

Workshop Title:

Organic Control Options for Vegetable Diseases

Speakers:

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Executive Summary:

The session covered a variety of plant diseases. The speaker also covered management options for dealing with diseases including an overview as well as specific case studies.

Main Notes:

Common diseases of Vegetable crops in New Brunswick

Plant disease

- *Infectious (biotic)*
 - Fungi
 - Bacteria
 - Nematode
 - Protozoa
 - Phytoplasma
 - Virus

- *Non-infectious (abiotic)*
 - Temp too high or too low
 - Drought or excessive moisture
 - Lack of excess light
 - Air pollution

- Nutrient deficiency, mineral toxicity, soil pH, etc.

Disease Development

- Environment (favorable)
- Susceptible host
- Pathogen

Disease can be eliminated upon eliminations by one of the three factors!

- Role of Insects in plant diseases:
 - Insects can transmit disease (virus, phytoplasma)
 - Wounds created by insect feeding: ideal entry point for pathogens
- Vegetable disease management:
 - Integrated pest management-manage pests that use all available strategies to reduce pest population below an economic injury level
- Monitoring:
 - Cultural Methods
 - Biological control methods
 - Chemical control

Common diseases of a tomato: Late blight: severe defoliation and fruit rot. Needs 7-10 days between spore deposition and lesion development (infection)

Management:

- Select resistant cultivars
- Transplant healthy seedlings
- Regularly monitor your fields
- Remove and destroy your defective plants

- Early blight
 - Infects leaves and fruits
 - Reduces plant vigor
 - Defoliated plants are subject to sunscald, infection and extended leaf wetness

Management:

- Remove and destroy crop residue or plow residue
- Crop rotation 3-4 year
- Control weeds
- Good air circulation
- Minimize plant injury
- Use resistant or tolerant variety
- Chemical/biological control

Powdery Mildew:

Infection: warm, humid and field under water stress

Most common in high tunnel than in field tomatoes

Management: Best is prevention. Select resistant varieties

Leaf Mold:

Problem in greenhouses. Can affect field tomatoes. Most destructive during the fall

Management: Good air circulation. Warmer night temps. Avoid wetting leaves. Adequate plant and row spacing (prevents excessive shading).

Cucurbits:

- Powdery Mildew: causes premature defoliation, affect yield and quality
- Downy Mildew: leaf veins, giving the lesion an angular or square appearance, often restrict lesions on leaves

Management: Use resistant varieties. Monitoring crops and weather forecasts. Site selection. Irrigation. Maintain nitrogen fertility.

Alternaria leaf blight:

Avoid working when plants are wet, Sanitation, Remove fallen leaves from greenhouse, Remove and destroy infected plants.

Carrot Diseases:

- Cavity spot and pythium root dieback
- Sclerotinia rot
- Crater rot; crown rot
- Aster yellows
- Leaf blight

Allium Diseases:

- Botrytis leaf blight
- Purple blotch
- Downy mildew
- Botrytis root rot
- Basal rot/nematode
 - o Use clean seed (free of nematodes)
 - o Crop rotation

Cole Crops:

- Wet and humid conditions favor
- Older, senescing plant parts are more susceptible
- Can spread by wind

Management: Keep dryer (minimize wetness of leaves). Remove infected leaves, etc.

Pathogens with wide host range

Lettuce:

- Gray Mold
- Wide range
- Cool and humid conditions
- Infects damaged tissues
- Field lettuce: most serious in early spring and late fall

Management:

- Spacing and ventilation
- Proper fertilization
- Sanitation
- Irrigation
- Sufficient heat at night to prevent dew formation

Sclerotinia sclerotiorum:

- Fungal plant pathogen
- Soil borne or airborne
- Infection at or beneath soil line

Management:

- Rotation 3 or less year with non-host crops

- Reduce weeds
- Discard infected plants from the field
- Deep plowing to keep the sclerotia from soil surface
- Do not mix infected with healthy crops
- Proper storage
- Damping-off and Root rots Management:
 - Use sterile soil-less mixture to grow seedlings
 - Use clean seeds
 - Try not to crack or shatter seeds
 - Plant when weather conditions are favorable
 - As soon as damping-off is detected, take a break from watering for a while
- Bio pesticides/chemicals