

Sulphur reduces egg-laying in laboratory trials with tomato potato psyllid (*Bactericera cockerelli*)

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Sulphur is mainly used as a fungicide but is known to have insecticidal properties against some insect pests. A series of laboratory studies was conducted to assess its effect on the tomato potato psyllid (*Bactericera cockerelli*; TPP), a recently established pest species in New Zealand that transmits the bacterium *Candidatus Liberibacter solanacearum* (Lso). Short assays (≥ 24 h) using dipped leaves indicated that fresh sulphur residues had no discernible impact on TPP settlement patterns or on-leaf behaviour. However, longer assays (≥ 72 h) using whole plants indicated that sulphur residues can disrupt egg-laying behaviour, but the effect was dependent on the assay design. In 72 h choice assays, TPP laid fewer eggs on plants sprayed with sulphur compared with control plants. In no-choice assays sulphur residues did not consistently reduce egg-laying. Together these results suggest that sulphur may slow the build-up of TPP populations within crops by deterring egg-laying. However, the lack of repellence or anti-feeding properties means that sulphur treatments alone may not be sufficient to prevent the transmission of Lso by TPP.

Effects of sulphur on control of tomato potato psyllid in potato

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Tomato potato psyllid (TPP) (*Bactericera cockerelli*) vectors *Candidatus Liberibacter solanacearum*, a phloem-limited bacterium that can cause a mottled browning discolouration ('zebra chip'; ZC) in fried crisps. Sulphur is mainly used as a fungicide but is also registered in New Zealand as an insecticide against erineum mite (*Colomerus vitis*) on grapes. A field trial to determine TPP response to foliar-applied sulphur found that weekly applications (no insecticides) significantly reduced psyllid nymph numbers in foliage compared with the control (no-sulphur + no-insecticide). However, the incidence of severe ZC in fry-cooked tubers was higher in the weekly sulphur treatment than with a commercial insecticide spray programme. Tubers from both the non-sprayed control and the weekly sulphur treatment had significantly lower yields and specific gravities than those treated with insecticide. Sulphur applied alternately with insecticides gave similar results to the commercial insecticide programme - promising for the industry's goal of reducing insecticide applications.