VegNet Vol. 13, No. 9. June 22, 2006
Ohio State University Extension Vegetable Crops On the WEB at: http://vegnet.osu.eduIf experiencing problems receiving this fax, Call 614-292-3857

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Late Blight Reported on Tomatoes in Pennsylvania by Sally Miller

Late blight was confirmed June 16 in tomatoes in one field in Lancaster County, Pennsylvania. This field had been sprayed twice with copper + mancozeb. Dr. Alan MacNab, Penn State University, noted that the disease was in the early stage of development and recommended that fields in a 50 mile radius of Lancaster County be treated aggressively with fungicides, while those between 50 and 150 miles northeast of Lancaster County should be treated before the next rain.

Symptoms of late blight in tomatoes are shown below. Late blight is favored by cool, rainy conditions. If prolonged cool, rainy weather persists or threatens, or the relative humidity is greater than 90% for 20 hours or more, tomatoes and potatoes should be scouted intensively and treated with protectant fungicides. If late blight occurs in the area, growers can consider applying additional fungicides such as Quadris, Cabrio, Gavel or Ranman tank mixed with protectant fungicides. Be sure to follow label instructions.

If you believe you have late blight in tomatoes or potatoes, samples can be sent for diagnosis to Sally Miller or Melanie Ivey, Department of Plant Pathology, The Ohio State University, OARDC, 1680 Madison Ave., Wooster. OH 44691, ph. 330-263-3838, or to the C. Wayne Ellett Plant and Pest Diagnostic Clinic, OSU, Kottman Hall, 2021 Coffey Road, Columbus, OH 43210, ph. 614-292-5006 (c/o Nancy Taylor).

A.  B 

C  D  E 

A) leaf lesion; B)microscopic view of mycelia and sporangia of *Phytophthora infestans*;
C) petiole blight; D) stem lesions; E) blighted fruit.

MAXIMIZING YIELD BY UNDERSTANDING VINE CROP POLLINATION

H. Chris Wien, Cornell University.

From:Vegetable IPM News, Cornell Cooperative Extension Vol. 11 Number 3 Mid June, 2006, _ By John Mishanec, Area Vegetable IPM Educator, Albany, New York 12207

Most of the commercially important vine crops have separate male and female flowers, and thus require pollinators to transfer the pollen. To successfully form the fruit, we must understand something about the behavior of the pollinating insect, as well as the biology of the plant. Fortunately, a lot of work has been done in this area in recent years, so our understanding is good.

The most common pollinating insects are honeybees, which can be either wild, nesting in trees, old unused buildings, etc. or raised in commercial hives. Bumblebees are active and important cucurbit crop pollinators as well. Both the above species are generalist pollinators, and will visit the flowers of the full range of cucurbit crops, as well as other flowers in the vicinity of the hive. For crops of the genus Cucurbita, which includes summer and winter squash, pumpkins and ornamental gourds, the specialist pollinator the squash bee has been recognized as important. Although the same size as the honeybee, this species is solitary and nests in tunnels they dig in the ground near or in fields. Both male and female squash bees visit the flowers of squash and pumpkin, and they are often there early in the morning, long before the honeybee becomes active. Squash bees are numerous and widespread throughout the pumpkin growing areas of the Northeast, and appear from our studies to be the main species pollinating these crops.

So if there is such an abundance of pollinating insects for pumpkin and squash, there should not be a need to introduce hives of bees into fields. Some recent research in Illinois indicates that augmenting the natural population of pollinators with beehives can still be profitable. These investigators found in four years of study that pumpkin fields that had supplemental bees during pollination time had increased yields of larger fruits than fields left to native pollinators. Apparently, increased bee visits resulted in fruits with more seeds, and hence increased fruit size.

The ability of the cucurbit plant to produce flowers is also an important factor in determining the success of pollination and fruitset. Again, to use pumpkin as an example, under summer field conditions, in moderate temperatures, the plant produces first male, then female flowers on the main stem. Farther up the plant, female flowers are produced at about every fifth node. If the weather gets hot, and/or the plants are crowded in the field, the frequency of open female flowers can be decreased to such an extent that fruit set and yield are significantly reduced.

The flowering habits of the other vine crops, and their methods of pollination are sufficiently different from that of pumpkins and squash that they need separate explanations below:

Cucumber: Traditional cucumber varieties have a flowering habit similar to that of pumpkin explained above. In the 1960s plant breeders discovered new lines that produced only female flowers, and no males. These so-called gynoecious lines were used to develop new varieties that have a high frequency of female flowers that produce high early yields. Although most of these field-grown cucumber varieties produce some male flowers, seed companies mix in a small percentage of traditional cucumber to make sure that there will be enough pollen available for adequate fruitset. The European greenhouse cucumber, on the other hand, is all-female in its flowering, producing no male flowers. These plants have another special trait; they set fruit without the need for pollination, so male flowers are not needed in this case.

Watermelon: This crop has a flowering pattern similar to pumpkin, and requires pollinators. In recent years, seedless fruits have become popular. For these, pollination is still required, even though no viable seed is formed in the fruit. The pollen must come from a standard variety that is capable of forming seeds. Generally, the recommendation is to plant one row of this pollinator variety for every three or four seedless rows. More recently, seed companies have developed special pollinator lines that can be mixed in with the seedless variety, and whose fruits are easily distinguishable, and kept separate.

Muskmelon: Plants of this species develop male flowers first, followed by perfect flowers. The latter contain both male and female parts, but the pollen is sticky, and still requires pollinators to transfer pollen. As with all these crops, the fact that the first nodes have male flowers implies that the plant is able to grow to adequate size before it becomes stressed by the developing fruit. Since we pay particular attention to melon fruits that have adequate size and sugar content, having sufficient leaf area on the plant to produce high quality fruit is of great importance.

SPRAY DRIFT MANAGEMENT

Andrew Landers, Cornell University,

From:Vegetable IPM News, Cornell Cooperative Extension Vol. 11 Number 3 Mid June, 2006, _ By John Mishanec, Area Vegetable IPM Educator, Albany, New York 12207

Spray drift of pesticides is an important and costly problem facing pesticide applicators. Drift results in damage to susceptible off target crops, environmental contamination to water courses and a lower than intended rate to the target crop, thus reducing the effectiveness of the pesticide. Pesticide drift also affects neighboring properties, often leading to concern and debate. There are two types of drift, airborne drift which is often very noticeable and vapor drift. The amount of vapor drift will depend upon atmospheric conditions such as humidity and temperature, and the product being applied and can occur days after an application is made.
Management strategies to reduce drift:

Before spraying:
- Select the correct nozzle for the target:
Fine droplets for fungicides and insecticides
Medium droplets for herbicides. The higher the operating the pressure, the smaller the droplet; too large a droplet will bounce off the target. Air blast sprayers give the greatest cause for concern as they produce many small droplets which are often off-target.

- Use nozzles with as large a hole as possible to produce a coarser droplet.
- Consider spray additives to reduce drift.
- Only spray when conditions are ideal, a 2-4 mph wind.
- Calibrate the sprayer with water to ensure that everything is working correctly.

Avoid spraying when:
warm and sunny days with less than 2 mph winds are greater than 4 mph. These conditions are favorable for atmospheric inversion

During spraying:
- Stay alert: ensure the spray is not allowed to drift on to non-target areas and watch for changes in wind speed and direction.
- Keep spray pressure as low as possible and ensure an accurate gauge is used.
- Keep the boom as close to the target as possible, ensure good boom suspension.
- Maintain a constant speed and pressure, if an automatic regulator is fitted, remember, small increases in speed result in large increases in pressure.
- Avoid spraying near sensitive crops or water courses; use at least a 50 to 100 feet buffer zone This is especially important when using Quadrus fungicide. Do not use anywhere near Macintosh apples as leaf drop will be induced.