Integrated pest management in urban farming

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Definition

**IPM** is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.
Stress
• Reduces Photosynthesis
• Reduces grow
• Attract pest

Stressors
• Too much or not enough water
• High or low soil pH
• Too much or low nutrients
• Compacted soil
Steps in IPM

- Monitor
- Identify
- Evaluate
- Chose
- Implement
Monitor
Evaluate
Integrated Pest Management (IPM) Tactics

• Cultural management
• Physical management
• Biological management
• Chemical management
Prevent disease by removing a factor

Pathogen

Environment

Host
• Cultural management

Soil management
Watering
Crop rotation
Plant selection
Planting times and spacing
Sanitation

**Crop rotation example**

- Nightshades
- Brassicas
- legumes
- Greens
• Physical management

• Manual
• Exclusion
• Traps
• Sanitation
• Biological management

• Beneficial animals and insects
  • Predators
  • Parasitoids

• Beneficial diseases
  • Bacterial
  • Fungi
  • Nematodes

Ladybug larva eating aphids
Wasp laying eggs in the body of a caterpillar
• Chemical management

- Biorational
- Inorganic
- Synthetic
Biorational

- Botanicals
  - Soaps, oils, plant extracts.

- Microbial
  - Spinosad
Botanical soaps and oils

• Insecticidal soap
  • Kills soft body pests
  • Kills only what it contacts
  • Do less damage to beneficial insects
  • Repeated application often necessary
  • Manages: aphids, white flies, caterpillars, scale crawlers, mealybug, thrips.

• Horticultural oil
  • Kills by smothering
  • Kills all life stages
  • Can damage plants at high temperatures
  • Manages: spider mites, scale, mealybug
Botanical pesticides

• Pyrethrum
  • Extracted from chrysanthemum flowers
  • Contact poison, rapid effect
  • Broad spectrum
  • Manages: aphids, beetles, caterpillars, thrips.

• Neem oil
  • Extracted from tree grown in Africa and India
  • Repellant
  • Stomach poison and fungicidal properties
  • Relatively non-toxic for adult beneficial insects
  • Manages: Mexican bean beetle, aphids, squash bugs.
Inorganic

• Used for pest management
  • Copper: fungal and bacterial management
  • Sulfur: Fungal management
  • Diatomaceous earth: aphids, mites, caterpillars
Synthetic chemicals

• Made in a laboratory
• May kill by contact, ingestion and inhalation
• More economic
• More effective
• Last longer
Beneficial insects care

- Don’t use synthetic pesticides
- Avoid using powder or dust
- Avoid spraying flowers
- Spray late in the day after the bees return to their hives
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