



Retail Nursery Newsletter

An Information Source for Retail Nursery Professionals

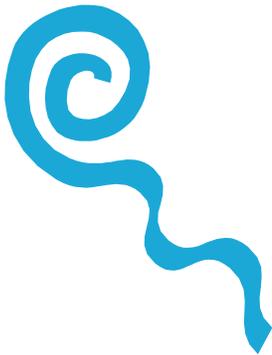
Volume 1, Issue 3

November 2005

Healthy Garden— Healthy Home

*Helping to improve
water quality in
San Diego County
through the
implementation of
Integrated Pest
Management
practices.*

It's The Water That Connects Us!



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FREE Point-of-Purchase Educational Materials and Training Workshops Available for Local Nurseries and Garden Centers!

As part of the **Healthy Garden – Healthy Home** Integrated Pest Management (IPM) outreach effort, research based educational materials, and the fixtures necessary to display them, are available to nursery and garden centers throughout San Diego County. Materials include water resistant pest cards and informational tear-off sheets. Pest Card topics include; *Ants, Aphids, Cockroaches, Earwigs, Fleas, Giant Whitefly (coming soon), Head Lice, Snails & Slugs, Spiders, Termites, Safe Use & Disposal of Pesticides, Lawn Insects, and Gardening with Good Bugs*. Tear-Off Sheet topics include; *General IPM Information, Ants, and Snails & Slugs*. And coming

soon; *Aphids, Giant Whitefly, and Gardening with Good Bugs*.

In addition to these Point-Of-Purchase items, several educational videos ranging in length from 15 second to 3 minute are available for use in your store. Both DVD and video format are available.

Workshops for nursery staff focusing on topics related to IPM and Water Quality are also available for booking.

For more information about any of these opportunities or to make arrangements for your nursery or garden center to participate in this program please contact Scott Parker by phone at 858-694-2184 or email at saparker@ucdavis.edu.



**Sample Pest Cards
Display Racks**

CITRUS LEAFMINER

By Vincent Lazaneo, Urban Horticulture Advisor

Gardeners through-out the county who grow citrus have noticed a new insect, the citrus leafminer, feeding on their tree's foliage this year. The adult citrus leafminer is a tiny moth about 1/12 of an inch long. It has silvery and white fore-wings with brown and white markings and a distinct black spot on each wing tip. .

ive to Asia and was first detected in the western hemisphere in 1993, infesting Persian lime trees in south Florida. It was found in California in Imperial County in 2000 and has since spread to other counties nearby.

Grapefruit, lemon and lime are favorite hosts of the citrus leafminer, but it feeds on all varieties of citrus. The insect primarily

feeds on young developing foliage and rarely on the rind of young fruit. The pest can have 6 - 13 generations annually, depending on temperature and the availability of new growth flushes. The moth is most active from dusk till dawn and rests on the under sides of leaves during the day.

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Citrus leafminer is na-

CITRUS LEAFMINER *continued from page 1*

The female moth lays eggs singly on new shoots and on leaves less than one-half inch in length.

The larva, a tiny caterpillar, hatches and begins feeding immediately in nearly invisible mines under the leaf's cuticle. As the larva grows, its zig-zagging path of parallel mines becomes more noticeable.



**Leaf Damage Caused
By Citrus Leafminer**

When the larva matures it moves to the leaf margin where it creates a silken cocoon.

As the silk dries the leaf curls over the pupal cell. The larva pupates within the mine and then emerges as an adult moth. Since the citrus leafminer is a new pest in our area, the damage it causes may initially be more severe but should decrease in time. Beneficial insects, particularly tiny parasitic wasps, that attack the pest, will increase

and should provide good biological control in a year or two. Gardeners will need to be patient while this occurs and should not spray mature trees with insecticides which harm beneficial insects.

The citrus leafminer population reaches a peak from late summer to fall and declines during winter. The population of adult moths should be relatively low in spring and new foliage produced at this time may mature with little damage. More damage will occur on new foliage that develops after mid summer, but this does not harm older trees.



Adult Leafminer

Mature bearing citrus can withstand heavy infestation of citrus leafminer with no loss of fruit production. The loss of some new foliage is a minor problem on older trees that have a healthy canopy of mature leaves. Mines in leaves may detract from their appearance, but the green

portion of leaves will still produce food for the tree and should not be removed.

Pest control products currently labeled for use on citrus in home gardens, are not very effective on citrus leafminer because they do not control larvae feeding inside leaves. Broad spectrum insecticides that leave a toxic residue on the foliage can do more harm than good. Repeated applications will kill beneficial insects which can result in a build-up of white flies, scale insects and other citrus pests.

The loss of new leaves is a more serious problem on young trees that do not have a lot of mature foliage. The growth of newly planted trees may be reduced by citrus leafminer if the infestation is heavy and prolonged. Treating young trees with insecticide may be justified if it helps protect emerging foliage until new leaves have grown too large for the leaf miner to attack. Unfortunately, contact insecticides are not very effective against the pest and some may damage tender, new foliage. A systemic insecticide would be more effective, but no product is currently labeled for use on home citrus.

VERTEBRATE PESTS OF THE GARDEN

By Cheryl Wilen, UCCE Area IPM Advisor

Pests in the garden are not always insects, snails or slugs. Small mammals and birds can also cause problems for the vegetable garden or flower bed. Some mammals, such as gophers and rabbits, will eat plants but may also become nuisances by digging holes or borrows. Rats and mice cause less damage to plants but might be a health hazard due to the diseases that they may carry. There are other mammals one might find around the garden, such as skunks, opossums, and cats and dogs, but these are more of a nuisance,

rather than major pests, to gardeners. Birds can also be garden pests. They can dig up and eat newly planted seeds or transplants and they also harvest fruits and berries just before you do. This article will help you learn how to manage gophers, ground squirrels, rabbits, and birds in gardens.

The first step in managing a pest is to identify it, usually by actually observing the animal, by recognizing the type of injury it causes, or by other signs of the animal. The second step is to decide when the

damage becomes sufficient for you to try to control the pest. For example, a rabbit that eats a couple of leaves of lettuce a day might not be a problem but a family of rabbits eating your entire crop would be. Finally, you must consider what options you have to reduce damage. These include:

- Exclusion – keeping the animal out either by fencing or netting.
- Removal – trapping the animal.

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VERTEBRATE PESTS OF THE GARDEN *continued from page 2*

- Poisoning – toxic baits.
 - Repellents – either by taste or smell.
 - Scare tactics – lights, movements, sounds, foil, plastic owls, and motion activated water sprays.
- Habitat modifications – removing brush piles and weeds so the animal cannot hide or rest.

GOPHERS

Damage: Pocket gophers feed on plants both above and below ground. Gophers also gnaw and damage plastic water lines and lawn sprinkler systems.

Signs: Mounds of fresh, fine soil, usually in crescent shape, are the most noticeable signs of gophers.

Management:

Trapping – Follow the directions on the trap or consult with a garden professional before using. Baits are not really needed but if desired, lettuce, carrots, apples, or alfalfa greens can be used as bait. Attach a string or wire to the traps and tie it to a stake so you can easily retrieve the traps. Exclude light from the burrow by covering the opening with dirt clods, sod, cardboard, or some other material. If a gopher is not caught within three days, place the traps in a different location.

Toxic Baits – Place pocket gopher bait in the main underground tunnel, not the lateral tunnels. This method is not recommended if you have pets that might find the poisoned gophers and eat them since they might be poisoned also.

Exclusion – Burying ½ to ¾-inch mesh hardware cloth or poultry wire two feet deep can keep out gophers if the entire perimeter of the garden is surrounded. It is also helpful if the fence extends one foot high. Wire baskets can be constructed or purchased to protect individual plants. To protect sprinkler lines, six to eight inches of coarse gravel one inch diameter or more around underground sprinkler lines might discourage gophers.

Flooding – Flooding will usually not drown gophers but can sometimes

force them from their burrows.

Fumigation – This method is usually not very effective because gophers quickly seal off their burrow when they detect smoke or gas. However, it might work in small sections.

Repellents – Plants such as gophers purge (Euphorbia lathyris), castor bean, and garlic have been suggested as repellents but these claims have not been substantiated by research.

Frightening devices – Vibrating stakes, ultrasonic devices, and wind powered pinwheels have not proven effective.

GROUND SQUIRRELS

Damage: Ground squirrels feed on shrub and tree roots and bark, twigs, and buds causing extensive plant injury. They also burrow tunnels, which can cause foot and leg injury to the unaware gardener as well as weaken slopes. Ground squirrels will gnaw on plastic sprinkler heads and irrigation lines.

Signs: The ground squirrel is 9 to 11 inches long exclusive of its tail. Its semi-bushy tail adds another five to nine inches. The fur is brownish gray. Ground squirrels live in burrows. With openings about four to eight inches wide, burrows can be 5 to 30 feet long or more and two to four feet underground. Ground squirrels are most active during mid-morning and late afternoon, especially on warm, sunny days. During winter months most ground squirrels hibernate, but some young might remain active.

Management:

Habitat modification - Remove brush piles and debris to make an area less desirable to ground squirrels. They can invade a site by moving into vacant burrows. Destroy old burrows by deep ripping or digging them to at least 20 inches deep. Large areas will probably require a tractor and ripping bar, a process probably best left for a contractor. Small areas can be hand dug to destroy burrows. Simply filling in the burrows with soil does

not prevent reinvasion since ground squirrels easily find and reopen old burrows.

Trapping - Traps are practical for control when squirrel numbers are low to moderate. However, live-catch traps present the problem of how to dispose of the live animals. Because ground squirrels carry diseases and are agricultural pests, the California Fish and Game Code specifies that it is illegal to release them elsewhere.

Toxic Baits - Anticoagulant baits can be used for controlling ground squirrels. Anticoagulants must be consumed in several feedings over a period of five or more consecutive days. It is best to use bait boxes (small boxes that the squirrel must enter to eat the bait) or by repeated spot baiting. Place sufficient bait in box for repeated feedings. Bait boxes are preferred around homes and other areas where children and pets are present.

Fumigation – Fumigate in spring when soil moisture is high. Check with a licensed pest control contractor for suitable materials.

Frightening devices – There are no effective frightening devices for ground squirrels.

RABBITS



Cottontail Rabbit

Damage: Rabbits will eat nearly anything green, including grasses, leaves, shoots, and flowers. In general, rabbits will start to feed in the evening and feed into the next morning. Rabbits can cause damage any time of the year.

Signs: One sign of rabbits is young plants chewed to the ground or smoothly cut leaves or stems. Another good sign of rabbits is their circular fecal droppings or pellets about ¼-inch diameter.

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HEALTHY GARDEN—HEALTHY HOME

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VERTEBRATE PESTS *continued from page 3*

Management:

Exclusion – The most effective long-term solution is excluding rabbits from the garden by surrounding the area with a 3-foot high fence of ¾ - 1-inch mesh. Bury the fence 4-12 inches deep. Individual plants and trees can be protected with wire mesh cylinders. If you cannot bury the fencing, the bottom must be staked or kept down some other way to prevent rabbits from going under it. Individual plants can be protected in a similar manner by constructing wire cylinders from poultry netting (chicken wire) around the tree trunks.

Repellents – Chemical repellents might reduce or prevent rabbit damage by deterring them by smell or taste. Effectiveness of these repellents is variable. Reapply them frequently, specially after a rain, heavy dew, or sprinkler irrigation, or when plants produce succulent new growth. Always follow the directions

printed on the repellent's label. Pay careful attention to what types of plants that they can be safely applied to since some cannot be used on food crops.

Habitat Management – Removing places where rabbits hide can effectively deter rabbits from moving into an area. However, removing hiding places might not be possible in areas surrounded by fields or other natural areas.

Frightening devices – Noisemakers, flashing lights, plastic snakes, and owls are generally not effective since rabbits often acclimate to them. Ultrasonic units, which emit high-pitched sound waves to repel rabbits, are not effective either.

BIRDS

Damage: Birds cause damage in gardens by eating newly planted seeds, pulling up seedlings, and

eating fruit.

Signs: Flocks of birds might be found in the garden shortly after planting seeds, or fruit has ragged holes pecking in it. Often the birds will injure fruits just as they are starting to ripen.

Management:

Exclusion – Keep bird off of newly planted seed or transplants with row covers. Larger vegetable plants and fruit trees can be covered with plastic bird netting to protect the ripening crop.

Repellents – Bird repellents are usually used for keeping geese and other water birds away from pools and ponds. These are not effective for deterring birds from gardens.

Frightening devices – Reflective tape and fluttering objects might help temporarily but will lose effectiveness as birds become accustomed to them.