IPM:
Integrated Pest Management
Best Practices and Philosophy

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THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
COOPERATIVE EXTENSION
Arizona Pest Management Center
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Phi·los·o·phy
fəˈläsəfē/ A particular system of thought

Possible thoughts about pests…

What is a pest?

A Pest, Defined







- Any organism that is detrimental to humans or their interests
  - destroys crops & structures
  - poses threats to human health and livestock
  - reduces aesthetic and recreational value
- **Any organism that is out of place!**
- **Pests** include insects, mites, plant pathogens, weeds, mollusks, fish, birds, and mammals

Pest situation

Pest situation

Problems due to pests

- Can cause structural damage/crop damage
- Can bite / sting
- Can damage food by entering and feeding
- Can contaminate food and surfaces with microorganisms they carry
- Nuisance when they invade buildings
- Can cause allergies, asthma and other hypersensitive reactions
- Can vector disease microbes

Why Pests?

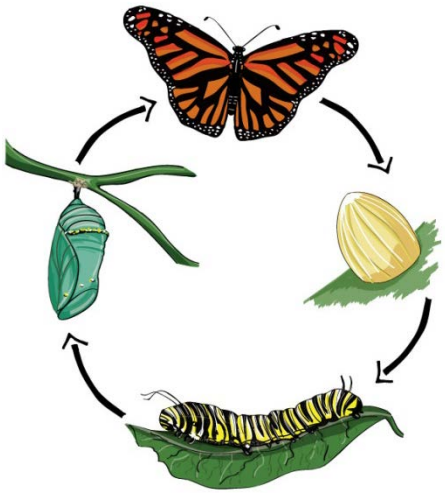
- Biological entities
- Seek food, shelter, and water

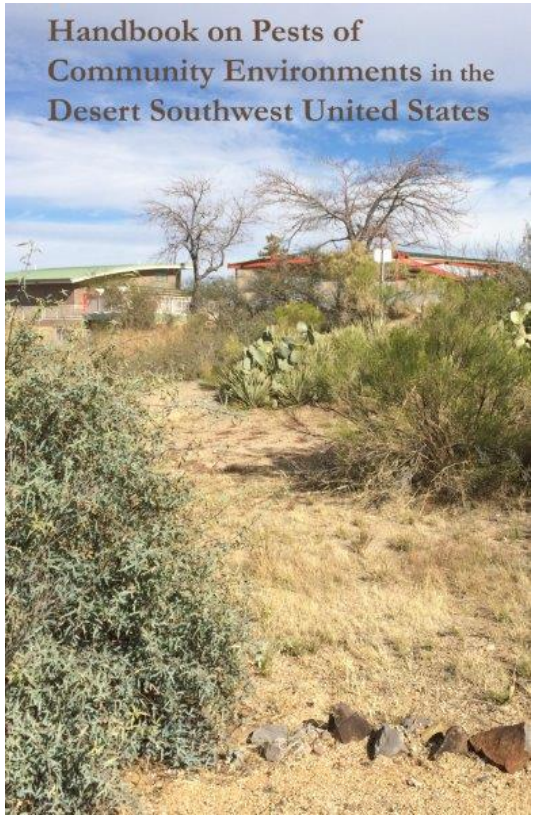
Community ("Sensitive") Environment ??

- Schools, child care centers, homes, hospitals, retirement/ nursing facilities, restaurants, hotels
- Challenging places for pest management
- Host diverse people, confined spaces, different lengths of time
- Have health problems such as asthma, allergies, or immune system compromising diseases
- Include diverse physical spaces, indoors and out, that provide ideal entry points and harborages for pests, and require customized solutions to pest problems
- Diminishing budgets and deferred maintenance worsen these problems

‘Pest’ Identification is Critical!

- All stages of a pest may not look the same or cause the same damage.
- Know the host of the pest or where it was found.
- Use good resources.
- Have pests examined by specialists.
- Handle samples carefully.





Take good pictures

- Smartphone photo tip: **Zoom in with your hands or feet, not your phone!**

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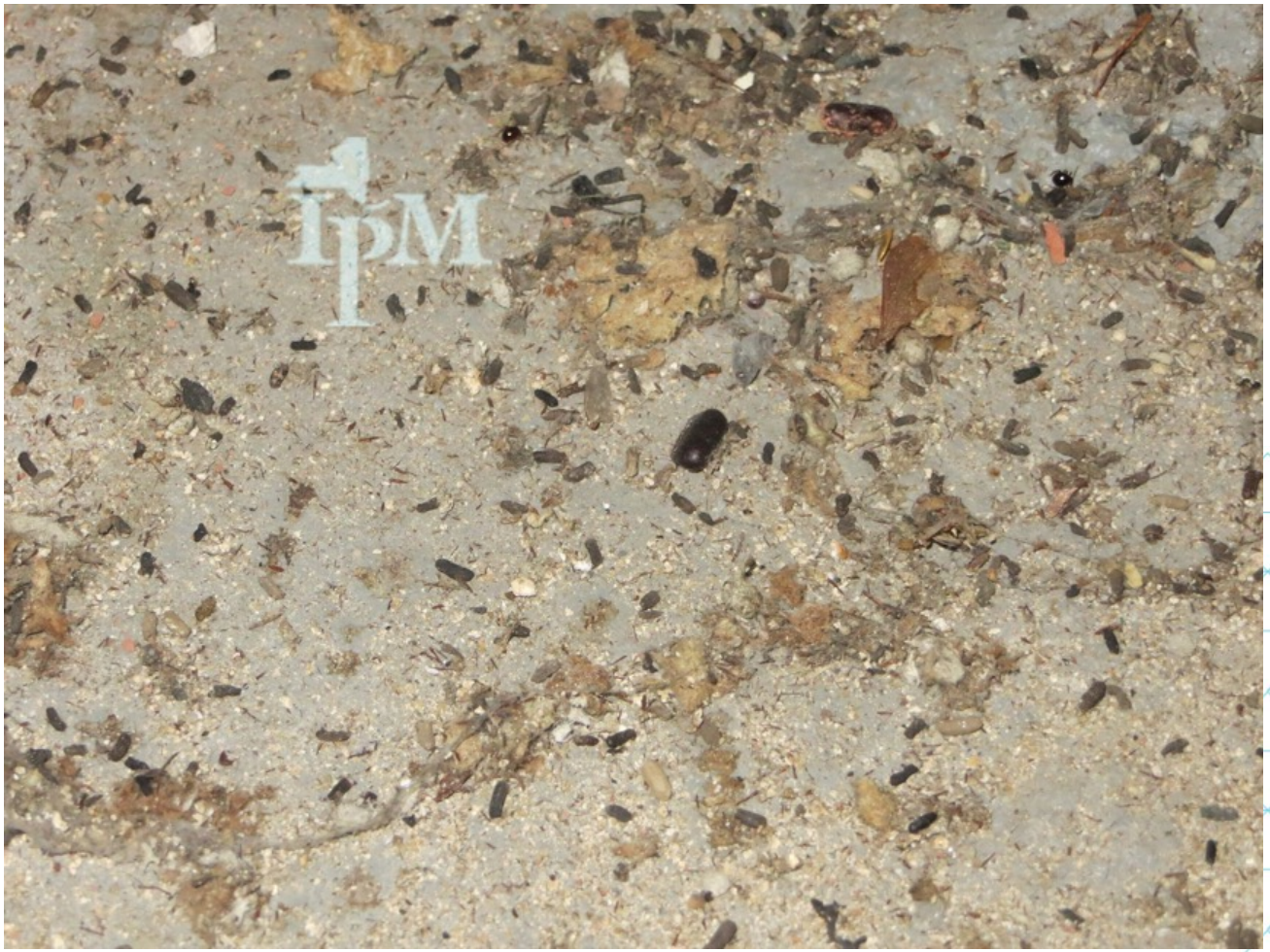
What pest might be present?



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Find the bed bug

1

Swallow bug

2

Brown dog tick

3

Apple seed

4

✓

5

Shiny spider beetle

6

German cockroach nymph

7

Bat bug

8

✓

9

Mexican poultry bug

10

Cat flea

The Unacceptable 4

- Cockroaches
- Flies
- Ants
- Rodents

Cockroaches

- German
- American
- Oriental
- Turkestan

- Can contaminate food and other surfaces, disease vectors – carry and spread pathogens
- Cause allergies and asthma
- Nuisance and unwelcome!

Ants

- Argentine ant
- Southern fire ant
- Pharaoh ant
- Carpenter ant

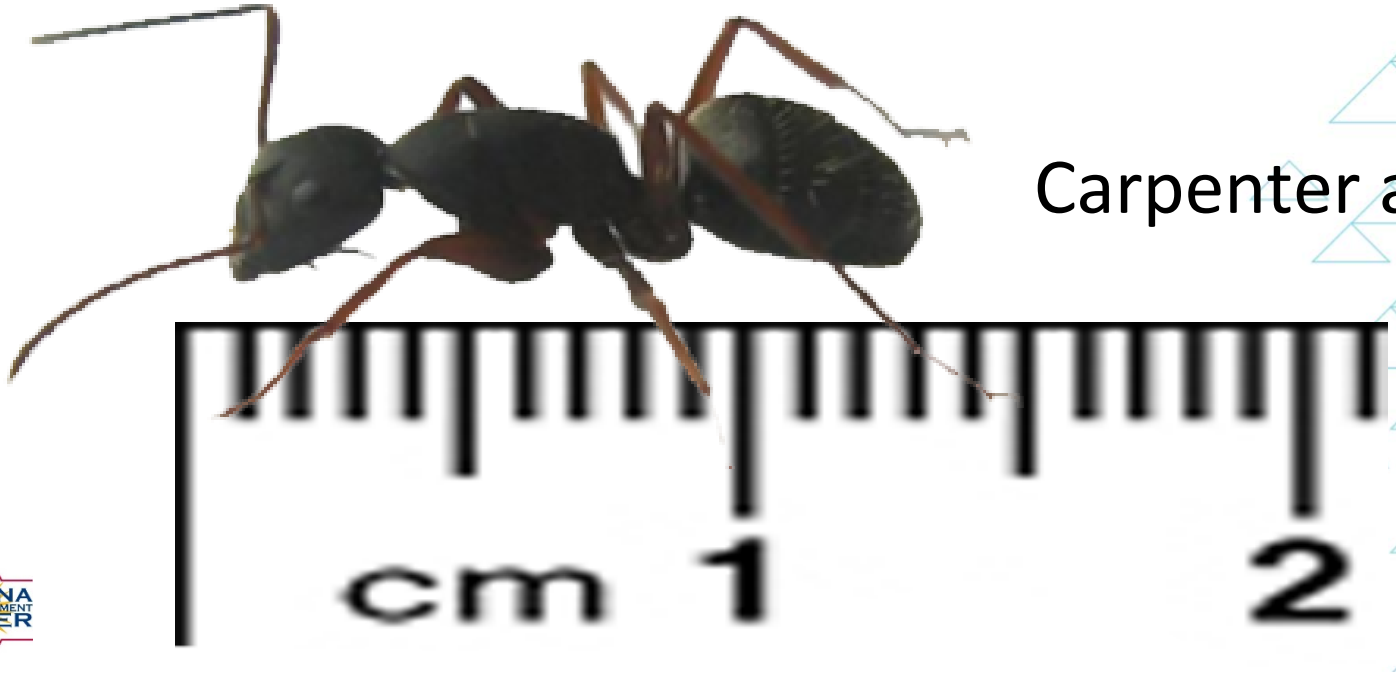
- Can cause painful stings and bites
- Can destroy structures by burrowing and nesting
- Can contaminate food and other surfaces disease vectors – carry and spread pathogens

Ant sizes

Pharaoh ant

Argentine ant

Southern fire ant



Carpenter ant

Filth Flies

- House flies
- Blow flies
- Flesh flies
- Drain flies
- Lots of other flies

- Breed in filthy matter (manure, garbage, cadavers, etc.)
- Considered pests because
  - nuisance insects
  - contaminate food and other surfaces
  - disease vectors – carry and spread pathogens

Mice & rats

- Destroy food and structures
- Can spread allergies and asthma
- Can lead to school closures
- Students can eat rodent baits leading to hospitalization
- Can contaminate food and other surfaces

MANY OTHER PESTS

PEST CONTROL /MANAGEMENT 101

http://www.midwesthiphopsummit.com/wp-content/uploads/2013/07/kill-cockroach.jpg

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EQUIPPED WITH
CHAMPION
SPARK PLUGS

What is IPM?

- Focuses on the **fundamental** reason why pests are there in the first place
- Proactive – monitoring and inspecting is constant
- Pesticides are used only when necessary

IPM = Intelligent Pest Management

- Promotes environmental health

IPM Works indoors and outdoors!

IPM components

Each environment/situation is different!

But IPM components are similar:

- Proper identification
- Regular monitoring
- Plan of action
- Education and communication
- Being proactive
- Multiple tactics

IPM components

Proper identification

- What is normal? What is acceptable?
- Are you sure it is a pest?
- Many problems are a result of abiotic factors (environment, cultural methods, pest-proofing)

IPM components

- Understanding the problem is key
- Regular monitoring is the most economical and simple strategy to manage pests

Don’t look. Observe!

IPM components

- Be proactive and discriminate between options
- Communicate, collaborate with experts

Common Problems

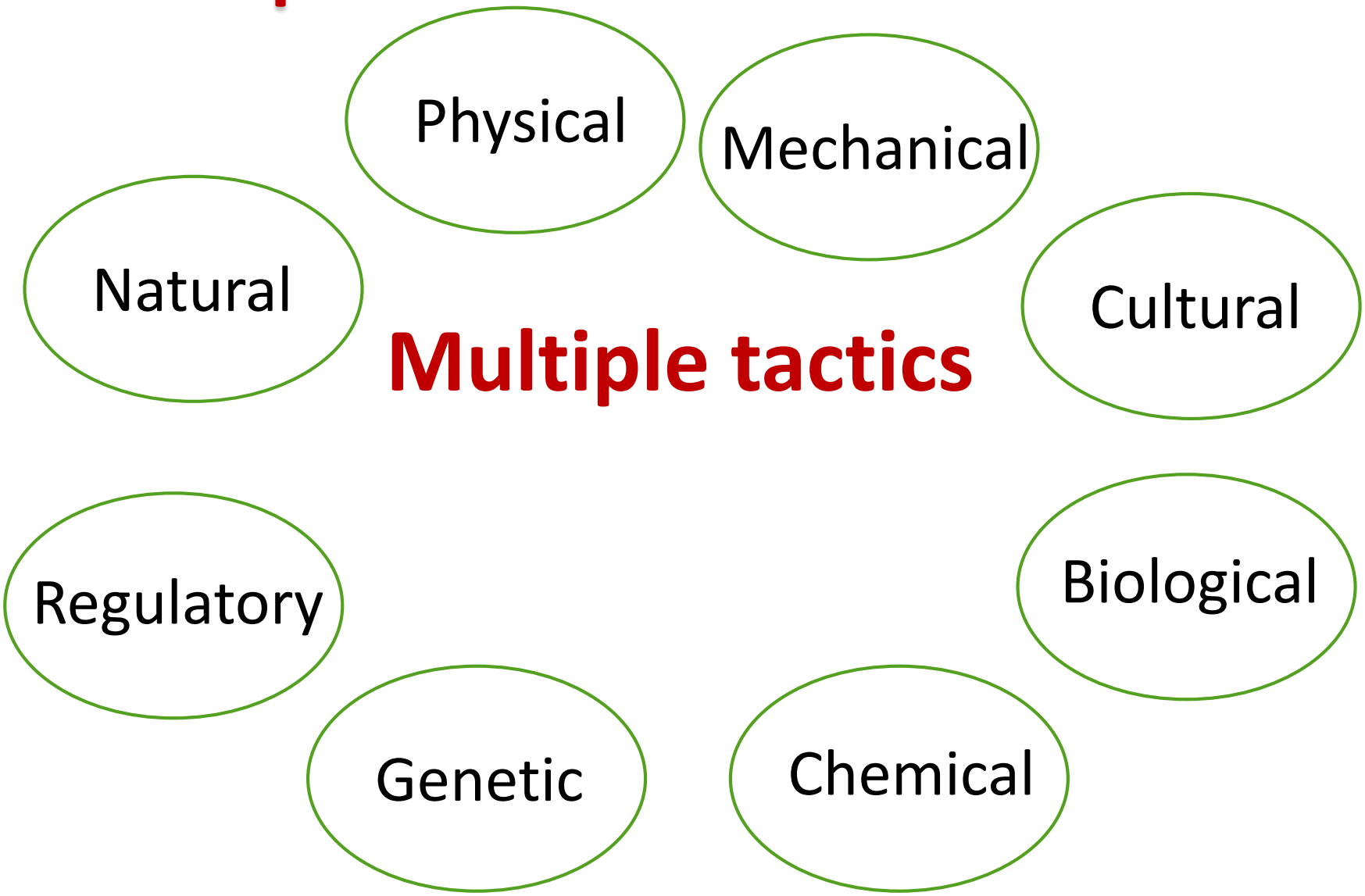
- No monitoring in PVAs.
- No PMP hours with staff.
- Excess pesticide use e.g. 143 applications for 3 schools in one year.
- No ID e.g. “red ants” or “sugar ants”.
- Poor knowledge e.g. mice have no bones.
- OTC pesticides.
- No communication with or education of faculty and staff.
- Poor partnerships.
- IPM costs more….

IPM must be compatible with current operations

- Doing what you do now---just think pests!!!
  - Security = monitoring
  - Energy conservation = exclusion
  - Sanitation = nothing to eat
  - Clutter control = no place to live

Food Water Shelter

IPM components



Physical/Mechanical Controls

- **Barriers** are used to keep pests from plants in the same way window screens keep out flying and crawling insects.

- Traps are effective to manage various pests indoors and outdoors. Trap placement is crucial to effectiveness.

Pest-Proofing!
This door is open to pests!

Cultural controls

- **Good sanitation** practices can reduce or eliminate food for pests.
- Outdoors- removing fallen, diseased or pest-infested leaves, branches and fruit to reduce pathogen and insect populations
- Indoors- cleaning floors and work surfaces, proper disposal of trash, storing food in sealed containers

Biological Controls

- Maintaining or increasing the number of beneficial organisms can be an effective way to manage pests.
- Including flowering plants in the landscape can attract and support beneficial organisms that are natural enemies of pests.

PESTICIDES

- Thresholds
- Spray timing
- Chemical Selection
- Resistance
- Mode of Action
- Selective chemistry

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What are thresholds?

Can be based on:

- Aesthetics
- Number of pests
- Damage to plants
- Food Loss
- Comfort level

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When using pesticides…

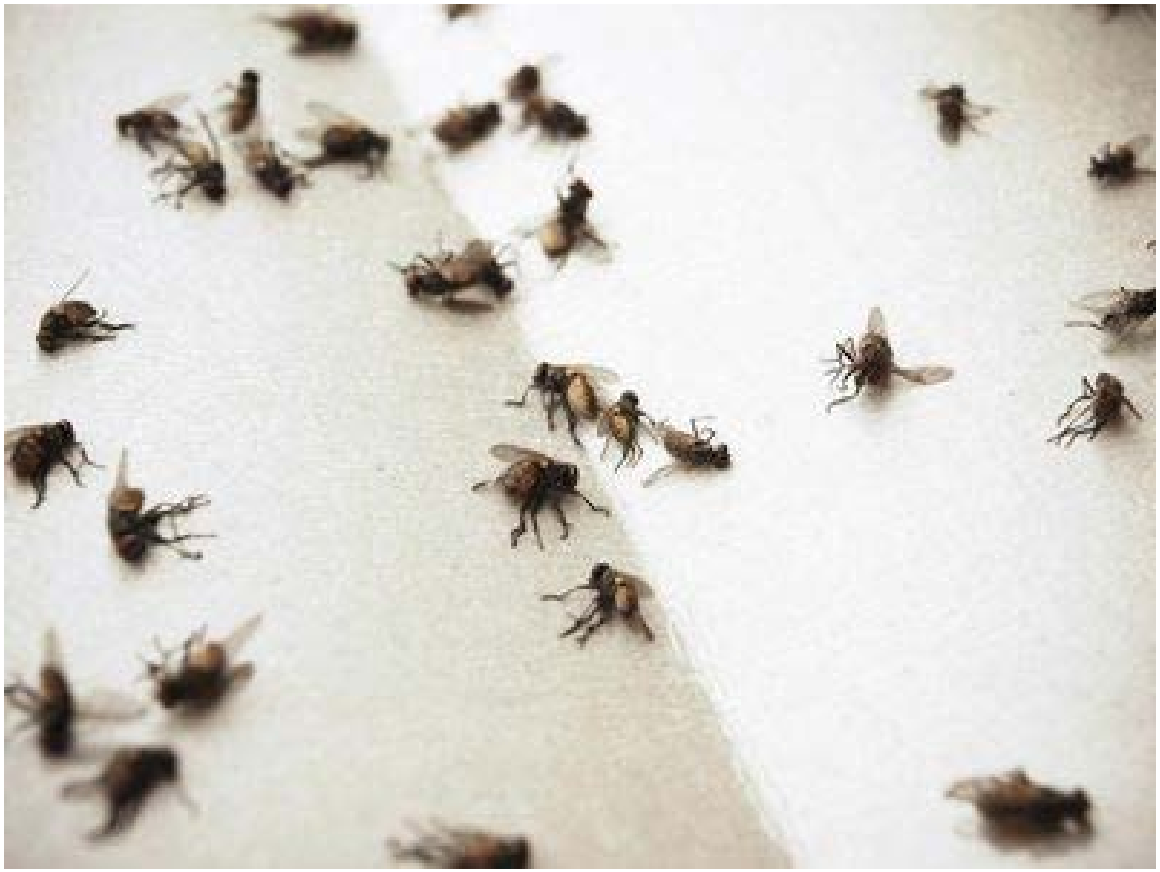
Use least hazardous options first

- Select least toxic materials
- Attempt to preserve natural enemies
- Use broad-spectrum insecticides as an absolute last resort

Pest scenario 1

Solution

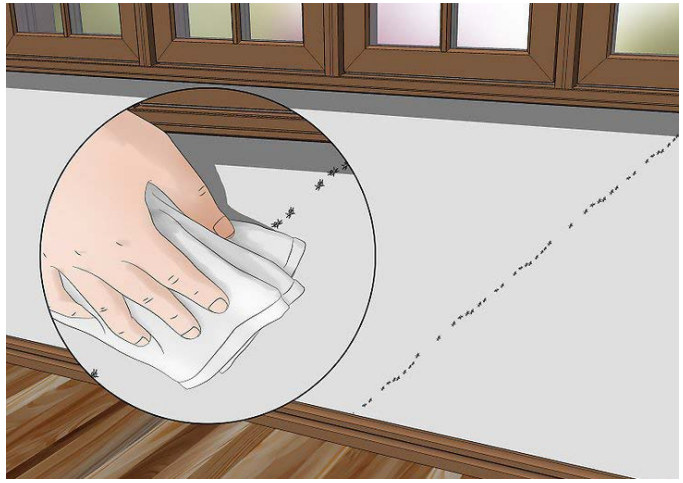
Pest scenario 2



Solution

Pest scenario 3

Solutions



Thank you!

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