

Natural Remedies

For the Garden

Basic Principles

1. Cause and effect (treat cause, not just symptoms)
2. Prevention is better than cure

Proverbs 26:2

“As the bird by wandering, as the swallow by flying,
so the curse causeless shall not come.”

Basic Steps in Pest Control

1. Soil/plant health

- Balance the soil fertility
- Build organic matter

2. Management practices

- Crop rotation
- Sanitation
- Encourage beneficial insects

3. Plant resistant varieties

4. Biological control

5. Physical control

6. Botanical insecticides

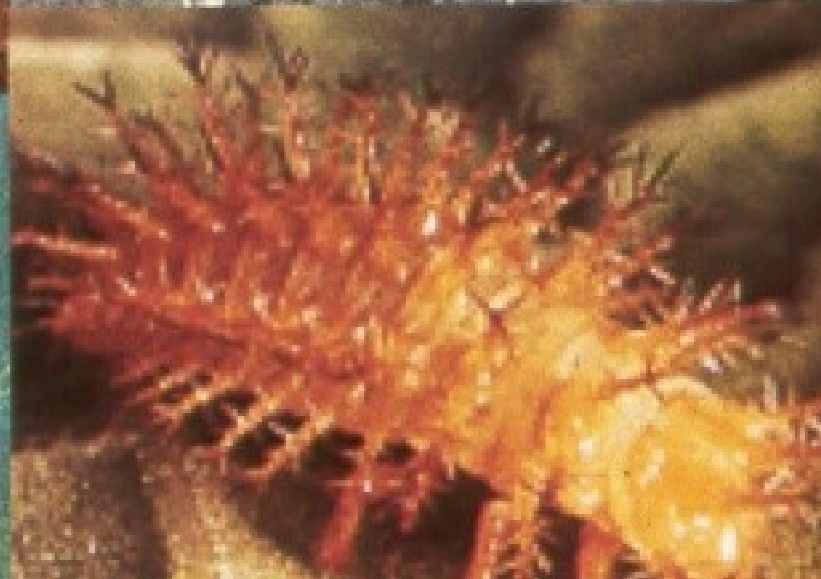
Mexican Bean Beetle



ADULT BEETLE



LARVAE & LEAF DAMAGE



Aphids Feeding on Fennel



Cucumber Beetle

Spotted and Striped



2. Management Practices

- Rotation
- Sanitation
- Encourage beneficials

Encouraging Beneficials

- Food
 - Umbellifer herbs
 - Dill, caraway, carrot, fennel, etc.
 - Composite flowers
 - Calendula, Marigold, etc.
- Shelter

Hoverfly (or Surphid Fly)



Hoverfly
Larva
Feeding on
Aphids



Ichneumin Wasp



Lady Beetle



Lady Beetle Larva



Ground Beetle



3. Plant Resistant Varieties

- VFN-Resistant tomatoes
- CMV-Resistant cucumbers
- Powdery mildew resistant peas and squash
- Anthracnose and powdery mildew resistant melons

Tomato

Disease Resistance/Tolerance Codes

AB	Alternaria (Early) Blight
AS	Alternaria Stem Cankor
F	Fusarium Wilt (Race1)
F2	Fusarium Wilt (Races 1 and 2)
L	Gray Leaf Spot
LB	Late Blight
LM	Resistant to Leaf Molds A-E (Cladosporium fulvum)
N	Nematodes
TMV	Tobacco Mosaic Virus
V	Verticillium Wilt

4. Biological Control

- *Bacillus thuringiensis* (BT, Dipel)
- *Beauveria bassiana* – fungus (Mycotrol, Naturalis)
- *Saccharopolyspora spinosa* – bacteria (Spinosad)

5. Physical Control

- Row cover
- Clay (Surround)

Botanical Insecticides

- Rotenone
- Pyrethrum
- Sabadilla
- Neem

Aphids with Hoverfly Larva



Lacewing



Lacewing Larva



Lady Beetle



Lady Beetle Larva



Ants



Armyworm



Mexican Bean Beetle



Mexican Bean Beetle Pupae & Pediobius Mummy

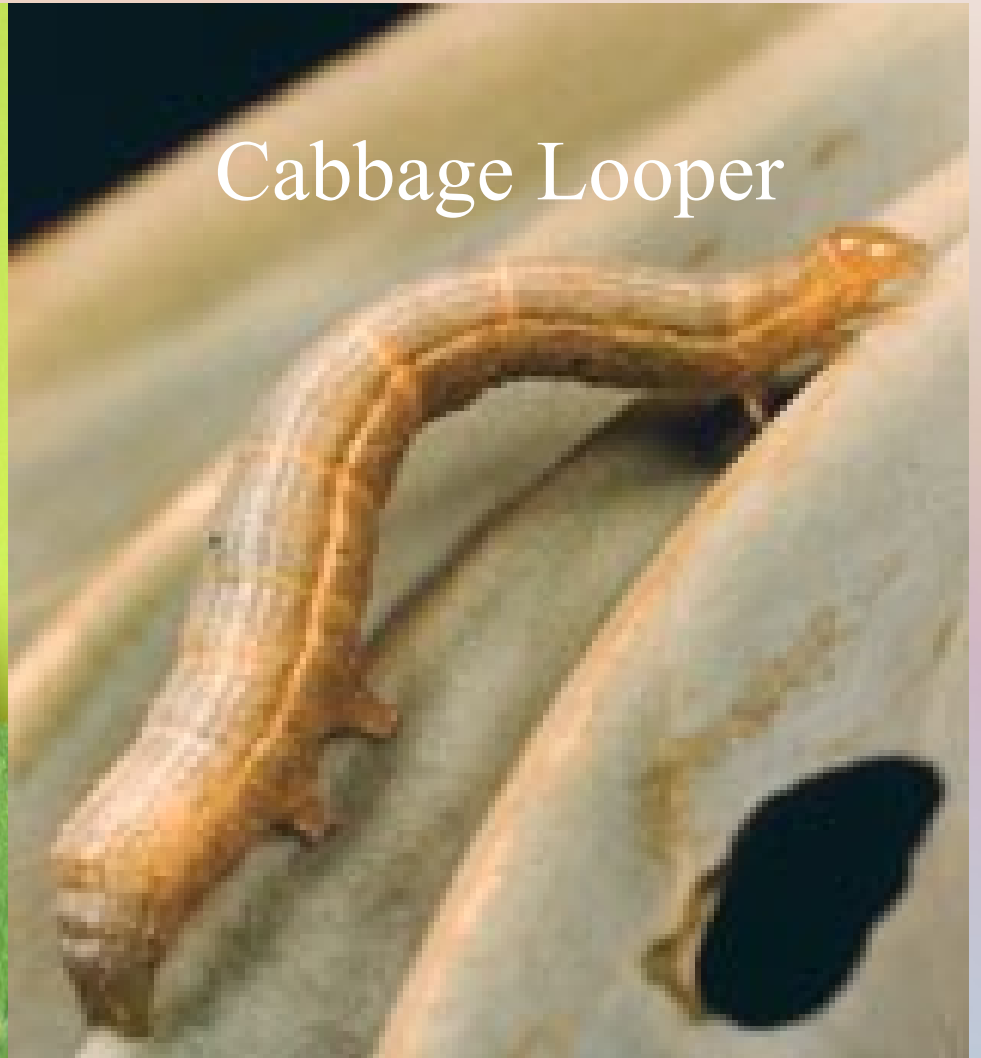


Cabbage Worms

Imported cabbage worm



Cabbage Looper



Cabbage/Carrot Maggot

Feeding on root



Damaged roots



Corn Earworm



Cucumber Beetle

Spotted and Striped



Cutworm



European Corn Borer



Flea Beetles



Root-Knot Nematode

Larva penetrating
tomato root



Root-knot galls
on roots



Colorado Potato Beetle



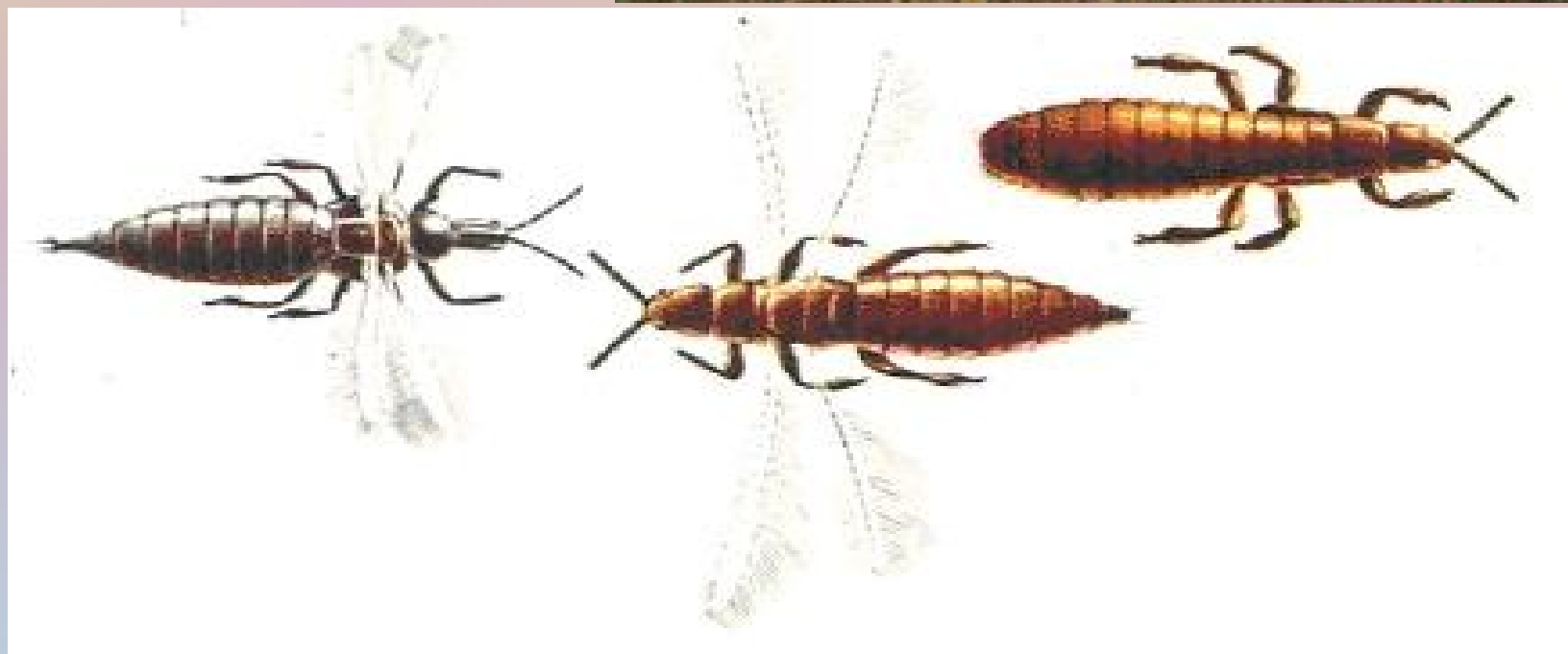
Squash Bugs – Adults & Nymphs



Slugs



Thrips



Tomato Hornworm



Pupae of the
Parasitic
Braconid Wasp
on
Tomato
Hornworm



Acknowledgements

- Photos courtesy of
 - Debbie Roos, acquired at chatham.ces.ncsu.edu/growingsmallfarms/index.html used by permission
 - Wikimedia commons, acquired at en.wikipedia.org under GNU Free Documentation License
 - Clemson University Extension, acquired at www.uri.edu/ce/factsheets/