

## Alternatives to Pesticides

### Companion Planting

- To encourage beneficial insects.
- To repel pests
- To distract pests (trap crop)

### Insects:

- There are a wide variety of natural recipes for controlling insect pests. Before using, always make test applications by treating a few leaves and waiting a few days. If plants seem damaged dilute the solution with water or avoid sensitive plants.

### Powdery Mildew:

- Downy patches on foliage.

### Slugs:

- Seedlings eaten. Irregular holes in leaves.

- Angelica, anise, calendulas, dill, fennel, Queen Anne's lace, sunflowers, yarrow, and zinnias.
- Asters, chrysanthemums, cosmos, coreopsis, scented marigolds, basil, coriander, catnip, marjoram, mint, parsley, rue, santolina, tansy, and thyme.
- For aphid and flea beetles, plant a border of nasturtiums.
- For earwigs - chervil, tomato hornworm - dill or lovage, wireworms - potatoes. Watch for the build-up of pests on the trap crop and spray with insecticidal soap or pull the crop and destroy it.
- **Crop Rotation:** Insect pests and plant diseases can be reduced by rotating your crops and flowers in the garden on a regular basis.
- **Physical Controls:** Use screening or barriers. Pick pests off plants.
- **Traps:** Use sticky traps or pheromone traps for pests on outside and flies in the house.
- **Biological Controls:** Encourage pest predators such as birds, lacewings or lady bugs in your garden. Trees, bushes and water will encourage birds, as well as a diversity of native plants.
- **Bt (*Bacillus thuringensis*)** is a bacteria that kills caterpillars when they eat it. Proper timing helps to minimize the amount used. Be careful, as it can be a serious threat to butterflies.
- **Aromatic Remedies:** Add several drops of an essential oil such as rosemary, pine or citronella to 1 cup water and spray on plants.
- **Insecticidal Soap:** Add 15ml liquid dish soap to 1 cup of peanut, safflower, corn, soybean or sunflower oil, mix 5-12ml of the soap-and-oil base to 1 cup water, and spray plants to control a wide range of insects.
- **Garlic Spray:** Useful for both insect and disease control. Soak 3 ounces minced garlic in 10ml mineral oil for 24 hours; strain, then add 600ml water and 5ml liquid dish soap. Mix thoroughly. Spray plants with a solution of 15-30ml soap mixture and 600ml water. Try this mixture with hot peppers or lime juice as well!
- The citrus extract d-limonene, sold under the brand names, Orange TKO and Orange APeel, also repels insects when the concentrate is diluted and sprayed on plants.
- There are many inventive mixtures to repel pests to experiment with: find a plant which isn't bothered by the pest you're trying to get rid of - grind or chop up the plant and mix with an equal amount of water. Another method involves collecting some dead insects that you'd like to get rid of, mixing with water and spraying on the plants.
- Provide good air circulation. Control weeds. Spray foliage with:
- **Compost Tea:** one part compost with five parts water; allow to stand for 1 week, then strain. OR
- **Baking Soda:** 5ml baking soda and a few drops of dish washing liquid in 1 litre of water. This recipe should control powdery mildew on plants if applied weekly in the spring before disease symptoms appear. Only treat if previous experience indicates mildew is almost certain to appear.
- Check under boards, rocks. Use boards to trap slugs. Use a copper barrier with the top folded over to deter slugs.
- Put out shallow containers of beer. Beer mixture: 2 tbsp baking yeast to 1 gal luke-warm water, let sit 10 min then stir while adding 1/3 cup sugar.

## Alternatives to Pesticides

### Weeds:

- Learn to appreciate the good things weeds do.
- Hoe soil weekly to eliminate weed seedlings.
- Pull up older weeds before they have a chance to flower and make seed.
- Create a weed barrier by mulching with synthetic or organic materials.
- Till shallowly, top 1" of soil to avoid bringing up dormant weed seeds.
- Grow cover crops such as buckwheat, rye and legumes.
- Look for new products which use corn gluten to inhibit weed growth.

### Lawns:

- Mow weekly with a sharp blade and keep grass at 1½"-2½". Leave the clippings on the lawn to fertilize the grass.
- Fertilize with slow release fertilizers or top dress every year or so with well made, fine compost. Ensure you don't over fertilize with soluble nitrogen as the stimulation of growth contributes to disease and the build up of thatch.
- Apply dolomitic lime as needed to maintain soil pH between 6.5 and 7.0.
- Water deeply, but not often.
- Aerate or use a thatching rake every 2 years.
- Choose an appropriate seed mix for your conditions.
- Dig out weeds by the root using a sharp weeding tool or a long thick spike.

### Moths:

- Clean clothes before you store them as well as cleaning closets and drawers. Store in tightly closed containers or plastic bags, shake and expose to sunlight periodically. Put clothes in a plastic bag in the freezer for 3-5 days to kill moths and larvae.

### Household Pests:

- Make sure any sources of food are eliminated. Cover compost and garbage and remove often. Rinse your recyclable containers. Ensure that there are no wet or damp areas that will attract pests. Keep drains fresh and free of food scraps. Check inside and outside for cracks where pests can enter and plug them.
- **Diatomaceous earth** (silicon dioxide) or **silica gel** kill insects by causing them to dehydrate. **Boric acid** is a stomach poison to insects with low-toxicity to humans. Be careful not to breathe in the dust and don't apply where children or pets will be exposed.

### Fleas:

- Successful flea control requires vigilance. Vacuum thoroughly and regularly and dispose of your vacuum bag right away if you have a severe infestation. Clean your pet's bedding frequently and treat sleeping areas with a flea soap. Use a flea comb on your pets daily and dispose of captured fleas in a bowl of soapy water. Bathe your pet with an insecticidal soap or spray with a less-toxic product such as Safer's or Dalteck Organic Spray. Discuss flea control in pill form with your veterinarian.

### Notes:

#### Pyrethrum, Pyrethrins, Rotenone

- Rotenone and pyrethrum or pyrethrin are both short-lived broad spectrum botanical insecticides. They are toxic to all insects - including beneficial ones - and to fish, birds and mammals. Because these botanical insecticides are as toxic at the time of application as other, more persistent chemicals, they haven't been recommended. If you choose chemical controls, these compounds may become your next choice. Always wear protective clothing, rubber gloves and a tight-fitting dust mask to spray pyrethrins or rotenone. Never use these insecticides near ponds or waterways.
- Look for pyrethrum or pyrethrin rather than the synthetic pyrethroids. Pyrethrum is usually formulated with other chemicals to increase its potency. Piperonyl butoxide, the most frequently used synergist, is a possible carcinogen. For flea killers, pyrethrins kill the adults and methoprene is used to prevent immature fleas from becoming adults. These insect controls may be combined with more toxic insecticides or 'inert' ingredients. Consult your veterinarian for the least toxic formulations. Note that cats are especially sensitive to pyrethrum.