

B-31 Evaluation of sampling methods for estimating densities of insects on potato

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Ecological studies and pest management sampling programme require precise and accurate estimates of insect densities. The relative efficiencies of 3 sampling methods, whole plant bag sampling method (WPBS), visual sampling, and sweep-net sampling, were evaluated for estimating insect densities on potato in Manitoba, Canada.

Insects counted were of the following species: Colorado potato beetle, *Leptinotarsa decemlineata* (Say); potato flea beetle, *Epitrix cucumeris* (Harris); potato leafhopper, *Empoasca fabae* (Harris); green peach aphid, *Myzus persicae* (Sulzer) and potato aphid *Macrosiphum euphorbiae* (Thomas). The results of WPBS were assumed to be unbiased estimates of absolute density, and were used as a standard for the comparison of other monitoring methods. The coefficient of variation [(standard deviation/mean)100] of WPBS and visual samples was used as a measure of precision of density estimates. Regression of visual or sweep-net samples (Y) on WPBS (X) allowed the conversion of densities of insects estimated from one sampling method to equivalent levels from another. The accuracy of visual estimates is indicated by the closeness of the gradient of the regression to 1. Seasonal bias was examined by calculating the percent bias of visual and sweep-net samples from, $100 \times [(predicted\ from\ the\ regression\ equation/observed)-1]$. Evaluation of precision, accuracy and seasonal change in efficiency showed visual sampling was an efficient alternative to WPBS to estimate densities of Colorado potato beetle, but WPBS was more suitable for potato flea beetle, potato leafhoppers and aphids. Sweep-net sampling of all 4 species yielded estimates that varied in bias over the season.

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