

Celery and Carrot Insect Pests

Ed Grafius and Maria Davis, Department of Entomology

Aster leafhoppers (1/8-inch long, gray-green, fig. 1) transmit aster yellows disease to celery (fig. 2), carrots, lettuce, onions and other crops and weeds. They overwinter as eggs in grasses and small grains or migrate into Michigan, often on storm fronts, from southern overwintering sites. Aster leafhoppers must pick up the disease from an infected plant and the disease must incubate inside the leafhopper for approximately 3 weeks before it can be transmitted to other crops or weeds. Many weeds are sources for the disease, including Queen Anne's lace (wild carrot), pineappleweed, and mare's tail (horse weed). Fields should be scouted at least twice per week to detect newly arriving aster leafhoppers. Many other non-pest kinds of leafhoppers are also common in carrots and celery. A sweep net is required to sample and correctly identify these fast-flying insects.

Green peach aphids and sunflower aphids (fig. 3) are common pests of celery but rarely cause problems in carrots. Aphids can build up to very high numbers and injure the celery plant, causing twisting and distortion of new growth (fig. 4). They can also be contaminants at harvest. Sunflower aphids are green with black cornicles (exhaust-pipe-like structures) and black legs. Green peach aphids are yellow-green, except for winged adults, which have black markings on their bodies. They may overwinter as eggs on an overwintering host or perhaps in greenhouses or migrate into Michigan from southern locations. On the overwintering host, the eggs hatch in the spring and, after several generations, winged aphids are produced. These migrate to many different weeds and crops. Winged forms are especially common when the host plant is dying or aphids are becoming crowded. The mother does not lay eggs but gives birth to tiny aphids; all these will be females. Each aphid can give birth to 50 to 100 young, and there may be 5 to 10 generations or more per year. In the fall, a generation with winged males and females is produced. These migrate back to overwintering hosts, mate and lay eggs.

Aphids have extremely high reproductive rates, but are often held in check by natural enemies (lady beetles, hover fly larvae, lacewing larvae, fungal diseases and tiny wasps). Unfortunately, insecticide or fungicide sprays sometimes disrupt this natural control and result in aphid outbreaks. Aphids can be monitored by direct visual observation of plant foliage. Yellow sticky cards or water traps can also be used, but identification is difficult because many harmless aphids and other insects may also be trapped. Green peach aphids and sunflower aphids can rapidly build up insecticide resistance because females reproduce without mating and offspring are genetically identical to the mother. Spraying with the wrong insecticide only increases aphid problems by killing natural enemies. Consult a current edition of Extension bulletin E-312, *Control of Insects, Diseases and Nematodes on Commercial Vegetables*, or your local MSU extension agent for up-to-date insecticide recommendations.

Several caterpillars are common pests of celery in Michigan, including **celery and cabbage loopers** (fig. 5), **variegated cutworm** (fig. 6), **celery leaf tier**, and occasionally

European corn borer. They can cause both foliar and stalk damage and can be contaminants at harvest. **Loopers** (fig. 5) may appear beginning in May (celery looper) and continue throughout the season. They do not have legs on the middle segments of their bodies and so move like an inchworm. The **variegated cutworm** (fig. 6) causes some of the most severe stalk damage and can appear as early as May. Caterpillars can be sampled visually. Adults (moths) can be monitored with pheromone (sex attractant) lures and traps. Preventive insecticide treatments are usually necessary when marketable petioles are present to prevent damage and contamination.

Tarnished plant bugs (fig. 7) injure celery by injecting a toxic saliva in the process of feeding at leaflet junctions, or on foliage or petioles. Injury appears as brown marks on petioles and leaves and sometimes twisted and distorted new growth. Adults are strong fliers and can move quickly in and out of fields, making control difficult.

Carrot weevils (1/4-inch long "snout beetles" with a light band across the hind leg, fig. 8) attack carrots, celery, parsley, dill, parsnips, Queen Anne's lace, dock and plantain. Adults lay eggs in leaf petioles (fig. 9). Larvae (fig. 10) tunnel in the roots and pupate in the soil. Carrot weevil larvae can kill or damage the plant and reduce quality (figs. 11 and 12). Larvae are most common early in the summer and rarely are present as a contaminant at harvest. Carrot weevils overwinter as adults in fields or field borders with weed hosts (or in greenhouses) and begin laying eggs in May or as soon as plants are large enough (celery transplants or 6- to 7-leaf stage carrots). Egg laying stops in mid-August as days get shorter.

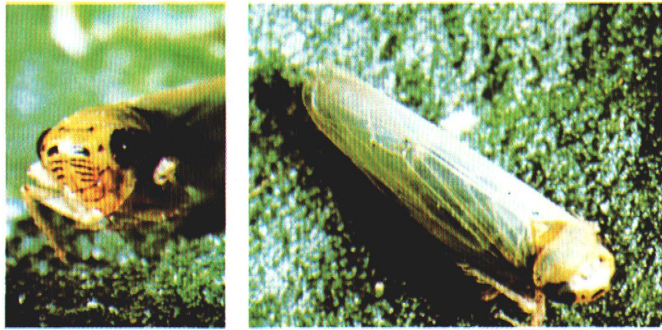
Carrot weevils can be monitored visually by looking for egg-laying scars. Traps baited with carrot can be used to monitor adults. See extension bulletin E-890, *Detection and Control of Carrot Weevil*, for detailed information on adult traps. Damage can be monitored at harvest to identify fields with problems. Adults do not fly, so crop rotation to a non-host, such as onions or potatoes, and control of broadleaf weeds provides excellent control. Sanitation in and around greenhouses and transplant beds will eliminate these as a source of infestation.

Vegetable leaf miner is very common in southern states and occasionally is a pest of celery in Michigan, especially if transplants of celery or other vegetables or flowers are brought from the south. This insect is highly resistant to insecticides, and spraying with the wrong insecticide only increases problems by killing natural enemies.

For insecticide recommendations, commercial growers should consult MSU Extension bulletin E-312, *Control of Insects, Diseases and Nematodes on Commercial Vegetables*. Home gardeners, consult bulletin HYG-001, *Home Insect Pest Management Guide*.

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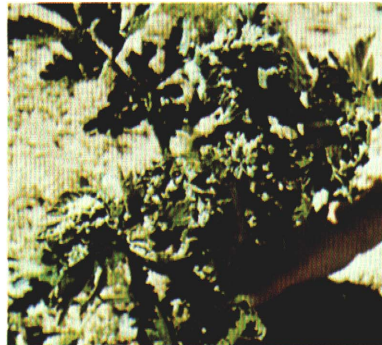
1. Aster leafhopper adult (left: front view; right: top view)



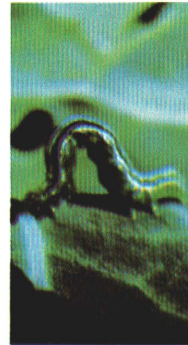
2. Aster yellows disease in celery (left) and carrots (right). Note heavy rooting in diseased carrot on right.



3. Green peach aphids on celery (arrow)



4. Aphid damage to celery (note malformed leaves)



5. Cabbage looper larva



6. Variegated cutworm (note yellowish spots on back) and damage



7. Tarnished plant bugs



8. Carrot weevil adults



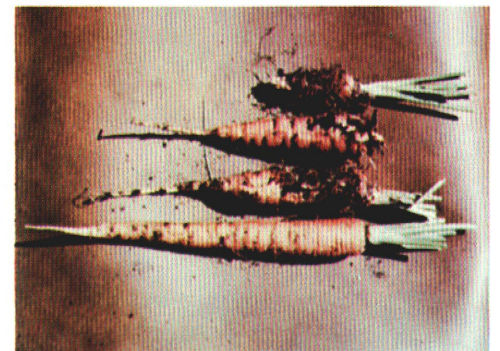
9. Carrot weevil eggs (left) and egg-laying scars on petiole (right)



10. Carrot weevil larvae (left); pupa (right)



11. Carrot weevil damage to celery



12. Carrot weevil damage to carrots (top 3 damaged)