



Produced through The Northern Rhode Island Conservation District 's **Providence County Urban Growers Leadership Program**, in partnership with Heather Faubert from University of Rhode Island's Cooperative Extension.



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Nymph and adult bugs
Whitney Cranshaw, Colorado State University, Bugwood.org



Squash beetle eggs
Whitney Cranshaw, Colorado State University, Bugwood.org

COMMON NAME: SQUASH BEETLES

SCIENTIFIC NAME: ANASA TRISTIS

IDENTIFYING CHARACTERISTICS:

- OVAL SHAPE
- MOTTLED DARK GRAY AND BROWN COLOR
- EGGS ARE BRIGHT ORANGE/BRONZE AND USUALLY FOUND ON THE UNDERSIDE OF THE LEAF

TREATMENT AND MANAGEMENT:

- BEST CONTROLLED THROUGH SANITATION PRACTICES. REMOVE ANY PLANTS WITH INFESTATIONS FROM THE GARDEN.
- KEEP GARDEN BEDS FREE OF PLANT DEBRIS THAT CAN PROVIDE SITES FOR BUGS TO OVERWINTER.
- HORTICULTURAL OILS LIKE NEEM OIL CAN BE SPRAYED AND ARE MOST EFFECTIVE ON NYMPHS.

PLANTS THEY EAT:



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

COMMON NAME: POTATO FLEA BEETLE

SCIENTIFIC NAME: EPITRIX CUCUMERIS

IDENTIFYING CHARACTERISTICS:

- HARD, BLACK SHELL
- ABOUT 1.5 MM LONG
- HAVE WINGS AND JUMP HIGH IN THE AIR SIMILAR TO FLEAS
- ADULTS LAY EGGS IN THE SOIL SURFACE AND OVERWINTER IN PLANT DEBRIS

TREATMENT AND MANAGEMENT:

- WEEDING WELL AROUND CROPS IS IMPORTANT TO KEEPING THE POPULATION OF THE FLEA BEETLE DOWN
- ROTATING CROPS TO DIFFERENT PLANTING AREAS SO THAT THE LARVA HAVE NO FOOD SOURCE

PLANTS THEY FEED ON:

POTATOES

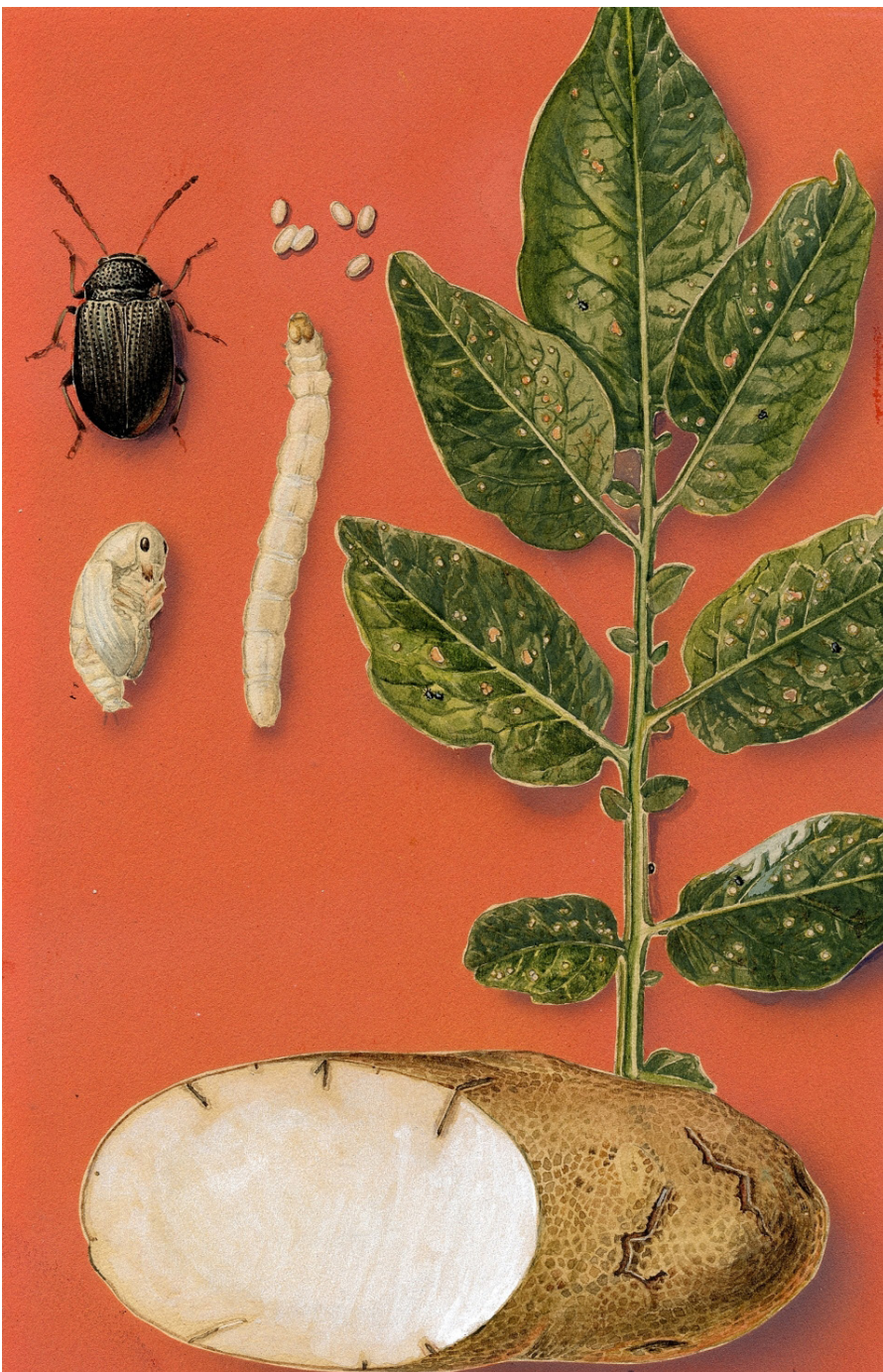


Howard F. Schwartz, Colorado State University, Bugwood.org

TOMATOES



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org



Potato flea beetle lifecycle
Art Cushman, USDA Systematics Entomology Laboratory, Bugwood.org



Potato flea beetle on leaf
Kansas Department of Agriculture, Bugwood.org

COMMON NAME: STINK BUG

SCIENTIFIC NAME: EUSCHISTUS SP.

IDENTIFYING CHARACTERISTICS:

- MEDIUM-SIZED BUGS IN THE SHAPE OF A SHIELD
- HAVE WINGS AND CAN FLY
- CAN BE MULTIPLE COLORS, USUALLY GREEN OR BROWN
- THEY HAVE PIERCING-SUCKING MOUTH PARTS THEY USE TO EAT PLANTS

TREATMENT AND MANAGEMENT:

- THERE ARE CURRENTLY NO OVERALL EFFECTIVE WAYS TO MANAGE STINK BUGS BEYOND PESTICIDE USE. EVEN PESTICIDE USE IS NOT RECOMMENDED BECAUSE THEY KILL STINK BUG'S NATURAL PREDATORS.
- COMMERCIAL STINK BUG TRAPS EXIST AND CAN BE BOUGHT IF THEY ARE A PERSISTENT ISSUE.



Daren Mueller, Iowa State University, Bugwood.org



Cluster of stink bug eggs
Brian Little, The University of Georgia, Bugwood.org

PLANTS THEY EAT:

STINK BUGS PREFER TO EAT THE FRUITS OF CROPS INSTEAD OF THE LEAVES AND STEMS THEMSELVES.

TOMATOES



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

CORN



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

PEPPERS



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

COMMON NAME: WHITEFLY

SCIENTIFIC NAME: BEMISIA TABACI

IDENTIFYING CHARACTERISTICS:

- ADULTS ARE SMALL AND WHITE
- EGGS ARE WHITE OR YELLOW, OFTEN FOUND ON THE UNDERSIDE OF THE INFESTED LEAF
- THEY LEAVE WAXY FILMS ON THE LEAVES
- INFESTED LEAVES BEGIN TO CURL INWARD, REMAIN SMALL, AND MAY HAVE SOME YELLOW DISCOLORATION
- WHITEFLIES TEND TO PREY ON YOUNGER LEAVES

TREATMENT AND MANAGEMENT:

- SPRAYING A HORTICULTURAL SOAP OR OIL SUCH AS NEEM OIL DIRECTLY ONTO BUGS
- MIXING 1 TABLESPOON DISH SOAP OR CASTILE SOAP INTO 1 QUART OF WATER AND SPRAYING DIRECTLY ONTO BUGS



Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org



Whitefly infestation on underside of leaf
Phillip Roberts, University of Georgia, Bugwood.org

COMMON PLANTS THEY EAT:



CABBAGES

David Riley, University of Georgia, Bugwood.org



BEANS

Howard F. Schwartz, Colorado State University, Bugwood.org



PEPPERS

Darbie Granberry, University of Georgia, Bugwood.org

COMMON NAME: POWDERY MILDEW

SCIENTIFIC NAME IS DIFFERENT FOR EACH PLANT SPECIES



Powdery mildew on watermelon
David B. Langston, University of Georgia, Bugwood.org



Powdery mildew on squash
Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org



Powdery mildew on pole beans
Howard F. Schwartz, Colorado State University, Bugwood.org

IDENTIFYING CHARACTERISTICS:

- **WHITE OR BROWN MEALY PATCHES DEVELOP ON LEAVES AND YOUNG STEMS**
- **SEVERELY INFECTED LEAVES MAY SHRIVEL UP AND DIE**
- **PLANTS ARE INFECTED BY SPORES WHICH CAN TRAVEL BY WIND, INFECTED TOOLS, OR GLOVES**
- **POWDERY MILDEW THRIVES IN DRIER CONDITIONS SUCH AS DROUGHT**

TREATMENT AND MANAGEMENT:

- **CAN BE TREATED WITH HORTICULTURAL SPRAYS SUCH AS NEEM OIL**
- **CAN BE TREATED WITH BAKING SODA BY MIXING 1 TABLESPOON OF BAKING SODA WITH 1 QUART OF WATER AND SPRAYING ON AFFECTED LEAVES**
- **CAN ALSO BE MANAGED WITH EARLY REMOVAL OF INFECTED PLANT PARTS, DISCARD OUTSIDE OF PLANTING AREA**



COMMON NAME: EARLY BLIGHT
SCIENTIFIC NAME: ALTERNARIA SOLANI

IDENTIFYING CHARACTERISTICS:

- IMPACTS TOMATOES
- SHOWS FIRST SIGNS OF INFECTION ON YOUNG TOMATO LEAVES
- APPEARS AS DARK BROWN, DRY RINGS OR CIRCLES ON LEAVES
- CAN INFECT TOMATO FRUIT AS DARK SUNKEN SPOTS
- THRIVE IN HUMID/WET CONDITIONS ON LEAVES

TREATMENT AND MANAGEMENT:

- CAN BE PREVENTED BY PRUNING PLANTS TO PROMOTE GOOD AIRFLOW, WATERING EARLY IN THE DAY TO ALLOW LEAVES TO DRY COMPLETELY, AND WEEDING AROUND THE TOMATO PLANT



Spider mite damage on leaves
Whitney Cranshaw, Colorado State University, Bugwood.org



Spider mites viewed through a hand lens
Frank Peairs, Colorado State University, Bugwood.org

COMMON NAME: TWO SPOTTED SPIDER MITES

SCIENTIFIC NAME: TETRANYCHUS URTICAE

IDENTIFYING CHARACTERISTICS:

- GENERALLY LIGHT BROWN IN COLOR WITH TWO DARK SPOTS ALONG THE SIDES OF THE BODY
- THEY FEED ON THE SAP OF PLANTS LEAVING SMALL WHITE OR ORANGE FLECKS IN THE LEAVES
- THEY OFTEN PRODUCE LOTS OF WEBBING ON PLANTS
- THEY ARE A GENERALIST HERBIVORE THAT FEED ON MANY PLANTS

TREATMENT AND MANAGEMENT:

- USE HIGH PRESSURE WATER TO WASH AWAY SPIDER MITES
- SPRAY THE AFFECTED LEAVES AND PLANT WITH A HORTICULTURAL SOAP OR OIL SUCH AS NEEM OIL

SOME PLANTS THEY EAT:



MARIGOLDS

Howard F. Schwartz, Colorado State University, Bugwood.org

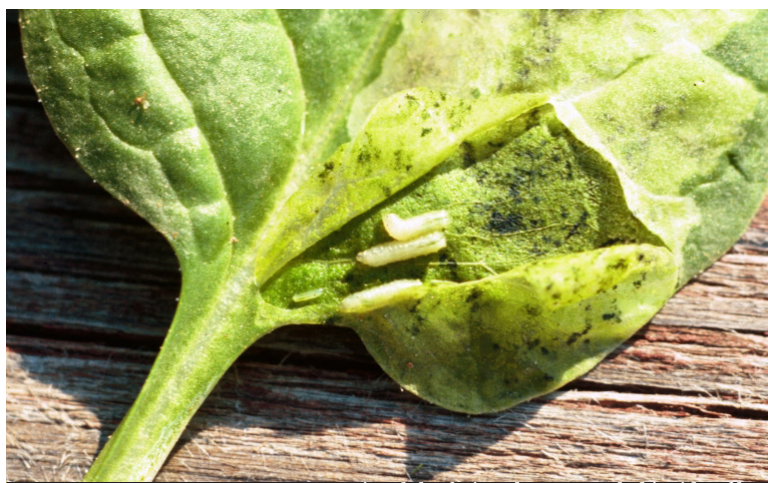


PEPPERS

Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

COMMON NAME: SPINACH LEAFMINER

SCIENTIFIC NAME: PEGOMYA HYOSCYAMI



Spinach leafminer larva revealed inside of leaf
Whitney Cranshaw, Colorado State University, Bugwood.org



Spinach leafminer eggs on underside of leaf



Adult spinach leaf miner

IDENTIFYING CHARACTERISTICS:

- ADULT LEAFMINERS ARE GRAY, HAVE WINGS, AND THEY ARE SMALLER THAN A HOUSEFLY
- LARVA ARE WHITE MAGGOTS THAT LIVE IN THE TISSUE OF THE LEAVES
- LARVA EAT THROUGH THE LEAVES LEAVING DARK TRAILS EVENTUALLY BECOMING DARK PATCHES THAT LOOK AS THOUGH THE LEAF IS WET
- EGGS ARE LAID ON THE UNDERSIDE OF THE LEAVES AND ARE SMALL, WHITE CLUSTERS

TREATMENT AND MANAGEMENT:

- SPRAYING AFFECTED AREAS WITH NEEM OIL SOLUTION AS NEEDED

PLANTS THEY EAT:



SPINACH



BEET LEAVES

Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo,
Bugwood.org

FEP Blue

USEFUL TOOL: A HAND LENS



USEFUL FOR INSPECTING SMALL THINGS ON PLANTS, SUCH AS PESTS AND DISEASES!

- **HOLD THE LENS UP TO YOUR EYE SO THAT IS ALMOST TOUCHING YOUR EYEBROW.**
- **HOLD THE SUBJECT VERY CLOSE IN FRONT OF THE LENS UNTIL IT COMES INTO FOCUS.**

10X ZOOM IS USUALLY ENOUGH TO GET GOOD DETAIL. HIGHER ZOOMS REQUIRE MORE PRECISION WHEN USING THE LENS.