiene and PCN management in the supply chain

Is fumigation effective? What are other control methods?

Should growers in infested areas be obliged to grow resistant varieties only? (*DBe: this may be hard to implement if e.g. major retailers ask for certain varieties that are susceptible e.g. Sebago*)

Will contractors (planning, harvest, spraying, cartage) be covered under the Plan e.g. via a code of practice or other method?

How can import restrictions / surveillance on imported risky materials / plants be maintained in other states? Tas has the advantage of controlled entry points.

What are the other hosts of PCN?

Processors' comments at the Deloraine meeting

There were no processor-specific comments made at the Deloraine meeting. Processor representatives stressed the fact that Tasmania does not want to lose any of its current advantages and clean status under a Plan.

Government representatives' comments at the Deloraine meeting

Surveillance

The pest risk analysis used as a basis for the Plan would have to be acceptable to all state authorities as agreement is important for harmonised surveillance programs and market access between states. Tas currently has issues with the pest risk analysis as it stands.

Tasmanian surveillance covered 20% of land each year over 19 years. The entire production area should have been covered after five years of testing.

3.9 *Conclusions and Recommendations from the Consultation*

Throughout Australia, a genuine concern about the potential spread of PCN exists and participants at all meetings wanted to be protected (growers, processors, packers) or protect industry (government, service providers) from the economic effects the pest may have in their region. The fact that one state has to deal with PCN infestations, one has acquired official area freedom status, one is aiming at getting the same status and the remainder are concerned about PCN spread through an infested seed source has naturally influenced views and discussions at each meeting. Trade relationships and the need to protect the economic position of each area also had an impact on how the Plan was perceived.

General comments about the Draft Plan

The Plan should be concise and easy to read and comprehend. If a rule stipulated in the Plan allows for exceptions or options, the conditions under which these apply should be clearly described. Details of exceptions and options should appear as appendices rather than throughout the body of the Plan. Technical discourses and discussions should be published as a supporting document to the Plan rather than being dispersed throughout the Plan. Apart from a discussion paper, which should include information on the Victorian DPI risk analysis, a review of latest mitigation methods and an economic impact analysis⁴, it is recommended to prepare an implementation plan and a communications plan.

The Draft Plan can be updated to provide answers to most questions and address concerns raised during consultation meetings, apart from those mainly driven by industry politics, competition within the industry or the currently known or suspected status of freedom or infestation.

At least one entity / person familiar with industry practices should independently review the Draft Plan in light of industry feedback and also the final copy of the Plan prior to releasing it for final endorsement.

The following paragraphs provide recommendations or comment on different sections of the Plan based on feedback from meetings; they are not a review of the latest version of the Draft Plan document.

Restrictions on infested and linked land

Parts of the Draft Plan dealing with restrictions on infested and linked land need updating based on a rating of risks that includes paddock history and considers

⁴ Hodda, M., and Cook, D. C. 2009. Economic impact from unrestricted spread of potato cyst nematodes in Australia. *Phytopathology* 99:1387- 1393.

management systems such as rotation, movement of tubers to central washing facilities, centre pivots, use of resistant varieties, seed source as well as particulars of tuber movements for trade, packing and processing.

PCN testing of seed for off-farm planting

Seed certification protocols should be revised under consideration of current practices in areas that already have good programs in operation, e.g. Tasmania.

Surveillance

It is important to clarify sampling requirements for field sampling and have a system that can be implemented. This will mean balancing the need for gathering meaningful data from surveillance with the practicality and costs of implementation. Growers may need to be required to develop PCN sampling plans (as part of QA or property management plans?) that fit in with crop rotation and ensure that the entire potato production area is covered over time. A risk-based approach may allow omission of some paddocks from sampling. Sampling plans would need to be adjusted if the growing area changes.

When preparing the surveillance requirements, practical examples should be considered to make it practical for industry and ‘fit for purpose’ such as:

For a 1,000ha farming operation growing 200ha of potatoes each year, rotating that area around the farm (5-year rotation) and 10% of annual production land would have to be sampled each year (= 20 ha) it would take 50 years before each paddock on the farm has been sampled. 20ha would require 10 samples, one per 2ha taken at a 10 x 10 m grid. At a cost of \$200/sample for analysis, surveillance costs would be \$2,000. At a yield level of 40t/ha, the farm would produce 8,000t and the cost of testing would be \$0.25 per tonne each year. Using European costs, the surveillance costs would be about \$0.05 per tonne.

The current and potential efficiencies of sampling and analysis have to be considered in the implementation plan.

Maintenance surveillance requirements must consider rotation practices as part of a risk matrix rather than stipulating a fixed timeframe for resampling. Rotations can be as tight as one potato crop every two years or more than five years without potatoes. In some regions, rotational crops may be PCN hosts, which will have to be considered. If ‘volunteer’ tubers (‘groundkeepers’) are not controlled in years without potato production, then a paddock cannot be considered as being ‘without potatoes’ for PCN control purposes. While close rotations with non-resistant varieties are negative for PCN control and pose a higher risk, close rotations with

resistant varieties could be considered part of an eradication plan but may leave the risk of not finding exotic PCN strains and type.

New detections

New detections of *G. rostochiensis* Ro1 should activate an eradication response if feasible, apart from other measures mentioned in the Draft Plan. The Plan would have to outline what would be considered as feasible. Detections of exotic PCN strains and types should trigger an eradication program as per Biosecurity Australia requirements.

Farm hygiene and PCN management in the supply chain

Farm hygiene protocols should be, as much as possible, incorporated into existing QA programs. It would be important to understand the QA programs currently used in the industry to ensure that they could include PCN management procedures. The advantage of working in with QA programs is that these are regularly audited.

Where QA programs do not have a fit, Codes of Practice may have to be recommended for different sections of the industry under consideration of standard practices.

Recommendations summary

1. Update the Plan to improve clarity and accommodate issues and answer questions raised during consultation.
2. Ensure the Plan explains all requirements of industry and government agencies clearly and concisely and is applicable to all types of production practices and tuber movements.
3. Clearly state whether the implementation date is the date from which onwards linkages via potentially infested seed can be established or whether there is a different start date for establishing linkage.
4. Review surveillance requirements based on risk. There should be no concession on area as cost/tonne would be the about same for all. For this, all risks and a risk hierarchy need to be clearly documented, including potato production on virgin land, soil temperature and other climatic effects, rotation, management of volunteer potatoes (ground keepers), rotational host crops and resistant varieties. Testing should ideally take place within a certain interval after harvest rather than just prior to planting.
 - a. Surveillance protocols should be based on risk and refer to those adequately researched and accepted in other countries.
5. Prepare an implementation plan which should address:

- a. process of endorsement and stepwise implementation of the Plan e.g. immediate inclusion of seed certification, followed by implementation of tuber movement rules and surveillance on a risk basis
- b. how the required industry ‘Codes of Practice’ will be put together and implemented in each state
- c. who will be the ‘caretaker’ organisation of the endorsed Plan
- d. what is the process for Plan revisions and amendments to the Plan, e.g. if improved surveillance methods have been identified
- e. what are the ‘policing’ requirements and options
- f. development and logistics of efficient surveillance based on a review of potential sample volumes throughout the year by state (area of seed, ware, processing) and availability/costs of current PCN testing services in Australia. The implementation plan has to ensure that surveillance can be delivered alongside the implementation of other aspects of the Plan
- g. if laboratory capacity is lacking;
 - i. the cost and optional use of high throughput labs in the EU should be investigated, especially during the EU winter, when these labs may not be busy with domestic samples,
 - ii. technology, space, labour requirements and costs of a new, high throughput Australian laboratory service should be investigated; a financial analysis on requirements, establishment costs and the potential sample throughput for a PCN testing service should be made available to suitable commercial laboratories in Australia,
- h. potential laboratory and sampling service accreditation requirements should be documented.

New results from biological control experiments may be reviewed as part of a discussion paper supporting the Plan to understand the potential for using them as part of risk management.

This paper should also identify knowledge gaps about PCN management and eradication in Australia and how to address these.

3.10 Reference list

1. Draft National Potato Cyst Nematode Management Plan, Version 1.6B, October 2010
2. EU PCN Directive 2007/33/EG
3. Canada and United States Guidelines on Surveillance and Phytosanitary actions for the Potato Cyst Nematodes *Globodera rostochiensis* and *Globodera pallida*, June 2009

3.11. APPENDIX

3.11.1 Potato Levy Payers' Meeting

The presentations given at the potato levy payers meeting in Brisbane, 17 April 2011 are included below. Information on potential sample volumes is included in presentation 10.1.

3.11.1.1 Presentation by Dr Doris Blaesing



NATIONAL CONSULTATION

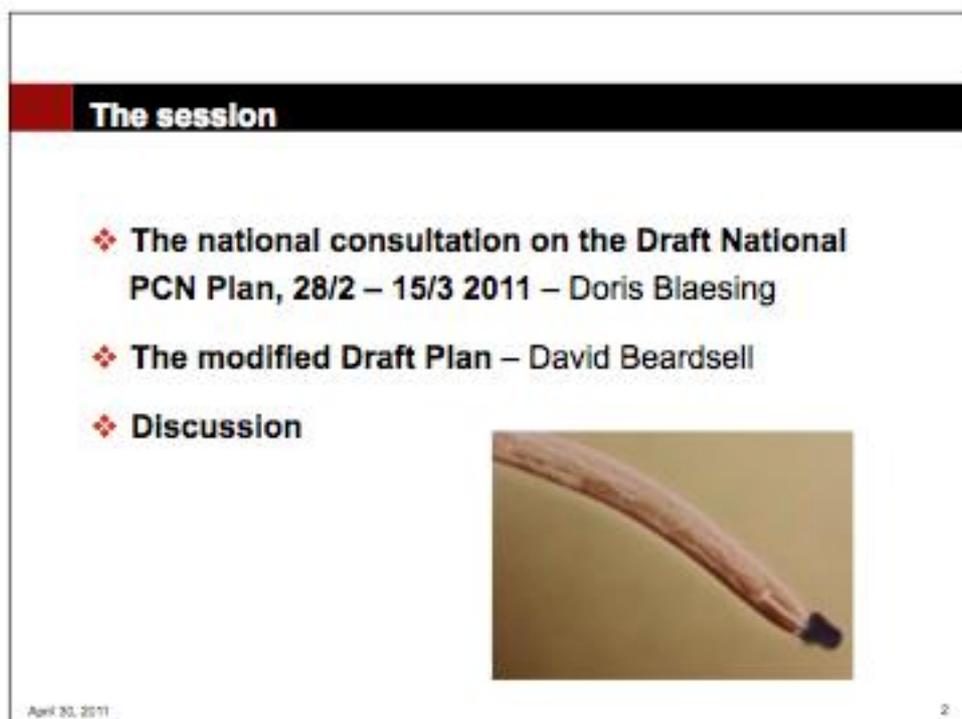
AUSTRALIAN POTATO CYST NEMATODE PLAN

Dr Doris Blaesing
for AusVeg and
Horticulture Australia Limited

RMCG
Consultants for Business, Communities & Environment

April 30, 2011

1



The session

- ❖ The national consultation on the Draft National PCN Plan, 28/2 – 15/3 2011 – Doris Blaesing
- ❖ The modified Draft Plan – David Beardsell
- ❖ Discussion

April 30, 2011

2

Major Outcome

A genuine concern about the potential spread of PCN and economic consequences for the potato industry was prevalent.

It was acknowledged that a harmonised national approach would be the best method to

- *Prevent PCN spread and facilitate eradication*
- *Prove that the pest is under official control*
- *Prevent entry of exotic strains of *G. rostochiensis* and of *G. pallida**
- *Support affected growers better than under current state legislation*

To do this, the Plan has to be practical and economical and not take away current advantages certain regions or states may have.

WA, while acknowledging the importance of a Plan for the other states, will not support it.

April 30, 2011

3

Where to from here?

❖ **Revise Draft Plan**

- ✓ Include industry feedback / recommendations
- ✓ Include a process that allows for amendments and revision

❖ **Include Implementation Plan**

- ✓ Steps & timeframes
- ✓ Start with addressing highest risks

❖ **Include Communication Plan**

- ✓ Industry has to be clear about issues and requirements

April 30, 2011

4

The Industry



Production Area (ha) by State

Number of businesses growing potatoes by State



April 30, 2011

The Situation

- One state has to deal with PCN infestations,
- One has acquired official area freedom status,
- One is aiming at getting the same status, and
- The remainder are concerned about PCN spread through an infested seed source.

Trade relationships and the wish to protect the economic position of each area had an impact on how a National Plan was viewed.

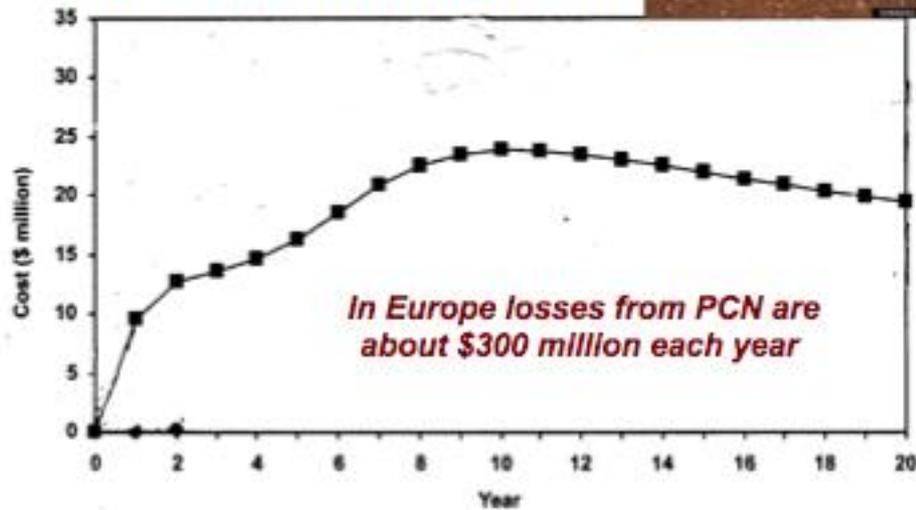


April 30, 2011

5

Cost of managing PCN if deregulated

CSIRO research, Hodda and Cook (2009)



What needs to be in a National PCN Plan?

Percentage of total area (%)

< 1

1-2

> 2

© Commonwealth of Australia 2001



The Primary Position Challenge

While you prepare the Plan, you do not know who or where you are going to be when it is implemented

- You could be a seed, ware or processing grower in any state
- You could be a processor
- You could be a packer or merchant
- You could be an exporter
- You could be a state or federal government regulator

Issues to consider

❖ The Plan and its implementation process

- ✓ Fit with the National Potato Biosecurity Plan
- ✓ Fit with regional industry practices, conditions and associated risks
- ✓ Endorsement process – what will be legislated by whom & when?
- ✓ Can states impose additional requirements?
- ✓ For Plan components that will not be legislated, how will codes of practice be established and used (QA systems, other)?
- ✓ Stepwise and / or part adoption possible?
- ✓ Policing of the Plan

April 30, 2011

10

Issues to consider



❖ Infestation / Detection

- ✓ Control zone size determination & restrictions
- ✓ Economic impact of restrictions
- ✓ Waste management issues
- ✓ Paperwork requirements
- ✓ Should use of resistant varieties be enforced on infested and linked land?

April 30, 2011

11

Issues to consider

❖ Linked land

- ✓ Starting date for determining 'linkage'
- ✓ How to 'unlink'
- ✓ Waste management cost

❖ Washing and brushing standards

- ✓ Washing on site not practical for multi-site operations with central washing facility
- ✓ What is good enough?

April 30,

12

Issues to consider



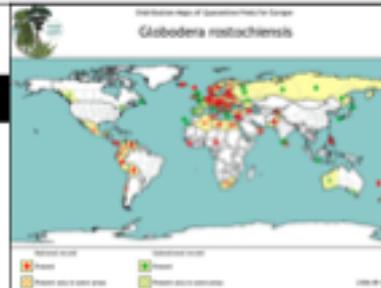
❖ Area freedom / protection districts

- ✓ How a region can get and maintain it?
- ✓ How it can be 'policed' – how to deal with non-participation?
- ✓ Once area freedom is established and certified seed & resistant varieties are used, is testing still required?
- ✓ Restrictions to tuber movement may be an issue for packers / merchants in these zones
- ✓ Will importing countries recognise area freedom for regions?

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Issues to consider



❖ Life cycle, epidemiology

- ✓ What are host crops?
- ✓ Effect of climate: soil temperature & moisture
- ✓ How long does it take for cysts to diminish when resistant varieties are used and non-host crops
- ✓ How long does it take between initial infestation of a paddock and detection through soil testing?
- ✓ What cyst levels cause economic damage?
- ✓ How many volunteer potatoes / ha are a risk?

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Issues to consider



❖ Various

- ❖ Market access - exports & imports
 - ✓ Evidence of official control of the pest
 - ✓ Protection from exotic *G. rostochiensis* strains & *G. pallida*
- ❖ Seed certification – alignment of current schemes
- ❖ Cross state border farms' paperwork
- ❖ Control of farm hygiene when using contractors
- ❖ Access to / acceptance of resistant varieties needs improving
- ❖ Recognition of pre-Plan testing results
- ❖ Inclusion of other host crops required in the Plan

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Issues to consider

❖ Sampling and Testing

- ❖ Sensible risk basis e.g. consideration of virgin land, non-linked land, rotation, resistant varieties etc.
- ❖ Sensible maintenance testing requirements
- ❖ Resourcing, administration & record keeping
- ❖ Logistics and lab capacity
- ❖ Effective, practical methods
- ❖ Lowest possible costs
- ❖ Leased land – who needs to pay?



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Annual sample number

1 sample per 2 ha and 20% of land sampled

	NSW	Vic	Qld	SA	WA	Tas	Total
Processing	118	553	126	451	60	505	1812
Fresh Market	177	300	221	561	120	66	1445
Seed	98	294	7	44	38	53	533
Total	393	1147	354	1056	218	623	3791

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Testing costs at 20% of area and 1 sample per 2 ha

Total cost

\$/ sample	NSW	Vic	Qld	SA	WA	Tas	total
200	\$78,560	\$229,380	\$70,800	\$211,160	\$43,620	\$124,660	\$758,180
70	\$27,496	\$80,283	\$24,780	\$73,906	\$15,267	\$43,631	\$265,363
30	\$11,784	\$34,407	\$10,620	\$31,674	\$6,543	\$18,699	\$113,727

Cost per tonne

\$/ sample	NSW	Vic	Qld	SA	WA	Tas	average
200	\$0.89	\$0.69	\$0.72	\$0.53	\$0.44	\$0.42	\$0.61
70	\$0.31	\$0.24	\$0.25	\$0.19	\$0.15	\$0.15	\$0.22
30	\$0.13	\$0.10	\$0.11	\$0.08	\$0.07	\$0.06	\$0.09

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Listen to what is in the current National PCN Plan and tell us:

Which other issues do you need to consider for your Plan for the Australian industry?

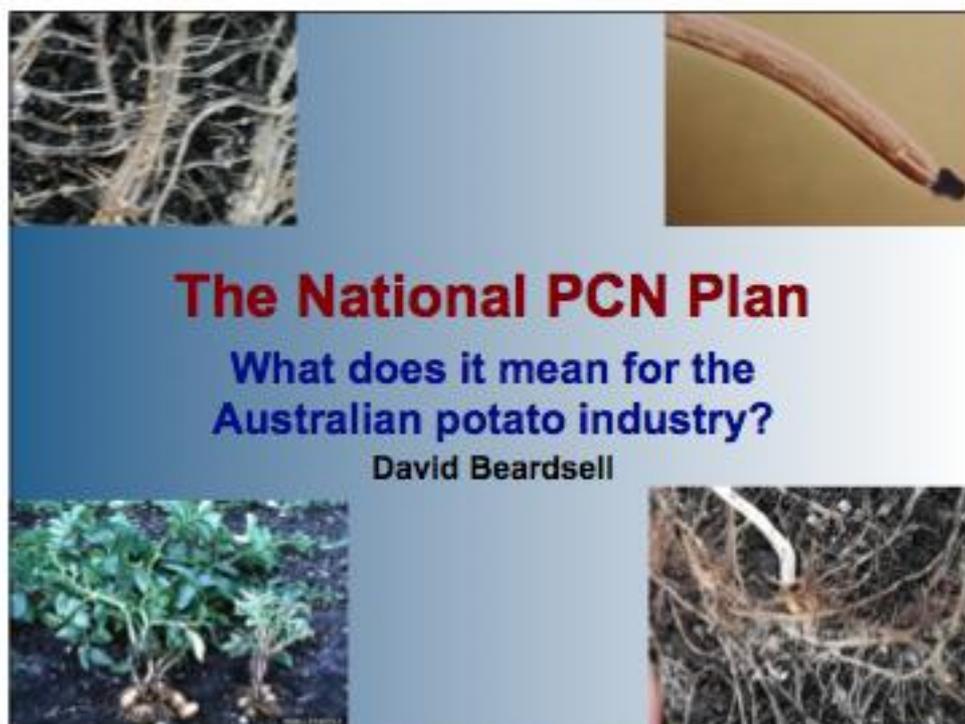
The Australian PCN Plan

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3.11.1.2 Presentation by Dr David Beardsell

At the meeting, David Beardsell provided an updated table of tuber and host plant movement conditions in the Draft Plan (Appendix 2) to participants.



WHY DOES AUSTRALIA NEED A PCN PLAN?

- **Protecting the industry from economic loss**
 - 9% yield reduction without seeing symptoms,
 - Heavy infestations may result in 60% yield loss
 - Reduced market access may be a consequence
- *In Europe, production losses from PCN are in the order of \$300 million each year*
- *If PCN is not better managed in Australia, it will spread and CSIRO has shown that it will cost industry over \$370 million over the next 20 years*

Protecting individual businesses from economic loss

- Without an effective way to respond to PCN outbreaks on individual properties, affected businesses may suffer great economic loss
 - The Plan has the extra benefit of reducing the spread of other soil borne diseases

Protecting the industry from potato imports from infested countries

Without an effective testing regime, Australia cannot claim 'area free status' to justify import restrictions on infested countries. Only Western Australia has formal Area Freedom status.

Adequate surveillance is required to prove and maintain area free status to allow export to PCN sensitive markets

Protecting area free zones

- Managing PCN in eastern Australia with the aim of long term eradication will strengthen and protect WA's and Tasmania's area freedom status
- It will also protect regional area free zones in NSW, Victoria and SA if they are declared following protocols in the Plan.

PCN affected Trent surrounded by resistant Crop 13 at Gembrook



Golden PCN cysts on non-resistant cultivar Wilwash after exposure to PCN



PCN resistant cultivar Atlantic without cysts after exposure to PCN



WHAT IS IN THE PLAN?

- **Classification of land risk, namely infested land, linked land, non linked land of indeterminate status, and PCN free land**
 - **Managing the land based on risk**
 - **PCN test of seed for off farm planting**
 - **Restrictions on infested and linked land**
 - **Area and property freedom surveillance**
 - **Dealing with new detections (*G. pallida*)**
 - **Farm hygiene and PCN management in the processing/marketing chain**

The main issue

- **The Plan will ensure that PCN remains a pest of quarantine concern under official control with the long term aim of eradication.**
- **With no Plan in place, Australia has no evidence that PCN is under official control.**

What are the options for PCN management in Australia

Option 1: Maintain the current arrangements

- Western Australia manages PCN via an area freedom protocol and strict importation regulations
- Victoria actively manages PCN (ie surveillance in all regions, farm hygiene, intense PCN testing of seed, regulation of potatoes and host material from infested and linked land).

Current arrangements continued

- The Tasmanian potato industry is protected by a long history of surveillance and strict importation regulations.
- In other states, the only management of PCN is regulation of entry from PCN affected parts of Victoria
- **If PCN is in other eastern states, lack of knowledge of where it is the biggest risk to its spread.**

Option 2. Base the management of PCN on the National PCN Management Plan

- The Australian industry needs to manage PCN rather than fear or ignore it.
- If the Plan is adopted, it will minimise the risk of uncontrolled spread of PCN.
- The cost for a survey program of waste soil in packhouses/factories covering 10% of land in the eastern states would be approximately \$300000 which would have to be paid by industry.

Option 3: Deregulate PCN

Because PCN spread was not well managed in NZ, the NZ Government walked away from it and it became an industry issue which industry had to deal with.

Some important things need to be done

- Australia is unprepared for an incursion/detection of *G. pallida* (not categorised under the EPPRD).
- We need a cheap and accurate PCN test which should be introduced under industry funding.

Implementation of the Plan

- If the Plan is supported by industry, state jurisdictions should endorse it at Plant Health Committee later this year and quickly implement harmonised changes to their PCN regulations
- Agreement and sign off on sampling protocols will be required
- Implementation of cost effective sampling and analysis methods
- Aim is for long term eradication of *G. rostochiensis* (WA has requested this)

Implementation (con't).

- Industry to implement PCN hygiene code of practice
- R&D be supported to answer unknowns (under grader sampling method, validation and are *Capsicum* spp. hosts?)
- Industry to support importation of a greater range of Ro1 resistant cultivars
- Industry to fund protective and market access surveillance
- Industry to use the plan to prepare for *G. pallida* detection

Questions raised by industry

- Timeframe: if agreed to by industry, it should be endorsed by government within 12 months and then time to put in each state's regulations
- Plan has incorporated industry concerns and practices
- Marketability of resistant cultivars-industry issue
- there are over 400 Ro1 resistant cultivars available overseas
- It would be ideal if all states endorsed the Plan
– a majority would be sufficient

Industry questions con't.

- The main change from current legislation is replacement of 20km quarantine zone by risk based mitigations
- Linked land classification following receipt of seed later found to be from infested land – since PCN takes years to build up depending on rotations and seed poses the highest risk of spread, thus a conservative approach should be taken otherwise it will spread

Industry questions con't.

- Cross border paperwork should be reduced by harmonised regulations and mutual recognition of PCN free zones
- Feedback will be accepted until final endorsement
- PCN sampling records to be kept by individual states
- Testing regime needs further refinement because of costing issues
- International recognition of the Plan will have to be negotiated
- Soil testing can be done at harvest but lab results may hold up marketing

3.11.1.3 Feedback after the levy payers' meeting

Feedback from levy payers

The main comments from the levy payers meeting were that:

- the need for a National PCN Plan and the steps of how to get there were now better understood
- the process seemed doable and not as daunting as first thought.

WA representation at the meeting maintained the position of not wanting to be part of a National Plan as explained during the consultation.

It now is up to industry to make a decision on a way forward.

Feedback from Dr David Beardsell

Following strong industry support at the AUSVEG Potato Summit, the following activities should be undertaken to ensure that the National PCN Management Plan (the Plan) gets appropriate industry endorsement and is adopted.

1. All industry comments be incorporated unless technically invalid, and the revised Plan, together with 4 page summary be lodged on AUSVEG external website by 1 June 2011.
2. AUSVEG to write to all state potato industries including those in WA and Tas seeking endorsement of the Plan and inviting final comments for consideration by 30 June 2011.
3. If a majority of state industry bodies endorse the Plan, a final revision to be completed and sent to Plant Health Committee for endorsement later this year. If Plant Health Committee endorses the Plan including getting agreement and sign off on sampling protocols, its subsidiary, the Domestic Quarantine and Market Access Working Group assist agreeing states to quickly implement harmonised changes to their PCN regulations.
4. Following agreement on national PCN testing procedure(s), immediate implementation of cost effective and reliable sampling and analysis will be required.
5. Ensure that a key aim of the Plan is for long-term eradication of *G. rostochiensis* from infested areas (WA has requested this).
6. Industry to implement PCN hygiene code of practice described in the Plan
7. R&D to be supported by AUSVEG/HAL to answer unknowns (industry has indicated that the under grader sampling method validation has the highest priority).
8. Industry to support selection process for the importation of a greater range of Ro1 resistant cultivars suitable for trialling against key varieties not resistant to PCN currently in use such as Sebago, Kennebec and Russet Burbank.
9. Industry to fund protective and market access PCN surveillance as described in the Plan.
10. Industry to use the Plan to minimise the introduction of *G. pallida* and to prepare for a detection of these serious quarantine pest.

3.11.2 March 2011 Consultations

3.11.2.1 Main responses by state and topic

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Ather-ton	Mt Gambier	Murray Bridge	Bunbury	Warra-gul	Ballarat	Deloraine	
IMPLEMENTATION											
Endorsement, timeframe, implementation process, policing of plan needs clarification	x	x	x	x	x	x		x	x	x	9
Plan needs to consider industry practices & conditions	x	x		x	x	x	x		x	x	8
Access to & market acceptance of resistant varieties need improving		x	x	x	x	x		x	x	x	8
Do all states need to endorse the Plan? Can it leave out states (e.g. WA, Tas)?	x	x			x			x	x	x	6
Will Plan override state legislation? How does it differ from current legislation?	x		x	x	x	x				x	6
Plan must make cross state border business easier, reduce paperwork	x				x	x		x	x		5
How is it possible to give feedback / vote on Final Plan	x		x					x		x	4
Growing of susceptible varieties should not be allowed on infested land and should be generally discouraged		x		x				x		x	4

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Ather-ton	Mt Gambier	Murray Bridge	Bunbury	Warrag-gul	Ballarat	Deloraine	
Concern about having received potentially infected seed from Vic prior to detection	x		x	x							3
Can parts of Plan be rejected?	x									x	2
Will importing countries recognise Plan, what are O/S requirements	x	x									2
Do not support the Plan unless it is as per WA procedures							x				1
SURVEILLANCE											
Administration of sampling & testing - who will determine who, when and how to test & who will keep a database etc.?	x	x	x	x	x	x		x		x	8
Clarify testing needs by risk type & % required / improve risk approach	x	x	x	x	x	x		x	x	x	9
What is the cost of sampling & testing?	x	x	x	x	x	x				x	7
Cost of testing too high @ \$200/test	x	x		x	x	x		x	x		7
How good are different testing methods esp. if resistant varieties are grown?	x					x				x	3
How will sampling be resourced?		x	x	x	x	x					5

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Atherton	Mt Gambier	Murray Bridge	Bunbury	Warragul	Ballarat	Deloraine	
Who is responsible for testing of leased land?		x									1
Can soil be collected during harvest? OH&S?					x	x					2
UGT preferred	x	x		x							3
UGT not preferred					x	x	x				3
Details on maintenance testing required, why is it needed?		x		x	x	x		x		x	6
What was the WA testing regime? Is WA conducting maintenance testing?		x				x				x	3
Why test processing paddocks if certified seed and resistant varieties are used and/or tubers are washed?					x	x				3	3
Plan must acknowledge testing history					x	x		x		x	4
DETECTIONS											
If PCN were found, for how long would it have been there?				x							1
AREA FREEDOM											
Clarify how to get area freedom - timeframe, advantages			x	x	x	x			x	x	6

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Ather-ton	Mt Gambier	Murray Bridge	Bunbury	Warrag-gul	Ballarat	Deloraine	
Why retest for area freedom if clean seed and resistant varieties are used? - Need to accommodate risk and history				x		x			x	x	4
What happens to area freedom if somebody in an area does not agree to test? How will 'recalcitrant' growers be treated?			x	x				x			3
How can packing operations that bring in / trade in ware tubers be accommodated in a protection district?									x		1
SEED CERTIFICATION											
Agreement with PCN testing for all certified seed			x	x	x	x	as per WA standards		x	as per Tas standards	7
Clarify seed testing requirements / cooperation between current schemes		x			x			x	x	x	5
Questioning the uptake / policing of a National Seed Certification Scheme				x				x		x	3
Seed certification costs may be too high				x							1
INFESTED & LINKED LAND											
Linked land - starting date for linkages? How to 'unlink'	x	x	x	x	x	x	x	x		x	9

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Ather-ton	Mt Gambier	Murray Bridge	Bunbury	Warra-gul	Ballarat	Deloraine	
Need clear washing / brushing standards; need to know how effective it is						x		x			2
FARM HYGIENE / SUPPLY CHAIN											
Use QA & code of practice	x				x					x	3
Which crops and weeds are hosts? Do they show symptoms?				x	x			x			3
Cost of waste management from PCN paddocks is too high	x				x						2
Are contractors (planting, harvesting, spraying?) covered under the Plan?										x	1
OTHER											
How does the Plan compare to US, EU regulations? Do they need to be considered e.g. as international rules for export?	x			x		x		x		x	5
Concern re how good Vic controls are and effect of Kooweerup floods on PCN spread			x	x	x					x	4
Need to understand life cycle, esp. in regards to climate / survival in hot conditions			x	x	x					x	4
What is the cost of managing PCN vs. economic loss from PCN?	x		x	x							3

	NSW		Qld		South Australia		Western Australia	Victoria		Tasmania	Number
	Wagga Wagga	Dorrigo	Bundaberg	Atherton	Mt Gambier	Murray Bridge	Bunbury	Warragul	Ballarat	Deloraine	
Do home gardeners pose a risk?			x							x	2
Discourage/ prohibit growing of susceptible varieties / disallow in infested land.				x						x	2
Plan will protect from imports				x							1
Plan will make imports easier						x					1
Are growers of other host crops included in the Plan?				x							1

3.11.2.2 Tuber and host plant movement conditions in the Draft Plan

National PCN Plan – Tuber and host plant movement conditions- high risk land

Crop type	Infested Land	Directly linked land (buffer)
Seed tubers	Prohibited	Prohibited (unless de-linked by 12 year testing / resistant cultivar program)
Ware potatoes	Resistant cultivars only, brushed/washed to remove visible soil, marketed in small bags/containers labelled “Not for planting” and with grower’s name and locality. Certified and sent to accredited packing facility using secure storage and transport Secure waste on farm, during transport and at packhouse	Resistant cultivar, negative low level test, brushed/washed to remove detachable soil, marketed in bag/containers labelled “Not for planting” and with grower’s name and locality. or Non resistant cultivar washed and marketed in bag/containers labelled “Not for planting” and with grower’s name and locality.
Processing potatoes	PCN Resistant cultivars only, brushed/washed and send waste from accredited factory to landfill / sewer.	PCN resistant varieties, brushed / washed free of soil, or non PCN resistant varieties with negative test, brushed / washed, free of soil and waste from factory to landfill, sewer or appropriately composted or heat treated
Soil grown hosts to be planted elsewhere (tomato, capsicum, eggplant, strawberry runners, soil grown bulbs, trees, turf)	Prohibited unless cleared with a high level test, host material cleaned free of soil and not to be planted in production areas (urban only)	Prohibited unless cleared with low level PCN test, host material cleaned free of soil

National PCN Plan – Tuber and host plant movement conditions- low risk land

Crop type	Non-linked land of indeterminate status (no links but no test result)	Verified PCN free land (negative test)
Seed tubers	<p>Permitted with accreditation. A negative standard PCN test on 100% of the crop each year. Brushed to standard shown in <i>Figure 4 – Movement and Market Access Conditions</i> (p.48). Marked or identified with grower’s name and locality. Certified Seed Authority certification or with a PHC or a PHAC.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free certification. Marked with grower’s name and locality. Certified as originating from a certified seed scheme.</p>
Ware potatoes	<p>Permitted with accreditation. A standard PCN test of at least 10% of the crop and brushed. Or Washed to standard shown in <i>Figure 6 – Movement and Market Access Conditions</i> (p.49). Certified with a PHAC*. Marked or identified with grower’s name and locality.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free certification. Marked with grower’s name and locality.</p>
Processing potatoes	<p>Permitted with accreditation. A negative standard PCN test on an average of 10% of crop and brushed. Or Washed to standard shown in <i>Figure 6 – Movement and Market Access Conditions</i> (p.49). Certified with a PHAC. Marked or identified with grower’s name and locality.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free certification. Marked with grower’s name and locality.</p>

3.11.2.3 Tuber and host plant movement conditions in the Draft Plan - revised

National PCN Plan – Tuber and host plant movement conditions- high risk land

Crop type	Infested Land	Directly linked land (buffer)
Seed tubers	Prohibited	Prohibited (unless de-linked by 12 year testing / resistant cultivar program) and linkage factors no longer apply
Ware potatoes	<p>Resistant cultivars* brushed/washed to remove visible soil. Non resistant cultivars must be washed or moved under government permit and protocol.</p> <p>Marketed in small bags/containers labelled “Not for planting” and with grower’s name and locality.</p> <p>Certified and sent to accredited packing facility using secure storage and transport.</p> <p>Secure waste on farm, during transport and at packhouse or send to secure landfill/sewer or treat to disinfect PCN, and not permitted to enter potato production areas.</p>	<p>Year 1: Negative standard pre plant PCN test of 30% of crop targeted to high risk areas and brushed to standard shown in <i>Figure 5 – Movement and Market Access Conditions</i> (p.48). The test is to establish that the land does not have infested status.</p> <p>Subsequent crops: Resistant cultivars* no pre-plant test, brushed to standard shown in <i>Figure 5 – Movement and Market Access Conditions</i> (p.48); or Non-resistant cultivars require pre-plant test of 30% crop targeted to high risk areas, washed or brushed to standards shown in <i>Figures 5 and 6 – Movement and Market Access Conditions</i> (pp. 48-49).</p> <p>All crops (including year 1): Packed on farm or transported with an approved declaration to an accredited packing facility for packing under segregation.</p> <p>Marketed in approved sized bags/containers each labelled “Not for planting” (washed potatoes exempt from this requirement).</p> <p>Marked or identified with grower’s name and locality.</p> <p>Inspected and certified with a PHC or a PHAC.</p> <p>Waste secured on farm or at the accredited packing facility and not permitted to enter PCN area free zones nor allowed to be sent to PCN free properties/paddocks</p>
Processing potatoes	<p>PCN Resistant cultivars* only, brushed/washed, labelled, sent to accredited facility and send waste from accredited facility to landfill / sewer or treat to disinfect PCN, and not permitted to enter potato production areas.</p>	<p>Year 1: Negative standard pre plant PCN test of 30% of crop targeted to high risk areas and brushed or washed brushed to standards shown in <i>Figures 5 and 6 – Movement and Market Access Conditions</i> (pp. 48-49). The test is to establish that the land does not have infested status. waste from factory to landfill, sewer or appropriately composted or heat treated. Waste not permitted into PCN free zones nor allowed to be sent to PCN free properties/paddocks</p> <p>Subsequent crops: PCN resistant cultivars*, brushed / washed free of soil <i>Figures 5 and 6 – Movement and Market Access Conditions</i> (pp. 48-49), or Non PCN resistant varieties with negative test on 30% of production land, brushed / washed, free of soil and waste from factory to landfill, sewer or appropriately composted or heat treated. Waste not permitted into PCN free zones nor allowed to be sent to PCN free properties/paddocks</p>

***Where PCN resistant cultivars are used PCN testing after every third crop should be done to determine absence of *G. pallida* or other strains of *G. rostochiensis*. PHC=Plant Health Certificate, PHAC=Plant Health Assurance Certificate.**

National PCN Plan – Tuber and host plant movement conditions- low risk land

Crop type	Non-linked land of indeterminate status (no links but no test result)	Verified PCN free land (negative test)
Seed tubers	<p>A negative standard PCN test on 100% of the crop each year.</p> <p>Brushed to standard shown in <i>Figure 4 – Movement and Market Access Conditions</i> (p.48).</p> <p>Marked or identified with grower’s name and locality.</p> <p>Certified Seed Authority certification or with a PHC or a PHAC.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free verification.</p> <p>Marked with grower’s name and locality.</p>
Ware potatoes	<p>A standard PCN test of at least 10% of the crop and brushed.</p> <p>or</p> <p>Washed to standard shown in <i>Figure 6 – Movement and Market Access Conditions</i> (p.49).</p> <p>Certified with a PHAC*.</p> <p>Marked or identified with grower’s name and locality.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free certification.</p> <p>Marked with grower’s name and locality.</p>
Processing potatoes	<p>A negative standard PCN test on an average of 10% of crop and brushed.</p> <p>or</p> <p>Washed to standard shown in <i>Figure 6 – Movement and Market Access Conditions</i> (p.49).</p> <p>Certified with a PHAC.</p> <p>Marked or identified with grower’s name and locality.</p>	<p>Permitted under an area freedom certificate or with a property or paddock PCN free certification.</p> <p>Marked with grower’s name and locality.</p>

3.11.2.4 *Surveillance summary*

Current surveillance requirements in the Draft Plan

Area freedom

Area to be tested to gain <u>area freedom</u>	10-30% of land used for potato production each year until all paddocks used for potato production has been surveyed in this fashion	Testing % level depends on risk (Rotation, varieties, seed source i.e. certified or not)
Maintenance after testing has shown PCN free status	As above	As above

Property freedom & Paddock freedom

Area to be tested to gain <u>property or paddock freedom</u>	100% of planted area each year until all paddocks used in the potato rotation have been tested	
Maintenance after testing has shown PCN free status	20% of area designated for potato production every 5 years (can follow the initial sampling regime) or after the 1 st subsequent potato crop, if the rotation is longer than five years	If non-host crops and resistant varieties are grown
	If hosts or non- resistant varieties are grown 100% of testing of production area postharvest	

Paddock freedom only possible for non-infested, non-linked land

Testing of infested land

To be done to change infestation status for ware & processing potatoes	100% of area	
--	--------------	--

Testing of seed

Seed certification for seed to be sold of farm	100% of area	
--	--------------	--

Seed must not be grown on infested or linked land