WEEKLY CROP UPDATE
UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Winter Temperature Index for Predicting Stewart's Wilt in Delaware Sweet Corn, 1999-2009

Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Average monthly temperatures in °F at Georgetown, DE REC 1999-2009

	2008-2009	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
December	41.8	39.7	43.5	36.2	38.9	38.6	36.7	43.2	31.2	40.3
January	31.0	36.8	39.7	43.0	34.9	29.5	28.9	40.0	33.8	33.9
February	39.2	39.9	30.1	37.4	36.7	35.2	33.8	39.9	38.8	39.7
INDEX	**112.0**	**116.4**	**113.3**	**116.6**	**110.5**	**103.3**	**99.4**	**123.1**	**103.8**	**113.9**

Average monthly temperatures in °F at Newark, DE Experiment Station 1999-2009

	2008-2009	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	2000-2001	1999-2000
December	37.1	37.5	42.5	34.0	35.5	34.0	33.5	43.3	31.1	39.1
January	28.0	35.5	37.3	39.5	31.0	26.4	27.1	39.6	31.5	32.6
February	35.8	36.5	27.8	34.5	34.2	33.1	29.5	40.1	38.4	37.8
INDEX	**100.9**	**109.5**	**107.6**	**108.0**	**100.7**	**93.5**	**90.1**	**123.0**	**101.0**	**109.5**

Severity Index: < 90, usually absent; 90-100, intermediate; >100, usually severe.
The index is used to predict overwintering flea beetle populations that vector the Stewart's wilt bacterium, *Pantoea stewartii*.

Prediction for 2009
Georgetown: 112.0 = Severe – Average monthly temp (Dec, Jan, Feb) = 37.3 °F
Newark: 100.9 = Intermediate to Severe – Average monthly temp = 33.6 °F

For processing and fresh market growers this means that if you are planting sweet corn hybrids that are susceptible or moderately susceptible to Stewart's wilt, flea beetle control is very important. A number of strategies are available including seed treatments, granular insecticides at planting and/or foliar applied insecticides after emergence. See the 2009 Delaware Commercial Vegetable Production Recommendations for control suggestions.

Note: Weather records from University of Delaware Carvel REC, Georgetown, DE and University of Delaware Ag Experiment Station Farm, Newark, DE. Data records found online at http://www.deos.udel.edu/

Seed Corn Maggot (SCM) Control in Spring Planted Vegetables

– *Joanne Whalen, Extension IPM Specialist*; jwhalen@udel.edu

We continue to observe seed corn maggot flies actively laying eggs in a number of situations including recently plowed fields, especially when a cover crop is plowed under or when manure was applied to a field. Spring planted vegetables susceptible to maggot damage include cole crops, melons, peas, snap beans, spinach, and sweet corn. Control options can include commercial applied seed treatments, or soil insecticides; however, not all options are available for all crops. The hopper box treatment Latitude (imidacloprid) is available in our area and is only labeled on sweet corn. Please refer to the labels as well as the 2009 Delaware Commercial Vegetable Production Recommendations.

Soil Health and Vegetable Production

– *Gordon Johnson, Extension Ag Agent, Kent Co.*; gcjohn@udel.edu

Experienced growers and crop advisors know that one of the keys to vegetable productivity is a healthy soil. According to the Cornell Soil Health Group, "Soil health describes the capacity of a soil to be used productively without adversely affecting its future productivity, the ecosystem or the environment." "Soil health emphasizes the integration of biological with chemical and physical measures of soil quality that affect farmers' profits and the environment."

From a biological standpoint, soil health relates directly to the root environment and organisms that inhabit the soil. A healthy soil for vegetables will be one that has few limits to root growth; supports high numbers of beneficial soil organisms, such as earthworms; supports a diverse microbial community with high levels of beneficial bacteria, fungi, Actinomycetes, protozoa, and nematodes and low levels of plant pathogens (such as root rot fungi, bacterial and fungal wilt organisms, soft rot bacteria, and plant parasitic nematodes). In a healthy soil, vegetable crop root systems explore a large portion of the soil volume, crops are under reduced stress, and pest problems are minimal. A healthy soil will also support mineralization of organic matter by soil microorganisms at levels appropriate to the climate.

From a chemical standpoint, healthy vegetable soils will be at a proper pH (6.0-6.8 in most soils); have a high cation exchange capacity; have optimal levels of calcium, magnesium, and potassium held on exchange sites; contain optimal but not excessive levels of other mineral nutrients needed by crops, have high levels of organic matter in various levels of decomposition and high levels of stable humus; support aerobic mineralization processes; and be free of toxic minerals from natural sources (such as high free aluminum levels) or from toxic chemical contaminants.

From a physical standpoint, healthy soils will have high levels of stable aggregates in the topsoil (creating a stable granular structure); an optimal mix of pore sizes (macropores and micropores) so that it is well aerated in the root zone, well drained, but also has a high available water holding capacity; and a low bulk density relative to the soil texture. They will be free of compaction, which limits root growth. Healthy soils are highly permeable to water and not prone to crusting.

From a management standpoint, vegetable growers have several tools at their disposal to maintain and improve soil quality including:

Crop Rotations

It is critical to choose crop rotations that minimize soil born diseases and at the same time can help to improve or maintain good soil physical and chemical characteristics. Mixing in deep rooted crops, crops with extensive root systems, and crops with high residue in the rotation will add organic matter, leave root channels which benefit future crops, break up compaction, and recycle nutrients from deeper in the soil. Crops that have similar pest profiles should not being planted consecutively, especially those vegetable and field crops that are susceptible to the same soil born diseases. Crop diversity in rotations is a key to maintaining or improving soil quality health.

Cover Crops and Green Manures
These are crops that are specifically used to recycle nutrients and to add organic matter to the soil. They occupy land and time periods in the rotation when grain and feed crops are not being grown. It is important to always have something growing on the land, even when not in production, to maintain soil health. Including cover crops and green manures in rotations increases crop diversity and provides the benefits associated with that diversity. For example, certain cover crops and green manure crops have been found to have benefits in reducing soil born diseases.

Reduced Tillage
It is important to reduce the levels of tillage in soils to maintain soil health. The more that soils are tilled the more soil aggregates are broken down and the more quickly soil organic matter is oxidized (decomposed). Soils that are excessively tilled generally have lower organic matter levels and often have poor physical characteristics. While some vegetables and vegetable cropping systems are not well adapted to no-till planting, there have been some great successes with vegetable no-till, such as pumpkins. Reduced tillage tools may be appropriate for other vegetable cropping systems. Zone tillage, vertical tillage (such as turbo till), and soil aeration are all examples of approaches that may be used successfully in vegetables. Other field crops in the rotation should be planted using no-till or reduced tillage tools as much as possible and attempts should be made to conserve crop residue (as long as it does not interfere with the vegetable portion of the rotation).

Compost, Manures, and Other Organic Matter Additions
Compost, manures, and other organic matter sources can be added to vegetable soils to improve soil quality. This approach is most appropriate where heavy tillage must be used, such as in plasticulture. By adding these organic matter sources you can counteract the effect of the heavy tillage and maintain soil health. These materials offer all of the benefits associated with increased organic matter in the soil: increased microbial diversity, reduced disease pressure, increased nutrient holding capacity, slow release of mineral nutrients, increased water holding capacity, improved aeration, and reduced bulk density.

Traffic Management
Managing traffic in vegetable crops is another soil health key. By reducing trips across a field with heavy equipment and trucks, soil compaction is reduced and soil health is maintained. Limiting traffic to designated areas, driveways, drive lines, or tram lines is another way to achieve this because areas in between are conserved and remain uncompacted. These heavy traffic areas can then be targeted with a subsoiler or other tillage equipment to break up compaction. While it is not always possible, reducing trips across vegetable fields when wet is also important. One pass by heavy equipment over wet soils can destroy the productivity of that area for a long period of time.

In 2009, the University of Delaware Cooperative Extension is launching a soil health education initiative specifically aimed at vegetable growers. In this initiative we will provide vegetable growers with information on soil health and vegetable production, soil health testing methods, how to evaluate soil health on farms, and how soil health testing can fit into an integrated pest management plan. We will be working with growers on how to create healthy rotations for vegetable crops specific to their farms. We will be doing demonstrations and field trainings on the use of different cover crops and green manure crops in vegetable rotations and demonstrations on the use of different types of composted materials and their the effects on soil health and subsequent vegetable production. For more information on this initiative, contact Gordon Johnson or Joanne Whalen.

Potato Disease Forecasting – *Bob Mulrooney, Extension Plant Pathologist*; bobmul@udel.edu

Potato acreage in Delaware has been declining, but we are committed providing disease forecasting for late blight and information on other important potato diseases and insects to the potato growers. Joanne Whalen and I will be providing the late blight forecast again using IPM resources. For those that would like to receive

the Potato Disease Update that have not received in the past, email me at bobmul@udel.edu or leave me a message at 302-831-4865 and give me your name and email address or fax number.

Agronomic Crops

Agronomic Crop Insects – *Joanne Whalen, Extension IPM Specialist*; jwhalen@udel.edu

Alfalfa

If you have not started to sample for alfalfa weevil, be sure to begin sampling fields on a weekly basis. Larvae are present in fields in Kent and Sussex counties. Look for small larvae feeding in the tips of plants producing a round, pinhole type of feeding. Once you detect tip feeding, a full field sample should be taken. In general, no treatment should be needed before you observe 50 percent of the tips with feeding damage. The most accurate way to time an application and try to avoid multiple insecticide applications is to sample stems and determine the number of weevils per stem. A minimum of 30 stems should be collected per field and placed top first in a bucket to dislodge larvae from the tips. Then count the number of weevils per stem. The following thresholds, based on the height of the alfalfa, should be used as a guideline when making a treatment decision: up to 11 inches tall - 0.7 per stem; 12 inches tall - 1.0 per stem; 13 - 15 inches tall - 1.5 per stem; 16 inches tall - 2.0 per stem and 17 - 18 inches tall - 2.5 per stem. Numerous pyrethroids are now labeled for alfalfa weevil including Baythroid XL, Mustang MAX, Proaxis, Warrior II and numerous generic pyrethroids. Imidan, Lorsban, Lannate and Steward are also labeled for alfalfa weevil control. Be sure to check all labels for rates, restrictions and days to harvest before application. *NOTE:* The use of Furadan on alfalfa has been cancelled (as well as 21 other crop uses). According to EPA, "existing stocks of the canceled products may be used until they are depleted, or until the effective date for revocation of the associated tolerances."

Field Corn

In addition to black cutworm (which is generally a pest of later planted corn), we can also have a number of other cutworm species present in corn fields at planting time, including the dingy cutworm, claybacked cutworm and variegated cutworm. Information from the Midwest indicates that the claybacked cutworms can cause economic loss in corn. They overwinter as half-grown larvae in the soil so they can get a "jump" on black cutworms when it comes to cutting each spring. Since they are larger in size earlier in the spring, this species can damage very young corn plants. So, scouting fields at plant emergence is important, even if at-planting materials were used, to catch any potential problems. Just a reminder, if you plan to tank-mix an insecticide with an herbicide for black cutworm control, it should be done at, or immediately following planting. Insecticides combined with early burn-down applications, 2-3 weeks before planting, have not provided effective control.

Timothy

Be sure to sample fields for cereal rust mite activity. Mites are active in fields at this time. As soon as fields green up, you should begin checking for cereal rust mites and the early signs of infested leaves, especially in fields with problems in past years. These mites are microscopic, so the use of a 20x-magnifying lens is necessary. If rust mites become a problem, Sevin XLR Plus still has a 24(c) label on timothy for rust mite management in DE. The following is a link to the 24(c) label for Delaware: http://www.cdms.net/ldat/ld332028.pdf. You must have this label in your possession at the time of application.

Wheat

Be sure to begin sampling fields for cereal leaf beetle activity. We are starting to find evidence of adult feeding, so fields should be scouted early for the presence of egg masses. The threshold for cereal leaf beetle has been adjusted to include sampling for eggs, especially in high management wheat fields or areas where problems were experienced the previous year. The eggs are elliptical, about 1/32 inch long, orange to yellow in color when first laid, changing to a burnt orange prior to hatching.

Check our website for pictures of cereal leaf beetle adults, larvae and eggs: http://www.udel.edu/IPM/facts/clbpictures.htm.

Generally, eggs are laid singly or in small scattered groups (end-to-end) on the upper leaf surface and parallel to the leaf veins. Cereal leaf beetle larvae are brown to black, range in size from 1/32 to 1/4 inch long, and eat streaks of tissue from the upper leaf surface. Since cereal leaf beetle populations are often unevenly distributed within the field, it is important to carefully sample fields so that you do not over or under estimate a potential problem. Eggs and small larvae should be sampled by examining 10 tillers from 10 evenly spaced locations in the field while avoiding field edges. This will result in 100 tillers (stems) per field being examined. Eggs and larvae may be found on leaves near the ground so careful examination is critical. You should also check stems at random while walking through a major portion of the field and sampling 100 stems. The treatment threshold is 25 or more eggs and/or small larvae per 100 tillers. If you are using this threshold, it is important that you wait until at least 50% are in the larval stage (i.e. after 50% egg hatch).

Soybean Rust: A Review of 2008 and the Current Situation

– *Bob Mulrooney, Extension Plant Pathologist*; bobmul@udel.edu

Soybean Rust in 2008

Last fall, soybean rust was discovered in the Selbyville sentinel plot on the Group VII variety USG7732NRR. The location, upon review, was determined to be just over the border and thus technically in Maryland in Worcester County, between Bishop, MD and Selbyville, DE. This is the first report of soybean rust in Maryland. A sample was collected on October 23 and incubated until October 28. Debbie Parrish examined the sample at the Delaware Dept. of Agriculture and determined there was a suspect soybean rust infection. Nancy Gregory, University of Delaware Plant Diagnostician and Bob Mulrooney, University of Delaware Plant Pathologist then examined the sample. They determined that there was one soybean rust pustule on one leaf out of the 100 leaf sample. Dr. Mary Palm, USDA/APHIS PPQ NIS, confirmed the identification on October 29, 2008.

The primary significance of this find is to illustrate that soybeans in the Mid-Atlantic region can become infected with soybean rust given the right combination of events. However, this particular discovery has no direct implications for soybeans in our region. It happened at the very end of the growing season, and in fact frost (approx. Oct 20) had already damaged the upper most foliage of this extremely late soybean sentinel plot. There was no remaining green foliage in this sentinel plot and all commercial fields were in various stages of harvest. This detection also illustrates that under the present set of standards, soybean rust can be detected at very low incidence. This ability gives us the information to provide growers an early warning in time to take protective measures in case it should appear earlier in the season when the crop could be at risk. The ipmPIPE program has been a very effective tool for monitoring the presence of soybean rust in the US and preventing this disease from causing needless losses, either from rust or from unnecessary spraying when the threat of rust is not present.

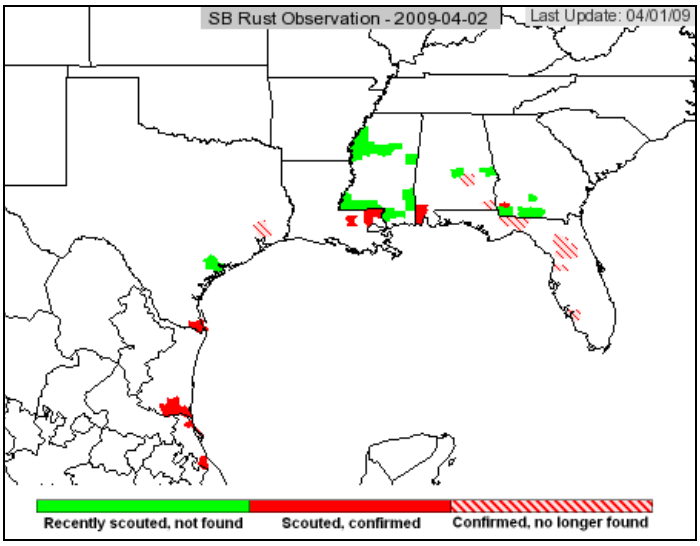
Asian soybean rust was not detected on soybean or any other host in Delaware in 2008. Leaf samples from sentinel plots in each county were collected over 17 weeks from July 10, 2008 to October 29, 2008. Five to seven sentinel plots were visited each week. Samples consisted of 100 leaves taken from each plot in the lower canopy of plants. Leaves were incubated in plastic bags at room temperature for a minimum of three days, and then the underside of each leaf was examined under low power of a dissecting microscope. Growth stage was recorded as well as foliar diseases and insects present. Data was entered weekly into the ipmPIPE database and the NPDN database.

Current SBR Situation

On March 12, soybean rust was confirmed on kudzu in Miller County, Georgia. On February 27, soybean rust was found on kudzu in Mobile County in the southwest corner of Alabama, however rust could no longer be found on kudzu

in Montgomery County. On February 26, soybean rust was found in Cameron County, Texas on volunteer soybeans from a 2008 planting.

Rust activity is pretty slow right now but conditions are more favorable along the Gulf Coast in LA, AL, MS, TX at the present time. It is currently in Mexico as well.



Grain Marketing Highlights - *Carl German, Extension Crops Marketing Specialist*; clgerman@udel.edu

Prospective Plantings and Quarterly Grain Stocks Released

USDA's Prospective Plantings and Quarterly Grain Stocks reports were released this week on Tuesday, March 31. Since the release of those reports the markets have reacted in a mixed fashion, up one day and down the next. Overnight energy and grain prices on the CME Group were higher and the dollar trader lower, pointing toward the possibility of higher prices being bid into these markets through the end of the week. At this point in time, with the carry of U.S. corn stocks that are anticipated and the prospective acreage of soybeans, it is likely to take a weather problem before prices could advance to much higher levels.

Corn Analysis

U.S. corn planted acres are projected at 85.0 million acres, one million acres less than last year. That level of planted acreage would result in approximately 77.7 million acres harvested. At last year's yield of 153.9 bushels per acre the crop size for the '09 crop could equate to 11.958 or almost 12 billion bushels. At last year's total U.S. corn use, the carry into '09/'10 marketing year would equal nearly 1.6 to 1.7 billion bushels. The season average corn price would be expected to range from $3.90 to $4.30 per bushel.

March 1 corn stocks totaled 6.958 billion bushels, 99 million bushels larger than a year ago.

Soybean Analysis

U.S. soybean planted acres are projected at 76 million acres, 300,000 acres more than last year. From that level of plantings we could see an estimated 74.936 million acres of soybeans harvested. Total U.S. soybean production would then be estimated in the vicinity of 2.967 billion bushels, using last year's yield of 39.6 bushels per acre. Last year's U.S. soybean crop produced 2.959 billion bushels. The preliminary estimate for '09 soybean production would not increase U.S. soybean stocks that much and with strong demand, might not be that indicative of an increase in U.S. soybean stocks for the '09/'10 marketing year. However, there does seem to be a catch and that is the possibility of a wet spring occurring in portions of the U.S. The wet spring could cause a shift from corn that could increase soybean acres.

March 1 soybean stocks totaled 1.302 billion bushels, compared to 1.434 billion bushels last year. March 1 soybean stocks are 132 million bushels larger than a year ago.

Wheat Analysis

U.S. prospective plantings for all wheat totaled 58.6 million acres, 4.5 million acres less than last year. Harvested wheat acres, estimated at 51.2 million acres, equates to an estimated production of 2.299 billion bushels for '09 production, as compared to 2.5 billion bushels last year, reflecting a decrease in production of 201 million bushels. With production projected at 2.299 billion bushels, carry-over stocks at 712 million bushels, and total use of 2.213 billion bushels for the current marketing year we are likely to see an increase in wheat ending stocks.

March 1 wheat stocks were estimated at 1.037 billion bushels, compared to 709 million bushels a year ago. March 1 wheat stocks are 328 million bushels larger than last year.

Market Strategy
March 1 stocks are indicative that we are likely to see an increase in USDA's projections in the ending stock numbers for U.S. corn, soybeans, and wheat in the April supply and demand report. That would suggest that we are not likely to see nor should we expect large price increases from current levels in the near term. On a positive note, the weakening dollar can help to bolster the outlook for U.S. exports. The dollar is currently trading six points lower and the price of crude is $3.00 per barrel lower than recent highs. Dec '09 corn futures are currently trading at $4.35 per bushel; Nov '09 soybeans at $9.22; and July '09 SRW wheat futures are $5.59 per bushel.

For technical assistance on making grain marketing decisions contact Carl L. German, Extension Crops Marketing Specialist.

Announcements

Pasture Walk Featuring Netherfield Estate

Saturday May 2, 2009 2:00-4:00 p.m.
50185 Hays Beach Road
Scotland, MD 20687
Hosts: Ruth & Peter Pry

There will be a tour of host farm highlighting conservation practices. Learn about pasture and hay management, soil testing and nutrient management, cost share incentive programs, manure composting, watering facilities, and more.

SPEAKERS:
Elmer Dengler
Grazing Specialist, USDA Natural Resources Conservation Service (NRCS)
Les Vough
Forage Systems Management Consultant, RCS Southern Maryland RC & D
Bruce Young
District Manager, St. Mary's Soil Conservation District
Terry Heinard
District Conservationist, USDA Natural Resources Conservation Service (NRCS)
Ben Beale
Extension Agent, St. Mary's County Extension

This event is FREE!!
Advance registration is required. Please RSVP by April 25 to Sara Lewis at St. Mary's County Soil Conservation District: (301) 475-8402 ext. 3 or Sara.Lewis@md.nacdnet.net

DIRECTIONS:
From Lexington Park: Go SOUTH on MD-235 S/Three Notch Rd. (12 mi). Turn SLIGHT LEFT onto MD-5. (1.4 mi). Turn LEFT onto Fresh Pond Neck Rd. (.8 mi) Stay STRAIGHT to go onto Hays Beach Rd.. (.8 mi). Parking is on right side, follow signs.
From Waldorf : Take Route 5 South. Continue to follow MD-5 S. (18 mi). MD-5 S becomes MD-235 S/Three Notch Rd.. (30.4 mi). Turn SLIGHT LEFT onto MD-5. (1.4 mi). Turn LEFT onto Fresh Pond Neck Rd. (.8 mi) Stay STRAIGHT to go onto Hays Beach Rd. (.8 mi). Parking is on right side, follow signs.
From Lusby: Go SOUTH on MD-2 S/MD-4 S/MD (13 mi.). Turn LEFT onto MD-235 S/Three Notch Rd. (16.5 mi). Turn SLIGHT LEFT onto MD-5. (1.4 mi). Turn LEFT onto Fresh Pond Neck Rd. (.8 mi) Stay STRAIGHT to go onto Hays Beach Rd. (.8 mi). Parking is on right side, follow signs

Upcoming Delaware Farm Bill Workshops

Wednesday, April, 8, 2009 7:00 p.m.
USDA Service Center- Kent Field Office
800 Bay Road, Suite #2
Dover, DE

Thursday, April 9, 2009 1:00 p.m.
Carvel Research and Education Center
16483 County Seat Highway
Georgetown, DE

Will my operation's eligibility be affected by new limits for adjusted gross income? Are there any incentives for beginning farmers or historically underserved customers? Have cost-share rates changed? Are there opportunities for organic or forestry operations? These and many more questions will be answered at a series of 2008 Farm Bill workshops hosted by the USDA Natural Resources Conservation Service (NRCS).

The farm bill is the primary agricultural and food policy tool of our Federal government. Some of the changes outlined in this legislation simplify existing programs and create new ones to address high priority environmental goals—affecting farmers for years to come. The NRCS programs staff has planned three workshops to clarify how these changes might affect Delaware producers. You may be familiar with some of these changes; however, this is your opportunity to receive a more in-depth explanation. A question-and-answer period will be held at the end of each workshop.

For more information on the workshops, please contact your local NRCS Field Office in Kent County (302) 741-2600 x 3, New Castle County (302) 832-3100 x 3, or Sussex County (302) 856-3990 x 3. For more information on the 2008 Farm Bill, visit www.de.nrcs.usda.gov and click on "2008 Farm Bill."

Delaware Agriculture Week 2010

January 18-22, 2010
Delaware State Fairgrounds
Harrington, DE

Save the date and plan to attend the Delaware Agriculture Week Meetings and Trade Show.

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of March 26 to April 1, 2009

Readings Taken from Midnight to Midnight

Rainfall:

0.24 inch: March 26
0.05 inch: March 27
0.64 inch: March 28
0.19 inch: March 29

Air Temperature:

Highs ranged from 75°F on March 29 to 53°F on March 28.

Lows ranged from 47°F on March 27 to 33°F on March 31.

Soil Temperature:

52.2°F average

Additional Delaware weather data is available at http://www.deos.udel.edu/agirrigation_retrieval.html and http://www.rec.udel.edu/TopLevel/Weather.htm

Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate – Vegetable Crops. For subscription information, contact her at emmalea@udel.edu or (302) 856-2585 x 587.