

## Assessment of Carrot (*Daucus carota*) and Leek (*Allium porrum*) as Companion Organic Crops: Can they Benefit Each Other?

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### Background:

In cropping systems, mixed cropping could provide better protection against insect or disease outbreaks. The ability of alliums to repel carrot rust fly is a characteristic that could benefit carrots in a companion cropping situation. The objective of this study was to determine the advantages associated with intercropping carrots and leeks, specifically on insect management and crop yield under South Western Quebec conditions. The effectiveness and cost of mechanical weed control were also evaluated.

### Project Overview:

The three years study (initiated in 2010) was conducted on a Verchère muck soil at the Platform for Innovation in Organic Agriculture, St-Bruno de Montarville, Qc. The cropping treatments were carrots or leeks, either grown together as companion crops or monocropped. Three different weed treatments were applied under each cropping treatment: Physically weeded, manually weeded, or without weeding (weedy check). The following table summarizes some of the main results and conclusions of the first two year of the project:

Results	2010	2011
<b>Pest insect of leeks</b>	Leek moth population peak on august 9 <sup>th</sup> - no damage reduction in companion plots	Leek moth population peak on august 18 <sup>th</sup> – no damage reduction in companion plots
<b>Pest insect of carrots</b>	Low pest pressure, no damage reduction of carrot rust flies in companion plots	Very low pest pressure, no damage...
<b>Marketable yield - carrot</b>	No significant difference but slightly lower in companion crop	No difference between pure stand carrot and companion crop
<b>Marketable yield - leek</b>	Significantly lower in companion crop	No difference between pure stand leek and companion crop

Mechanical weed control was as efficient as manual control, by reducing the operation time in the companion plots by 75.7% in 2010 and 62.5% in 2011.

### Conclusions:

Although the benefit of companion cropping against carrot rust fly damage could not be established, it was determined that physical weed control was just as efficient as manual weed control. In 2012, we should be able to confirm the best weed control system and possibly determine the benefit of companion cropping leeks and carrots against carrot rust fly damage and leek moth.

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