

Vegetable Notes

January 2000

Editor...John Howell, Editor, 413-545-5307

Assistant Editor...Judy Kolb, 413-545-4769

Subscription Mgr... Marilyn Kuzmeskus, 413-577-0712

In this Issue:

[Calendar](#)

[Announcements](#)

[1999 Clyd Survey](#)

[Techniques for Improving Spray Coverage in Pumpkins and Winter Squash](#)

[All Day Meeting](#)

[Summer 2000 Cucurbit](#)

Calendar

Jan. 29 **ALL DAY Vegetable Growers Meeting**, Waltham, MA
(see enclosed meeting announcement.).

Feb. 1-4 **New York State Berry Growers and Direct Marketing Conference**, Buffalo NY. Call Bob or Judy Schultz (716)484-7300.

Feb. 5 **2000 NOFA/MASS Winter Conference & Annual Meeting**, Saturday, Quabbin Regional High School, 800 South Street, Barre, MA. For more information or to register contact Elaine Peterson, @978-928-4707.

Feb. 7-10 **North American Strawberry Growers Assn.**, Orlando FL. Call Bob or Donna Cobbledick (905) 945-9057.

Feb. 8-10 **NY State Vegetable Conference**, Syracuse.
Call Jean Warholic at 607-539-7648.

Feb. 9 **Winter Flower Growers' Meeting**, sponsored by University of Massachusetts Extension and the MA Flower Grower's Association, Mahoney's Rocky Ledge, Wholesale Division, 200 Wildwood St., Woburn, MA.

Feb. 11-12 **North American Bramble Growers Assn.**, Orlando FL.
Call Richard Fagan at 301-724-4085.

Feb. 23- **Mid-Atlantic Direct Marketing Conference,**
27 Parsippany, NJ.
Contact Dr. Ramu Govindasamy at 732-932-9171, ext.
254.

March 10 **Massachusetts Farmers Direct Marketing Conference,**
Boxboro Holiday
Inn, 8:00 AM - 5:00 PM. **Mark your calendar for a
program of
up-to-date, practical marketing and business ideas and
a trade
show specifically for direct marketers!** This one-day
program
is jointly sponsored by MARS (Mass. Association of
Roadside
Stands and Pick Your Own Farms) and FMFM
(Federation of
Massachusetts Farmers Markets). The opening program
will feature a
keynote speech by Brent Warner of the Ministry of
Agriculture
from British Columbia on Unique Marketing Ideas from
Around
the Globe. You will also hear about new membership
services
available from MARS and FMFM. Concurrent sessions
will address
such topics as insurance issues on the farm, how to create
a
consistent winning farm image to customers,
entertainment
agriculture, and the latest consumer favorites in direct
markets.
Lunch in the trade show will give you a chance to talk
with
vendors of marketing products and services. **For more
information
contact the FMFM office in its new location in
Waltham: 718-893-8222**

For a complete program including map and registration form, contact Paul Lopes at 508-
295-2212, ext.24 or Tina Smith at
413-545-5306. Pesticide credit given. **Register by Feb. 4, 2000.**

Announcements

1999 Crop Disaster Program

The Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2000 includes \$1.2 billion for the Crop Disaster Program (CDP). CDP assistance is for farmers who suffered losses to 1999 crops due to natural disasters. Farmers are eligible for compensation for 1999 crop losses directly attributed to adverse weather conditions.

Eligible crops

CDP covers all crops as follows:

Insured crops - crops insured by either catastrophic (CAT) or buy-up crop insurance;

Uninsured crops - crops for which crop insurance was available but not taken;

Noninsurable crops - crops for which crop insurance was not available.

1999 Emergency Drought Disaster Loans Available

Hampshire and Hampden County Farmers who suffered qualifying production losses (crops and farm products) due to the 1999 drought could be eligible to receive emergency loans up to \$500,000. or 80% of the extent of the loss, whichever is less. Loans are available to family farms that are unable to secure credit elsewhere and that suffered at least a 30% loss in production on one or more crops. The loans presently carry an interest rate of 3.75%. Emergency loan applications will be accepted now through April 19, 2000. **APPLY EARLY BECAUSE FUNDS ARE LIMITED AND MAY RUN OUT.** For additional information or for an application package, please call your Farm Service Agency Office for more information.

1999 CLYD Survey

Robert Wick and Ruth Hazzard, Department of Microbiology and Department of Entomology, University of Massachusetts Vegetable IPM Program.

Last year we reported a "new" disease affecting squash and pumpkin fields throughout Massachusetts. The disease, referred to as Cucurbit Lethal Yellowing Disease (CLYD), is characterized by several symptoms: sudden wilt, yellowing or necrotic foliage and curled leaves at the growing tip. Plants frequently die. It is fairly clear to us now that CLYD is simply bacterial wilt caused by *Erwinia tracheiphila*. We will now refer to this disease as bacterial wilt instead of CLYD.

The term CLYD originated in New York when it became apparent that winter squash and pumpkin were succumbing to a new malady. We were also seeing similar symptoms in Massachusetts, and were finding bacteria in the vascular system of some of the symptomatic plants. Because squash and pumpkin were considered to be fairly resistant to bacterial wilt, and the symptoms were different from those on cucumbers and melons, we thought we should look for other possible causes. The UMass Vegetable IPM Program with grants from the New England Vegetable and Berry Growers Association

and the UMass IPM program carried out a survey in the summer of 1999.

A similar disease had recently been discovered in Texas and Oklahoma and called yellow vine. The cause of the disease is still unknown but it is not caused by *Erwinia tracheiphila*. We thought that it was possible that the disease we were seeing was also yellow vine. A group of scientists at the USDA, Agricultural Research Station in Oklahoma agreed to examine plants from our survey to determine if our disease was yellow vine.

The Vegetable IPM team collected over 70 symptomatic squash and pumpkin samples from farms around the state, which were processed and analyzed at the diagnostic lab for the presence of fungal and bacterial pathogens in their roots, stems and leaves. After diagnosis, samples were shipped to the USDA in Oklahoma for molecular analysis, to confirm the presence of either *Erwinia* or the yellow vine pathogen.

A total of 24 symptomatic plants (12 pumpkins, 12 squash) were submitted to the diagnostic lab. Of these, 15 were diagnosed with bacterial wilt (*E. tracheiphila*). *Pythium* was found in 14 of the plants, and of these, 10 had both bacterial wilt and *Pythium*. Four plants had only *Pythium*. Some of the plants were considered to have severe drought stress, which became increasingly common towards the latter part of the season. Although we believe that drought stress contributed to disease symptoms in most of the plants submitted, it was considered the primary factor in only 4 of the samples.

One sample, from a farm in Charlemont, was diagnosed by the USDA lab as having yellow vine disease.

Summary and Future Plans

The term CLYD should be discarded since it is fairly clear that the disease seen in winter squash and pumpkin is due to bacterial wilt. It should be noted however, that other factors such as drought and *Pythium* root rot are difficult to distinguish from bacterial wilt, and in many cases, several different problems will affect a single plant. It is not known why winter squash and pumpkin have become more susceptible to bacterial wilt. It is possible that there are new strains of the bacterium, or perhaps, new cultivars have less resistance to the disease. It is also possible that environmental conditions over the past two summers have predisposed the plants to bacterial wilt.

Since the bacterium is spread by cucumber beetles, we need to take a closer look at the threshold levels that we are currently using. For example, if a grower has had significant losses in winter squash or pumpkins, perhaps an insecticide (e.g. Sevin) should be applied as soon as the first beetles are observed. For all fields of winter squash and pumpkins, we will recommend a lower threshold for applying controls, such as 1 beetle per plant.

It is important that the IPM program continue to monitor bacterial wilt in winter squash and pumpkins. We also want to collect isolates of the bacterium and compare them with isolates from other sources to determine if new strains have developed. We also want to

determine if the yellow vine disease is emerging as a problem in Massachusetts. In addition, we want to assess the extent and impact of other diseases such as Phytophthora blight, powdery mildew and black rot. For all of these reasons, we will be conducting a cucurbit disease survey again in the summer 2000.

To be a part of this survey, see sign up info later in message.

The vegetable IPM program thanks the Department of Food and Agriculture, the New England Vegetable and Berry Growers Association, Jeff Lerner, Richard Anair and Jessica Tuffley for helping to make this survey possible.

Techniques for Improving Spray Coverage in Pumpkins and Winter Squash

John Howell, Department of Plant and Soil Sciences, University of Massachusetts

Three types of sprayers are commonly used for applying fungicides and insecticides to pumpkin and winter squash in New England. These are high pressure/high volume hydraulic (boom), low pressure/low volume hydraulic (weed sprayers) and air blast. The dense foliage of pumpkin and winter squash vines makes it difficult to achieve good spray coverage on all but the upper leaves. Depending on the sprayer type, there are several suggestions for improving spray coverage.

These include:

1. using a slow ground speed (two mph) to allow enough time for spray droplets to penetrate the foliage;
2. using a high volume (80+ gpa) to cover more surface;
3. using high pressure (100 psi) to force spray into the canopy;
4. on hydraulic sprayers, using solid cone nozzles which provides better penetration than hollow cone nozzles;
5. turning horizontal booms of hydraulic sprayers so the spray pattern is about angled about 15° forward
rather than vertical to stir the leaves.

Low pressure/low volume or so called weed sprayers typically operate at about 40 or less pounds per square inch (psi), deliver 20 to 40 gallons per acre (gph) and are equipped with flat fan nozzles which are not designed for penetrating the foliage. These sprayers can not be expected to provide adequate coverage.

High pressure/high volume hydraulic sprayers are capable of providing the recommended pressure and volume and typically are fitted with hollow or solid cone nozzles. This type of sprayer would be expected to provide reasonable penetration of the canopy.

Air blast sprayers utilize a strong stream of air to carry the spray to the target. It would be expected that this blast of air would carry spray droplets into the canopy.

Water sensitive cards can be used to evaluate spray coverage. The cards surfaces change color when contacted by spray droplets, clearly indicating the amount of coverage at that particular spot. Using clothes pins, cards can be clipped to leaves at various locations within the plant canopy. A spray of water only (to eliminate re-entry concerns) is applied and the coverage pattern is easily seen at the locations of the cards.

Water sensitive cards were used to evaluate spray coverage provided by four sprayers in three pumpkin fields in August, 1999. At this time, the leaf canopy was fully developed. For hydraulic sprayers, cards were clipped to the upper and lower surfaces of top leaves and those that were low in the canopy and well covered by upper leaves. Ground speeds of 2 mph and 4 mph were tested. Spray booms were operated so that nozzles pointed straight down (vertical) or angled forward about 15°. One of the sprayers is a low pressure/low volume unit with flat fan nozzles which delivered 50 gpa at 2 mph and 25 gpa at 4 mph. We also tested low pressure hollow cone nozzles. All treatments with this sprayer provided very little coverage of the lower surfaces of top and bottom leaves. The various treatments did affect coverage of the upper surfaces: 2 mph was always better than 4 mph; the boom generally provided better coverage when angled than when vertical; and the flat fan provided better coverage than the hollow cone, however, the flat fan delivered twice the gallonage of the hollow cone. Regardless of treatment, this sprayer provided poor coverage.

The high pressure/high volume sprayer has solid cone nozzles and was tested at 2 mph (120 gpa) and 4 mph (60 gpa) with the boom vertical and angled. With the boom angled, this sprayer provided excellent coverage of the upper surfaces of top and bottom leaves at both ground speeds, but little coverage of the lower surfaces. When the boom was in the vertical position, coverage of the upper surfaces was reduced and was poor on the lower surfaces. There was little difference between ground speeds.

Two air blast sprayers were tested at 2 and 4 mph. They delivered 25 and 12.5 gph at these speeds respectively. Cards were attached to upper and lower leaf surfaces of top and bottom leaves as for the hydraulic sprayers. In addition, this was tested on the first, third and fifth rows from the sprayer. The coverage was somewhat better in the third row than in the first or fifth rows. Perhaps this could be improved, especially in the first row, by adjusting air patterns. With these sprayers, coverage of the lower surfaces was poor and fair on the upper surfaces at 2 mph. Coverage was reduced at 4 mph. Occasionally, a top leaf would flip over in the air stream, resulting in better coverage on the lower surface of the leaf.

None of these sprayers provided a desired level of coverage of lower leaf surfaces. Coverage of the fruit, especially the lower surfaces, would probably be marginal. The high pressure/high volume hydraulic sprayer with solid cone nozzles with the boom angled, provided the best coverage. The low pressure/low volume sprayer provided the poorest.

All Day Meeting

Saturday, January 29, 2000

**New England States Cooperative Extension &
New England Vegetable & Berry Growers Association**

Eastern Massachusetts Extension Center
240 Beaver Street, Waltham, MA

Commercial Members Day

Commercial members are invited to set up exhibits of their products or services.

9:30 AM Registration. There is a \$10.00 registration fee for those who are not members of NEV&BGA. This does not include lunch.

10:00 AM Vegetable Production Guide Update: Three of our Extension Specialists from University of Massachusetts will bring us up to date on the recommendations in the New England Vegetable Guide for 2000-2001.

-Insects - Dr. David Ferro

-Diseases - Dr. Robert Wick

-Weeds - Dr. Richard Bonanno

11:30 AM Spintor, a Selective yet Broad Spectrum Insecticide, Dr. Jude Boucher, University of Connecticut. Spintor is a new biological insecticide that is very user and environmentally friendly. It controls a wide range of insects on many crops including corn, potatoes, tomatoes, peppers, eggplant and cole crops.

12:00 Lunch. Chef Du Jour John Ayotte will provide us with a sumptuous lunch, including banana fritters. Phone reservations can be made or changed until noon on Wednesday, January 26th by phoning 508-378-2546. Those who make reservations and do not show up will be billed.

1:00 PM Business Meeting, Election, Reports

1:30 PM Questions and Answers, Warren Gove, Moderator. A list of questions has been prepared. Call out the number of the question you want answered and our panel of experts will provide the answer. If you have a question not on the list, you can ask it as well.

2:00 PM Drip Fertigation and Chemigation, John Howell, University of Massachusetts. As water becomes an increasingly scarce resource, more growers are turning to drip irrigation. Fertilizers and chemicals can also be applied through drip systems. John will discuss this aspect.

2:30 PM Apply Chemicals Through Sprinkler Irrigation, Dick Ward, Carver, MA.

3:00 PM Meet David Kopsell, Dr. David Kopsell, University of New Hampshire. Dr. Kopsell, hired to replace Dr. Otho Wells retired last June, comes to us from Georgia and

will give us an overview of the onion industry including the famous Vidalia onion.

NOTE: Two credit hours toward recertification for certified pesticide applicators attending this meeting will be given. Bring your number with you.

UMass Cucurbit Disease Survey

Sign-Up Form

Name: _____

Farm: _____

Mailing address: _____

Phone: _____

Email address: _____

Summer 2000 Cucurbit Disease Survey

UMass Extension Vegetable IPM

Are winter squash or pumpkins an important crop for you? Have you had problems with diseases -- do you find diseases difficult to identify and manage and have they caused some yield loss? Would you like to know more about what diseases are in your pumpkin and squash crops and how to manage them?

If you've answered yes -- consider participating in the UMass Cucurbit Disease Survey next summer!

Why are we doing the survey? Bacterial wilt (previously known as "CLYD") is showing up more often in pumpkin and winter squash crops than in the past. This and other diseases are causing crop losses. We need to understand better how widespread and serious these diseases are in winter squash and pumpkin crops around the state. We want to understand better what is happening with bacterial wilt, Phytophthora, black rot, powdery mildew and other diseases, in order to help growers manage them more effectively.

What we'll do: We will contact each farmer at the start of the growing season, and we will visit each farm once a month in June, July, August and September to scout your winter squash and pumpkin fields and take disease samples. Samples will be diagnosed in the UMass Plant Disease Diagnostic Lab and you will receive a report on what we've found and recommendations on how to manage it. You can also call us if you see a problem, and we'll get there as quickly as we can.