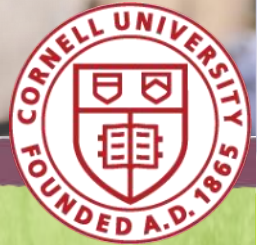


Vegetable News



When Can I Harvest My Sweet Potatoes?

Chuck Bornt, CCE ENCYHP

This year with all the heat we had in July, sweet potatoes have developed faster than normal. So, when can I harvest my sweet potatoes? Simple: whenever you have the size you are looking for and the number of roots your happy with. Sweet potatoes can be dug at any time roots reach a marketable size. However, sweet potatoes do not reach their full potential flavor until they have been dug and properly cured – so digging them is only half of the work! If you are an Irish potato grower, remember that sweet potatoes are nothing like your standard Irish potatoes. In fact, they have very little in common. Sweet potatoes are much more delicate and require more attention when harvesting and storing.

Keys to sweet potato harvesting:

1. Do not let the roots get exposed to cold temperatures (less than 50oF), especially soil temperatures. Sweet potato vines can be hit with a light frost, but when roots are exposed to prolonged colder temperatures, they can form an internal white ring of tissue which really decreases the quality of the root. The roots will not store as long or taste as good. That is also why we recommend storing sweet potato roots at or around 55oF.
2. Mowing or cutting the vines will help make the harvest go easier, but it will not help “set” the skins or “toughen up” the skins as it does with regular Irish potatoes. You can mow and dig sweet potatoes the same day and the skins would be no different than if you cut the vines two weeks prior to harvesting.
3. If you are using a mechanical digger such as a potato digger to harvest your roots, make sure you run the chain as slow as possible and carry as much dirt up the chain as possible to reduce the amount of bouncing that occurs. The sweet potato has a thin, delicate skin that is easily broken. Any cuts, bruises, or skin abrasions will reduce quality and storability significantly. It might even be worth taking the shakers off of your digger to reduce the amount of bouncing of the roots on the rods. The longer the chain, the more dirt that can sift down through the rods exposing the roots which can then allow workers to pull the roots off the digger before they are put back on the ground.

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This would eliminate one more potential bruising opportunity.

4. What should you put the roots in? When picking up your sweet potatoes, use some kind of slotted crate or small bin that will allow air to flow through them. Instruct your workers to gently place them in these containers. If picking up with buckets and dumping into bins, reduce the distance the roots have to fall as much as possible. This will help reduce cuts and bruises.

5. Do not wash your roots until you are ready to go to market with them! Remove as much dirt as possible when digging, keep them dry, and place directly into the harvest containers. These containers should then be taken to an area to cure.

6. You need to cure them after harvest for several reasons. First, curing allows any cuts, abrasions or bruises to heal which allows for better storability of roots. Second, curing

is when the roots develop their flavors and starches are converted into sugars which give sweet potatoes their sweetness.

7. Ideal curing conditions are a temperature of 85°F with 90% humidity for 5-7 days. At this time of year, empty greenhouses can be an excellent place to cure sweet potatoes, but there are a couple of things that need to be done. First, floors of the greenhouse should be watered several times a day in order to keep the humidity levels at 90%. Second, make sure fans are set for 85°F and the heater is turned on and set to keep the greenhouse as close to 85°F night.

Once your sweet potatoes are cured, store as close to 55 - 60°F as possible, but no lower, and maintain a high humidity. If done properly, sweet potatoes should easily store into February and even into April if conditions are right.

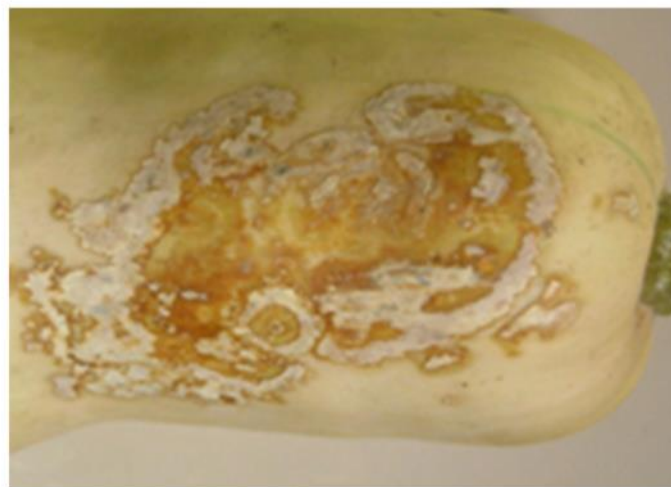
Look for Black Rot During Squash Harvest

Crystal Stewart & Chuck Bornt, CCE ENYCHP

Black Rot can infect all of the vine crops, but tends to be most destructive on butternut and other "buckskin" type squash. What makes this disease interesting is that it has two stages on the plant. The first stage infects the cucurbit foliage and is referred to as Gummy Stem Blight, *Didymella bryoniae*. It looks like many other diseases and environmental stresses, so can be easily

overlooked. The other stage is known as Black Rot (*Phoma cucurbitacearum*) and is the one that is easily recognizable as the "rust" we see on butternuts. You can find it in the field at harvest or fruit can appear clean, but when put into storage can develop symptoms. On pumpkins it will appear as a sunken area that bleaches in color and turns black.

Once black rot gets to this stage, it is impossible to control. Control needs to start back when purchasing seed and selecting which fields to plant your cucurbit crops in. The disease is both soil and seed borne so a minimum 2-year rotation out of cucurbit crops is recommended and



purchasing only high quality seed will help. Additionally, reducing the amount of feeding injury (both foliar and on the fruit) by insects such as cucumber beetles, aphids and squash bugs and controlling other diseases such as Powdery Mildew will help the plant be less susceptible to Gummy stem blight/Black rot infection. I have learned that fungicides applied when the plants begin to set fruit can also

reduce disease infection. Even though we do not recommend the FRAC group 11 strobilurin fungicides (Quadris, Pristine etc.) for Powdery mildew control anymore, they are still effective in controlling Gummy Stem Blight and Black Rot but as stated previously, need to be applied starting when the fruit begin to develop. For most growers cultural controls can keep this disease in check.

As mentioned in last week's storage article, it is vitally important to handle the fruit as carefully as possible. Part of this handling process should involve separating fruit that has black rot symptoms from

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fruit that does not and storing them separately to reduce spread. Any kind of wound, especially where stems puncture fruit when harvesting, is a perfect site for infection to get started. This goes for winter squash, pumpkins, gourds etc. Any kind of rough handling opens the fruit for not only black rot, but other diseases such as

bacterial soft rots etc. This also includes when moving bins from the field to storage—the more the fruit is jostled in the bins, the more bruising can happen and the more black rot infection can occur, especially if you have rough farm roads!

Black Mold Management in Onions

Ethan Grundberg, CCE ENYCHP

Black mold (*Aspergillus niger*) on onions can be a serious concern when bulbs are maturing during hot, humid weather. However, multiple field experiments conducted both by Cornell and University of Georgia faculty have shown that **there is no statistically significant improvement in black mold reduction from late season fungicide applications once leaves have dried**. The same studies have, however, concluded that in-season foliar fungicide programs that are targeted to manage other foliar diseases (botrytis, stemphylium, and purple blotch) **DO** reduce the incidence of black mold in storage. Those interested in more detail on these trials should refer to the research done by Hunt Sanders et al in 2013-14 starting on page 37 at https://secure.caes.uga.edu/extension/publications/files/pdf/AP%20114_1.PDF.

So if late season fungicide applications don't reduce the presence of black mold on onions, what will?



- As already mentioned, keeping up with an effective foliar fungicide spray program in season
- Ensuring the onions are fully mature and dry at harvest, which can be facilitated by deeper undercutting early in the harvest process or lifting later in the season once sunburn is less of a concern
- Minimizing bruising and physical injury to onions during the harvest process
- Most importantly, focusing on creating the ideal post-harvest curing and storage conditions! Ideal curing conditions are 75°F-80°F at 70% humidity for about 2 weeks. Once curing is complete, both temperature and humidity should be gradually lowered to near 33°F and 50%, respectively. Since black mold thrives at temperatures above 60°F and at relative humidity of 80% and higher, hot and humid storage and curing conditions create a prime environment for it to grow.

Fall/Winter Spinach Fertility

Amy Ivy, CCE ENYCHP

Last winter Judson Reid, Michael Davis and I set up a trial at the Cornell Willsboro Research Farm's unheated high tunnel to look at nitrogen uptake in the plant from various sources to see if there was any difference. It's commonly understood that cool soil temperatures slow the release of nitrogen, especially from organic sources, so we decided to compare some sources. We used urea (46-0-0) as our conventional source of N to compare with bloodmeal (12-0-0) and alfalfa meal (2.5-0.5-2.0) and the control treatment of no additional N.

The Agro-One soil test recommended 130 lbs of actual N per acre for the crop. Two experienced winter greens growers told us they apply 200 lbs N preplant, but we went with the lab recommendation for this study. (Note: we do have funding for another study this coming winter where we will use just one source of N but at a few different rates to see if the rates make a difference in uptake and yield). This project focused on the differences between the sources, at the same rates.

Because urea and blood meal are

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more quickly released, we split the rate for these and applied the equivalent of 65 lbs N per acre preplant, and the remaining 65 lbs in early March. Alfalfa meal is much more slowly released so we applied all 130 lbs N pre-plant. To clarify, fertilizer recommendations are for the actual nutrient, as in "130 lbs of actual N per acre". The grower then needs to do the math for the product they are using to determine how much of that product they need to apply to reach the recommended rate of N. Urea at 46% N would be applied at a much lower rate than blood meal at 12% N. If anyone has questions about this, please contact any of us on the team for a more detailed explanation and help with calculations.

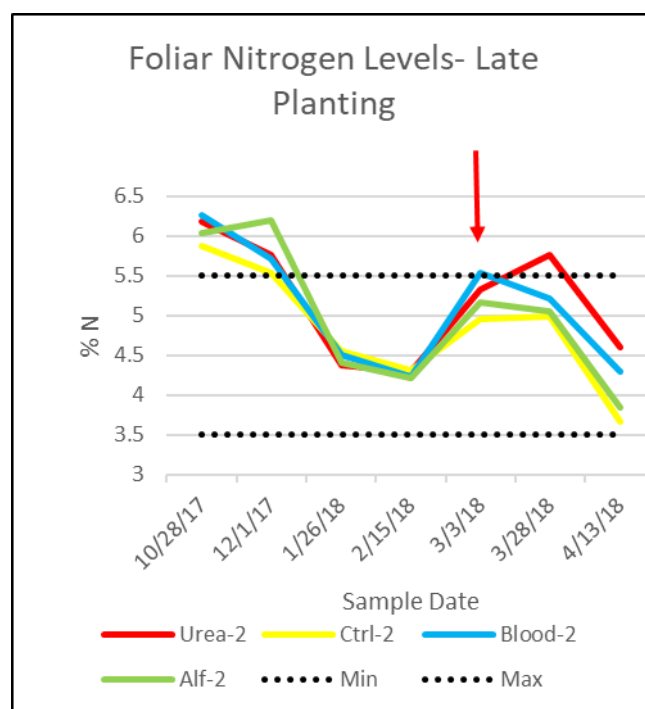
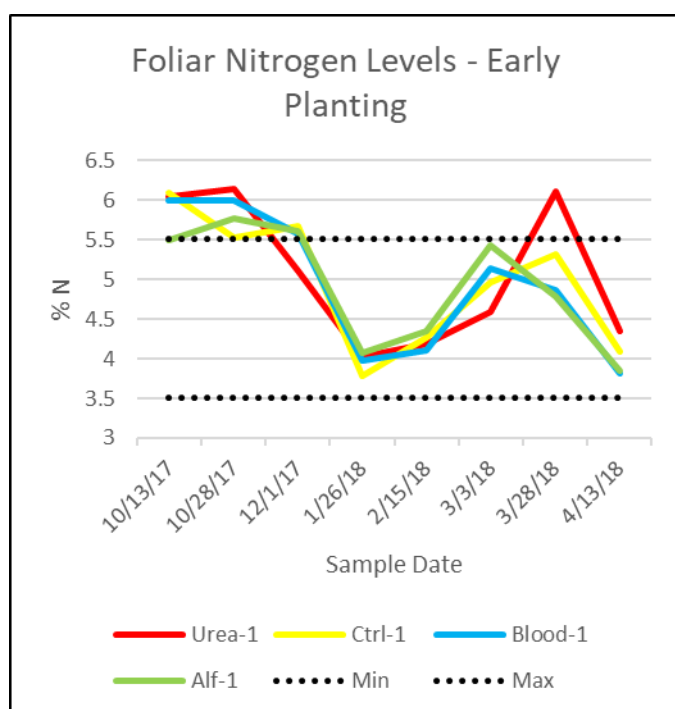
We made two plantings, on September 20 and October 6, setting out 4 week old transplants. The 20 x 48' tunnel is

cover by the north wall for the coldest location was 22.97 degrees

- Minimum soil temperature (2" deep) under the row-cover near the center of the tunnel for the warmest location was 27.54 degrees
- Minimum air temperature (12" above the soil) in the tunnel outside the rowcover was -14.01 degrees

Weather highlights from the NEWA weather station at the research farm:

- The minimum air temperature was -15.7 in December and -19.5 in January
- There were 7 days each month, December and January, with temperatures below zero.



Above graphs show nitrogen levels over time in both early and late plantings. Red downward arrows indicate when the sidedressing of urea and bloodmeal occurred. Horizontal dotted lines show minimum and maximum levels of %N (nitrogen).

At no time did any of the treatments, including the control with no additional N, drop below the minimum level of N.

moveable so we were able to move it to fallow ground to eliminate any residual nutrients in the soil. We harvested the crops as they grew, all the way until May 3rd. This is longer than most growers would leave a winter crop but we were curious to watch the N levels as the season progressed (see the graphs below).

A double layer of rowcover was laid over low hoops once the weather went below freezing. From the 3 dataloggers inside the tunnel (with no supplemental heat) we found:

- Minimum soil temperature (2" deep) outside the row-

Here are some of our conclusions:

- Throughout the project the foliar samples from all treatments showed similar levels of N, regardless of the treatment, including the control that had no nitrogen added. The levels started out excessive then moved to the average range for the remainder of the trial (see the graph for details)
- Alfalfa meal had a negative impact on the seedlings in the early planting. The leaves in this treatment yellowed and had lower N levels in the foliar tests. These levels evened out after the first few weeks. The later planting was not so noticeably affected.

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- Foliar nitrogen levels were higher in Urea plots than the other treatments after the March 4 side dressing. These levels dropped off by mid-April.

The highest yields were in the blood meal and urea treatments in both the early and late plantings.

- In the early planting:
 - ◊ Urea had a 29% **greater** yield than the control
 - ◊ Blood meal had a 24% **greater** yield than the control
 - ◊ Alfalfa had a 2% **lower** yield than the control

- In the late planting:
 - ◊ Urea had a 17% **greater** yield than the control
 - ◊ Blood meal had an 11% **greater** yield than the control
 - ◊ Alfalfa had a 12% **lower** yield than the control

To view the complete final report for this project visit:

https://enych.cce.cornell.edu/submission.php?id=602&crumb=greenhouse_and_tunnels|greenhouse_tunnels

How Long Do Fungicides Work?

Maire Ullrich, CCE ENYCHP

In this season of unrelenting leaf-wetness and heavy rains, the question of how long fungicides remain active in the field has come up frequently. Those of you who grow onions remember that Dr. Lorbeer, for the Blight Alert system, used to prescribe a re-evaluation of spray decision if it had rained at least 1 inch or was more than 7 days since the last spray. Now, that was many years ago before some of the surfactants and spreader/stickers are what they are today. It was also before climate change had generated the kinds of storms we see quite regularly now with high winds and pounding rains. More recent studies have shown that 0.1-0.25 inches of rain can wash off 20-50% of protectant fungicides but that it does take 1-2 inches of rain to significantly reduce protection.

That being said, there is some guidance out there to reflect on whether a new spray is needed and when. This information was gathered from a variety of sources (see below) as well as for a variety of crops and diseases so it may not be completely applicable to your situation but hopefully helpful guidelines, nonetheless.

The first consideration is the type of fungicide you applied – systemic or contact. See below for a general list separating them but they are grouped this way:

Systemic: get inside the plant to protect it from disease. Systemic chemicals can take up to 24 hours to enter the plant to reach maximum efficacy so rains immediately after application may wash them off before hours have passed. Some surfactants can increase this uptake but follow label directions carefully or you could reduce efficacy. Systemic fungicides can be localized in that they protect the cells in the vicinity of where they entered the plant or can travel throughout the plant to varying degrees. Systemic fungicides are like you taking oral antibiotics for an infection.

Contact: work on the surface of the plant to prevent disease from surviving, reproducing on, or penetrating leaf tissue. Contact fungicides are primarily preventative and are like putting Neosporin or some other topical medicine on a cut immediately after injury.

Another way to classify fungicides is that they are called “preventative” “curative” or “eradicant”. Preventative fungicides are just that. They prevent the disease from infecting the plant sometimes by just creating a physical or chemical barrier on the leaf. Curative fungicides cannot entirely cure, especially if the disease cannot be eliminated from the plant environment. However, curative fungicides, if used early in infection cycle, can reduce symptoms enough to present like a “cure”. Eradicant fungicides are usually highly effective fungicides that can have a marked effect on diseases that are well-established in/on the plant.

The bottom line is that you want to:

- Apply fungicides before infections develop. Utilize weather and disease information from applicable predictive models to help decide when to start fungicide applications for which diseases.
- Apply fungicides at least a day before rains or overhead irrigation.
- Refrain from using surface water for overhead irrigation water as much as possible.
- Utilize recommended systemic fungicides in rainy seasons.
- Use combinations of systemic and protectant fungicides. Plant pathologists trial combination sprays that are more effective than the sum of the individual chemicals.
- Use adjuvants that increase rain fastness. Consult the labels of both the fungicide and sticker to be sure they are compatible otherwise you could reduce

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fungicide efficacy.

- Rotate fungicide mode of actions. Use FRAC codes to know which brand/chemical names are same mode of action. Resistance management is important to future disease management options.
- Use recommended nozzle/gallonage/pressure/droplet size for the chemicals in the tank to achieve best coverage.
- Before you suspect you have a fungicide failure, be sure they symptoms are a disease and not a nutrient deficiency or other disease that cannot be controlled by fungicides.
- Re-apply both protectant and systemic fungicides after phases of rapid growth to protect new and rapidly expanding tissue.
- A general rule-of-thumb for most diseases and crops: after 5-7 days for protectant chemicals and 10-14 for systemic, evaluate the need to reapply.
- After 1" of rain, maybe less if the rain was particularly hard or high wind were involved in that tissue damage may have occurred, regardless of how many days since last spray, re-evaluate coverage and need to spray again.

Examples of Fungicide Types (1):

Protectant/Contact	Systemic
Actinovate	Abound
BlightBan A506	Adament
Bravo	Aliette
Captan	Bayleton
Copper	Cabrio
Dithane/Manzate/ Penncozeb	CaptEvate (mixture)
Ferbam	Elevate
Gavel	Elite
JMS Stylet Oil	Endura
Kaligreen/Armicarb	Flint
Lime sulfur/Sulfurix	Forum
Omega	Indar

OxiDate	Orbit
PlantShield/RootShield	Phostrol/ProPhyt
Prev-Am	Presidio
Serenade	Pristine
Sonata	Procure/Viticure
Sporan	Quintec
Sulfur	Rally
Thiram	Ranman (limited systemic activity)
Ziram	Regalia*
	Revus/Revus Top
	Rovral
	Rubigan/Vintage
	Ridomil Gold
	Scala
	Sovran
	Switch
	Tanos
	Topsin M
	Vanguard

Sources:

Michigan State University: http://msue.anr.msu.edu/news/fungicide_properties_and_weather_conditions
(1)

http://msue.anr.msu.edu/news/the_challenges_of_disease_control_during_rainy_spells

University of Georgia:

<https://site.extension.uga.edu/pecan/2017/06/how-long-does-your-fungicide-need-to-be-on-before-the-rain/>

Perdue University:

<https://vegcropshotline.org/article/10-useful-rules-for-fungicide-application/>

Considerations for Using Sound Cannons?

Maire Ullrich, CCE ENYCHP

Using sound cannons to deter birds from feeding on crops is a recommended practice, but cannons need to be (based on previous NYS Dept of Agriculture and Markets opinions on sound practices):

- only firing during daylight hours, from sunrise to sunset or less
- pointed away from homes, or at least the closest home, if possible.



- more than 500 feet from closest home
 - reasonable timing, which is staggered at 3-4 minutes or 5-10
- For more guidance, please see <https://www.agriculture.ny.gov/ap/agsservices/sapo.html>
- Also, investigate whether your town has a sound ordinance. You may be exempt for agriculture, but best to research it, too.

Agricultural Respirator Fit Testing Clinic

September 11 to 13, 2018

Registration deadline: Sept. 7

Cornell Cooperative Extension of Ulster County

232 Plaza Road (Hannaford Plaza)

Kingston, NY 12401

The New York Center for Agricultural Medicine and Health ([NYCAMH](#)) is pleased to provide a respirator fit testing clinic located in Eastern NY's DEC Region 3, which serves Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester counties.

Who should attend? Anyone who handles or applies pesticides or other materials which require them to wear a respirator. NYCAMH will provide medical evaluations; respirator fit tests; and WPS compliant trainings on how to properly inspect, put on, take off, fit, seal check, use, clean, maintain, and store respirators.

Clinic appointments are 1-hour long, and groups of 4 workers can be seen at a time. Medical evaluations, fit tests, and trainings are available in both English and Spanish.

Appointments are scheduled on a first-come, first-served basis. This is fee for service. Registration deadline: September 7

To schedule an appointment: Contact the NYCAMH office from Monday, Mon. August 13 to Fri. September 7

and ask to speak with the farm respirator clinic scheduler. We can be reached at either 607-547-6023, or toll-free 800-343-7527, Monday-Friday, 8:00 AM-4:30 PM. When calling to schedule an appointment **please have the following information available:**

- Total number of people attending from your farm
- Name of each person being scheduled
- Language spoken by each attendee

Make and model of each respirator to be tested

A respirator fit test ensures that a particular make, model, and size of respirator fits the wearer's face and will meet the wearer's needs. A fit test is specific to the make, model, and size of respirator. If a worker wears more than one style of respirator, including filtering facepieces, they must be fit tested for each one.

Please keep in mind while determining who will come to the clinic that a clean-shaven face is a necessity for masks to be effective and for fit testing to be possible.

It is important to us that your workers be protected from any respiratory hazards. It is important to us that you be protected from potential OSHA or DEC fines.

If you have any questions, please call 607-547-6023 or 800-343-7527.

Corn Pest Trap Counts

County	CEW	ECB-Z	ECB-E	FAW	WBC
Albany	40	1	2	0	13
Clinton 1	0	0	0	0	7
Clinton 2	1	0	1	0	1
Dutchess	2	0	0	x	x
Orange	12	0	0	13	0
Ulster 2	12	0	0	x	4
Ulster 3	11	0	0	x	x
Ulster 4	35	0	0	x	0

Reduced Tillage Field Day Resources Available!



Our Reduced Tillage Field Day on July 31 at the Cornell Willsboro Research Farm was a big success with 71 people in attendance visiting 6 demonstration stations. We've assembled all the resources provided that day into a pdf file on our website. Click here to access it: https://enych.cce.cornell.edu/submission.php?id=600&crumb=soil_health|soil_health

And mark your calendars for **Tuesday,**

October 2nd from 4:00-5:30 pm when Chuck Bornt, Mike Davis and I will be back at the Willsboro Farm for our Cover Crops Field Day, looking at a variety of cover crops in both sandy and clay soil plots and discussing management strategies.

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Registration fee: \$75

Register online by October
31, 2018.

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