Crop Profile for Onions (Green) in Ohio

Prepared: December, 1999

General Production Information

(Amaryllidaceae: *Allium cepa*)

- Acres in Ohio: 307 (5) - 100% for fresh market (2)
- Percent of US Acreage/Rank: 2.1%/7th (3)
- Number of Growers: 37 (3)
- Per Acre Value: $6600 - $7300 (2)
- Value of Production in Ohio: $2,026,200 - $2,241,100 (2)

Location Of Production

The main pockets of concentrated production can be found in northeast Ohio on muck crop soils of Huron and Stark counties.

Production Methods

Green onions are grown on muck soils in Ohio. Soil pH should be maintained between 5.4 –5.6. Fertilizers (40 –60 lb. per acres each of N,, P_2O_5 and K_2O) should be broadcast and disked. An additional 30 –35 lbs/A of N should be side-dressed later. Green onions are direct seeded at a rate of 8 – 10 lbs/A beginning in late March until mid-August. No thinning of seedlings is done. Irrigation is used for crop establishment and as needed throughout the season. In order to achieve the long white shoulder or shank on the onion, the soil is hilled at least 2 –3 weeks before harvest. Green onions are harvested about 2 months after planting.

Insect Pests

1. **Onion Maggots** (4)
   The onion maggot is a cream-colored fly larvae about 1/8 to ¼ inch long. They are adapted to cool, wet weather. Development of the larvae can begin at temperatures as low as 40° F. The adults, brown-gray flies about ¼ inch long, emerge from puparia in the spring. The females lay eggs in the soil next to or at the base of young onions. After the eggs hatch in 3-5 days, the newly emerged larvae feed on the onion roots and bulb for 2-3 weeks. The feeding can result in the death of the seedling or it may provide a site of entry for pathogens. Approximately 20% of the crop is damaged by onion maggots in the spring despite treatments at planting (2). The damage decrease over the course of the season but some injury is seen throughout the summer since onion maggots produce three generations each year.

2. **Onion Thrips** (4)
   Onion thrips attack the foliage of onion plants. They are very small (1/16 inch), cream or brown insects that overwinter as eggs and sometimes adults and larvae on weeds, small grains and culled and stored onions. Eggs are laid into the plant tissue and hatch within a few days during the growing season. Adults and larvae cause damage to onion plants by cutting through the upper surface of the leaves, puncturing the culls underneath and feeding on the plant sap. The damaged leaves develop white or silvery blotching, later turning dry and yellow. Leaf damage can make a green onion unmarketable and results in a slowing of plant growth and a reduction in yield. Thrips begin to appear in June and by early July have infested usually 100% of the green onion crop in Ohio (2).

CHEMICAL INSECT CONTROLS:

- **Diazinon**

  Percent acres treated: 97% (2)
  Target pests: onion maggots and onion thrips
  Average rate and frequency of application of most common formulations: (2)
  Diazinon 4EC – 1 qt/A, once (foliar for thrips)
  Diazinon 14 G – 20 lbs/A, once (in furrow, pre-plant for maggots)
  PHI: 7 days (foliar), 60 days (in-furrow) (2)
  Efficacy rating: Average (2)
  Rational for use: Cost and effectiveness against both pests.

- **Cypermethrin** (Ammo)

Percent acres treated: 58% (2)
Target pests: onion thrips
Average rate and frequency of application of most common formulation: (2)
Ammo 2EC – 5.5 oz/A, 1-2 times
PHI: 7 days (2)
Efficacy rating: Very good (2)
Rational for use: Growers have experienced a decline in the effectiveness of both organophosphate and pyrethroid insecticides used against onion thrips in the past.

- **Malathion**

Percent acres treated: 8 % (2)
Target pests: onion thrips
Average rate and frequency of application of most common formulation: (2)
Malathion 8EC – 1 qt/A, 1-2 times
PHI: 3 days
Efficacy rating: Fair
Rational for use: Able to use in hot weather and closer to harvest.

CULTURAL CONTROLS:
Floating row covers can exclude adult onion maggot flies, but this has not proven to be an economical alternative to in-furrow treatment and can result in excessive temperatures. For onion thrips, growers in Ohio have used rye rather than wheat as a cover crop, because wheat has been shown to be a better overwintering host for thrips. This practice appears to delay thrips infestation.

BIOLOGICAL CONTROLS:
Ground dwelling predators are known to feed on onion maggot eggs, but do not provide sufficient suppression to avoid economic damage. Ohio growers have noted less damage, however, after they discontinue foliar sprays of organophosphates for adult onion maggots. They suspect that preservation of ground-dwelling natural enemies is contributing to maggot control.

Diseases

1. **Botyrtis Leaf Blight** (5)
   The disease is caused by various species of the fungus *Botrytis*. Symptoms first appear as many white specks on the leaves. As the spots expand, the leaves die from the tips and turn brown. The

tops of the plants may be killed and topple over within a week. The disease can easily spread to all plants in a field. The fungal spores are spread by air currents and the wind. Leaf blight often develops at the site of injury from thrips feeding, mildew and other agents.

CHEMICAL DISEASE CONTROLS:

- **Maneb** (Manex)

  Percent acres treated: 37% (2)
  Target disease: Botrytis Leaf Blight
  Average rate and frequency of application of most common formulation: (2)
  Maneb 75DF – 2-3 lbs/A, once
  PHI: 7 days
  Efficacy rating: Very Good
  Rational for use: This fungicide is effective for control of diseases that can damage or destroy the onion leaf.

- **Chlorothalonil** (Bravo)

  Percent acres treated: 21% (2)
  Target Disease: Botrytis Leaf Blight
  Average rate and frequency of application of most common formulation: (2)
  Bravo 720 – 2.25 pt/A, twice
  Bravo 500 – 3 pt/A, twice
  PHI: 7 days
  Efficacy rating: Good
  Rational for use: Controls the disease as a preventative control

CULTURAL CONTROLS:
Rotate crops and remove cull piles and rogue volunteer onions since they are a major source of disease.

Weeds

Purslane, Red-root pigweed, Vivid amaranth, Oak leaf goosefoot, Nutsedge, Shepards purse, Pineapple weed and Giant crabgrass.

CHEMICAL CONTROLS:

None reported (2)

CULTURAL CONTROLS:
Hand hoeing, and mulching with straw or black plastic. (2)

CRITICAL PEST CONTROLS ISSUES

Important pesticides used for which there are few or no other alternatives or the only alternatives are organophosphates, carbamates or B2 carcinogens include:

Diazinon

Maneb

CHEMICAL AND NONCHEMICAL ALTERNATIVES

Cyromazine (Trigard) seed treatment has been researched as an alternative to the in-furrow treatment for onion maggots. It has been effective in preliminary trials. However, the seed must be pelletized to avoid phytotoxicity from the seed treatment and the pelletized seed does not fit the most planting equipment used. Furthermore, the minimum rates supported by the registrant, Novartis, would be very expensive for the growers. Some third generation pyrethroids have been effective against onion thrips. Spinosad, chlorfenapyr and acetamiprid have shown acceptable but sometimes variable efficacy in preliminary trials.

Contacts

Casey Hoy, Department of Entomology, OARDC, The Ohio State University, Wooster, OH 44691, (330) 263-3611.

Sally Miller, Department of Plant Pathology, OARDC, The Ohio State University, Wooster, OH 44691, (330) 263-3678

Doug Doohan, Department of Horticulture and Crop Science, The Ohio State University, Wooster, OH

44691, (330) 202-3593.

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Compiled by: C. Hoy and M.F. Huelsman, June 1999.
