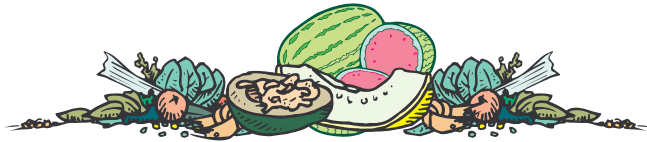


VEGETABLE CROPS HOTLINE

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. 410
August 01, 2002

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

IN THIS ISSUE

- APHIDS IN WATERMELONS AND PUMPKINS
- SPIDER MITES IN WATERMELONS
- AGRONOMIC DROUGHT STRESS WEB SITE
- PLANT STRESS AND FRUIT DEVELOPMENT
- POSTHARVEST HANDLING OF WATERMELON AND MUSKMELON

APHIDS IN WATERMELONS AND PUMPKINS - (Frankie Lam) - High aphid numbers have been found in some watermelon and pumpkin fields near Vincennes. Many aphid species, including the melon aphid, green peach aphid, and cowpea aphid, feed on cucurbits; although the melon aphid is the main aphid pest in watermelons and pumpkins. Aphids can transmit viral pathogen by feeding on the plant one time; therefore, controlling aphids with insecticides is not effective for the control of viral diseases.

Aphids are small insects about 1/16 inch long. Individuals may be winged or wingless. Almost all aphids have a pair of cornicles (siphon-like structures) located at the end of the dorsal abdomen. Both nymphs and adults suck the plant sap from underside of the leaves, weakening the plants and reducing the quantity and quality of the fruit. Leaves damaged by aphids have a distorted, cupped appearance. Plants with a heavy infestation have a mottled appearance or necrotic spots on leaves and stunting of the plants. The "honeydew" secreted from the anus of the aphids may cause the growth of a sooty, black mold. The honeydew and the growth of the mold may cause cosmetic injury to the fruits. If the plants are infected before fruit set, a severe reduction in yield may occur.

First check the underside of the leaves of plants located on the field border, because most infestations will start at the border. If aphids are found, then also check inside the field. On each colony of aphids also check for natural enemies, including predators and parasitized aphids. The predators of aphids are the larvae and adults of lady beetles and

lacewing larvae. The parasitized aphids, or known as mummy aphids, appear tan and are 2-3 times larger than the normal aphids. If a couple of natural enemies are found, mark the infested areas with flags and return to inspect it in 5 days. If the aphid population is not increasing, no treatment is necessary. If the infested area is expanding, then spot spray the infested areas and 100 feet beyond the edges

of infestation.

Thiodan, Endosulfan, Phaser, Dimethoate, Capture, Fulfill, and Actara are recommended for aphid control.



SPIDER MITES IN WATERMELONS - (Frankie Lam) - Spider mite infestations were found in some watermelon fields in southern Indiana. Although the populations of spider mites found in those fields are relatively low, heavy infestation of mites in watermelons may reduce the marketable value of fruits and even kill the plants.

Spider mites are small (1/80 - 1/60 inch) relatives of spiders. The adult mites are eight-legged, ranging in color from pale yellow to brown. The immatures look similar to the adults, but are six-legged and smaller in size. Both adults and immatures feed by rasping and sucking the sap from plants. The mites usually feed from the underside of the leaves and give the foliage a speckled appearance. They produce protective webbing around the area where they feed and lay their eggs. Their eggs are very small, spherical, straw-colored, and shiny. Under optimum conditions (>80°F and <50% RH) the mites can complete their life cycle within 5-7 days. Heavy rains, which increase relative humidity in the field, is favorable for the development of fungal diseases in mites and may also wash the pests off of the leaves.

Besides melons, spider mites do serious damage to many vegetable crops, including beans, corn, tomato, eggplant, celery, and onion. When the web of the mite is caught by wind, the pests can spread from field to field over a long distance. Scouting for mites should focus on the borders of fields. Infestations of mites usually occur at the edge and slowly move into the field. Colonies of mites tend to establish on the crown leaves of melon plants. Crown leaves that are yellow or speckled should be examined carefully for mites by using a 10x-hand lens. If mites are found on plants along the field edges, the rest of the field should also be checked. At least 10 plants in 10 locations of the field should be checked. Mark the infested plants with flags and recheck the plants in 3-4 days. If infestation is not spreading, spot spraying may be effective. For spot spraying, spray the infested area of the field and 100 feet beyond the infested area. If infestation is spreading and mites are found during a hot, dry period, the whole field should be treated. In addition, the first miticide application should be followed by a second application within 5-7 days. The first application will kill all mite stages except the eggs, whereas the second application will kill the mites hatched from those eggs escaped from the first application.

Miticides should be used only where and when the application is justified. This is because many of these chemicals also kill beneficial organisms, including predatory thrips, minute pirate bugs, and predatory mites, that feed on the pests. Dimethoate, Kelthane, Agri-mek, and Danitol are commonly recommended for the control of mites on melons. Read the labels carefully before applying any pesticides.



AGRONOMIC DROUGHT STRESS WEB SITE - (Bob Nielson and Chris Gunter) - Here is a website <<http://www.agry.purdue.edu/ext/drought/index.html>> to check out while you are waiting for rain. While this site deals with agronomic crops, I think there is a great deal of information that may be of interest everyone during this hot, dry season.



Severe drought stress does not typically afflict Indiana agriculture every year. The amount and pattern of normal annual precipitation throughout the state usually satisfy the moisture needs of its major agronomic crops of corn, soybean, wheat, and hay. From time to time, however, severe droughts or extended periods of insufficient rainfall occur and cause major yield losses.

Most recently, severe droughts occurred in 1983, 1988 and 1991. Yield losses in corn as a result of drought stress during those years were 33, 29 and 25 percent relative to trend yields. The fact that drought timing and crop tolerance influence the severity of damage among different crops is reflected in the fact that soybean losses in those same drought years were 13, 27 and 1 percent relative to trend yields.

This Web site was created to serve as a repository of information on crop management issues related to drought stress. The purposes of the site are to 1) preserve the memories and experiences gained from droughts of years past and 2) add new information especially pertinent to current or future droughts. The sources of the information found within this site reside not only at Purdue University, but also include a number of other major land grant universities throughout the U.S.



PLANT STRESS AND FRUIT DEVELOPMENT – (*Liz Maynard*) – Effects of stress on plants often show up in quantity, size, or quality of the fruit. This article will discuss some of those effects.

Stress could include any factor, which reduces the plants ability to produce sugars through the process of photosynthesis. This year high temperatures and lack of water caused stress in some crops. Heavy disease, defoliation or leaf damage by insects, competition from weeds, and injury from pesticides can also stress plants.

Earlier this year a Hotline article (Issue No. 406, June 6, 2002) discussed some effects of low temperatures on flowering and fruit set. This influences the quantity of fruit. Stress, which causes flower buds to fall off or prevents proper flower development, will reduce the number of fruit set at that time. Undoubtedly some of you have seen this in peppers, snap beans, and some tomato varieties this year.

The size of a fruit is influenced by the number of other fruit on the plant developing at the same time. The more fruit developing at once, the smaller each fruit will be. The fewer fruit developing, the larger each one will

be. Developing fruit needs sugars and other compounds, and the limited amount a plant can produce must be divided among all the fruit on the plant.

Fruit that is set early will delay development of later fruit. Cucurbits and peppers often show this response. It can occur whether or not the plant is stressed, but is likely to be more extreme under stress. In some cases, the earlier fruit will prevent flowering or fruit set nearby on the same branch. The limited amount of sugars a plant can produce are not enough to support development of another fruit.



POSTHARVEST HANDLING OF WATERMELON AND MUSK-

MELON - (*Chris Gunter*) – Watermelon are typically harvested at full maturity, since they do not continue to develop color and sugars after being cut from the vine. There are a few key methods to determine when a watermelon is mature. First check the ground spot, or the side of the melon that rests on the ground. This spot should turn from white to creamy yellow. Also, look at the tendril that is growing on the vine nearest to the developing fruit. This tendril should be wilted or drying out. If one of the melons is cut open to check maturity, the seeds should be hard and the gelatinous covering (called the aril) will be absent.

High quality fruit will be uniform in size and symmetrical with no scars, sunburn, surface abrasions, or bruising. Though many watermelons are shipped without precooling, these melons must be utilized promptly because quality declines rapidly without cooling. If precooling is an option, melons stored at 50-59°F should last about 14 days and if stored at 45-50°F they should last up to 21 days. Watermelon, however, is sensitive to chilling injury at these lower temperatures and extended holding at these temperatures is not advised.

Muskmelons should be harvested ideally at the firm ripe stage (3/4 to full slip) when vine separation occurs with light pressure. Typically they will have a deep uniform green at maturity and turn a light yellow at full ripeness. Also, raised netting is another indicator of maturity. As with watermelon, the first surface should be free of scars, sunburn, and surface defects. Melons may be cooled using either forced-air cooling or hydro-cooling methods. Muskmelons held at 36-41°F will last up to 21 days, though eating quality suffers if melons are held for long periods at the lower temperatures.



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/extmedia>> 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