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In This Issue

1. Survey of Stewarts wilt on sweet corn in Illinois in 2007
2. Crop Reports

Survey of Stewarts wilt on sweet corn in Illinois in 2007 by Jerald Pataky, Univ. of Illinois

Each year since 1999 the University of Illinois sweet corn pathology program in cooperation with UI Variety Testing Program has assessed the incidence of plants infected with Stewarts wilt for sweet corn hybrids with different levels of resistance or susceptibility. Trials are planted at nine locations (Table 1) in the southern two-thirds of Illinois. Incidence (%) of infected plants is measured from three replicate plots of about 150 plants of each hybrid (about 450 plants per hybrid per location). The 2007 survey was completed June 4. The results illustrate the effects of winter temperature and host resistance on the occurrence of Stewarts wilt (Table 1).

At the three northernmost locations, Dwight, Monmouth and Goodfield, incidence of Stewarts wilt was 1% or less for hybrids that have resistant (Bonus, Ambrosia, and XT 182A) or moderate reactions (Shimmer, Bodacious, XT 273A, Honey Select, and Double Gem), and 2% or less for moderately susceptible to susceptible hybrids (Snow White, Coho, Jubilee, and Supersweet Jubilee). At these locations, the average temperature for December, January and February was less than 26 F which probably resulted in relatively small overwintering populations of the corn flea beetle, the insect that vectors the Stewarts wilt bacterium, *Pantoea stewartii*.

At three central Illinois locations where the average winter temperature ranged from 28.7 to 29.9 F, Stewarts wilt incidence was below 2% for resistant hybrids except at New Berlin where 2.7% and 3.7% of Bonus and Ambrosia plants were infected, respectively. For hybrids with moderate Stewarts wilt reactions, incidence ranged from 0 to 5.7% and was above 2% in 7 of 15 comparisons. For hybrids with susceptible reactions, incidence ranged from 0.4 to 19.3% and was above 2% for 11 of 12 comparisons and above 5% for 6 of 12 comparisons..

At three southern Illinois locations where the average winter temperature was above freezing, incidence of Stewarts wilt infected plants was below 2% for resistant hybrids except for Ambrosia planted at St. Peter. For hybrids with moderate Stewarts wilt reactions, incidence ranged from 0.4 to 4.7% and was above 2% for 5 of 15 comparisons. For hybrids with susceptible reactions, incidence ranged from 1 to 17.2% and was above 2% for 10 of 12 comparisons and above 5% for 8 of 12 comparisons.

Previously, weve calculated that seed treatment insecticides (e.g., Poncho, Cruiser, Gaucho) are economical (the \$ value of control is greater than the cost of the seed treatment) if the incidence of Stewarts wilt in the absence of seed treatment control is above 1 to 2% on sweet corn hybrids grown for fresh market and above 5% on hybrids grown for processing. Using this guideline, Stewarts wilt control from seed treatment insecticides usually would not have been economically beneficial in 2007 for hybrids grown in the three northern locations or for the resistant hybrids grown in the central or southern Illinois locations. In central and southern Illinois, Stewarts wilt control from seed treatment insecticides would have been economically beneficial most of the time in 2007 on susceptible hybrids and more than half of the time on hybrids with moderate Stewarts wilt reactions.

Reactions of sweet corn hybrids to Stewarts wilt and other prevalent diseases are available at the University of Illinois sweet corn pathology website (www.sweetcorn.uiuc.edu).

TABLE 1. Survey of Stewarts wilt on sweet corn in Illinois in 2007.

| 2007 | Stewart's wilt reaction: | | Hybrid and incidence (%) | | | | | | | |
|-------------|---------------------------------|----------------------|---------------------------------|-----------------|----------------|----------------|------------------|----------------|---------------------|--|
| | Avg Temp | Planting Date | R | R-MR | R-MR | M | M | M | M | |
| | | | 1.2 | 1.7 | 2.2 | 4.5 | 4.7 | 5.3 | 5.8 | |
| | | | Bonus | Ambrosia | XT 192A | Shimmer | Bodacious | XT 273A | Honey Select | |
| Dwight | 25 | April 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Monmouth | 25 | April 21 | 0 | 0 | 0 | 1 | 0.3 | 0.9 | 0.4 | |
| Goodfield | 25.5 | April 24 | 0 | 0 | 0.2 | 0.2 | 0 | 0 | 0.5 | |
| Urbana | 28.7 | April 22 | 0.6 | 0 | 0 | 1.2 | 0 | 1.2 | 0.2 | |
| Perry | 29.4 | April 22 | 1.6 | 0.5 | 0.6 | 3 | 0.7 | 2.2 | 1.1 | |
| New Berlin | 29.9 | April 21 | 2.7 | 3.7 | 1.7 | 5 | 4.1 | 2.3 | 5.6 | |
| St. Peter | 32.1 | April 20 | 0.6 | 2.6 | 0.2 | 2.2 | 4.1 | 1.7 | 2.9 | |
| Elkville | 36 | April 20 | 0 | 0 | 0 | 1 | 0.4 | 0.2 | 1 | |
| Belleville | 36.8 | April 20 | 0.4 | 0 | 0.2 | 1.2 | 4.5 | 1.3 | 4.7 | |

Avg. Temp = average temperature (F) in Dec., Jan., and Feb.

Incidence of Stewart's wilt (%) = number of infected plants/ total number of plants

Bold = above 2%

Highlighted = above 5%

| | Stewart's wilt reaction: | | | R | R-MR | R-MR | F |
|-------------|--------------------------|---------------|---------|-------|---------|---------|----------|
| | Avg Temp | Planting Date | Rating: | 1.2 | 1.7 | 2.2 | M 4.5 |
| 2007 | | | | Bonus | Ambosia | XT 162A | Shimmer |
| Dwight | 25 | April 23 | | 0 | 0 | 0 | 0 |
| Monmouth | 25 | April 21 | | 0 | 0 | 0 | 1 |
| Goodfield | 25.5 | April 24 | | 0 | 0 | 0.2 | 0.2 |
| Urbana | 28.7 | April 22 | | 0.6 | 0 | 0 | 1.2 |
| Perry | 29.4 | April 22 | | 1.6 | 0.5 | 0.6 | 3 |
| New Berlin | 29.9 | April 21 | | 2.7 | 3.7 | 1.7 | 5 |
| St. Peter | 32.1 | April 20 | | 0.6 | 2.6 | 0.2 | 2.2 |
| Elkville | 36 | April 20 | | 0 | 0 | 0 | 1 |
| Belleville | 36.8 | April 20 | | 0.4 | 0 | 0.2 | 1.2 |

Avg. Temp = average temperature (F) in Dec., Jan., and Feb.

Incidence of Stewart's wilt (%) = number of infected plants/total

Bold = above 2%

Highlighted = above 5%

Crop Reports by Ron Becker and Brad Bergefurd

Wayne County Report, From: 6/29/07

Diseases – The downy mildew infestation on the farm where it was initially found this year by scouts from the Wayne County Integrated Pest Management program has increased significantly over the past week. Three other farms in the West Salem area were also found to have downy mildew on cucumbers. Powdery mildew was found in a field of cucumbers on June 25th. Anthracnose and angular leaf spot are also being found in several fields of vine crops. Early blight is being found in about half of the area tomato fields. Bacterial spot has been found in

pepper varieties that do not have genetic resistance. Copper has been keeping it under control for the last several weeks. Bacterial speck is being found in several area tomato fields.

Insects – Flea beetles were heavy in many cole crop fields this week, especially in brussel sprouts. Cabbage worms had been controlled in most fields, but eggs were still present. Colorado potato beetles increased significantly this week with many potato fields needing to be treated. Potato leafhoppers and flea beetles also had to be sprayed for in several fields. European corn borer is being found at threshold levels in sweet corn that is starting to tassel. Silking sweet corn is on a 5–7 day schedule for corn borer control. Potato leafhoppers are being found in green beans with several fields needing to be sprayed. Cucumber beetles are being found at threshold levels in several fields. They are also starting to cause damage to ripening fruit. Thrips are being found in onion fields at threshold levels (10–15 thrips per plant). We are also finding botrytis in several onion fields. Tomatoes and peppers have low levels of aphids in them. Timber rot is being found both in the field and in high tunnels. Eggplant has had flea beetle, potato leafhopper and potato beetle damage at threshold levels.

Southern Ohio VegNet report for 6/29/07

Bacterial canker has been positively diagnosed by Nancy Taylor at the OSU Plant and Pest Diagnostic Clinic using a serological test in fresh market tomato plants from a Bainbridge Ohio field, about 2 acres in size, which had not been treated with any fungicides. Bacterial canker is a very serious disease of tomatoes and has caused severe economic losses and reduced quality in processing tomato over the past 20 years in Ohio and has been showing up more in fresh market tomato in recent years with severe crop loss experienced. For more information on bacterial canker of tomato visit <http://ohioline.osu.edu/hyg-fact/3000/3120.html> , <http://www.oardc.ohio-state.edu/tomato/kabelkaposter.pdf> . Most important, if the disease is diagnosed in your fields control irrigation to minimize the time foliage is wet and avoid working among wet plants such as with harvesting, scouting, tying or suckering in an attempt to reduce the spread of disease within the field. Also do not take equipment or harvest containers from an infected field to a non infected field for this could also spread the disease between fields. Following a fungicide program will help with this and other bacterial and fungal diseases in tomato. Visit <http://ohioline.osu.edu/b672/pdf/Tomatoes.pdf> for suggested fungicide programs for commercial tomato plantings. Irrigation continues to be on the mind of growers, like it has the past 10 weeks. Drip, overhead, center pivot and big gun irrigation systems have been running almost 24/7 last weekend and early this week on

vegetable, fruit and also in corn and soybean fields where available. I have received reports from some county Agricultural Educators that some growers have been putting on too much water with drip irrigation systems which has led to leaf curling and rolling in tomato fields. If using drip or any irrigation system it is important to monitor irrigation amounts being applied and not to exceed about an inch of water per week from rainfall and irrigation combined. For more information on use and monitoring of irrigation systems visit

<http://ohioline.osu.edu/aex-fact/0370.html> ,

<http://ohioline.osu.edu/b672/pdf/Irrigation.pdf> or

<http://agalternatives.aers.psu.edu/crops/Irrigation/Driplrrigation.pdf> .Most growing areas did receive some rainfall

the past 4 days, 6/29, 6/28 , 6/27 and 6/26 from evening showers and thunderstorms with some areas receiving less than 1/2 inch to some areas receiving over 3

inches for the period. The cool temperatures associated with these storm fronts have been welcomed to relieve crop stress due to the recent high heat in the mid to high

90's and continued drought conditions. Harvest of high tunnel tomatoes is in full swing with very high quality, yield and market demand. Growers who did not get shade

cloth applied to tunnels are reporting yellow shoulder disorder and sunburn on tomato fruit due to the high temperatures, in the low 100's, in these non covered

tunnels. Indeterminate tomato varieties being harvested in tunnels have been topped in preparation for harvest of

field tomatoes in the next 10 days to 2 weeks. Some growers will be replanting their tunnels in 2 to 4 weeks for a fall high tunnel tomato crop harvest with harvest usually lasting into November and early December weather dependent. Some growers have reported misshapen fruit due to poor pollination. It is important to pollinate high tunnel tomato crops to increase fruit quality and yield. For more information on pollination of greenhouse tomato visit <http://edis.ifas.ufl.edu/pdffiles/CV/CV26600.pdf> . Walking up and down the rows with a simple leaf blower or mist blower without water in it, directed at the flower clusters to vibrate them and loosen the pollen is sufficient for pollination. Pollination should be done at least every other day but daily does not hurt. Sweet corn harvest is in full swing for Ohio River growers with some smaller ear size in some plantings due to the lack of rainfall and drought conditions. Harvest of summer squash, fresh market cucumbers, fresh market pickles, cabbage, broccoli, snap peas, snap beans, sweet onions and high tunnel tomatoes continues. Harvest of black raspberries, blueberries and summer red raspberries is also in full swing. Harvest of machine harvested processing pickles will begin today (6/29) and tomorrow (6/30), weather dependant, and will continue through the 4th of July weekend. Planting of sweet corn, melons, tomatoes, peppers, pumpkins, winter squash, summer squash, cucumbers, radish, turnips, green beans, snap peas and red beets continues. Planting of sweet corn, green beans,

cucumbers, pickles, summer squash, pumpkins, winter squash, radish, turnip, red beets, melons, watermelons, field tomatoes, bell and hot peppers continues. Bird damage and reduced plant stands in recently planted pumpkin fields has been reported where the seed has not germinated for three weeks due to the drought conditions and dry top soil allowing for the birds to find the seed. Some mouse and rodent damage to seed in no till pumpkin plantings has been reported. Hand hoeing and cultivation continues for weed control since many pre emergent herbicides were not successful since there has been no rainfall this spring to activate the herbicides.