

## MSU Diagnostic Services

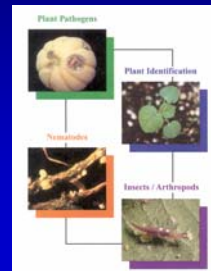
Tips on services, sampling, and shipping.

Steven A. Gower, CPAg/CCA  
MSU Diagnostic Services



## Diagnostic Services

- Multi-disciplinary plant health and pest diagnostic facility
- Clients may submit samples for diagnosis
  - plant pathogens
  - insect or weed pests
  - nematodes
  - herbicide injury
  - other crop related problems



## Diagnostic Services

Lab Manager/Tech



Nematology



Entomology



Plant Pathology



Weed Science



## Clientele

- ✓ Homeowners
- ✓ Growers / producers
- ✓ County extension agents
- ✓ MSU campus specialists
- ✓ Michigan Department of Agriculture
- ✓ Other regulatory agencies
- ✓ Landscape and Nursery Industry
- ✓ Agricultural businesses
- ✓ Chemical control companies
- ✓ Pest control companies
- ✓ Medical doctors and veterinarians
- ✓ Lawyers
- ✓ Other businesses



## Diagnostic Services

### Interdisciplinary Assessment

- Single lab on campus
- Several Sets of Eyes are Better than One
- Several Disciplines are Better than One



## Diagnostic Services

### Interdisciplinary Assessment

- Final product is a comprehensive team effort which often incorporates the opinions of campus specialists





## Services Provided

### Plant Health Analysis

- Visual inspection for infectious and non-infectious diseases, insect and herbicide injury; pathogen culturing; pH; SS
- Virus ELISA tests
- Bacterial identification

### Nematology

- Basic nematode analysis
- Total nematode community analysis
- *Verticillium* analysis

### Weed Science

- Plant / weed identification
- Herbicide resistance screens
- Pesticide analysis

### Entomology

- Insect /arthropod identification



## Service Fees

### Plant Health Analysis

- Most plant health inspections: \$20
- Virus ELISA tests: \$20
- Bacterial identification: \$25

### Nematology

- Most nematode analyses: \$20
- Total nematode community analysis: \$50

### Weed Science

- Common weed ID: N/C
- Keyout weed ID: \$10
- Herbicide resistance: \$50
- Pesticide analysis: varies

### Entomology

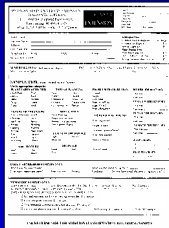
- Common insect ID: N/C
- Keyout insect ID: \$10



## Diagnostic Services

### • Sample Submission

- Accurate diagnosis depends on the rapid receipt of a fresh and representative sample.
- Along with pertinent information and client objectives.



## Sample Size



## Plant Health Analysis

### • Tree Decline/Wilt

- Send 6 to 12 branch sections, 1/2 to 1 inch diameter and 8 inches long.
- Do not send completely dead branches.
- Seal branches in plastic to retain moisture.



## Plant Health Analysis

### • Herbaceous Plant Samples

- Submit whole plants if possible.
- Package to keep the roots and soil separate from the above ground tissue.
- Submit several plants with symptoms.



## Plant Health Analysis

- Turf
  - Include a 4"x4"x3" square of turf.
  - Take the sample from the margin of the diseased area.
  - The sample should include both healthy and diseased turf.
  - Wrap the sample in newspaper and pack in a box.



## Entomology



Adult and Hard-bodied Specimens



Larvae

## Entomology

- Precise identification requires specimens to be undamaged upon arrival.
- Not recommended:
  - peeling a squashed bug from a flyswatter or bottom of shoe.
  - Sending dried and unprotected insects in an envelope.
  - Attaching insects to scotch tape.



## Entomology

- Kill and ship specimens in a small, leak-proof vial filled with rubbing alcohol.



## Nematology

- Refer to MSU E-2199
  - Detecting and Avoiding Nematode Problems
- Problem Diagnosis:
  - Collect soil and roots (or foliage) from margins of diseased areas. Submit samples of diseased and apparently healthy ones.
- Problem Avoidance:
  - collect soil and roots by walking a zig-zag or w-shaped pattern. The more sub-sample, the "better" the sample.

## Nematology

- Always store and ship in plastic bags or containers that retain moisture.
- Submit a pint to quart of soil.



## Weed Science

- Weed / Plant Identification
  - Submit whole plants.
  - Plants may be pressed flat to prevent leaf crinkling.
  - Submit plants immediately after digging.
  - Prevent soil from touching the foliage.



## Weed Science

- Herbicide Injury
  - Submit injured and apparently healthy plants.
  - Dig plants carefully !!
  - Prevent soil from touching the foliage.
  - Submit “good” and “bad” soil.
  - Note any field patterns and crop/pesticide history.



## Weed Science

- Herbicide Injury
  - Submit photographs



## Weed Science

- Herbicide Resistance
  - Submit mature seedheads or seed from mature plants.
  - Grown in greenhouse and sprayed with appropriate herbicides.



## Diagnostic Services

Submittal Form, Brochure, and Website



## Sample Submission

- Samples may be:
  - dropped off at Diagnostic Services.
  - dropped off at county Extension office
  - shipped by:
    - 
    - 
    - 
  - submitted electronically via email.