

The Carrot Rust Fly

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Distribution and damage

The carrot rust fly is widely distributed in western Oregon, extending from Clatsop to Coos counties along the coast and from Multnomah to Lane counties in the Willamette Valley. The larvae feed on the roots of carrot, parsnip, celery, parsley, celeriac, wild carrot, coriander, caraway, dill, and fennel. Damage may first appear as small holes in the root, but later conspicuous tunneling occurs near the surface of the root. This injury scars the root and may allow the entry of rot organisms. Heavy infestations can kill seedling host plants.

Description and life history

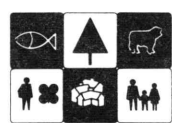
There are two to three generations of the carrot rust fly per year. It overwinters as a pupa and occasionally as a larva within or near roots in the soil. The larva is dusky, straw colored, and wiry. Yellowish-brown pupae about $\frac{1}{4}$ inch long may be found in the soil close to the plant during the growing season and in the winter months.

The adult flies have shiny metallic greenish-black bodies, reddish-yellow eyes, and yellow legs and antennae. The first adult fly usually can be found about the middle of April. The emergence of this first brood continues until mid-June. Small, white eggs are laid on the soil surface or slightly beneath the surface at the base of the host plant.

Maggots of the first generation are seldom noticed by the lay person, but they can be found in plant roots from the beginning of June until mid-July. About 30 days are required for complete larval development. Another month is needed to complete the pupal period.



The carrot rust fly, its larvae, and a damaged carrot. This pest can seriously damage vegetable crops if not controlled, especially in western Oregon and the coast region.



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The second generation, or summer brood, of flies emerges about the middle of July. The larvae produced by these flies can be found in plant roots during August. The pupae from this second generation can be found from mid-August to late September. Some remain in the soil to overwinter.

The fall brood of flies begins to emerge in late September, continuing into November. Larvae from this brood enter host plant roots from early October to early November. This generation of larvae may cause heavy damage to roots left in the soil after mid-October. These overwinter in the roots left in the fields, or in the soil as pupae.

Adult flies seek shelter in brushy areas during the day and move into carrot and parsnip plantings about dusk. Areas of the field that receive afternoon shade are usually more infested than unshaded portions of the field. Adult flies seem to prefer depositing eggs near seedling plants.

Control

Diazinon 50W is the only insecticide registered for control of the carrot rust fly. It is registered at a rate of 4 pounds formulated material per acre as a drench to the seed furrow only at planting time. This drench will protect the seedling carrots, but because of overlapping generations of the fly and the extended egg-laying period, it will not give protection against the subsequent fall generations of the fly. Root crops left in the soil after mid-October stand the greatest chance of being infested with larvae of this fly. Therefore, to reduce infestation levels, remove the root crop before mid-October where practical.

Rust fly damage is most severe in organic soils and heavily mulched or manured soils. Damage can be reduced, though not eliminated, by planting frequently (monthly to 6-week intervals) and harvesting early to avoid multiple generation attack on the crop.