HOST PLANT RESISTANCE TO HESSIAN FLY IN WHEAT AND BARLEY

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The Hessian fly is an important pest of wheat and barley in New Zealand and in many of the major cereal-growing regions of the world. The most successful method available for controlling Hessian fly is host-plant resistance. In the USA more than twenty resistance genes have been identified in wheat. Because New Zealand populations of Hessian fly have not been studied in regard to host plant resistance, we have initiated studies to explore whether resistance to Hessian fly is present in New Zealand wheat and barley cultivars and breeding lines. In our studies we have explored two types of resistance, antixenosis, which prevents adult female Hessian flies from ovipositing on plants, and antibiosis, which prevents newly emerged larvae from establishing a successful parasitic relationship with the plant. Both antixenosis and antibiosis appear to be important forms of resistance in New Zealand cereals, as well as in related wild grass species such as *Hordeum bulbosum*. Antixenosis was expressed in choice bioassays with less preferred grass species receiving 0-10% of the eggs received by preferred species. Antibiosis to Hessian fly was most strongly expressed in larval mortality, with newly emerged larvae dying on resistant cultivars within 3-4 days. Future studies will explore whether reduced egg laying on less preferred species also occurs when females are given no-choice but to lay on less-preferred species (i.e., no-choice rather than choice bioassays).

ALPHACHLORALOSE SEDATION: DOES IT HAVE POTENTIAL FOR CANADA GOOSE CONTROL?

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Canada geese (*Branta canadensis*) cause crop and pasture damage on some New Zealand farmlands, but current culling practices have attracted public concern. Chemical control using the sedative alphachloralose (Ac) could be an acceptable alternative, but local field trials of this method have to date been unsuccessful. We exposed three groups of 20 captive Canada geese to *ad lib.* grain containing 0.2, 0.5 and 1.1% Ac, which sedated 25%, 85% and 85% of the geese, respectively. On average, individual birds ate 38 g, 22 g and 16 g of grain, respectively, giving mean Ac doses of 22, 33 and 49 mg/kg body weight. However, grain consumption was highly variable among individuals (ranging from 0 - 100 g) in part because drugged geese began acting abnormally after 20 - 25 min. This disturbed others, causing them to cease feeding having eaten little grain. All geese that ate >20 g of 0.5% Ac grain were successfully sedated, which is consistent with the 30 mg/kg body weight dose recommended by overseas studies. Ac grain will be effective for sedation of small numbers of geese that can individually be fed this amount. For Ac grain to be effective when fed out to a flock, a way is needed to encourage steady feeding by all individuals and to prevent partially-sedated geese from disturbing their companions.