



# Integrated Pest Management (IPM): A Conservation Approach

## WHAT IS IPM?

IPM is a system that combines a decision-making process with natural resource conservation to address pest and environmental impacts. It aims to reduce plant pest pressure, minimize harm to beneficial organisms, and decrease the transport and emission of pesticides into the environment.



## KEY PRINCIPLES: PAMS STRATEGIES

- Prevention
- Avoidance
- Monitoring
- Suppression

## WHY IMPLEMENT IPM? (BENEFITS)

- **Reduce Plant Pest Pressure:** Effectively manage weeds, insects, and diseases.
- **Protect Beneficial Organisms:** Reduce injury to helpful insects and other organisms.
- **Minimize Environmental Impacts:** Reduce pesticide transport to surface and groundwater.
- **Improve Soil Health:** Activities like diverse crop rotations contribute to soil health and reduce pest pressures. Poor soil drainage can increase soil-borne diseases.
- **Promote Overall Plant Vigor and Resilience:** Healthy plants are more tolerant to pests.

## IMPLEMENTATION OF PAMS:

### Prevention & Avoidance (PA)MS

- **Site and Crop Selection:** Choose appropriate sites and select locally adapted, pest-resistant crop cultivars. Diverse crop rotations are effective for minimizing pest development.
- **Healthy Soil & Plant Vigor:** Ensure adequate plant nutrients, soil moisture, favorable soil pH, and healthy soil to reduce plant stress and improve vigor. Good water management avoids conditions conducive to disease.
- **Sanitation & Exclusion:** Manage crop/plant residue to maximize conservation goals and reduce pest populations. For structures like greenhouses, consider exclusion methods such as screening openings to prevent pest entry.
- **Manage Soil Seedbank:** Reduce weed seed inputs and manage the soil environment to lessen weed establishment.

### Monitoring & Scouting PA(MS)

- **Scheduled Monitoring:** Establish a schedule for monitoring and scouting
- **Sampling & Identification:** Use scientifically verified methods to sample pest populations.
- **Environmental Conditions:** Monitor for favorable environmental conditions (e.g., temperature, humidity, rainfall) that could favor pest or disease development.

### Suppression Techniques (Threshold-Based)

- **Decision-Making Guidelines:** Determine thresholds or use general decision-making guidelines for each pest to decide which treatment is warranted.
  - **Cultural Controls:**
    - Consider tillage/soil incorporation impacts on erosion. Be aware that tillage can reduce mycorrhizal fungi and soil organic matter, which benefit soil and plant health.
  - **Biological Controls:**
    - Support naturally occurring beneficial organisms; evaluate and improve their habitat.
  - **Chemical Controls:**
    - **Risk Assessment:** Evaluate site-specific water quality impacts of chosen pesticides (leaching, solution runoff, soil adsorbed runoff).
    - **Impact Evaluation:** Determine if any pesticides pose potential impacts to humans, fish, or pollinators.
    - **Timing:** Apply chemicals when the most susceptible life stage of the pest is present (e.g., adult emergence, predicted egg deposition).