



# UNIVERSITY OF ILLINOIS EXTENSION

College of Agricultural, Consumer, and Environmental Sciences

## *Illinois Fruit and Vegetable News*

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*A newsletter for commercial growers of fruit and vegetable crops*

*"We are what we repeatedly do. Excellence, then, is not an act, but a habit." Aristotle*

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editor, Rick Weinzierl, 217-244-2126, [weinzierl@illinois.edu](mailto:weinzierl@illinois.edu). The *Illinois Fruit and Vegetable News* is available on the web at: <http://www.ipm.illinois.edu/ifvn/index.html>. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or email address above.

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**University of Illinois Extension Specialists in Fruit & Vegetable Production & Pest Management**

### *Upcoming Programs*

- **Grape Growers Workshop, April 2, 2011.** Pittsfield Community Center, Pittsfield, IL, beginning at 1:00 p.m. Rick Weinzierl and Elizabeth Wahle will discuss early-season pest control, including identification of early-season pests, critical timing for control measures, and changes in the 2011 Midwest Small Fruit and Grape Spray Guide. Registration fees will be taken at the door starting at 12:30 p.m. and will be \$15.00 for individual IGGVA members or \$20.00 per vineyard or non-IGGVA member. The Pittsfield Community Center is located at 224 West Washington Street. From Springfield, take I-72 west to Exit 35. Take US-54/IL-107 south to Pittsfield. Follow US-54 as it joins IL-106 and becomes Washington Street. For more details or if disability accommodations are required, contact Elizabeth Wahle at (618) 692-9434 x-21 or by email at [wahle@uiuc.edu](mailto:wahle@uiuc.edu).
- **Central Illinois Sustainable Farming Network** field days and workshops include **Propagating High Yields: How Producing Transplants On Farm Bring Higher Yields In Hoop Houses and in the Field, April 2, 2011**, 9:30-noon (registration starting at 9:00 am), PrairieErth Farm, 2047 2100 Road, Atlanta, Illinois, **Growing Small Fruit and Developing Value-Added Products, April 16, 2011**, 1:30-3:30 pm (registration starting at 1:00 pm), Teresa's Aronia Acres, 1566 CR 400 N, Congerville, and Teresa's Fruits and Herbs, Eureka, Illinois, and **Equipment for Small Farmers, May 21, 2011**, 1:00-3:30 pm (registration starting at 12:30 pm), [Spence Farm](http://www.spencefarm.com), 2959 N 2100 E, Fairbury, Illinois. For more information, see the University of Illinois Extension Small Farms website at <http://web.extension.illinois.edu/smallfarm/events.cfm>.
- **Good Agricultural Practices (GAP) Workshop, April 7, 2011.** Kankakee County Extension Office. Phone: 815-933-8337. Register online at: <https://webs.extension.uiuc.edu/registration/?RegistrationID=5408>.
- **SW Illinois Orchard Twilight Meeting, April 14, 2011.** Backwoods Berry Farm (Dale & Becky Conrady), 27244 Hettick Scottville Road, Hettick, IL. Program begins at 6:00 p.m. and will include discussions led by UI Extension on early season insect and disease management in fruit crops. From Carlinsville, take IL-108 west to IL-111. Turn right onto IL-111 and follow for 4.3 miles. Turn left onto CR-9. Take the first left to stay

on CR-9 and go another 4.5 miles to 27244 Hettick Scottville Road. For additional details or questions, contact Elizabeth Wahle at [wahle@illinois.edu](mailto:wahle@illinois.edu) or 618-692-9434, ext. 21.

- **Grape Growers Workshop, May 14, 2011.** Lazy L Grape Ranch, near Mechanicsburg, IL. Brad Taylor, SIU, and Elizabeth Wahle, UI Extension, will demonstrate and discuss major practices, including shoot thinning and positioning and cluster thinning and leaf removal, vineyard floor management, and petiole sampling. Program begins at 10:00 a.m., with registration at 9:30 a.m. On I-72 east of Springfield, take Exit 114 into Mechanicsburg. Turn left (east) onto W. Main Street, then right onto S. Church Street, which turns into Roby Road. Continue south past Darnell Road and turn left (east) onto Moomey Road. The vineyard is on the right (south) and visible from the road. Registration is \$20.00 for individual IGGVA members or \$30.00 per vineyard or non-IGGVA member. Registration is at the door and includes lunch. For further details, contact Elizabeth Wahle at [wahle@illinois.edu](mailto:wahle@illinois.edu) or 618-692-9434, ext. 21.
- **SW Illinois Orchard Twilight Meeting, May 19, 2011.** Broom Orchard, located 2.3 miles south of Carlinville/IL-108 on the Alton Road/Shipman Road. Program begins at 6:00 p.m. For more information contact Elizabeth Wahle at 618-692-9434, ext. 21 or [wahle@uiuc.edu](mailto:wahle@uiuc.edu).

## ***Regional Updates***

**In southern and southwestern Illinois**, the groundhog had it right, and spring growth is running early. Based on my fruit plantings (St. Louis Metro East), apricots are at pink, peaches are at swollen bud to half-inch green, cherries are at bud burst, apples are silver to ¼ inch green, and pears are at green cluster. Grapes aren't showing any significant bud swell yet, but pruning cuts are "bleeding." Strawberries are showing good leaf development and should be uncovered. Blueberry fruit buds are swelling; brambles are not suckering yet, but buds are beginning to swell. The more uncommon fruits such as Medlar, Shipova, Quince, Chinese Haw, and Azarole are in similar development stages to the more common tree fruits, but Che, Persimmon, PawPaw, and Mayhaw have yet to break bud in my location. The fruiting Cornelian cherry dogwoods just moved into full bloom. Of the nut crops, pecan and walnut aren't quite to bud break, but the hazelnuts are flowering.

Most fields are still too wet for planting or horseradish digging, but growers are primed to go as soon as some drying occurs. Rivers are in fairly good condition considering the amount of snow up north. However, the Big Muddy in the Murphysboro area is just at flood stage, the Ohio River from Paducah to Cairo is well above flood stage; and the Illinois River from Beardstown to Hardin is at flood stage.

Primary apple scab control programs start at green tip. Remember that Captan (or other sulfur containing compounds) should not be used within 14 days of an oil application to avoid phytotoxicity. For complete spray details for scab control and fungicide resistance management, see the **2011 Midwest Tree Fruit Spray Guide** at <http://www.extension.iastate.edu/Publications/PM1282.pdf>.

Remember that the best timing for dormant liquid lime sulfur/Sulfurix sprays to grapes and blueberries is just prior to bud break. With the amount of anthracnose and Phomopsis observed last year, this application is a must in order to reduce inoculum.

Note the upcoming regional programs listed at the beginning of this issue ... a grape growers workshop on April 2 at Pittsfield, a twilight orchard meeting on April 14 near Hettick, a second grape growers workshop on May 14 near Mechanicsburg, and a second twilight orchard meeting on May 19 near Carlinville.

*Elizabeth Wahle (618-692-9434, ext. 21; [wahle@illinois.edu](mailto:wahle@illinois.edu))*

**In northern Illinois**, mid- to late March brought many clear days with highs in the upper 40s to low 60s and lows in the mid 20s to low 40s. The region has recorded only 1 inch of snow in March, compared with over 27 inches in February. The ground is still frozen in much of the region, so few outdoor farm operations have begun. Some growers are starting vegetable seedlings in greenhouses. Small and tree fruits are still in the dormant state, and pruning of mature and young trees is still going on in many orchards in the region, particularly on warmer days.

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## *Notes from Chris Doll*

It was a short spring! A few days into the 70's and low 80's last week made it seem like spring had arrived and moved apples into cluster bud, peaches into the first signs of pink, pears into white bud, apricots into petal fall, and Oriental plums into early bloom. Now that it has cooled down to about 30 degrees on March 26, getting those plums pollinated will be a chore during the forecasted cold week ahead, as bees will be pretty scarce and inactive. However, the optimistic view is that plant development here should not be injured with the minimum temps in the next couple of days. A few growers and reporters remember 2007 when crops were further advanced and the cold was severe. My poor memory for this time of the year goes back to March 24, 1974, when five inches of snow fell and temperatures dropped to near zero, and that zapped the peach crop. Time will tell about your crop in the next five weeks, and we all hope that lows do not drop to the critical temperatures for killing flower buds or fruits.

Plasticulture strawberry growers can be thankful for row covers during times like this, and I can only feel for the South Atlantic berry growers who experienced both excess heat and potential cold injury during the past week. I visited Tom Schwartz near Centralia last week and saw that his matted row berries were still covered with straw without any signs of yellowing, but removal time will be in the near future. Brambles and grapes are at the early stages of growth which means that pruning, tying or training procedures need to be finished in a hurry so that buds are not lost during the process.

On tree fruits, some so-called dormant sprays went on as delayed dormant, and that should be OK. There has been enough fireblight on apples in recent years to make these sprays include coppers for reducing the infections. I've also seen that one application of oil has sometimes not been adequate for control of San Jose scale, so that second or third sprays can be made where the first application did not get complete coverage,

Crop prospects for peaches at this time are very good, as freeze injury has been minimal. A few blocks have a below normal bud set due to droughty conditions last summer but are adequate for full production anyway. Repeat bloom for some apple varieties susceptible to biennial blooming such as Goldens and Fuji are shy of flower clusters this spring. Two growers reported that NAA in three of the early cover sprays did not prevent the problem. These growers did not use any ethephon to try to help. Based on visual observations, it was another year in which clonal stocks like Bud9, M-9, and G30 showed their propensity for setting flower buds, and it will be more visible when bloom begins. In this area where summer rains were above average, vegetative growth of both apples and peaches was above average. Many apple trees have terminal growth of 2-3 feet, and well cropped peach trees had 3-5 feet of shoot growth.

Peach growers throughout the country are waiting for a size-controlling rootstock that might revolutionize peach culture in the way dwarfing rootstocks dramatically changed apple production. Rootstock studies have been ongoing in a number of states as part of an NC-140 project. A paper in the APS Journal (volume 65, pages 26-41, January 2011) summarizes one of the projects that included 14 rootstocks and 10 states and Ontario. After six years of study and measurements, they found that all rootstocks had the same capacity to bear fruit in proportion of the canopy size. Bailey, Lovell, and Guardian were the comparison seedling stocks in the test. Of the clonal stocks, Cadaman was similar to Lovell in all measured parameters. Lovell had the lowest number of lost trees and Cadaman was second lowest. Three years of yield data showed that Cadaman had the highest yield total of 81.1 kg/tree and Lovell had 67.5 kg/tree. The yield of small statured trees of Red Haven on VVA-1(Krymsk1) was 30.2 kg/tree. Lovell was slightly more vigorous than Cadaman, as shown by cross-sectional measurement. Some clones put out numerous root suckers, while Lovell had only a trace. Lots of data to digest, and the search goes on.

From the files, I found the following: HOH is the world's most predominant solvent and significant constituent of whole plant, cellular and cell-free agriculture. It is a unique combination of ingredients, unlike any other, that has been received by farmers with great interest. HOH is now offered to growers to stimulate the necessary growth for bountiful harvests. It is non-corrosive, has a high safety margin, oral and dermal, and generally approved for use on crops and for people. It solidifies below temperatures of 0 degrees Celsius and vaporizes above 100 degrees Celsius. There is nothing quite like water.

*Chris Doll*

## ***Specialty Crops and Local Foods Issues***

### ***Central Illinois Sustainable Farming Network Workshops***

The [Central Illinois Sustainable Farming Network](http://web.extension.illinois.edu/smallfarm/events.cfm) (CISFN) will hold a series of field days and workshops during the 2011 season. Workshops scheduled for April 2, April 16, and May 21 are included in the list of upcoming programs at the beginning of this newsletter. For more information on these and additional workshops, check the University of Illinois Extension Small Farms website at <http://web.extension.illinois.edu/smallfarm/events.cfm>. The Central Illinois Sustainable Farming Network's (CISFN) mission is to promote the development of local food systems in Central Illinois through farmer support and training. Network members are committed to sustainable farming and are willing to share knowledge and participate in learning opportunities. Programming for CISFN is facilitated by the University of Illinois Extension and The Land Connection and with direction provided by an Advisory Group of Central Illinois farmers.

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### ***MarketMaker's March Newsletter Available***

The March 2011 edition of the Food [MarketMaker Newsletter](http://national.marketmaker.uiuc.edu/uploads/d3b4882815c5415b21bdede4acac52f8.pdf) is available online at <http://national.marketmaker.uiuc.edu/uploads/d3b4882815c5415b21bdede4acac52f8.pdf>. To view the document, you will need Adobe Reader. If you currently don't have this program on your computer, you can get the latest version by going to <http://get.adobe.com/reader>. The March issue includes ...

- MarketMaker Business in the Spotlight - Circle G Ranch, GA
- Our new "Great Idea" column
- MarketMaker Tips & Pointers - "What Makes My Profile Noticeable?"
- Other MarketMaker News including new registrations and Buy & Sell Forum ads

For more information, email [marketmaker@extension.uiuc.edu](mailto:marketmaker@extension.uiuc.edu) or check <http://foodmarketmaker.com>.

## ***Fruit Production and Pest Management***

### ***Vineyard Cropload Balance***

As grape growers get ready for another season, they should always review the prior season to consider its impact on the productivity of vines in the coming season. The notion that the previous season may need to be taken into account when managing for this season is consistent with a viticultural concept called "Cropload Balance" or "Vine Balance."

The need to ensure that grape vines, which are perennial organisms, survive and retain their vitality from year to year is linked with vine balance. Like fruit trees, grape vines can be cropped so heavily that the vine suffers and enters the winter weakened. The following spring, even if it hasn't suffered damage as a result, it will probably have a lower capacity for carrying a crop. If the vine continues to be cropped at an excessive level, it can be permanently stunted, or more likely, suffer winter damage due to the weakness induced by overcropping. This undermines the long-term investment that growers make when setting up a vineyard. To avoid causing stress and damage to vines, grape growers need to understand vine balance, and make management decisions that are harmonious with vine balance.

The concept of vine balance can be applied to formulas which can determine whether vines are in balance or not. The results of applying the formulas can help vineyard managers determine what steps need to be taken to maintain vine balance or to bring a vineyard into balance. Because vines are pruned annually and those prunings represent the ability of the plant to grow vegetation and produce a crop, the prunings can be weighed and used as a measure of vine balance. This is because the energy the vines gain from healthy growth is translated into tissue – new shoots, leaves, and fruit. The new tissues that overwinter – the canes – are derived from the shoots, so they represent the strength of the vine. When measured, the weight of these pruned canes is a relative measure of vine strength. When this relative measure is used to determine potential cropload, the vine will be assigned a cropload that is consistent with the energy it has for production.

A primary tool for measuring vineyard balance is the Ravaz Index. If you divide your average weight/vine yields from the previous season by the average pruning weight of the vines, this result is a ratio. The ratio should be between 5 and 10. If it is less than 5, the vines are undercropped. If it is greater than 10, the vines are overcropped. Accordingly, growers can adjust the bud count upward or downwards to shift the ratio and bring the index within the range. A longer, detailed discussion of vine balance in vineyard can be found at <http://www.extension.org/pages/33109/basic-concept-of-vine-balance>.

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### ***Caring for New Trees Before Planting***

Many nurseries have started shipping trees to their customers. The following are a few points on how to care for these trees.

First and foremost, find out from the nursery the exact date your trees will be shipped, the name of the carrier, and a tracking number if available. Call the shipping company to find out the exact date of delivery and give them your cell phone number in case the truck driver can't find you when he/she arrives at your farm.

As soon as the shipment arrives, quickly inspect the trees for signs of damage, preferably before you sign the shipping slip. If the box is damaged on the outside, open it and make sure the film liner is not damaged and there is plenty of sawdust covering the roots. Check the trees to make sure that the variety, rootstock, and caliper are correct. Each tree should have a label for the rootstock and each variety should be labeled as well. Trees of the same variety may be bundled together, but there should be at least one label listing the variety name and rootstock. Also check to see if the graft union is at least two inches above the root system (apples). If you noticed that the trees had arrived dry, if the buds have started to grow, or if the trees are not labeled correctly, call the nursery immediately and explain the problem. Don't accept the trees; ask for replacements.

If the trees look healthy, but they are shipped as bare roots, then put moist sawdust or wet rags around the roots. The sawdust should feel moist, not soggy. Fruit trees are very sensitive to low oxygen, so don't put the roots directly in water for more than a few seconds. If the trees are shipped with sawdust, make sure it is moist. Reseal the boxes and place them in a cold room. Do not trim any broken branches or roots on these trees before planting. Any damage to the trees will enhance bud break, so wait until the time of planting to make any cuts.

Trees should be stored in a cold environment to prevent the buds from breaking. The cooler should be set to about 35-40 F. A cold room is preferred, but a cellar or any non heated room will do for a short storage time. If you plan to store the trees in a fruit storage room, make sure it has been properly aerated to get rid of any residual ethylene. Ethylene is a hormone produced by most fruits. It stimulates bud break at very low concentrations. Ethylene has no smell and it mixes very easily with air, so the room should be aerated for at least a week before you store any trees in it. To speed up the process of aeration, you can use an exhaust fan to remove any residual ethylene. Make sure you bring in fresh air free of ethylene. Ethylene is autocatalytically produced in the plant, so any small amount left in the room can cause buds to start breaking dormancy. Smoking, propane powered forklifts, car exhaust, and some types of rubber will generate ethylene. Do not cover the tree tops with plastic bags, especially if you are going to store them in a cellar or non refrigerated rooms. High humidity and some ethylene will be generated by the trees stored in plastic bags, especially in late winter or early spring, so only the roots should be covered in plastic bags.

Humidity is another important factor that can affect stored trees. Make sure to place a humidifier or at least an open pan of water in the room to increase the humidity. Lay the trees flat on the ground or raise the bottom of the tree a little higher than the top so their buds will not germinate quickly.

If you plan to store trees that you dug out of your own nursery, it is best to store them in pots of soil or peat moss. Water will evaporate from the pots and some of it will be taken up by the trees, so make sure to add water to the pots even in cold storage. Check your cooler temperature frequently and make sure the temperature in the room is set correctly. A thermometer is the only way to determine the exact temperature in the room.

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## ***Using Degree-Day Models in Fruit Insect Management***

The March 7 (2011) issue of this newsletter presented some guidelines for trapping key insect pests of Illinois fruit crops and noted that information from traps is often best used in conjunction with weather data and degree-day (phenology) models. Because insect development is temperature-dependent and the rates of development of many key pests have been studied and described based on temperature, weather data can be used to predict and describe the timing of occurrence of stages and generations as seasons progress.

The basics of insect development and phenology models are described on a number of web sites, including “About Degree-Days” at <http://www.ipm.ucdavis.edu/WEATHER/ddconcepts.html>, the Insect Growth and Development page (<http://ipm.illinois.edu/degreedays/index.html>) on the University of Illinois’ Degree-Day Calculator site, and in a lecture outline for the University of Illinois’ Introduction to Applied Entomology course (<http://ipm.illinois.edu/cropsci270/syllabus/lecture15.pdf>). Readers are encouraged to consult these sites to understand the basics of degree-day models for insects.

In general, to use degree-day models in making insect management decisions, we need to know (1) when to start counting degree-days, (2) what base or threshold to use, (3) temperatures in or near the field or orchard where the pest is to be managed, and (4) background information on how many degree-days correspond with what stages of insect development as the season progresses. For the first of these – when to start counting degree-days – the answer is either a specific calendar date or the first consistent observation of adult insects in the spring, usually in a pheromone trap. This first consistent observation in the spring is referred to as the “biofix” date for that insect and differs among fields or orchards. For each specific pest that might be the focus of degree-day models, the basis for starting to count degree-days is provided on the University of Illinois Degree-Day Calculator site (<http://www.isws.illinois.edu/warm/pestdata/sqlchoose1.asp?plc=>). Thresholds (base temperatures above which degree-days are counted) are also provided for each pest on this site. Weather data (particularly daily minimum and maximum temperatures) are most accurate if measured at each farm. Simple min-max thermometers can be used, or recording devices that can be downloaded to a computer for degree-day calculations are also available. One Illinois supplier of monitoring devices and software is Spectrum Technologies of Naperville, IL ([http://www.specmeters.com/home\\_usa.html](http://www.specmeters.com/home_usa.html)). Alternatively, Illinois State Water Survey data from a location near an individual farm or orchard can be used as a slightly less accurate measure of temperatures. See the map on the Degree-Day calculator site (<http://www.isws.illinois.edu/warm/pestdata/sqlchoose1.asp?plc=>) for these locations. Background information on the relationship between accumulated degree-days and the development of stages and generations of individual pests is also summarized under the specific pest listings at this site.

So, an example ...

For codling moth in an orchard near Murphysboro, IL: The grower needs to have traps in place in apples by early bloom. In the absence of temperature data from within the orchard, the grower uses data from the nearest available site in the data base – Carbondale. The grower uses the calculator by clicking on codling moth AND the location (Carbondale) on the map (<http://www.isws.illinois.edu/warm/pestdata/sqlchoose1.asp?plc=>), then clicking on the “Calculate” link. The program asks for the biofix date (first consistent capture of moths in pheromone traps). It’s too early right now (late March) to have captured codling moths yet, but when we reach early May, the grower might type in 04/28 if flight begins then. The program uses data from the Carbondale weather station to calculate the number of degree-days that have accumulated between April 28 and the current date. It also uses historic average temperatures to predict how many degree-days will accumulate 1 week and 2 weeks into the future. To interpret these degree-day numbers, the grower can click on the link for information about the codling moth phenology model to learn that egg hatch begins around 240 degree-days (base 50F) after biofix. In general (depending on the insecticide to be used), an insecticide needs to be applied shortly before 240 degree-days have accumulated so that it will kill larvae before they enter fruits.

Fruit and vegetable insect pests for which models are available on the Degree-day Calculator site include apple maggot, bean leaf beetle, black cutworm, codling moth, Colorado potato beetle, corn flea beetle, western corn rootworm, European corn borer, European red mite, fruittree leafroller, oriental fruit moth, peachtree borer, San Jose scale, seedcorn maggot, spotted tentiform leafminer, squash vine borer, tufted apple bud moth, and western bean cutworm.

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## ***Vegetable Production and Pest Management***

### ***Sweet Potato Varieties for Illinois ... A Rainbow of Sweet Spuds***

Sweet potatoes are very closely linked to production in the southeastern US. Louisiana State and North Carolina State Universities have the premier breeding programs for this crop, based on those states' dominance in sweet potato production. Sweet potatoes have long been regarded as too tropical a crop for areas in central or northern Illinois. Home gardeners have been growing them, but conventional wisdom was that they couldn't be grown commercially on a competitive basis with traditional southeastern locations. Research at the University of Illinois has shown that this is not necessarily the case. Studies on the Vegetable Research Farm here in Champaign and in western Kankakee County have yielded promising results. Whether or not these can be adapted to commercial fields remains for growers to prove.

If you quizzed the average person on the street, many would have no idea of where supermarket sweet potatoes originate. Those who do have some idea would correctly guess they come from the south, the land of George Washington Carver and the sweet potato pie. The few gardeners among them might say, "The growing season is too short up here to grow them well." Fortunately, this may not be true, especially with a few growing tips. Some monstrous roots have been produced from the field in Champaign, up to a current record of 8 pounds, 14 ounces. Several of the best varieties have consistently produced over 12 pounds per plant in repeated annual replicated experiments.

The difference between perception and reality may be because the variety selection available to home gardeners over the years in the north has been lacking in potential. Emphasis was on compact vines and varieties such as Bush Porto Rico and Vardaman. While they do have compact vines that take up less garden space, they are not especially productive, especially of the large jumbo roots we see in the supermarket. In addition, they both have a tendency to send their roots into far-flung locations underground, making digging a wearying chore. They seem to be compensating for their lack of vine length with wandering roots.

Once the trials included a wider variety selection, most of which came via the Seed Savers Exchange, this perception began to change. Both heirloom and more modern cultivars were available there. Red Yam and Beauregard are two that should open the eyes of any remaining doubters. They both have long vines, but a concentrated root set that makes digging much easier. Both size up early in the season, so early harvest is a possibility, even in northeastern Illinois. Left to fully mature, 12 pounds per plant, with individual roots up to 4 or more pounds, are commonplace.

How do you grow them? The most common method is to purchase slips, rooted cuttings, which are pulled from the plant beds and replanted in the field. Although these wilt and look doomed for a day or two, they quickly recover and begin to grow like weeds. You can also start your own slips by bedding roots under 3-4 inches of sand or peat/perlite mixture, allowing them to sprout, then pulling them free from the mother roots. These roots will continue to produce slips for some time after the first ones are pulled. Finding sufficient quantities of rarer varieties to plant acreage can be a problem, but growing your own can eventually multiply the available stock.

Planting on raised beds will warm the soil more quickly, particularly if the beds are covered with black plastic. The plastic will be especially effective at speeding growth during the first month after transplanting, when soil temperatures can still be sub-optimal in the field. There is no need to rush planting to any great degree. Memorial Day is a good starting point, but even later into June, planting should still yield good results with the earlier varieties. Plants stunted by cool growing conditions may be surpassed in vitality and yield by those planted after both soil and night temperatures are consistently warm.

Early weed control is important, although later in the season the foliage of sweet potatoes competes well with newly emerging weeds. With black plastic, the main trouble point for weeds will be along the edges of the plastic, where the soil cannot be effectively tilled to kill small weeds. Hand hoeing is usually the answer in the home garden, while commercial growers might use a pre-emergent herbicide in these areas. Plants are drought resistant, but irrigation to maintain even levels of soil moisture will avoid cracking and other problems of the roots caused by uneven water availability.

By late summer, the soil at the base of the plant should begin to show swelling due to the developing roots below. For early sales, digging can begin as soon as sufficient size has been reached, usually ½ to 1 pound per main root. When

digging by hand, two people, each with shovels should be on either side of the row. After the vines have been cut back and the plastic removed, each one begins to dig into the raised bed from opposite sides, starting far enough back to avoid cutting the roots, if possible. As the root mass is discovered, each shovel is worked down and partially under, until upward pressure from both sides, simultaneously, produces a slight crunch which sends the mass of roots to the surface. With a tightly clustered variety, diggers will soon get the feel of what needs to happen.

Roots are very succulent and vulnerable to cuts, scrapes, and other injuries at digging time, so reasonable care should be taken to minimize damage. Hand harvesters should wear cloth gloves to keep the roots as safe as possible. Roots should be pulled from the plant firmly, but cautiously, to keep the skin as intact as possible. Pack carefully into containers and transport with minimal jostling. Roots can be allowed to dry for a short time in the field before picking up and packing. For immediate sales, roots can be washed carefully, but for curing and storage, washing should be delayed.

For long storage, roots need to be cured, ideally at about 85 degrees Fahrenheit for 10 days to 2 weeks. If this is not possible, they should be stored as warm and dry as possible, so that nicks, scrapes, and bruises can suberize and heal over. Water content also decreases during this process, which stabilizes the roots. Once this curing process is complete, roots can be stored at lower temperatures and higher humidities for several months.

Among the revelations among average consumers is that not all sweet potato roots have orange flesh. Both the skin and flesh of roots come in a variety of colors. Skins can be white, cream, yellow, orange, red, or purple. Flesh colors include white, cream, yellow, shades of orange, and purple. While the most common leaf type is more or less heart-shaped, some have pointed lobes, others deeply divided lobes or “cut” leaves. So-called “ornamental” types have been developed with varying leaf colors, including chartreuse, red, multi-colored, and deep purple. Although some cultivars are more prone than others to flower, sweet potatoes do often develop morning glory-type flowers.

With the current stress on phyto-nutrients, “eating your colors” has become a catch phrase of healthy eaters. Sweet potatoes certainly pack a nutritional punch unmatched by many other vegetable crops. Tender young leaves and stems can also be used as a green vegetable.

Some varieties that represent the above characteristics might include **Georgia Jet**, a very vigorous, productive cultivar. Unfortunately, the roots it produces are often cracked and are subject to scruffy skin. In addition, this variety is widely regarded as having moderate to poor eating characteristics. Unfortunately, this is a very easy one to find in catalogs and garden centers.

A summary of available varieties ...

**Red Yam** is an heirloom sort that has early sizing, plump, abundant, smooth roots that can grow to huge proportions, and vigorous vines. This is probably the best eating of the highly productive, orange-fleshed varieties. Mice seek it out, which shows its superior quality, but also requires that it be dug soon after it reaches full size, to avoid severe chewing injury.

**Heart o’ Gold** is a more modern cultivar, with lots of leaves on compact vines. The roots have a pale yellow exterior, but do, truly, have hearts of gold, or really a light orange. It is quite productive, with the roots borne in fairly tight clusters.

**Hernandez** is a cultivar grown a lot commercially before the introduction of Beauregard and Covington. It has the most intense orange color in the roots of any in the collection, and is also quite productive. Carotene in this one must be off the charts. Its vines grow very long.

**Ivis White Cream** is among the “cream” of the white-rooted cultivars. The roots are fairly short and blocky with very high sugar content. Roots are usually in a compact set near the base of the plant. It has full-sized vines that can grow to 8 feet or longer.

**Jewell** is another commercial sort, which is grown on somewhat fewer acres than in past years. It has short, chubby roots with good external color. They are relatively easy to dig and quite productive.

**Korean Purple** and **Violetta** are similar varieties with magenta root skins and creamy white flesh within. They produce an abundance of relatively long and slender roots, although individual roots can reach good size.

**Maryland 810** has deep red skin, with deep orange flesh. These roots often have ridges on the skin that resemble the blood vessels on intense weight lifters. This is a very productive sort, but is also the first one Japanese beetles choose to nibble the leaves.

**Yellow Jersey** is not as productive as most of the above, but does have unique yellow roots. They are moderately closely grouped.



**Purple** is just that. It has large, rather coarse roots that are intensely purple, both inside and out. Imagine the boost of anthocyanin in these. Asian cuisines use these in a variety of ways. The roots can be long and a bit spreading, but the novelty often sells this one.

**Centennial** is a medium orange, long root, which usually has a smaller number of larger roots. Because of the length, this is not one of the easier digging types.

**Bush Porto Rico** has short vines and long slender roots. It is not especially productive, and has disappointed many home gardeners over the years.

**Boniato** is a starchy-rooted type from Cuba. Skin is deep red with off-white flesh, which quickly discolors when peeled due to the oxidation of the starch. It is very productive and may have a place in certain ethnic markets.

**Vardaman** has short, lush vines that look very healthy. Compared to the better varieties in the trials, they are not very productive, and the roots have an unfortunate tendency to split lengthwise during digging.

Among the “ornamentals,” **Tricolor** has yellow roots that resemble the garden sorts. **Marguerite** has purple skins and creamy flesh. **Blackie** has very white roots. None of these is very productive, nor are the roots produced of very good quality. They are, however, edible.

What about sweet potatoes versus yams? In the old south, only white-fleshed sweet potatoes were consumed. The orange ones were only deemed fit for livestock forage. As moist orange-fleshed types were developed and popularized, a name was sought to set these apart from the dryer, white sorts. For some reason “yam” was chosen, even though a very different root crop already went by that name. This has led to much confusion over the years, but seems to be accepted, such that all sweet potatoes are now sometimes called “yams”.

What is this other “yam”? It is *Dioscorea batatas*, while sweet potato is *Ipomoea batatas*, a relative of morning glories. Both are higher flowering plants, but *Dioscorea* is a monocot, while *Ipomoea* is a dicot, two widely different plant types. Yams have brown or black skin, which resembles the bark on a tree. They have off-white, purple, or red flesh. True yams are very popular in Africa, South America, and the Caribbean. This is the third most popular root crop in the world, behind cassava and sweet potato. Yam roots are often sold in pieces and can grow to 7 feet long and weigh 150 pounds. Yams can be used similarly to sweet potatoes in recipes. They are toxic if eaten raw but perfectly safe once cooked. They don't contain as much vitamin A and C as sweet potatoes, but sweet potatoes also vary in vitamin A content with color.

Finally, why should Midwest gardeners and farmers grow more sweet potatoes? They taste great, they are good for you, and, most importantly, they are much easier to grow than “conventional wisdom” says they are.

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### ***Less seriously ...***

Blessed are those who can give without remembering and take without forgetting.

The irony of life is that by the time you're old enough to know your way around, you're not going anywhere.

I was always taught to respect my elders, but it keeps getting harder to find one.

Every morning is the dawn of a new error.

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