Organic Pest Control
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1. Monitoring of Pests
- Give plants a thorough inspection during the day at least once a week. Look at both sides of the leaves, around buds and flowers, and along the stems.
- Also shallowly scratch the soil or mulch for likely culprits. Look for clusters of eggs, webs, or pellets or sawdust-like insect droppings.
- Some insect pest activity occurs at night (like slugs and snails); night/early morning monitoring is often necessary.
- If you find damage, jot down a few notes; name of affected plant, affected plant parts, and the kind of damage (e.g., large jagged holes in leaves)
- If you can actually find insects, examine them with a magnifying lens (10X is best). Don’t assume that all insects are pests — they could just as easily be beneficials.
- If you can’t find any insect pests, consider other possible sources, like wind damage, nutrient deficiency, improper watering.


   - **Biological**
     - Attract natural predators to the garden (ladybug, praying mantid, lacewing, parasitic wasp, hover fly) by planting flowering herbs

   - **Cultural**
     - Match plant for your garden site (drainage, air circulation, enough sunlight)
     - Select plants that are disease resistant or tolerant (UH seed is a good choice)
     - Add organic matter to your soil (feeds soil foodweb to help protect plant)
     - Water according to specific plant needs
     - Fertilize only when needed (organic = slow release of nutrients)
     - Exercise proper garden sanitation
     - Diversify and rotate plants (heavy feeders, light feeders, soil builders)
     - Never work with plants when they are wet
     - Prune-harvest w/sharp clippers to prevent pulling/tearing of the plant
The O'ahu Master Gardeners are a group of dedicated volunteers who are trained by the University of Hawai'i Cooperative Extension Service in environmentally sound tropical gardening practices

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- **Mechanical/Physical**
  - Hand pick pests/diseased leaves (remove scale w/cotton-tipped swab dipped in rubbing alcohol and water or soapy water)
  - Weed by hoe or cultivator
  - Use mulch to control weeds
  - Blast pests with water spray
  - Use yellow sticky traps (aphids, whitefly, thrips, mites, leafminer)
  - Use pheromone traps (oriental fruit fly, melon fly)
  - Use screens and barriers against insect pests (nets, copper tape)

- **Chemical**
  - Last resort; start with pesticides with the lowest toxicity (Look for the SIGNAL word on the pesticide label; CAUTION = low toxicity)

3. **Working with Organic Pesticides**
   - Organic pesticides are extracted from plants/derived from a ‘naturally’ occurring source. Examples include neem, insecticidal soaps, veg/fish oils, and sulfur dusts.
   - Follow all pesticides label instructions and restrictions
   - Keep pesticides in their original container and lock them up
   - Do not mix/apply pesticides around keiki and/or pets
   - Do not smoke, eat, or take a restroom break while working with pesticides
   - Do not apply pesticides when very hot/windy and before rainfall
   - Always wear protective gear (listed on the label); use separate measuring cups/spoons
   - Take a shower (soap and water); wash clothes separately from family wash
   - Spray toward own property, keep nozzle close to target and use low pressure (produces bigger droplets) to reduce spray drift
   - Spray at dusk to minimize risk to pollinating insects/lessen phytotoxic reactions

4. **Common Organic Pesticides and Target Insect Pests/Diseases**
   - **Neem Oil**: Controls aphids, whiteflies, flea beetles, leaf miners, Japanese beetles, thrips leafhoppers and spider mites, as well as helping control certain fungal diseases (powdery mildew).
   - **Iron Phosphate**: Useful for control of snails and slugs.
   - **Insecticidal Soaps**: Useful for control of aphids, spider mites, thrips, leaf hopper, flea beetles and whiteflies, but require direct contact to work.
   - **Sulfur**: Used for control of spider mites and certain plant diseases. Organic gardeners primarily use microfine sulfur dust formulated for application as a liquid spray.
   - **Bts**: ‘Bt’ stands for *Bacillus thuringienesis* and help control caterpillar pests such as cabbage worms and loopers. Bts are generally slow-acting, have to be eaten by the caterpillar in order to work, and are most effective when caterpillars are small.
   - **Vegetable and Fish Oils**: There are a number of organic oils made from various plant seed or fish extracts that are effective against soft-bodied insects, such as aphids, mites, and whiteflies. Some products also are used as fungicides to control black spot and sooty mold.
   - **Diatomaceous Earth**: Used for control of slugs/snails, thrips, blister beetle and flea beetles.