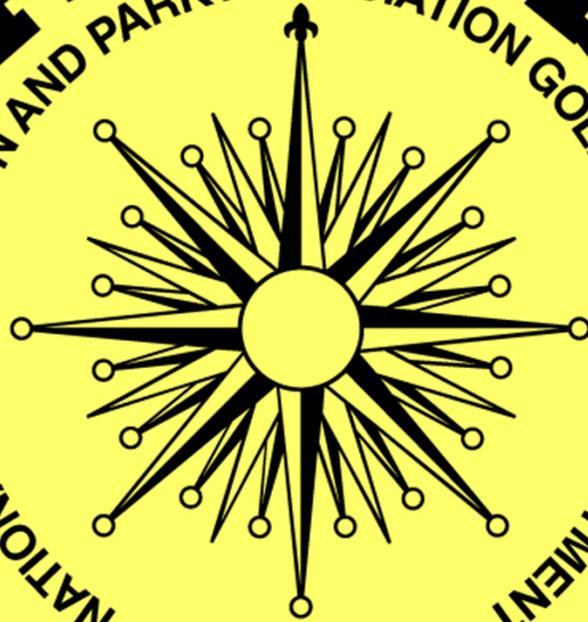


**BEST PARKS IN USA**  
NATIONAL RECREATION AND PARK ASSOCIATION GOLD MEDAL DEPARTMENT



*Grand Prairie*  
— T E X A S —

PARKS, ARTS & RECREATION

# ORGANIC GARDENING 101

Presented By

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# Understand Insects

There are about 30,000 species of insects in Texas

Less than 100 are routine pests in vegetable gardens

Most insects are incidental or beneficial contributing to:

- pollination

- the balance of nature

- recycling of organic matter

A garden with an abundant supply of insects may actually be quite healthy

Identification of insects in the garden is important

- Determine if beneficial or pest species

- Recognize damage

- Know the life cycle

Control measures should be considered when insects are a threat to the garden (economic threshold)

Your best approach is to have a healthy garden

- Start with soil preparation

- Proper nutrient levels

- Clean the area often

## Cultural Control Methods

This includes a variety of management practices

Crop Rotation

Cultivation

Weed Control

Water Management

Good Fertilizer Utilization

Plant Resistant Varieties

These practices will interrupt the life cycle of pests, remove plants that harbor pests and produce healthy plants that resist attack

# Biological Control

The use of one organism to control another.

Three approaches have been successfully implemented

Importation – Foreign exploration for a parasite or predator that can be introduced to control a pest species

Conservation – Perpetuation or encouragement of natural enemies that are present

Augmentation – Release of additional predators and parasites to contribute to the natural populations

## Mechanical Control

The use of physical means to reduce the number of insects and their damage.

Barriers

Covers

High Pressure Water Sprays

Hand Picking of Insects

Each method has positive and negative effects and outcome varies depending on time of year, size of the pest and size of or age of the plant material.

## Chemical Control

Pesticides come in many forms and provide a wide array of tools for pest management.

They are regulated for safety by the EPA and TX Dept. of Agriculture.

These agencies do not consider how well the product works

The user is always responsible for the proper use of any insecticide.

Read and follow the label

It is illegal to use a product in a manner not specified on the label.

## Less Toxic Approaches

Cedar Oil

Citric Acid

Citronella

Cloves

Garlic

Lemon Grass Oil

Mint

Peppermint

Rosemary

Thyme

White Pepper

Capsaicin

These products are  
considered or sold as  
repellants

# Bio-Control Agents

Bacillus thuringensis

Beneficial Nematodes

Bacillus popilliae - East

Nosema locustae

Trichogramma wasp

Green lacewings

Praying Mantid

Lady beetles

Outcome depends on the ability to find a host, survive in your location, ability to use alternate hosts, reproductive rate, ability to adapt life cycle

# Natural Insecticides

Pyrethrum

Nicotine

Sabadilla

Rotenone

Use of these products should be evaluated carefully some are toxic to fish, beneficial insects and humans

## Other Pesticides

Insecticidal Soap

Diatomaceous Earth

Superior Horticultural Oil

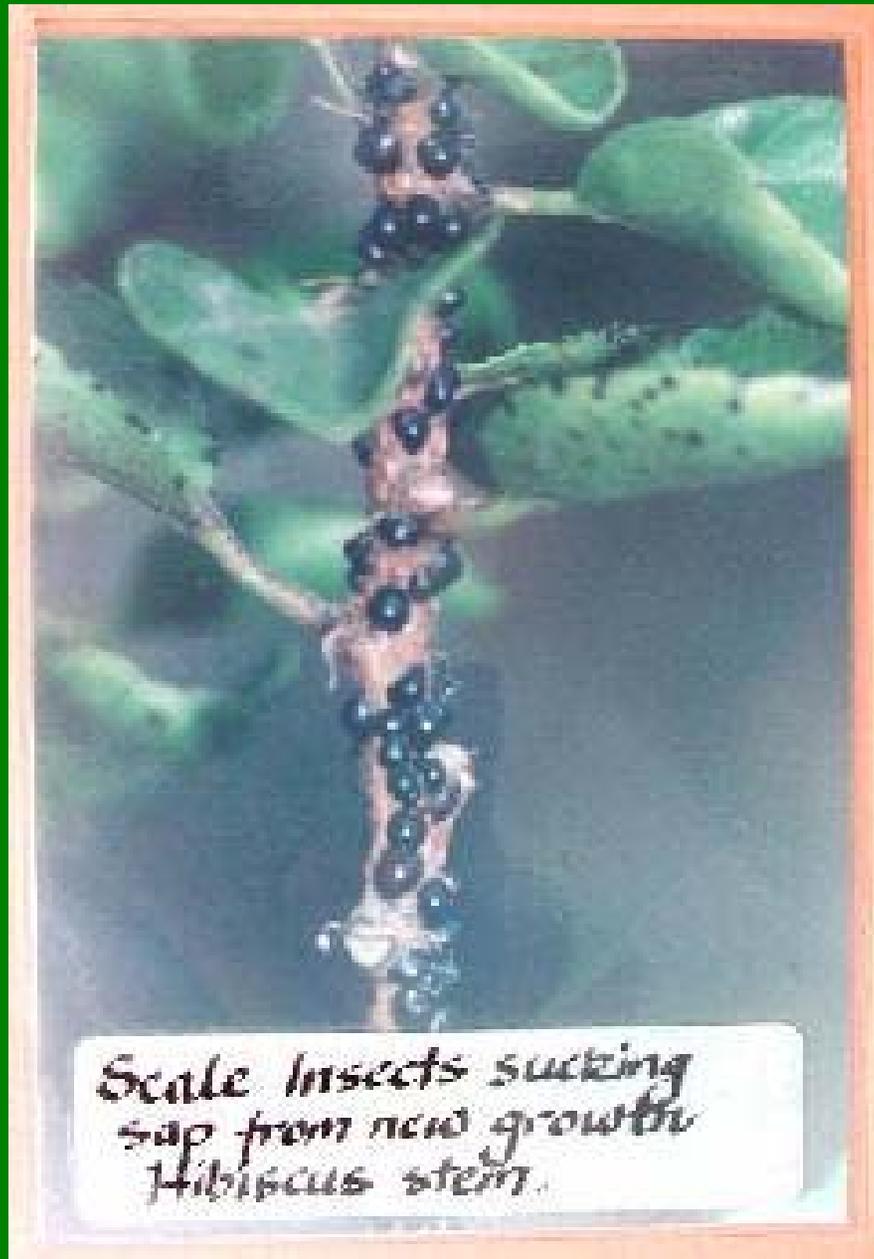
These products are available at your local nursery or feed store. Never purchase more than you need or will use in a years time.



**Aphids**



**Mealy Bugs**



## Scale

# Army Worms





# Tent Caterpillar





Bag Worms

# Squash Bugs



# Tomato Horn Worm



# Red Spiders



# Crape Myrtle Scale





Crape Myrtle  
Scale  
Sooty Mold



**Ant Lion Larva**

**Lady Bug**



**Adult Lady Bug**

© 1999 Nature's Control



Praying Mantis  
having lunch

# Lace Wing

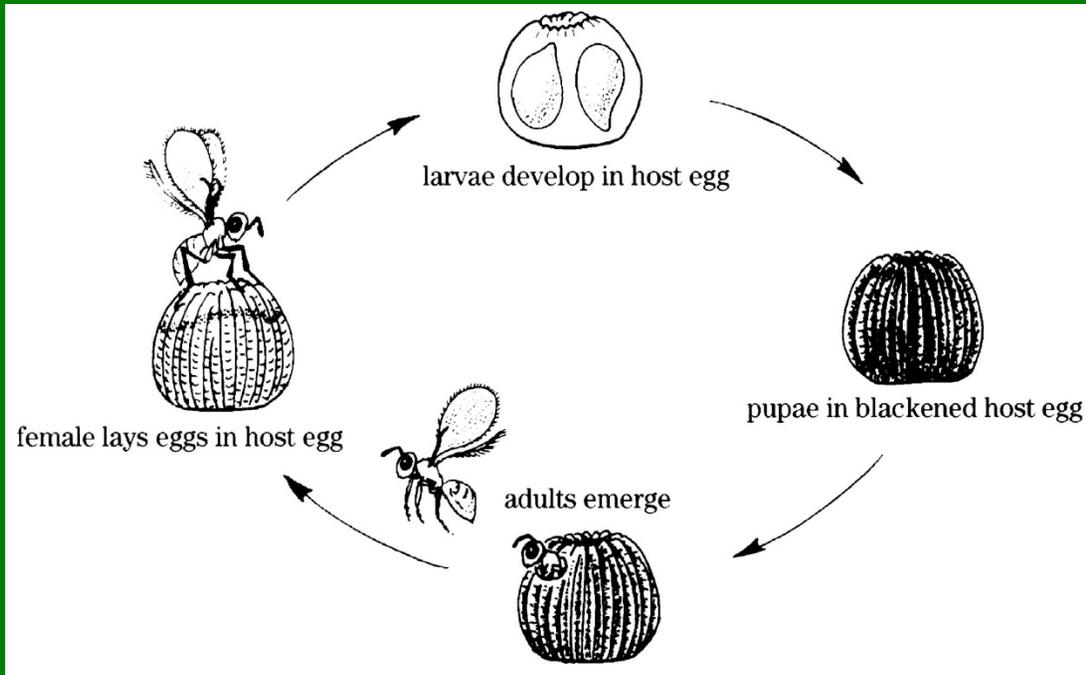


Larva



Adult

# Life Cycle



# Trichogramma Wasp

Adult Laying Egg

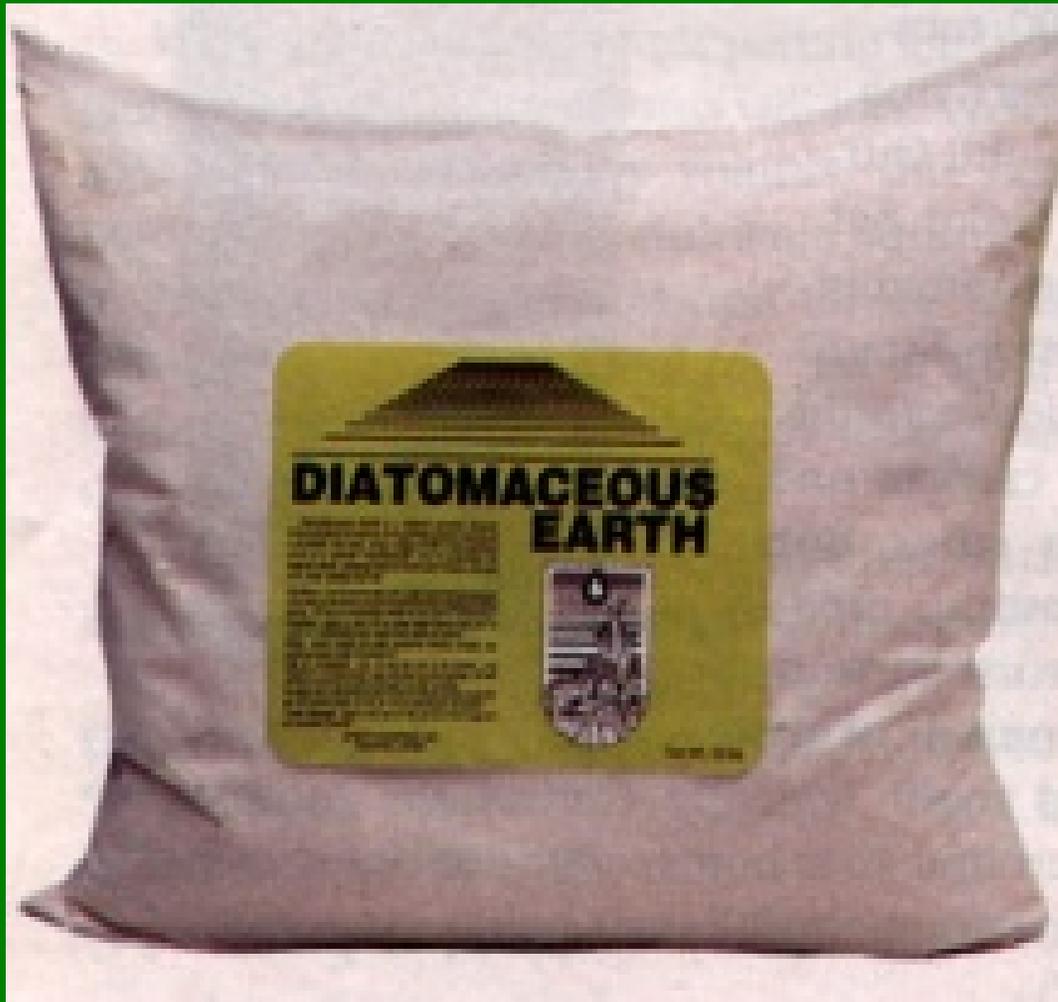


Three things to add to your arsenal of pest control products.

1. Superior Horticultural Oil

2. BT bacillus Thuringiensis

3. Insecticidal Soap



This can be used for hard or soft bodied insects but is most effective on immature stages and soft bodied insects. A must for every gardener.

## **You are the main connection between control and failure in the garden.**

- Regular inspection is the key.
- Treat when you reach the economic threshold.
- Retreat in 7 to 14 days to ensure getting the 2<sup>nd</sup> generation.
- Keep the garden healthy.
- Clean the garden on a regular basis!
- Remove any weeds and undesirable plants.

**Remember to have fun and involve the children to ensure future generations garden!**