

Canada's Organic Science Cluster, Activity D.1: Agroecosystem Management for Pest Control in Organic Vegetable Production.

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Background:

Few Canadian studies have examined the effectiveness of integrating the use of flowering strips, companion and trap plants and determined their impact on insect and weed populations in organic vegetable production systems.

Project Overview:

The purpose of this project is to investigate how organic vegetable production systems can be managed to increase biodiversity while preventing or minimizing pest problems. This project has been established at the Platform for Innovation in Organic Agriculture in Saint-Bruno-de-Montarville, Québec. It consists of 4 experiments repeated over 2 or 3 years. Crop production methods follow organic agriculture guidelines. Treatments were replicated four times in a complete block design. Each experiment has specific objectives. Experiment 1 was set up to determine the effect of crimper-rolled winter rye on weed control, insect populations and transplanted vegetable crop productivity. The transplanted crops are: A Brassicaceae (broccoli), a Solanaceae crop (pepper), an Alliaceae crop (onion), and a Cucurbitaceae crop (melon/squash). The four treatments are: Crimper-rolled rye, mechanical weeding; hand weeding, and no weeding. Experiment 2 was initiated to study the effect of companion planting of carrots with leeks on crop enemies (insects, weeds and diseases). The nine treatments are: Leek mechanically weeded, hand weeded and not weeded; carrot physically weeded (flaming and mechanical), hand weeded and not weeded; leek and carrot physically weeded, hand weeded and not weeded. Experiment 3 was undertaken to establish the efficacy of trap plants in attracting herbivorous insect populations while decreasing their incidence on the main crop. Yellow rocket and Jimsonweed are used as trap plants in cabbage and potato respectively to decrease the incidence of diamond-back moth and Colorado potato beetle, respectively. The treatments consist of two trap cropping arrangements and crops with no trap. Experiment 4 was carried out to determine the efficacy of different flowering strips in increasing insect biodiversity. The plants evaluated are: Alfalfa, petunia, phacelia, mustard, yarrow, alyssum, coriander, cosmos, French marigold, nasturtium.

Conclusions:

These experiments are ongoing and the results will be integrated in the use of flowering strips, companion and trap plants in organic vegetable production systems when they become available.

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