Ornamental Pest Management

Training for Commercial Pesticide Applicators

Category 3b

MSU Extension

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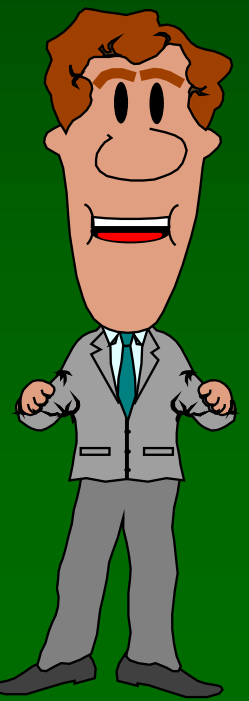
MSU Extension

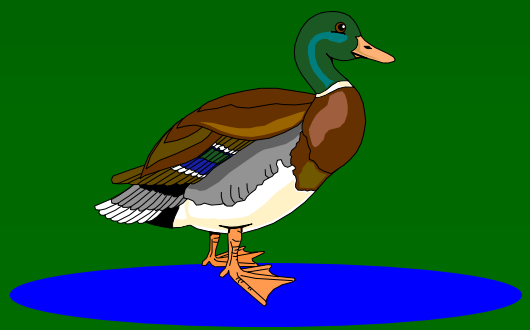
Principles of Pest Management

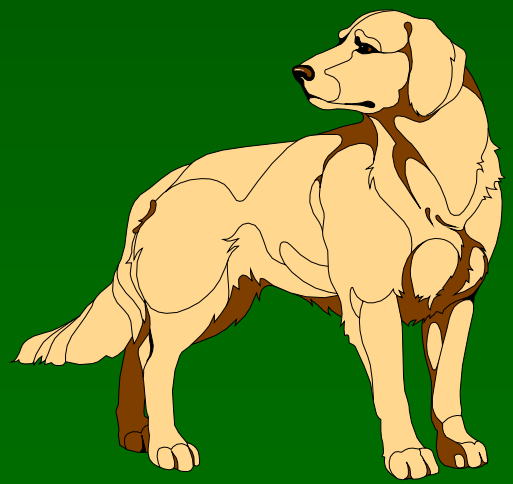
Chapter 1

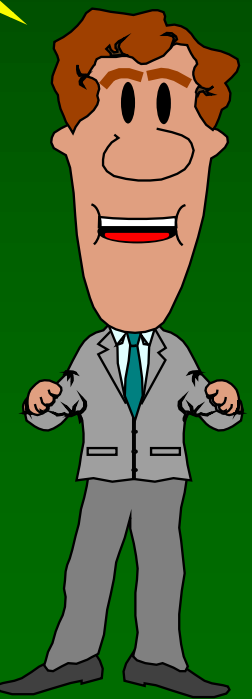
A pesticide applicator doesn't *just* apply pesticides. Social and legal responsibilities accompany the use of toxic materials.



Pesticide application must protect plant material from pest injury without harming nontarget organisms.





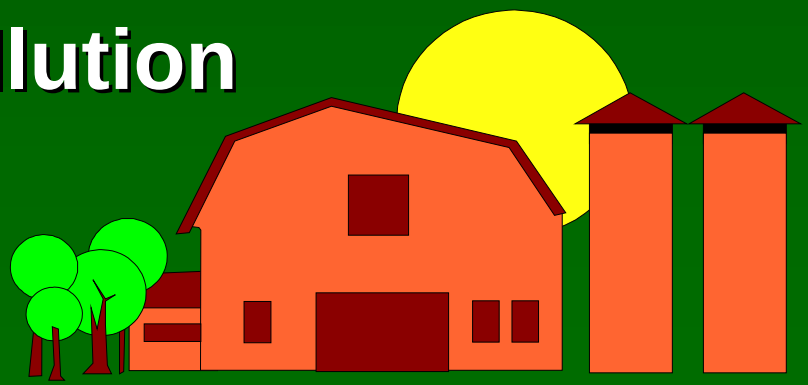


IPM

- **Use of all available strategies to manage pests**
  - Resistance, cultural practices, natural enemies, mechanical controls, pesticides
- **Achieve acceptable yield & quality with least environmental disruption**
- **Not anti- pesticide**

IPM developed because....

- No one method achieves long term pest management
- Pest management is a component of plant care
- It can reduce costs
- Failures, resistance, pollution occurred

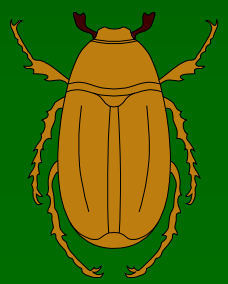


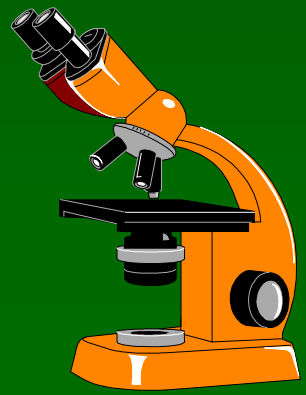
IPM Steps for Landscapes

- Detection of agents injuring plants
- Identification of agents injuring plants
- Economic significance
- Selection of management methods
- Evaluation and recordkeeping

Detection

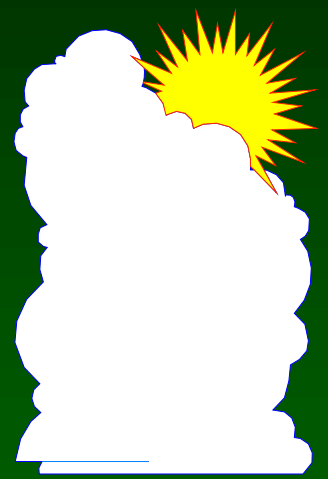
- **Benefits**
  - Low pest population
  - Discover population and life stages
  - Variety of management techniques available
  - Less toxic methods of management may be employed

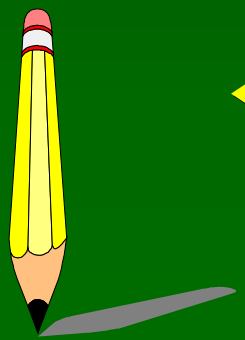




Monitoring

- **Scouting**
- **Traps**
- **Monitor weather**
- **Degree days (CAT Alerts)**
- **Phenology (Coincide)**
  - plant development relationships
- **Recordkeeping (data sheets)**



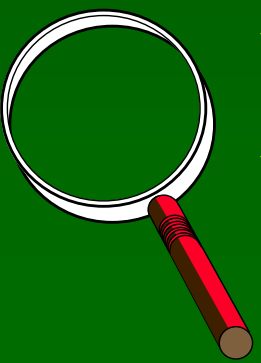


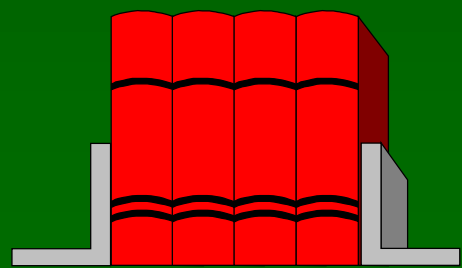
Identification

- **Know the healthy plant**
- **Know the agents damaging plants**
  - cultural, environmental
  - weeds
  - diseases
  - insects
  - animals

Diagnosing Plant Disorders

- Investigate the whole plant
- Symptoms
- Plant history
- Investigation tools
- References
- Diagnostic Lab
- Multiple causes possible

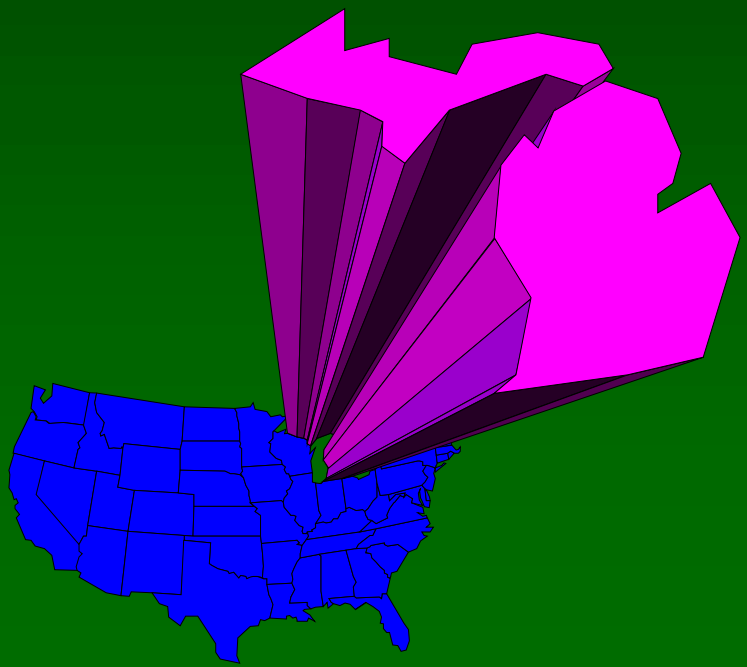




Economic Significance

- **Economic injury level**
  - cost vs benefit
- **Landscape injury level**
  - unacceptable injury
    - whose decision?
- **Action threshold**
  - pest level causing management action

Nursery stock must be certified ‘free’ from injurious insects and diseases.



MDA

Setting Landscape Injury Levels

- **Damage to plant health**
- **Damage to plant appearance**

Factors Influencing the Landscape Injury Level

- **Client tolerance of pest damage**
- **Landscape importance of host plant**
- **Pests' ability to reproduce & spread**
- **Expected pest reduction from natural and/or applied controls**

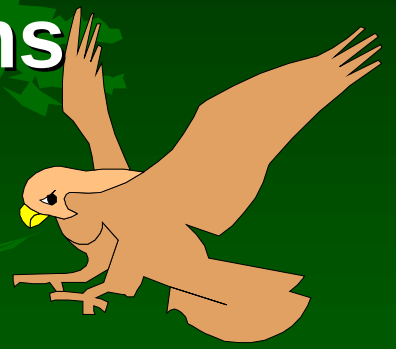
Setting landscape injury levels that reflect specific pest and host conditions is the cornerstone of IPM.

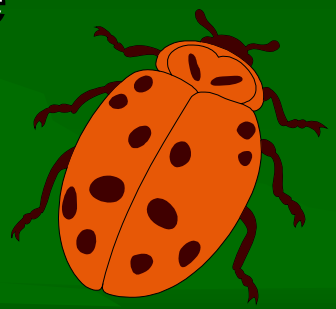
Selection of Methods

- **Many factors limit pest populations**
  - weather
  - natural enemies
  - plant defenses
  - controls implemented by people

Choose Management Methods…

- Least toxic to nontarget organisms
- Enhance natural controls
- May permanently limit the pest
- Least hazardous for the applicator
- Most likely to stay on the target site





Factors That Limit Options

- **Budget**
- **Availability of equipment**
- **Availability of labor**
- **Time**
- **Availability of products**
- **Public/client acceptance of methods**

Evaluation

- **Were plants protected from serious injury?**
- **Negative consequences?**
  - environmental impacts
  - promotion of other pests
- **Practical?**
- **Cost?**