Swede midge – coming soon to your vegetable farm

Andy Jones, Intervale Community Farm, Burlington, VT

Yolanda Chen, Dept. of Plant and Soil Sciences, University of Vermont, Burlington, VT
Swede midge afflicts stem Brassicas:
Broccoli, Brussels sprouts, Cabbage,
Cauliflower, Kale, Kohlrabi, Rutabaga, Turnip
Swede Midge Distribution 2009

LEGEND:

= location of first detection of swede midge in North America in 2000
= county in which swede midge has been detected

*Not all counties have been surveyed for swede midge. For example, in New York, detection survey work was discontinued after 2007. It is very likely that swede midge occurs in other counties within these states and within other states.
*Swede midge has also been detected in other Canadian provinces beyond the boundary of this map.
How Bad is Swede midge?

ICF 2009 Broccoli plantings – unmanaged SM

– 4/25 planting: <5% damage
– 5/4 planting: 30% damage
– 6/29 planting: 95%+ damage
– 7/13 planting: 60% damage
– 7/27 planting: 30% damage
– 8/3 planting: <10% damage

– Fall 2012 Broccoli: 40% damage in Pesticide study
Successful management options:

• Row cover & exclusion
• Rotation distance
• Timing of plantings

Promising Research Directions:

• Barrier ‘fences’
• Predatory nematodes vs. pupae
• ????
Swede midge

- Adults continually emerge from end of May to early October
- Multiple generations
- ~15 day life cycle

Adult male swede midge. S. Ellis, USDA APHIS PPQ, Bugwood.org
Swede Midge Life Cycle

- Eggs: ~0.3 mm
  - Transparent
  - 2-50 eggs/cluster
  - 100 eggs/female
  - 1-5 days

- Larvae: ~0.3 to 3-4 mm
  - Transparent on first hatch to yellow when mature
  - 7-21 days

- Pupae: ~2-4 mm
  - Most within top 2 cm of soil
  - Optimum 25-75% soil moisture for emergence
  - May-June
  - July
  - July-August
  - August
  - Sept - Oct

- Adults: ~1.5 to 2 mm
  - 4-5 generations
  - 7-14 days

- Overwintering Pupae
  - Survive in soil > 1 year

- Pre-pupae

- Emerge mid-May

- Soil
  - Moisture
  - Drought
Best practices for swede midge management

1) Use of clean transplants
2) 2- to 3-year rotation to non-crucifer crops
3) Post-harvest crop destruction
4) Swede midge detection and monitoring
5) Insecticide applications as needed

(Swede midge Information Center for the US)
Look for brown corky scarring
Crop rotations!

• Long distance –
  – Minimum of 600-1000 ft between sites
  – Recommendations of 1-2 km

• Long temporal rotations
  - Minimum 3 years between Brassica crops
Cultural practices

• Burying pupae
  – If pupae are buried with > 5 cm of soil -> reduced adult emergence
  – Reduction

• However, field flooding
  – Little evidence of success. Following Hurricane Irene in 2011, swede midge was still present in 2012
BMP for Conventional Growers

• Imidachloprid right after transplanting for 3-5 week of control.

• Assail 30SG – every 9 days

• Pyrethroid, carbamates and organophosphates are toxic to the midge,
  – But limited in field efficacy
  – Midge is galling, and is partially protected from sprays

(2010 Interim Best Management Practices, Cornell)
For Organic Growers

• Row covers for protection
  – Protection from damage early in the season.
  – But, row covers come off by middle of June
  – Midge populations increase by July
Trend towards more marketable produce using Azadirachtin
Farms most at risk for Swede midge issues!

- Sequential plantings
- Small farms with limited land for rotation
- Organic farms
We need your help!

• Raise awareness over the damaging effects of the midge
• Lack of federal funding for research on organic midge management
  – USDA Organic Research and Extension Initiative
• Volunteer for letter writers!
Thanks!

Monica Beers
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Thomas Case
Wendy Ordway