Canterbury Potato Liberibacter Initiative

Grower Newsletter No.1 October 2021

Dear Canterbury Potato Grower,

This Newsletter is to update you on the formation of the Canterbury Potato Liberibacter Initiative (CPLI) which was formed in August 2021 by like-minded farmers and industry representatives to combat the devastating impact of the Liberibacter (Lso) bacterium causing Zebra chip in potato crops.

The issue in front of us is very clear and although the control measures and agronomy of Tomato Potato Psyllid (TPP) has made improvements the incidence of Zebra Chip in the processing crop has only increased and detection levels in potato fields have remained high.

Clearly following similar strategies and doing the same chemical programs over and over, year on year and expecting a different result is not solving or reducing the Zebra Chip impact for the growers, seed growers and processors. Therefore, a major rethink is needed to tackle this problem and the CPLI committee all agree there is a major knowledge gap with Lso. Although TPP is the carrier of Lso, Lso is affecting the quality of our potato crop.

Cost – We estimate the annual cost to the Canterbury Potato Industry for Crisping, Fry Processors and the Seed Industry at between $11 and 12 million per annum.

Background – The TPP incursion was detected in Auckland in 2006 and quickly spread throughout the North Island and then throughout the South Island to as far as Invercargill within approximately a 5 – 6 year time period.

Only a small (3-5%) percentage of TPP in a population will carry Lso, these psyllids are classed as “Hot psyllids” and through feeding on the plant cause Zebra Chip in the potato tubers. This Zebra Chip issue mainly caused production issues initially only in the North Island processing plants until 2015.

From around 2012 - 2015 in Canterbury trap numbers were increasing and this has continued to increase year on year and causing quality issues for both Growers and Processors.

From 2015 insecticide programs have improved and increased year on year with now weekly spraying of Potato crops to reduce TPP populations. There have also been other initiatives tried with varying levels of success over the years to reduce TPP populations.

Recommendation & Actions – We believe the only way to tackle the TPP & Lso (Zebra Chip) issue in Canterbury is a Canterbury Initiative lead by key industry stakeholders with a purpose to either eradicate Lso and TPP or at the very least to reduce the incidence so Zebra Chip has a minimal impact on the quality of the potato crop for both growers and processors at under 0.2 percent defect level.

We have proposed a levy to fund this research program at $1.50 per MT each for both the Seed and Commercial Growers, Seed Companies and Processors for the 2022 harvested crop and levy collected through the processors and companies.

To wait for any Potatoes NZ funding would mean a delay of more than one year as other funding would also be requested and we need to move on this Canterbury Lso problem now with urgency and determination to deliver and improve the outcome for the 2022 harvested crop which is now begin planted.

We also need to quick improve our knowledge on Liberibacter as we have a knowledge gap in the industry.

Key initiatives and actions below are already in the planning phase. We need every seed and process potato Grower in Canterbury to join this program so we can either eradicate or reduce the incidence of Lso and substantially reduce the increasing cost of potato production due to TTP and Lso. Note this is not the final list but a beginning.

a. **Short term – Now until winter 2022**
    i. Testing the efficacy of seven contact insecticides pre-season.
    ii. Grower factsheet to minimize TPP hotspots in field, stressed areas in field.
    iii. Field history & Self-set potatoes in other crops.
    iv. Nature strips for beneficial/predator insects, headlands or outside of field.
    v. Analysis spray dairies, best results of best 10 crops and worst 10 crops.
    vi. Fish Fert or other potential products to discourage TPP.
b. **Medium Term – Reduce the risk to the 2023 harvested crop**
    i. Improve our knowledge on Hot Psyllids and Lso, trap data analysis.
    ii. Apply and Communicate 2022 results.
    iii. TPP Populations in NZ and differences between regions and sub region populations.
    iv. Non-insecticide control agents.
    v. Protector oils and new products, test and review what is available.
    vi. Insecticides, test remaining products for resistance.
    vii. Molecular tests of stick traps.
    viii. Knowledge gap with Lso, understand the problem, can we inhibit, eradicate the bacteria in the plant.
    ix. Reduce over-wintering populations of TPP.
c. Long Term - Future and beyond 2023 crop year.
    i. Blue Skies, Eradicate TPP or inhibit Lso action in the Potato crop.
    ii. Control of self-set potatoes.
    iii. Over-winter populations of TPP and eradication of host plants.

To date we have had a very positive response from Growers and processors for this initiative.

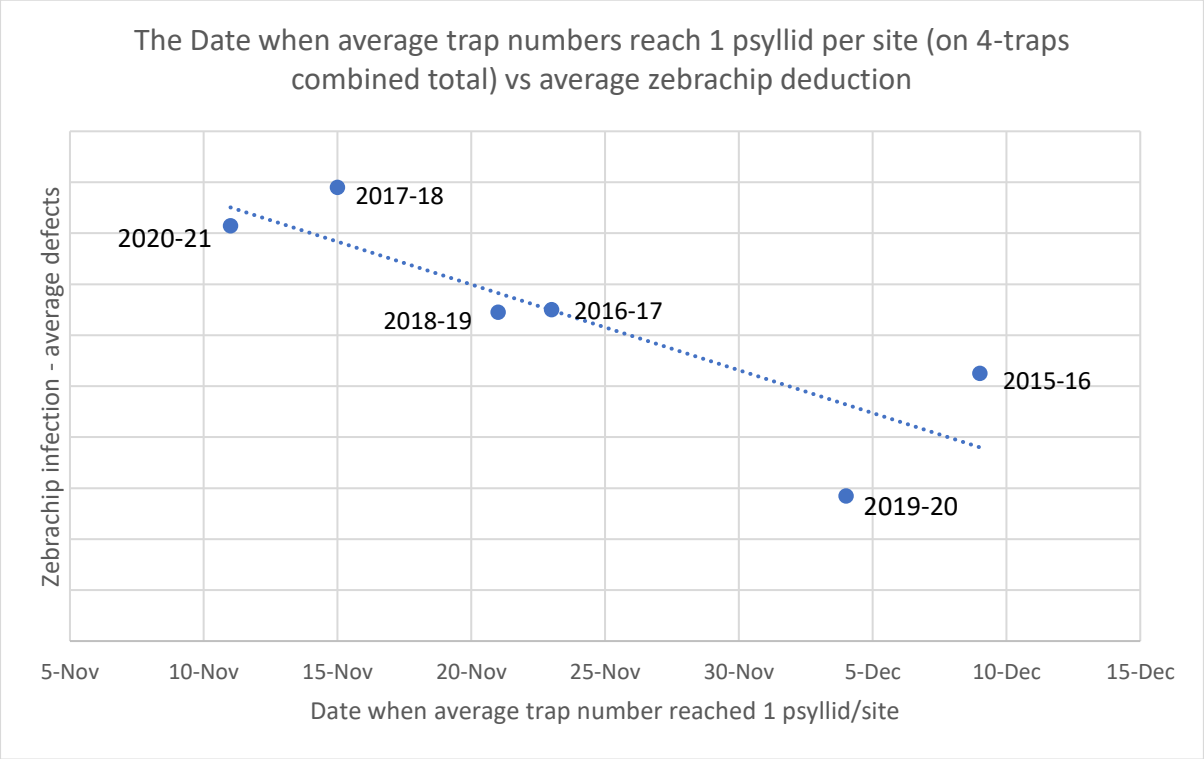
What are we doing and what are you getting for your money for the 2022 harvest;

- Testing the efficacy of seven contact insecticides through Plant and Food research on TPP with preliminary summary of results available at the end of November. Therefore if any resistance to any of these products is found changes to insecticide strategies can occur for this season. The remaining products will be tested before planting the 2023 crop next year.
- Weekly text of overview in Canterbury and weekly emails through Potatoes NZ of Growing Degree Day (GDD) Accumulation, there is a historic direct correlation between the earlier the date first psyllid numbers averaging 1 are found on sticky traps and the higher the average Zebrachip level in that season's potatoes. Although this is an overview guide for Canterbury you will be able to compare this to your own field sticky trap numbers to see where your crops sit in comparison.
- Advice on desiccation dates for process crops linked to GDD accumulation or other measure to reduce insecticide use at the end of the season when tuber bulking is complete but crops still have green tops and therefore risk of late season infection of Lso.
- Winter 2022 review of the past season and results and learnings.
- Good practice guidelines and fact sheets.

Good Practice guidelines you should consider for the coming crop.

- The key is knowledge of what is happening in your paddock and the environment around it, e.g;
    - Yellow sticky trap results
    - Field scouting – what life stages of TPP are in your crop (eggs, stage 1-3 nymphs, stage 4-5 nymphs, adults)
    - Growing degree day accumulation.
- **Try not to kill predator or beneficial insects early in the Season, Abamectin is hard on beneficial insects**.
- Target a 7-day spray interval throughout the season, with insecticides targeted to the life stages that are being seen in your crop, and **know the limitations of the products being applied**
- Consider Actara in-furrow application for seed, and from October onward planted longer season process crops, e.g. Russet Burbank.
- Consider the need to tank mix certain insecticides at certain times, e.g. Mavrik, Benevia, Movento
- Minimise the use of broad-spectrum insecticide and resist the urge to use them early or mid-season. If non-selective chemistry is to be used, try limit this to only 1 or 2 applications as the last application or with Desiccant.
- It is not recommended to use Lambda-Cyhalothrin (Synthetic Pyrethroids) and especially not early-mid season, overseas information suggests that these products can
    - Knockdown adults only
    - Cause the female to lay 20 – 25% more eggs before they die
    - Knocks beneficial insects
    - Results in a flair up of the TPP population
- Do not let your crop continue to grow and be exposed to TPP in the environment for longer than necessary.

- At desiccation ensure that no green leaf remains and monitor regrowth. Follow with additional desiccants and insecticides if required until the crop is completely dead.
- Control of self-set potatoes in other crops as this is a major source of TPP and Lso.
- Start insecticide program early, the spray diary's we have reviewed suggest a good strategy appears to be to start once the crop has emerged **AND** TPP are appearing on sticky traps in your area.
    - As stated earlier there is direct correlation between the earlier the date of the first TPP number average of 1 when found on the sticky traps and the higher the average Zebra Chip level in that seasons potatoes as shown in the below graph.



This graph shows the first occurrence of when yellow sticky traps showed an average of 1 psyllid per paddock, with 2020-21 showing the earliest detection of 1 TPP compared with recent years. Most process growers started foliar insecticide programs well after this date of the 11-Nov (and some up to 35 days later than this date) meaning if crops were emerged and had no in-furrow insecticide they had no protection from TPP that were present in the environment. A major problem has been seen with Zebra Chip in the resulting potatoes from the 2020-21 season.

What does Success look like after the 2022 potato harvest season;

- Increase in profitability and payable yield, no reject crops.
- Zebra Chip under 0.2 percent defect level at the factories.
- Improve Seed quality.
- Improved forecasting and management tools for TPP and Lso
- A clear vision of the pathway forward to reduce the reliance on Insecticides.
- Better understand of nature strips and how to use them, beneficial and Predatory insects and biological alternatives.

Please don't hesitate if you have any questions to contact any of the committee members below

We look forward to seeing you at the upcoming meeting we have planned to go over these initiatives and recommendations on this new seasons Potato crop at Hotel Ashburton at 7.30pm on the 27th October. Additional comms will be texted to you closer to the date.

Kind regards,

CPLI Committee

- John Jackson – Chair
- Richard Redfern – Seed Grower
- Guy Slater – Process Grower
- Klye Grey – Process Grower
- Daniel Lovett – Process Grower
- Jessica Vereijssen – Plant & Food Research
- Iain Kirkwood – Potatoes NZ
- Nicola Loach – Potatoes NZ
- Roger Blyth – Seed & Field Services
- Scott Cleland – McCain Foods
- Gerhard Botha – Talley's
- Nigel Rowe-Lucas – KraftHeinz