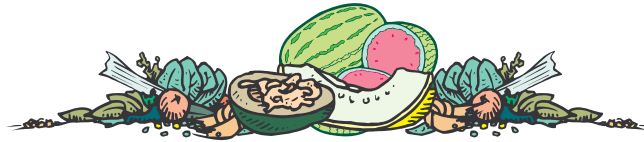


# VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the  
Purdue University Cooperative Extension Service

Chris Gunter, Editor  
(812) 886-0198  
gunter@hort.purdue.edu



No. 438  
July 23, 2004

<http://www.entm.purdue.edu/entomology/ext/targets/newslett.htm>

## IN THIS ISSUE

- SECTION 18 FOR REFLEX IN SNAP BEANS
- POWDERY MILDEW ON PUMPKIN
- JAPANESE BEETLE AND GREEN JUNE BEETLE
- STRIPED CUCUMBER BEETLE AND WESTERN CORN ROOTWORM BEETLE ON PUMPKINS

**SECTION 18 FOR REFLEX IN SNAP BEANS - (Steve Weller) -**  
The Office of the Indiana State Chemist just received notification from the US EPA that a Section 18 Emergency Exemption for Reflex Herbicide (fomesafen) for postemergent control of various weeds in Snapbeans was approved. This exemption allows the use of Reflex in snapbeans until September 1, 2004.

### Directions for use on target weeds:

- **Pigweed**, apply Reflex at the 2-4 leaf stage at 0.5-1 pint of Reflex/acre. A single application below 1 pint/acre may only provide suppression.
- **Common ragweed**, apply Reflex at the 2-4 leaf stage at 0.5-1 pint/acre. A single application at rates below 0.75 pint/acre may only provide suppression of ragweed.
- **Morning glory**, apply Reflex at the 2 leaf stage at 1 pint/acre.

All these applications can be made by ground equipment or air. There is a maximum application allowed of 1 pint Reflex per acre per year.

The snap beans should be at the 1 to 3 trifoliolate stage of growth at the time of Reflex application and the last Reflex application can not be closer than 30 days prior to harvest.

### Spray additives:

Add nonionic surfactant containing at least 75% surface active agent at 0.25 to 0.5% (1/2 to 1 pint per 25 gallons) of finished spray, or a nonphytotoxic petroleum based crop oil concentrate containing 15% approved emulsifier at 0.5 to 1% (1-2 pints per 25 gallons) of the finished spray. Use of Crop oil concentrate can improve weed control but may slightly reduce crop tolerance to Reflex.

Thorough spray coverage is essential for best control. Reflex requires a 1-hour rain free period for best results.

### Restrictions:

Do not exceed 1 pint of Reflex per acre per year on snapbeans. Refer to the EPA-registered product label for rotational crop restrictions. In Indiana, Reflex (fomesafen) may not be applied to the same acreage more than once every 2 years. Application must be made prior to snapbean bloom. Do not apply within 30 days of harvest.

This product is toxic to birds and mammals. Do not apply directly to water, or to areas where surface water is present. Do not apply to sites where run-off is likely to occur to aquatic habitats. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment-washwater or rinsate.

Do not make applications when weather conditions favor drift from treated areas. In areas where soils are permeable and the water table is shallow Reflex (fomesafen) may leach to ground water. Livestock may not be grazed in treated areas.

Applicators must be in possession of a Reflex product label at the time of application and all applicable directions, restrictions and precautions on the EPA-registered product label (EPA Reg. No. 10182-83 - Zeneca Product or EPA Reg. No. 100-993 - Syngenta Product are to be followed. Any adverse effects resulting from the use of Reflex under this emergency exemption must be immediately reported to the Office of Indiana State Chemist.



**POWDERY MILDEW ON PUMPKIN - (Dan Egel) -** Powdery mildew has begun to show up on pumpkins (Figure 1). This article reviews management of this disease.



Figure 1.  
Powdery mildew on pumpkin.  
(Picture by D. Egel)

Growers who fight powdery mildew every year should be aware that there is partial resistance to powdery mildew in a few varieties. If susceptible varieties are used, many growers will find it necessary to use fungicides. The strategy behind powdery mildew control on Midwestern pumpkins is based on protecting vines from infection through mid-September. Fungicides are much more effective when applied before powdery mildew is observed. Cabrio, Flint, Pristine, Amistar, and Quadris (strobilurins) have the same mode of action and must never be applied in back to back sequence. Similarly, Nova and Procure have the same mode of action. Topsin has yet a different mode of action.

Pristine contains two different active ingredients, pyraclostrobin and boscalid. Pyraclostrobin has the same mode of action as the rest of the strobilurin group. This is why Pristine must never be used in back to back sequence with any other fungicide in the strobilurin group. Boscalid has a new mode of action not found in any other fungicide registered on cucurbits.

Initial applications of one of the systemic fungicides above should be made when earliest pumpkins are still green and not more than 1/2 their estimated full size (mid-late July). Repeat applications at about 2-week intervals through early September. Consult the label for information on application intervals. Please note that powdery mildew, unlike many diseases, does not need leaf wetness to infect. Much of this information can be found in the Midwest Vegetable Production Guide for Commercial Growers 2004 <[www.entm.purdue.edu/Entomology/ext/targets/ID/index.htm](http://www.entm.purdue.edu/Entomology/ext/targets/ID/index.htm)>. Please read the label carefully for rate, safety and other important information.



**JAPANESE BEETLE AND GREEN JUNE BEETLE - (Frankie Lam)** - Relatively high numbers of Japanese beetle and green June beetle were observed in some fields of southern Indiana during mid-July. Japanese beetle (Figure 1), green June beetle (Figure 2), May (or June) beetle (Figure 3), chafer, and dung beetle (Figure 4) belong to the same family of scarab beetles. Commonly, some larvae of these beetles are collectively known as white grubs and might cause severe damage on lawns and turfgrass.



Figure 1. Japanese beetle. (Picture by F. Lam)



Figure 2. Green June beetle. (Picture by F. Lam)



Figure 3. May (or June) beetle. Picture by F. Lam)



Figure 4. dung beetle. (Picture by F. Lam)

**Japanese Beetle.** The Japanese beetle is shiny metallic green, oval-shaped, with dark-tan wing covers, and about half-inch long. The adult has six pairs of white tufts along each side of the dorsal abdomen. The beetle can feed on more than 300 species of plants, including soybeans, grapes, roses, shrubs, fruit and deciduous trees, corn silks, and flowers of all kinds. Usually the adult feeds on the upper surface of foliage and chewing out tissue between veins and skeletonizing the leaves (Figure 5). The Japanese beetle has one



Figure 5. Skeletonized soybean leaf. (Picture by F. Lam)

generation per year. However, the Japanese beetle seldom has been reported to cause severe damage of foliage and fruits of melons and pumpkins; not much research had been done on the economic importance of the beetle on these crops. Danitol, Dursban, Malathion, and Sevin are recommended for the control of the Japanese beetle.

**Green June Beetle.** The adult green June beetle is about 1-inch long, dull velvety green above with deep yellow margins, and metallic green below. Some people call this beetle a “Junebug” or “June beetle”. One should not confuse the green June beetle with the May or June beetle or the Japanese beetle. The May or June beetle usually feeds at night, whereas the Japanese beetle and green June beetle often active during daytime. During flight the green June beetle gives off a buzzing sound, which sounds like a bumblebee. The adult begins flying from June through September with the peak occurs in mid-July. The green June beetle has one generation per year.

The adult green June beetle is an occasional pest of fruits. The adult feeds on foliage of many plants and ripening fruits with thin skin, including apricots, peaches, nectarines, grapes, blackberries, raspberries, plums, prunes, apples, and pears. The beetles may rest on all kinds of vegetation; however, no severe damage on melons and vegetables by the beetles were reported. I did see some green June beetles on my tomatoes, melons, and pumpkins at our center, but no feeding on leaves or fruits was observed. Furthermore, the adult beetle might feed on open melons (especially watermelons) left in the field.

**White Grubs.** White grub is a term for beetle larvae, which has white and C-shaped body, brown head capsule, three pairs of legs, and with hind abdominal portion slightly enlarged and darker color (Figure 6).



Figure 6. White grub. (Picture by J. Obermeyer)

The larvae of Japanese beetle, green June beetle, May beetle, and chafer are commonly known as white grubs. However, the true white grub typically has a three-year life cycle, which is only referred to the larva of May beetle. The arrangement of hairs on the underside of the abdominal tip is the key feature to identify different grubs. For the identification of white grubs, please check the following website <[www.ohioline.osu.edu/hyg-fact/2000/2510.html](http://www.ohioline.osu.edu/hyg-fact/2000/2510.html)> of Ohio State University.

The white grubs are the main pests in turf. Grassy areas with high organic matter and fields with hay bales, manure piles, or bark mulches are highly preferred by the females for egg laying. The grubs feed on dead and decaying materials, as well as plant roots. Lawn and grassland with patchy dead areas about 5 to 20 feet in diameter might indicate the infestation of grubs. The sod of these patchy areas can be rolled back easily to check for the grubs. The grubs can be controlled by the application of insecticides. Most soil insecticides, including Dylox, Force (on corn), Merit, and Sevin, have effective control on white grubs. Applying soil insecticides during fall can control most of the young grubs developed in summer. Read the labels carefully before applying any pesticides.



**STRIPED CUCUMBER BEETLE AND WESTERN CORN ROOTWORM BEETLE ON PUMPKINS - (Frankie Lam) -**

During mid-July relatively high populations of striped cucumber beetles (Figures 1 and 3) and western corn rootworm beetles (Figures 2 and 4) were found on pumpkins in southern Indiana. This year the cucumber beetle population on pumpkins is higher than in recent years in Southern Indiana. Among those fields that I have sampled, the highest numbers of beetles per pumpkin was 8.4 and 4.4 for striped cucumber beetle and western corn rootworm beetle, respectively.



Figure 1. Striped cucumber beetle. (Picture by F. Lam)

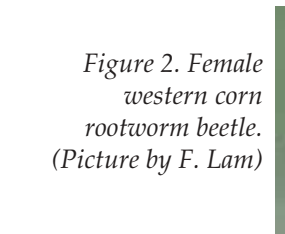


Figure 2. Female western corn rootworm beetle. (Picture by F. Lam)



Figure 3. Striped cucumber beetles. (Picture by F. Lam)



Both the striped cucumber beetle and western corn rootworm beetle belong to the leaf beetle (Chrysomelidae) family. However, if we look at the beetles carefully, we can distinguish the two beetles by the external features listed in Table 1 (below). The striped cucumber beetle is a prominent pest on cucurbits, whereas western corn rootworm is a major pest on corn and might feed on the blossoms (Figure 5) and fruits of pumpkins. The economic threshold of



Figure 4. Male western corn rootworm beetle. (Picture by F. Lam)

cucumber beetle is five beetles per plant. There is no economic threshold for western corn rootworm beetle on pumpkins; however, if direct feeding of the beetles on fruits were observed in late season, insecticidal management may be necessary. The insecticides recommended for the control of cucumber beetle are: Adios, Ambush, Asana, Capture, Pounce, Sevin, and Thiodan. Read and follow the label carefully before applying any insecticides.



Figure 5. Striped cucumber beetles and western corn rootworm beetle (right). (Picture by F. Lam)

Table 1. Comparison of the external features of striped cucumber beetle and western corn rootworm beetle.		
External feature	Striped cucumber beetle	Western corn rootworm beetle
Underside of abdomen (belly)	Black (Figure 3).	Yellow (Figures 1 and 5).
Stripes	Both female and male: Stripes are distinct, straight, and reach almost to the end of the wing covers (Figure 1).	Female: Stripes are less distinct and do not reach the end of the wing covers (Figure 2). Male: Wing covers yellow and black, mostly cannot identify the stripes (Figure 4).
Middle segment (tibia of hind leg)	Yellow (the legs look yellow and black) (Figure 1).	Black (Figure 4).

It is the policy of the Purdue University Cooperative Extension Service, David C. Petritz, Director, that all persons shall have equal opportunity and access to the programs and facilities without regard to race, color, sex, religion, national origin, age, marital status, parental status, sexual orientation, or disability. Purdue University is an Affirmative Action employer. 1-888-EXT-INFO <<http://www.ces.purdue.edu/marketing>> Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

Vegetable Crops Hotline  
c/o Chris Gunter  
Southwest Purdue Agricultural Program  
4369 N Purdue Rd  
Vincennes, IN 47591