Report on the Economic and Business Impacts of Potato Psyllid on the Potato Industry

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Survey conducted by Alan Kale
On behalf of ELAK Consultants Ltd
For Potatoes New Zealand (PNZ)

About the survey

This survey was commissioned by Potatoes New Zealand with funding from Sustainable Farming Fund (SFF). It covered forty-two (42) growers from all sectors of the potato industry as well as five (5) Processors and three (3) Seed Merchants.
The survey used a one to one interview style which took 1-2 hours for each interview.
The following figures and statements are a reflection of the comments from growers and industry personnel interviewed. The figures relate to a current time period (the last 12 months).

As with any biological system it is difficult to be exact with regard to specific impacts when multiple factors are acting at once. This survey has utilised growers best estimates of the situation and costs incurred specifically due to Potato Psyllid. The survey has been as precise as possible, but not all costs are independently verifiable

To maintain anonymity for individual respondents, the costs relating to psyllid are presented as regional and national totals.
The **regional grower costs** are broken into three categories which include costs relating to specific areas as follows.

Crop Impacts

- Reduced yield
- Increased rejects
- Raw material downgrading
- Total crop failures
- Cost incurred to make up for losses
- Cost impact on other/rotational crops

Control Costs

- Extra Insecticide products
- Extra Fungicide products
- Extra spray applications

Other Costs

- Psyllid related increased seed costs
- Moving production location
- Impact on markets
- Extra management/ crop monitoring
- Extra research costs
- Extra compliance costs
- Any other costs

For commercial reasons the **processor and seed industry** costs are listed as one total figure only. These costs cover the following areas

- Lost margins through short supply due to psyllid
- Increased production costs
- Cost of plant improvements required
- Increased laboratory and procurement office expenses
- Increased crop monitoring costs
- Contributions to research on Potato Psyllid

Certain **assumptions** have been used in calculation of these costings

- Appropriate IRD depreciation rates on capital inputs have been used where required
- The standard SFF grower in kind contribution rate of $75/hour for grower time
- When a vehicle cost is included this has risen to $90/hour
- A standard Contractor rate for spray application of $55/Hectare has been used
- A standard chemical pricing has been used in calculations of spray product costs.

The costs presented did not include any of the following

- Increases in raw material pricing
- Lost opportunity costs where growers have reduced their area grown.
- Lost sales turnover (just the margin)

Some costs (eg the South Island Trap monitoring programme) have been included under Processors and Seed industry costs for ease, though they are in practice shared with the growers concerned.

Potatoes New Zealand has provided an estimate of research and associated costs that are additional to the research funded by the voluntary contribution (as these have been included in grower costs).

The Impact of Psyllid on the Industry

The following two areas were the most consistently pressing issues expressed by the growers interviewed.

The destabilising effect of psyllid.

Growers who suffered major crop failure losses when psyllid first arrived now report a lower level of crop losses, but only due to vastly elevated levels of crop vigilance and control inputs.

Psyllid has elevated the costs in potato production and perceived risk of crop failure, to a point where the risk return ratio is so out of balance, that unless immediate improvement in returns are forthcoming, then a major change is imminent.

For many, psyllid has added “another layer of burden to what was already a very marginal business.”

There was an overwhelming sense, from the surveyed growers, that they are reviewing their options, and positioning themselves to reduce their risk exposure to the current potato situation, by cutting back production.
For many the capacity to absorb major crop failures is now not tenable, and major capital costs are being deferred. Some expressed the view that a significant occurrence of either could lead to their exiting from the industry.

Even in the South Island (where growers “felt fortunate that they have had time to prepare for the arrival of psyllid”) there is a caution regarding taking on any additional financial exposure and a sense that “the worst is yet to come.”

While there are some growers who reflect minimal psyllid impacts to date, and some exhibiting a dogged determination to “beat the psyllid”, the majority are already taking action to mitigate risk.

The advent of psyllid has had a "destabilising effect on the industry", "introducing much more uncertainty". But growers reported in some ways it also has had a positive side; in terms of the better crop focus and industry cohesion it has given rise to ("made everyone lift the bar")

However the seriousness of the situation felt by growers is reflected in the following two quotes.

"The Industry cannot underestimate the risk of psyllid, and it is important that the whole industry takes it very seriously".

"Psyllid has the capacity to bugger the industry therefore we need to give it horsepower. PNZ is doing the right thing"

While some sectors and regions of the industry have been more severely impacted by psyllid to date, **the above comments reflect the feedback from growers surveyed across all sectors**.

Erosion of the Potato Sector Market Profile

Some growers expressed a concern that the work and costs recently invested to build up the potato sector profile with the consumer, will be undermined by the short term loss recovery actions taken by some whereby psyllid affected unsuitable product is placed onto the fresh market. It was felt that this could have an even bigger long term impact on the industry than the psyllid is having.

The impact from these actions on market returns is still considered a major cost to fresh market growers in the North Island.

There is a feeling of frustration with the state of the industry by some, with one grower going as far as to suggest there should be market regulations introduced to protect the good of the whole sector from these cost mitigating actions.
It was suggested that PNZ could play an education role here (particularly with supermarkets) to help them understand the future impacts that current actions could have on the industry. Another suggestion was that no retail pack of potatoes should be sold without the grower's name being on the pack.

Current Cost Snapshot

Table 1

Total Current Industry Psyllid Induced Extra Costs

Growers Costs	$21,661,810
Processors and Seed Industry Costs	$5,330,000
Research and Associated Costs	$1,012,456
Total	$28,004,266

Research and Associated costs supplied by Potatoes New Zealand

Table 2

Total Current Psyllid Induced Extra Grower Costs

Crop Impacts	$11,068,664
Control Costs	$6,033,699
Other costs	$4,559,447
Total	$21,661,810

Table 3

Psyllid Induced Extra Cost per Hectare- By Sector By Region

Region	Description	Seed	Fresh	Process	Total
Auckland	**Total Cost per Hectare**		$2,998.0	$5,103.9	
	Regional Hectares		1,728	1,338	
	Regional Total Cost		**$5,180,532**	**$6,829,077**	**$12,009,609.1**
Hawkes Bay	**Total Cost per Hectare**		$5,840.9	$5,656.2	
	Regional Hectares		55	361	
	Regional Total Cost		**$321,249**	**$2,041,879**	**$2,363,128.3**
Manawatu	**Total Cost per Hectare**	$2,816.5	$3,500.1	$3,750.9	
	Regional Hectares	190	681	395	
	Regional Total Cost	**$535,138**	**$2,383,592**	**$1,481,595**	**$4,400,325.2**
Canterbury	**Total Cost per Hectare**	$572.5	$197.5	$540.2	
	Regional Hectares	1,004	1,169	3,856	
	Regional Total Cost	**$574,825**	**$230,915**	**$2,083,008**	**$2,888,747.4**
New Zealand	**National Total Cost**	**$1,109,963**	**$8,116,288**	**$12,435,559**	**$21,661,810**

Hectares used are those supplied by PNZ 2010 survey figures. The Auckland figure differs slightly perhaps due to some hectares from other regions being included in the surveyed Auckland area.

The above figures illustrate the current difference in extra costs between the regions and production type. The figures are a weighted average of the individual respondents for that region. The weighting is based on the percentage of the total hectares for each of the respondents in that category (i.e. If a respondent had 10% of the hectares for that category in that region, then that growers responses would carry a 10% weighting towards the final average)

A lower figure may not always indicate less expenditure. It could also reflect that the pre-psyllid input costs may have been already higher in comparison to the post-psyllid costs. This also applies to the following table where the costs are further broken down.

Table 4

Psyllid Induced Extra Cost per Hectare- By Sector
Breakdown by cost Type

Region	Description	Seed	Fresh	Process
Auckland	**Crop Impacts**		$763.8	$4,088.0
	Control Costs		$680.0	$798.4
	Other costs		$1,554.2	$217.5
	Total Cost per Hectare		**$2,998.0**	**$5,103.9**
	Hectares Surveyed		**1,728**	**1,338**
Hawkes Bay	**Crop Impacts**		$615.4	$3,594.6
	Control Costs		$1,120.7	$1,314.4
	Other costs		$4,104.8	$747.2
	Total Cost per Hectare		**$5,840.9**	**$5,656.2**
	Hectares Surveyed		**39**	**361**
Manawatu	**Crop Impacts**	$1,614.5	$1,451.2	$2,381.1
	Control Costs	$1,065.8	$1,206.9	$1,077.7
	Other costs	$136.2	$842.0	$292.1
	Total Cost per Hectare	**$2,816.5**	**$3,500.1**	**$3,750.9**
	Hectares Surveyed	**62**	**206**	**141**
Canterbury	**Crop Impacts**	$0.0	$0.0	$184.7
	Control Costs	$446.8	$172.8	$299.2
	Other costs	$125.8	$24.8	$56.4
	Total Cost per Hectare	**$572.5**	**$197.5**	**$540.2**
	Hectares Surveyed	**283**	**228**	**1,272**

Generally the largest direct impact of psyllid on potato crops is seen in northern New Zealand and on process crops.

In Auckland no grower reported losing whole crops in the field, but 62% of process surveyed hectares reported having significant tonnage downgraded to reject (dumped) status. In addition 41% of fresh market and 77% of process surveyed hectares still reported yield reductions due to psyllid compared with pre-psyllid yields.

In Hawkes Bay no grower reported losing whole crops in the field, or having significant crop downgraded to reject status. However 13% of fresh market and 97 % of process surveyed hectares still reported yield reductions compared with pre-psyllid yields.

Manawatu results were similar to Hawkes Bay, but with yield reductions still reported for 50% fresh market, 77% process, and 35% of seed hectares surveyed.

In Canterbury there were no downgrading reports or whole crops lost. However 24% of process hectares surveyed did report yield reduction compared to pre-psyllid.

The main cause of downgrading reported was that due to lower Specific Gravity.
There was a view put forward by some that the eating quality of potatoes may also be affected by psyllid.

Other aspects from the survey

Long maturing varieties such as Moonlight were certainly reported as having suffered greater crop losses due to psyllid.

Some growers clearly indicated that psyllid was responsible for them either cutting back or moving totally away from these varieties.

However the majority of growers surveyed (especially fresh market) indicated that any variety change had been in response to other market reasons, not psyllid.

Some growers were making changes to rotations and how they grouped potato fields. But none indicated they were moving production to other regions to avoid psyllid. However there has been an increase in product grown in the South Island destined for the North Island.

Most growers registered no yield impact on other crops they grow, but often this was due to extra resources being employed. Some growers were able to quantify this cost (direct employment of extra staff), but most were not able to quantify the cost (they just worked harder and longer).

Growers reported using both traps and direct in-field monitoring. It was felt both had there own specific uses.

South Island growers felt that trap data was a more integral part of their control decision making. This was attributed to lower numbers and the slower generation development time for psyllid in the South Island compared to the North.

In the North Island, trap data is used mainly as a signal and timing of where to focus field scouting. Northern growers find correlation between trap results and psyllid levels present in fields is not high especially early in the season.

Another concern raised was that publicising the increased control inputs too much will lead to negative consumer responses also affecting the overall sector profile negatively.

Research and information delivery

While most growers felt that the research programme was addressing the Psyllid issues as best as they could, concern was expressed as follows

- There has been a gap between the science and grower needs in terms of
  - Delivery of results
  - Delivery of answers to the **short term practical needs** of the grower
  - Focus of Trial work priorities

- The program priorities are focused on delivering outcomes/ solutions that are medium to long term in nature.
- More emphasis on solutions to the immediate practical psyllid control needs of the growers would have been beneficial.

- Much of this need has now been addressed through growers own trial and error experience.

Also it was felt that some basic understandings still require addressing

- What is the downstream impact of psyllid infected seed on subsequent crop growth, quality, and storage
- What impact does direct "clean" psyllid feeding have on crop yields, quality, specific gravities, cooking etc
- What is the downstream effect of psyllid feeding on storage physiology
- How does "hot and cold" psyllid feeding impact on Seed
  - Vigour
  - Dormancy
  - Stem Numbers
  - Daughter Tuber numbers
  - Daughter Tuber quality

The situation has improved with the addition of the psyllid co-ordinator

Other areas mentioned that growers would like research to provide answers for, include

- Action Threshold for control
- Fast track Registration of proven effective new chemicals to provide more options
- What climate factors lead to major outbreak

Feedback on delivering of information

- Many growers rely on merchant based or independent agronomists for their programme content advice. This group is a key component for any co-ordinated delivery of control strategy/options information to growers
- Research information to growers needs to be tailored, not all use email therefore still need newsletter, mail, and direct talking opportunities
- The regular quarterly psyllid grower meetings are very good for bringing the wider industry together. Concerned to see grower participation at these tapering off.
- Co-ordinating with other psyllid affected industry segments (tamarillos, processing tomatoes) to provide a greater pool of information and increased strength in attracting research dollars
- It is very important that messages from researchers are correct.

Resistance management strategy

- Most growers believe that a resistance management strategy is important and forms part of their current chemical use.
- The current lack of registration on potatoes for some of the chemical control options is seen as an obstacle to resistance management by some. Part of this was related to not being able to use off label use.
- Some felt that the price of the new chemistry made it harder (especially for those with tight crop production budgets) to achieve ideal resistance management programmes.

Some key learnings passed on by growers

- Control of self sets in other crops is critical
- Trying to plant earlier to avoid peak psyllid pressure
- Healthy crop is the best defence against psyllid.
- Psyllid gets into stressed areas of crops first
- Early season psyllid control important especially for late crops
- Air-blast sprayers don't penetrate crop well enough to give necessary coverage
- Edge spraying technique used effectively in South Island

Other points raised

- Don't forget other pests and diseases
- Seed crops are at the higher end for risk as they have no mitigating alternatives for crops with problems. A rejected crop is a total loss therefore heightened risk with psyllid
- Understand need for seed certification, but there is a need to review the process consulting seed growers in the details of the certification process. Review process to fix some of the impractical and inappropriate paperwork and requirements that now exist. Welcomes buyer visits
- Need new variety material more resistant to psyllid
- The expansion of dairying and the intrusion of North Island operations into the South Island is putting pressure on land availability and rotation length; pushing crops onto more marginal land and closer to seed producing areas
- Have done a lot of testing, and never seen Zebra Chip in any sample. It is possible to avoid any psyllid issue if you spend the money and get control of psyllid.
- Biggest yield variation ever seen in the South Island this year, but can't confirm that psyllid was involved
- Feel that experienced psyllid damage for the first time this year (South Island grower)
- Impacts on health to growers and workers through extra worry and stress caused by psyllid, and exposure to extra chemicals. This was felt to be a real impact, but not able to be quantified

The final comment from a Northern Grower

Our operation has never scrimped on inputs, focusing on quality product. This has stood us in good stead with Psyllid.