

The Effect of In-Furrow Application of Pyrethroid in Rotational Crop in Reducing Wireworm Damage in Subsequent Wheat

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The term “wireworm” is used to describe the larval stage of click beetles (Coleoptera: Elateridae). Wireworms are a major pest of many crops, including cereals and vegetables grown in the Pacific Northwest (PNW). Neonicotinoid seed-treatments are the only chemical control option registered for cereal application. The seed treatments, however, have not been effective in reducing wireworm damage in cereals. Thus, there is a need to test alternative methods, to be employed as components of an integrated management protocol. Focusing on one of the most damaging species in the PNW, the sugar beet wireworm *Limonius californicus*, we conducted a greenhouse study to evaluate the effect of in-furrow application of the pyrethroid bifenthrin, in a commonly planted rotation crop in the PNW, in reducing wireworm damage in the subsequent wheat crop. In the treatment where bifenthrin-treated pea was followed by thiamethoxam-treated wheat, up to 82% mortality was reported in wireworms. This mortality rate was significantly higher than those observed in treatments where untreated pea was followed by untreated wheat (30%). Germination success was relatively higher in wheat that followed pea treated with bifenthrin compared to the wheat treatments which followed untreated peas.

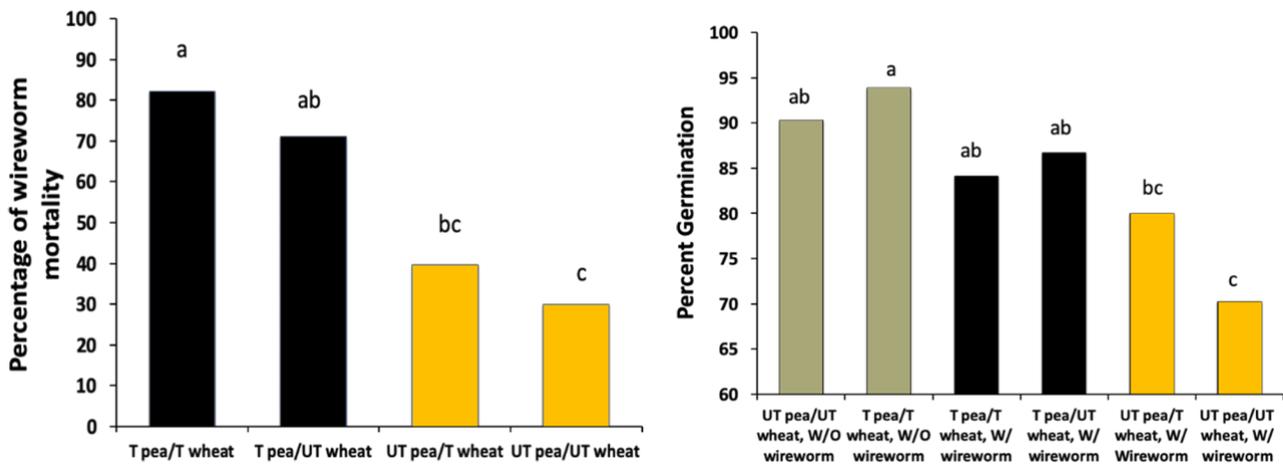


Figure 1. Left: Percentage of wireworm mortality. A significant difference was detected among treatments (generalized linear mixed model (GLIMMIX): $F_{3, 72} = 3.76$, $P = 0.0144$). Right: Percentage of successful emergence per each treatment. (GLIMMIX): $F_{5, 108} = 3.72$, $P = 0.0038$).

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