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Eastern NY Commercial Horticulture Program

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Berry News

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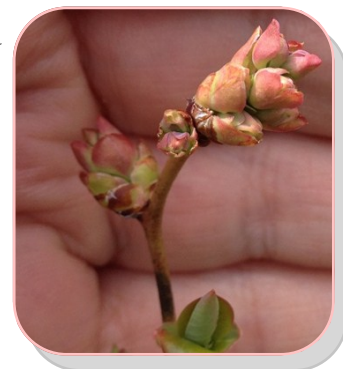
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Regional Reports:

The entire eastern NY region is moving slowly forward in terms of accumulated heat, but it's at a snails pace! This might be due to extremely cold ground temperatures, but the fact that we have had no real period of warmth to push crops forward is also contributing. The growing degree day accumulation shown in the weather data has been similar to last year, but the berry crop phenology is possibly 7-10 days behind what we perceive as being average.



In the lower Hudson Valley, Jim O'Connell reports that blueberries are between tight cluster and shoot expansion. Summer raspberries are leafing out and June bearing strawberries are just beginning a scattered bloom, although not at 10% bloom yet.

In the Capital District, Laura saw the first strawberry blossoms of the year on overwintered 'Seascape' on plastic. Unfortunately they did have frost damage. Matted row berries are barely uncovered – a REAL problem as yield will be impacted by the late uncovering (see article on page 3). In many places strawberry flower trusses are emerging from the crown and beginning to extend. Those folks that have placed row cover over their berries may well have some blooms underneath – at least that's what they are hoping for – although that has not been seen to be the case yet, except in plantings of Chandler. Fall raspberry canes are emerging but are still only about 4" high in most places. Leaves are starting to expand on summer raspberries, but not many flower buds visible yet. Blueberries are at bud break or tight cluster depending upon your site. Critical

temperatures rise as the buds progress, so keep an eye on them as we move through May.

Gooseberries are just finishing bloom in southern locations but have not seen fruit set at this point.



A black vine weevil larvae and adult.

Photo by R. Childs, UMass

In northern NY, Lindsey Pashow and Dr. Elson Shields found black vine weevil (BVW) larvae in strawberries in a field where the soil temperature was around 50 F. Growers that believe they have BVW problems can start digging and looking for the small larvae as they move into the root systems of plants. During the next few weeks the larvae will grow in size quickly.

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

Welcome Cara Fraver and Lindsey Pashow ENYCHP Summer Technicians!

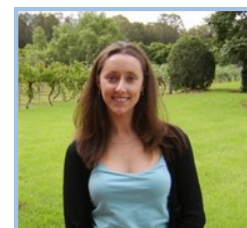
The Eastern NY Commercial Hort program welcomes Cara Fraver and Lindsey Pashow to the team this season. They'll be working with various educators around the region so don't be surprised if you see them on your farm checking traps, scouting or helping with a research projects. Cara will be working mostly in the immediate Capital District and upper Hudson Valley on vegetable and small fruit crops while Lindsey will be in the North Country helping with tree fruit and grapes. We have asked them both to introduce themselves below and hope you will welcome them to our team too.

Cara Fraver: I'm enthusiastic to be spending the season working with the ENYCHP as a Summer Technician. For a few years, my husband, Luke Deikis, and I have been growing diversified vegetables for farmers' markets and Community Supported Agriculture at [Quincy Farm](#) in Washington County. In the three years that we raised vegetables at Quincy Farm, we more than doubled in size and ended with four strong summer markets, three great winter markets and a 75 member CSA. Prior to farming on our own, we worked at [Roxbury Farm](#) in Kinderhook, NY and [Hearty Roots Farm](#) in Claverack, NY. Before we began growing vegetables for sale, I worked for many years at [Just Food](#), the non-profit that coordinates CSA's in New York City. I set up Just Food's [Fresh Food For All](#) program. Prior to that, I organized a new CSA in Ravenswood, Queens, which evolved to become the thriving [Hellgate CSA](#).



I am very excited for my new role with the ENYCHP, to learn from trials and farm visits and to work with this great group of educators and growers.

Lindsey Pashow: I'm a seasonal Field Technician for the northern region of the CCE Eastern NY Commercial Horticulture Program. Last year I worked as a Field Technician for CCE on the cold hardy wine grape trial at Cornell's research farm in Willsboro with Kevin Iungerman, and prior to that I was a volunteer on the project for two seasons. I currently own a small wine grape vineyard called [Adirondack View Vineyard](#) in Keeseville, NY.



In addition to grapes I'm also helping with a bio-control research project led by Elson Shields that is studying the use of native beneficial nematodes to control root feeding weevils on strawberries in northern NY, coordinating some programs for apple growers in our area, and helping out where needed. I'm excited to be working for Cooperative Extension in a broader capacity this season!

Weekly Berry "To Do" List

Strawberries

- When bloom begins, remove the row covers so that you allow pollinators to work.
- Make sure irrigation is in place for frost protection.
- Bloom signals the start of botrytis control – this is the most important period for controlling gray mold, so be sure to get your cover sprays on.
- Begin scouting for clipper and tarnished plant bug as we approach bloom.

Raspberries

- Watch for raspberry fruitworm feeding on new leaves.

Blueberries

- Mummyberry protection should be starting now.
- Make arrangements to bring in bee hives to insure good pollination (see article in last edition of Berry update).
- Fertilize blueberries now and plan on the second application in one month.
- Last opportunity for pre-emergent fertilizer is now.
- Grass herbicides should be applied while grasses are 6-8" high – that window is rapidly passing!

Winter Injury to Brambles

Lots of winter injury has been seen this spring, especially in brambles. Tip burn is especially notable in summer raspberries, but hopefully bud damage will not be too extensive. The very slow advent of spring this season will likely mean that growers will continue to notice winter injury expression as the plants leaf out. Symptoms of winter injury in brambles include: dieback of canes, failure of laterals to develop, weak lateral growth and normal initial growth followed by collapse.

Blackberry damage is more serious. Many reports of complete cane dieback in both field and high tunnel plantings even those that are very well-established. The photos below were taken by Dr. Faruque Zaman with Suffolk county CCE from a Long Island blackberry planting where 90% of buds looked like this. It is unlikely these buds will produce flowers. There will probably be very little fruit on such plants this year. Maybe some of the lower buds on the canes will be fruitful as they tend to be injured the least, but once growers determine that the cane is injured, it should be removed. - LGM



Blackberry bud showing green tip.

Photo by F. Zaman, CCE Suffolk County



Cross section of the same blackberry bud showing a dead growing point.

Photo by F. Zaman, CCE Suffolk County



Florican raspberries suffering winter injury. *Photo by M. Pritts, Cornell Univ.*

Remove Straw Mulch NOW!

Straw mulch is used to prevent winter injury to the crowns of matted-row June bearing strawberries. Typically straw is removed by late March in the lower Hudson Valley, early-April for the Capital District and late April for the coldest areas of eastern NY. This year, as the spring has been VERY slow to get going, many growers have delayed mulch removal. But it is moving into mid-May, and mulch should be off of ALL berries in EVERY location now!

It is true, that the earlier you remove the straw, the earlier the plants will produce, which may translate in to earlier frost protection, but now there is a real danger of drastically reducing the yield of your berries by leaving straw on too long. A New England study looked at straw mulch removed periodically over a six weeks. The highest yields came from plants that were uncovered as early as possible. The later the straw was removed, the more yield was reduced. This is due to the plants need for sun in order to convert energy into vegetative growth necessary to support the fruit buds that were initiated last year. The plant cannot grow if it does not have light to fuel it.

Many growers will remove the bulk of the straw as early as possible, but still leave a light 1" layer of mulch on the

berries. The leaves can grow up through the mulch but the straw helps prevent weed seed germination. There is also research pointing to the very best results in terms of yield and plant vigor being when heavy straw mulch – applied in early December, was removed in late February (this was not possible this year!). After straw was removed it was immediately replaced with a light row cover. This allowed light to encourage growth, but didn't favor heat build-up so the plants were lightly protected, but not stimulated to grow rapidly. This method is the most labor intensive, but definitely yielded the best results.

As much as we all hate frost protection, it is still imperative that the plants get sunlight as soon as possible in the spring. Strawberry growers should inspect their fields several times a week beginning in late March to make sure you are seeing emerging leaves. Focus on the earliest varieties and sample several areas along the row. But this season, if you haven't removed the mulch already, please make sure to do it IMMEDIATELY – especially as the weather will be warmer this weekend. If you do it before the rain event that is predicted it will help settle the newly moved straw making it less prone to being wind-blown. - LGM

Tarnished Plant Bug

By Sonia Schloemann, UMass Extension, UMass
Berry Notes, May 2013

ID/Life Cycle: The tarnished plant bug (TPB) is a small bronze colored insect with a triangular marking on its back. It is a 'true bug' with piercing/sucking mouthparts. The immature stage, or nymph, is smaller and bright green, resembling an aphid, but much more active. TPB is a ubiquitous feeder with a wide host range.

Tarnished plant bug overwinters in protected areas such as leaf litter, plant debris, hedge rows and brush piles. Adults become active and lay eggs in grasses, broadleaf weeds, and in strawberries in early to mid-May. The eggs hatch to nymphs in 7-10 days depending on the temperature. The nymphs may be present on the plants as early as the second week of May. The first observation of nymphs usually occurs during full-bloom period of midseason flowering cultivars. Nymphs undergo 5 stages of development. There are several generations per year.

Damage: This is the most significant insect pest in strawberries. Both adults and nymphs feed on the developing flowers and fruit, sucking out plant juices with straw-like mouth-parts. This results in deformed fruit: typically "cat-faced" berries, also called nubbins or button berries. Such fruit are generally unmarketable. Damage can cause significant crop loss. For complete Fact Sheet on TPB, see <http://www.fruit.cornell.edu/berry/ipm/ipmpdfs/tpb.pdf>.

Management

Monitoring: Monitor for TPB nymphs by shaking flower trusses over a white surface and counting the number of nymphs present. At each of five sites per field, shake 10 flower clusters over a white pan or paper to dislodge the nymphs. The action threshold for nymphs is 0.15 nymphs per blossom cluster. At this level, control measures can be applied to maintain berry quality and yield before too much damage occurs. White sticky traps are available for monitoring tarnished plant bug adults. These traps are used as an indicator of plant bug activity in the spring and a relative indication of their abundance, not as an indication of when to control this insect.

Control strategies

Cultural/Biological:

- Control weeds in and around the planting to reduce populations of this insect.
- Avoid mowing nearby fields during bloom or early fruit development.
- Avoid planting strawberries near alfalfa, which attracts high populations of TPB.
- Preserve natural enemies whenever possible by selecting spray materials that are less toxic to beneficials.

Chemical:

- Apply recommended insecticides if threshold levels are exceeded.
- DO NOT APPLY INSECTICIDES DURING BLOOM.
- If repeat applications are needed, rotate insecticides from different IRAC groups to reduce the chance of resistance development in the pest. Group designations can be found on product labels or by going to the Cornell Berry Crops Guidelines located at: <http://ipmguidelines.org/BerryCrops/>.

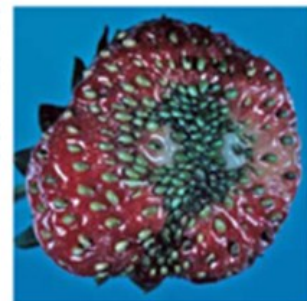
Conventional

- **Assail SG** acetamiprid @ 4.0-6.9 oz/A
- ***Brigade WSB** bifenthrin @ 16-32 oz/A
- ***Danitol EC** fenpropathrin @ 10-2/3 fl oz/A
- **Malathion 57 EC** malathion @ 1.5-3.0 pt/A
- **Beleaf 50 SG** flonicamid @ 2.8 oz/A
- ***Dibrom 8EC** naled @ 1 pt/A
- **Pyrenone crop spray 0.5EC** pyrethrin @ 2-12 oz/A
- ***Actara** thiamethoxam @ 4 oz/A (suppression only)

* restricted use material

Organic

- **Mycotrol O** *Beauveria bassiana* strain GHA @ 0.25 to 1 qt/A
- **PyGanic 1.4 ECII** pyrethrin @ 16-64 fl. oz/A



Managing Mummy Berry Shoot Strike Infections

Written by Mark Longstroth and Annemiek Schilder, Michigan State University Extension, Department of Plant, Soil and Microbial Sciences. Available online: http://msue.anr.msu.edu/news/managing_mummy_berry_shoot_strike_infections.

With spring, a blueberry grower's thoughts turn to preventing mummy berry. Warm weather has blueberries growing rapidly and leaf tissue is quickly emerging. This young tissue is susceptible to infection by mummy berry (*Monilinia vaccinii-corymbosi*).

Mummy berry needs to infect blueberries twice every year to survive. Spores from overwintering mummies need to infect the new growing shoots. This primary phase of the disease is commonly known as shoot strike. Early disease control is focused on preventing shoot infections. Infected shoots die and spore from these infections are spread to the flowers during bloom.

The primary phase of mummy berry (shoot strike) is on the left side of this diagram of the mummy berry life cycle. Source: Michigan Blueberry Facts: Mummy Berry (E2846)

Mummy berry apothecia, called trumpets or mushrooms, have emerged from the mummies in southwest Michigan. Mushroom numbers so far are low to moderate, perhaps due to drier conditions since mid-April. Rains may result in a second or third flush of apothecia. If apothecia are present as well as green leaf tissue, blueberry growers need to protect against mummy berry.

Table 1. Mummy berry shoot infection conditions.

Wetness	Average temperature (F) during wet period				
	36	43	50	57	65
Duration (h)					
2	0	0	0	0	0
4	0	0	0	0	0
6	0	Low	Low	High	High
8	0	Mod	High	High	High
10	Mod	High	High	High	High
15	Mod	High	High	High	High
24	High	High	High	High	High

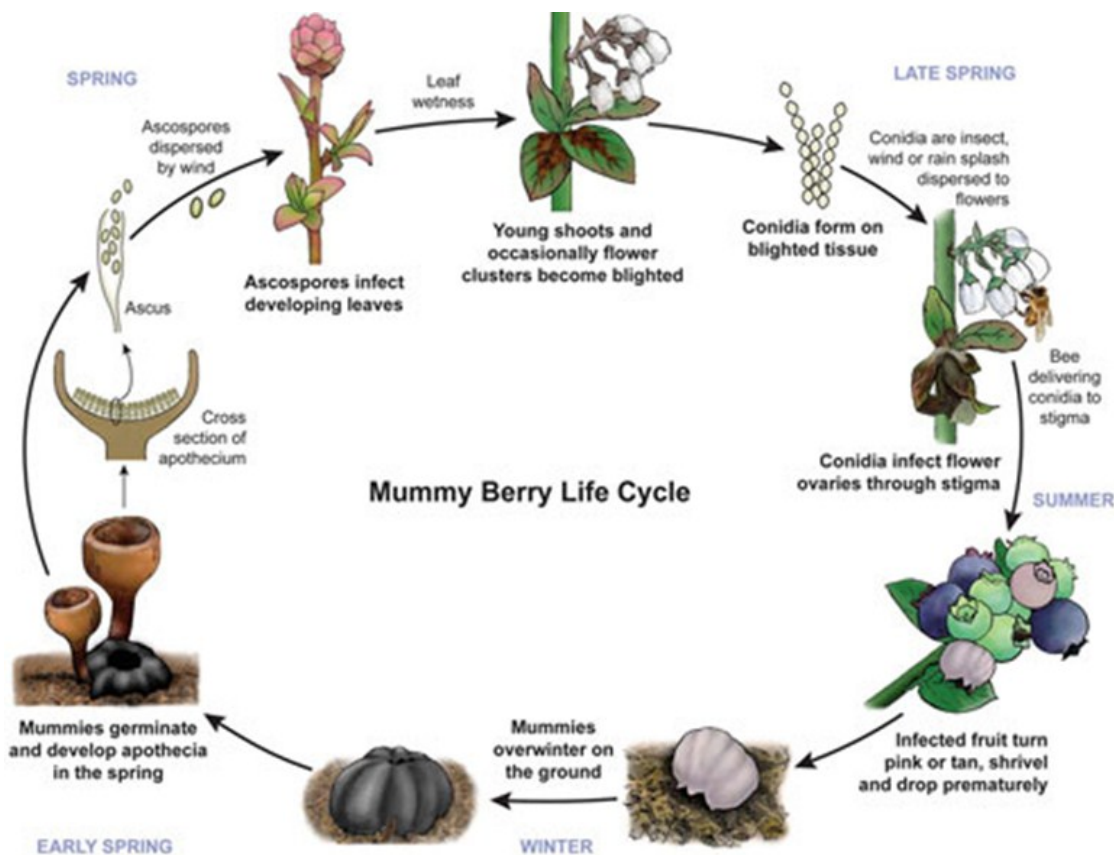
Source: Paul Hildebrand, Ag Canada, Nova Scotia

As the leaf buds expand, the exposed leaves are susceptible to infection by ascospores from the apothecia. Ascospores are often discharged in the morning when relative humidity drops and the wind speed picks up. Ascospores are dispersed by the wind and can move a good distance from the apothecia. Spores can blow in from neighboring fields or from volunteer or wild blueberry bushes around the field. Growers should monitor their fields for mummy berry trumpets and watch the weather to anticipate disease infection periods.

The ascospores need water to germinate. For an infection to occur, the leaf tissue must be wet long enough for the

fungus spore to germinate and infect the young tissue. Paul Hildebrand of Ag Canada in Nova Scotia has determined the infection conditions necessary for shoot infection in lowbush blueberry; these seem to hold up for highbush blueberry as well. At 57 degrees Fahrenheit (14 degrees Celsius) with adequate moisture, infection occurs in five to six hours. At 36 F (2 C), 10 hours of leaf wetness are required for infection. The warmer the temperature, the shorter the wetting period required for infection. The optimum

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Managing Mummy Berry Shoot Strike Infections, continued from p. 5

temperature for infection is about 68 F. Over 80 F, conditions are less favorable for fungal growth and the fungus needs longer wetting periods for successful infection.

Growers can use Table 1 to estimate risk in their blueberry fields. You can also use Michigan State University's [Enviro-weather](#) website to monitor for mummyberry infection conditions. There is no specific mummy berry model, but blueberry growers can use the [Multi-Crop Disease Summary](#) tool in the fruit section of [Enviro-weather](#). This tool reports the hours of wetness and the average temperature during a wetting period for all the stations in the region. The columns for duration and average temperature are located near the middle of the table. This tool can be used to estimate the risk on your farm by comparing similar or nearby stations. This allows growers to determine the disease risk during or soon after wetting events. In 2014, we plan to have a mummy berry model available for Enviro-weather.

Another important disease control decision is what fungicides to use in your mummy berry control program. Some of the more effective mummy berry fungicides are shown in Table 2. Some materials work well against both phases of the disease, but most are better against one or the other. Fungicides that are effective at preventing shoot strike are materials that are good at protecting young leaf tissue, usually under cooler spring temperatures. The table groups materials by whether they are systemic or protectant fungicides.

Protectant fungicides are deposited on the surface of the plant and kill fungal spores as they germinate. Protectant materials need to be applied before the infection event to be effective. Systemic materials are absorbed into the plant and kill the fungus as it tries to penetrate the plant. The table also shows the FRAC (Fungicide Resistance Action Committee) code. The FRAC code indicates the mode of action of the fungicide. To reduce the risk of fungicide resistance in the mummy berry fungus, it is a good idea to use fungicides with more than one mode of action to control mummy berry. This can be done by alternating materials with a different mode of action (FRAC code) between sprays or mixing materials with different modes of action.

The new fungicide Quash is as effective as the current grower standard Indar. Quash has a seven-day PHI (Indar and Orbit have a 30-day PHI) and has excellent activity against phomopsis and moderately good activity against anthracnose fruit rot. Quash, Indar and Orbit all belong to FRAC group 3, meaning they are sterol inhibiting (SI) fungicides and have the same mode of action. There are minor differences between

the compounds in the same group, so some are more effective than others against the same disease.

The SI fungicides are readily absorbed into the leaves and kill the fungus as it penetrates the leaves. This group of fungicides moves throughout the leaves where they were applied and provides protection until the growth of the leaf dilutes the fungicide concentration, making it no longer effective. This period of protection is about four to five days or less, depending on the rate of growth of the plant. The SI fungicides can kill the fungus soon after the initial infection while the fungus is still small. This ability to kill the fungus after the initial infection gives these materials back action of about 24 hours. This gives growers the ability to wait for an infection period before applying a fungicide control.

FRAC group 11 comprises the strobilurin fungicides (e.g., Abound, Pristine). These materials are absorbed as well, but are generally weaker at killing fungi after an infection, i.e., they have less post-infection activity, and Cornell Berry Crop Guidelines <http://ipmguidelines.org/BerryCrops/> recommends they only be used as protectant fungicides and should be applied before, not after, infection periods.

FRAC group 11 fungicides tend to have a strong affinity for the waxy layer on the plant surface and are less susceptible to wash-off from rain. However, they have a high risk of fungicide resistance development and a lower efficacy against mummy berry shoot strike. These products are recommended for application at or after

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Table 2. Fungicide efficacy against mummy berry in blueberries

Fungicide		Specific infection controlled	
Trade Name	FRAC Code	Shoot strike (primary phase)	Fruit rot (secondary phase)
<i>Systemic fungicides</i>			
Indar	3	+++	+++
Quash	3	+++	+++
Orbit	3	+++	++
Omega	3	++	++/+++
Pristine	11/7	++	+++
Quit Xcel	11/3	++	++
<i>Protectant fungicides</i>			
Serenade + Nu-Film	44	++/+++	++
Sulforix	M2	+++	++
Bravo	M5	++	+
Ziram	M3	++	++

Managing Mummy Berry Shoot Strike Infections, continued from p. 6

bloom, when they also control other diseases such as phomopsis and anthracnose.

Finally, there are the true protectants such as Ziram and Bravo. FRAC codes beginning with M denote that the group has multiple modes of action and are less susceptible to fungicide-resistance problems. Protectant materials remain on the plant surface and are often tank-mixed with systemic materials. The advantage of mixing

two materials with different modes of action is that it reduces the risk of fungal resistance to a specific group of fungicides and mode of action and giving a longer period of control with a protectant material on the outside of the plant.

An effective mummy berry control strategy requires that growers understand the disease and the strengths and weakness of the control products available to them.

2014 Weather Table—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. For more information about NEWA and a list of sites, please visit <http://newa.cornell.edu/>. This site has information not only on weather, but insect and disease forecasting tools that are free to use.

2014 Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50° F			Rainfall Accumulations		
Site	2014 Weekly Total 4/28-5/4	2014 Season Total 3/1 - 5/4	2013 Total 3/1 - 5/4	2014 Weekly Rainfall 4/28-5/4 (inches)	2014 Season Rainfall 3/1 - 5/4 (inches)	2013 Total Rainfall 3/1 - 5/4 (inches)
Albany	15.1	73.1	95.5	0.85	5.36	4.98
Castleton	18.5	74.1	97.7	1.12	5.77	0.90
Clifton Park	10.6	55.7	82.4	1.13	6.01	5.71
Clintondale	28.2	96.6	114.4	2.65	8.79	4.37
Glens Falls	19.0	69.7	78.5	1.12	6.15	5.76
Guilderland	13.5	54.0	72.5	.02¹	.47¹	.55¹
Highland	32.0	98.4	125.8	2.38	8.59	2.16
Hudson	22.8	86.3	108.3	1.26	5.82	3.87
Marlboro	26.0	78.9	105.5	1.94	7.68	3.18
Montgomery	26.0	80	94.5	2.95	8.41	4.16
Monticello	8.1	41.5	61.0	0.76	4.23	0.08¹
North Easton	10.6	55.7	105.2	N/A	N/A	1.29
Peru	14.4	48.7	49.3	1.20	4.88	1.42
Shoreham, VT	11.7	49.7	91.9	0.85	5.09	4.40
Wilsboro	9.1	40.3	84.3	0.70	3.45	2.15

¹—These units were not properly working in 2013.

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