Canterbury Potato Liberibacter Initiative

Grower Newsletter No-3 March 2022

Dear Canterbury Potato Grower, Industry Members and Financial Supporters,

We are sending this update along with the confirmation request (attached) to formalise your co-investment of the TPP and Lso Initiative lead by Potato Growers and Industry in Canterbury.

Note this voluntary Levy will be collected through the Potatoes NZ Belis Levy System and then deposited into the Potatoes NZ Charitable Trust bank account so your voluntary levy will be treated as a donation so it is tax deductible to you.

Also remember the earlier newsletters and information on these initiatives can also be found on the Potatoes NZ website. Follow the link https://potatoesnz.co.nz/rd-project/canterbury-potato-liberibacter-initiative/

To date the CPLI working group is made up of 18 representatives from across the NZ Potato Industry from Seed and Process Growers, Processing Industry Representatives, Agronomy and Potato service companies, Potato NZ personnel, Plant and Food Research, and now we would like to also welcome to the committee Dr Clive Kaiser, Associate Professor of Plant Science, Field Research Centre at Lincoln University. Clive has come to Lincoln University from Director of Research at the Hermiston Agricultural Research and Extension Centre in Oregon State USA in association with the Oregon State University and has a life time of knowledge of agriculture and potato production. Clive has been a huge asset and support to the challenges we all face with TPP and Liberibacter in Canterbury and has brought some fresh ideas to the committee.

The Committee is large at 18 members, but reflects the enthusiasm and urgency from within the Canterbury Potato industry to find solutions to the cost Liberibacter is inflicting on our industry and the need for a cost competitive solution.

After our first meeting in August 2021 and since then we have covered a lot of issues which contribute to the cost TPP and Liberibacter is having on Canterbury potato production, the importance in finding solutions and the prioritisation of getting research projects up and running for this season. We have now narrowed the strategy to 7 key projects; some to be undertaken this season and some over the next 2 years which are summarised below.

The commitment from CPLI for these 7 research projects to date is just under $500,000 so this is not a small commitment but reflects the importance to find a cost competitive solution to the cost of Liberibacter.

We are very positive that with the broad range of these research projects, we will find a way forward and a solution.

We will also be running an industry evening during in the winter months to present these projects and findings to the Canterbury Growers and Industry.

If you have any questions or would like to meet to discuss any off these projects please phone;

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CPLI Program summary

1. **Screening of TPP for resistance to commonly used contact insecticides.** The aim of the project was to investigate whether selected contact insecticides at label rate were efficacious on a field-collected population of TPP from Canterbury. MAVRIK® AQUAFLO, Karate Zeon®, Pirimor® 50, Benevia®, Oberon®, Methafos 600, and Sparta™ were screened. The results showed no material difference in mortality of adults and nymphs between the 'wild' field-collected colony and the susceptible PFR TPP colony for all products tested. Therefore, the perceived lack of control of TPP in Canterbury may have been due to other factors. Project completed and full report available on the PNZ website https://potatoesnz.co.nz/rd-project/canterbury-potato-liberibacter-initiative/

2**. Screening of TPP for resistance to commonly used systemic insecticides**. The project will investigate the field population against nine insecticides with systemic and/or translaminar properties at label rate. This would involve screening the insecticides against TPP collected from the field in March 2021 (and now in rearing) and the susceptible PFR lab colony as a control. The insecticides that have been requested to be tested include Benevia®, Oberon®, Methafos 600, UpholdTM, TransformTM, AVID®, Chess® WG, Movento® 150 OD and Mainman®. Project underway and final report due May 2022.

3**. Screening of Systemic Acquired Resistance (SAR) products and antibiotics for efficacy on Liberibacter.** Test selected products/compounds for their activity on reducing zebra chip symptoms in potato tubers. The trial will be conducted in a shade house at PFR Lincoln, using potato tubers planted in pots. CLso-positive adult TPP from the PFR Lab colony will be used. Products tested include, KeyStrepto™, Force Field, Actigard®, and Kendal®. Project underway and final report due.

4. **Fertilization of potatoes with calcium propionate to prevent spread of Liberibacter**
This project potatoes will be fertigated with calcium propionate in greenhouse pots. Once the plant has taken up sufficient calcium propionate that it will be afforded protection against *Liberibacter*, vectored by "hot" TPP. Potato seed will be grown in pots in virgin soil obtained from fields in Canterbury, representative of those that will be growing potatoes. Plants will be treated with calcium propionate as a soil application. Some plants will be infected with TPP from either "hot" or "cold" colonies and compared against non-TPP treated plants. The effect of calcium propionate on the infection by liberibacter will be determined in the leaves, stems and tubers. This project will be completed by a Masters student at Lincoln University.

5**. Use of lures to attract and kill TPP to prevent their entry into potato crops.** A range of products will be investigated for attractancy and repulsion of psyllids. These will include: Agar; Gums e.g. guar, xantham etc.; Gels; Surfactants; Encapsulants; Dessicants; Sterilants. Evaluation of these products using both "hot" and "cold" psyllids will be undertaken to ensure attraction to both. This project will be completed by a Masters student at Lincoln University.

6**. Use of biological control agents to manage TPP populations in both potato crops and in alternate / over-wintering hosts.** Identify and shortlist potential biocontrol agents based on scientific literature, specific life-traits and potential TPP consumption. Small scale experiments will determine the actual performance of candidates on TPP-infested potato leaves and on African Boxthorn leaves, as well as possible control agent feeding preferences on one or more TPP life stages. Host-plant tolerance and preference will be determined and the extent to which selected biocontrol agents can survive/reproduce on potato and boxthorn plants. Release of predators at boxthorn locations have taken place and further releases are planned following

laboratory studies. This project will be completed by a Post-Doc researcher at Lincoln University.

7. Use of selected border planting to attract beneficial insects and limit Psyllid ingress into potato crops. 10 commercial paddocks have had border crops planted adjacent to the potatoes. The impact of these borders will be assessed at the end of the season to determine if they have had a significant impact on Liberibacter infections. Results will be collated following the 2021/22 season and are expected by June 2022.