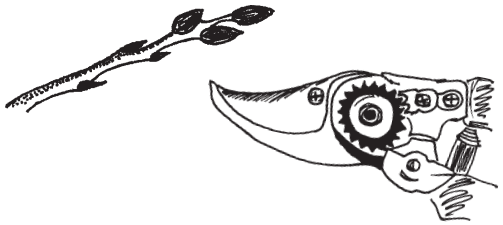
UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION

DEPT. OF PLANT BIOLOGY
SPAULDING HALL
DURHAM, NH 03824
TEL. (603) 862-3200

NEW HAMPSHIRE VEGETABLE, BERRY & TREE FRUIT NEWSLETTER

Volume 3:1 **January 2007**



APPLE PRUNING TIME? BY BILL LORD

"Is it safe to prune now" is a question I am hearing frequently this season. In the past, we have marked the start of the cold season, generally around December 1, waited 25 days or so, and assuming no warm weather extremes during that 25 day wait, started pruning. The weather this season has been difficult to gauge. It has consisted of some very moderate cold interspersed with weather that is quite warm for this time of year, but no real extremes have occurred to date.

We have to get the job started. On the plus side, the moderate weather and lack of snow cover makes the job go fast. On the minus side, it could get cold, real cold, fast…and if it does, winter injury risk is real, especially for recently pruned trees.

Start with older, less desirable trees first. Mature trees will generally survive a few years after sustaining winter injury, giving you a chance to include injured blocks in your orchard renewal plan. Delay pruning younger trees as long as possible. Each day that passes means reduced risk for injury and these are your most valuable trees.

So let's get pruning. First, it is important to define the 2 basic types of pruning cuts you could make – thinning cuts and heading cuts. A thinning cut is made by removing a branch completely either to its point of attachment to the trunk, or perhaps to its origin along a major scaffold or lateral. The tree response to a thinning cut is generally muted, consisting of a couple of adventitious shoots at or near the point of cut. These can be trained as replacement limbs if needed or removed when summer pruning.

Heading cuts (or tipping) involve the removal of a part of the previous year's growth (this is the way deer prune). In response to tipping, vegetative buds below the cut break and vigorous growth occurs. These new shoots often form a 'crow's foot' at the end of the branch, creating a dense shade canopy at the periphery of the tree, blocking sunlight penetration to interior fruiting wood.

As you might surmise, I like to put the focus on thinning cuts (whole limb removals) and leave tipping or heading cuts to those rare instances where some local growth stimulation is needed.

I like to focus on pruning the tops of older trees first. Here my goal is to keep the top narrow, reducing shading of lower, fruiting branches. If the tree is a central leader, the job is quite easy. Remove larger limbs, leaving smaller, weaker growing limbs as replacements. For trees with multiple leaders, again remove larger limbs, but this might be a bit more difficult to visualize. One type of cut often used in multiple leader trees is the bench cut. Here an upright growing branch is cut off to a more lateral growing side branch. For some apple varieties (e.g. Macoun), bench cuts may be a useful tool. My concern with these cuts in most situations, however, is that they often do not heal quickly and eventual loss of the entire branch is possible.

This emphasis on selective branch removal to improve sunlight penetration into tree canopies should be maintained in the lower portions of the tree as well. Here you will want to remove whole limbs or portions of limbs, again using thinning cuts, to reduce internal shading. In making limb removal decisions in the lower portions of the tree, focus on removal of branches that have fallen below the horizontal. Limbs that sag to horizontal or below generally lose vigor and fruitfulness and eventually die.

What about smaller trees? Here I assume you are using some variation of a single leader system. My first action is to identify that single or central leader and either remove or tie down completing shoots. Again, thinning cuts are the primary cuts employed. If the trees are trained to stakes, identification of the leader is easy. For the rest of the tree, prune only to limit limb crowding and shading, focusing on the removal of "out-sized" branches. An out-sized branch is significantly larger than others in that portion of the tree or is much larger than 1/3 the diameter of the trunk at its point of attachment. While this 3 to 1 rule is not absolute with apples, when you are training young pears or cherries, it should be.

If you are training dwarf trees in a moderately dense to dense spacing, limb location is an important factor to consider. Ideally, select laterals that grow at 45° angles from the drive row- selectively remove (or use limb positioning techniques such as tying or taping to move) those laterals that point straight at the drive row or the tree next door in the row. This will allow maximum branch extension with the least amount of tractor/operator/tree conflict.

Thoughts on pruning peaches (pure joy in my world) will come later…

Research Report: Sweetpotato Variety Trial in New Hampshire

Our objective: In 2006, we evaluated sixteen varieties of sweetpotatoes at UNH in Durham, NH. Despite a slow start and a very wet spring, we had a successful crop. We plan to repeat the trial next year. We were looking for varieties that produced high yields of good quality medium-sized tubers with fairly uniform and attractive root shapes. As a specialty crop, those with unique flesh and skin colors may be particularly interesting. Because good eating quality is also essential, we also conducted a taste test using 40 untrained tasters at UNH after harvest.

Starting plant materials: Sweetpotatoes are started as 'slips', or rooted cuttings, which are available from several suppliers. Slips are shipped in bundles at planting time (we were aiming for 6/1 in Durham – soil temp should be well above 60F at planting time because sweetpotatoes are very sensitive to chilling). Although they should have been planted immediately, one shipment arrived when soil was still too cold (5/1), and the other shipments arrived when the field was flooded. Slips from the 5/1 shipment were transplanted into jumbo 6-packs and maintained in the greenhouse until transplanting. They got slightly rootbound, which affected root shape later on (we had some really unique knotted ones), so try not to do this unless you hope to enter 'world's weirdest root' competitions. The other shipments arrived around 6/8, but the field was too wet to transplant until 6/22. Entire bundles were temporarily set into pots and kept moist until the field was ready. Although they looked stressed, almost all survived and started to grow well after transplanting.

Mulches and Rowcovers: The variety trial was planted on black plastic-covered raised beds, with no rowcovers. In a side experiment, we compared mulches (IRT vs. black), and rowcovers (slitty poly vs. spunbonded vs. none). There was a very slight (but not statistically significant) yield advantage of IRT over black mulch. Perhaps in other years, with earlier plant dates, the effect would be significant. Both types of rowcovers initially increased growth, and also prevented deer browsing. Final yields were lower in both covered treatments, probably because photosynthetic capacity was limited in mid-late summer, and rowcovers were removed too late (late August). Next summer, we will remove covers as soon as canopies fill out.

Field conditions: 25 lbs N and 200 lbs K per acre were incorporated preplant (based on soil tests), prior to laying plastic. The sweetpotatoes were sidedressed twice with 50 lbs soluble N through drip irrigation lines. Slips were transplanted 9 inches apart in single rows on 3' wide raised beds with black plastic mulch. Roots were hand dug on 9/27, removed from the field on 9/28, and were cured in an empty greenhouse until 10/10. Roots were sorted, counted and weighed before transferring them to storage at 55F. Brix, dry matter, and taste tests were done in mid-November, after roots had been stored one month.

Pests: The primary pest was deer. Field edges were severely and continuously browsed, though plants kept regrowing. A temporary poly-tape electric fence was installed in late July; two strands (approx 2' and 4' high) on plastic posts. We didn't bait, but it still prevented further damage. We expected to have vole damage, but actually had fewer than 10 damaged roots in the entire field. There was a small amount of scurf on roots of some varieties. Scurf is a fungal disease, favored by wet weather. It is primarily an aesthetic problem, and didn't noticeably affect eating or storage quality.

Measurements:

Yield: Roots were classified as 1 – no blemishes, nice shape, 2 – slight blemishes only, 3 – undersized/too small, and 4 – unmarketable due to severe blemishes. Only marketable roots (1 and 2) were considered in yield measurements. Yield is shown as both weight and number of roots from 12 plants.

Brix: Higher brix values mean more soluble sugars in the flesh, which correlates with sweetness.

Percent Dry Matter: The opposite of water content. High values mean starchier flesh, whereas lower values mean moister.

Flavor: Plain sweetpotatoes were baked, cooled, and sliced into discs. 40 non-random participants sampled room-temperature discs, and rated each variety on a 1-5 scale, where 1-poor, 2-below average, 3-average, 4-very good, and 5-my favorite! Tasters were permitted to taste as many varieties as they liked. Each variety was rated by at least 22 people.

THE RESULTS: See one-page insert for specific ratings (yield, flavor, brix, etc.) for each variety, as well as for general comments and sources where slips were obtained. With the cautionary statement that my experiences are only based on a single year's tests, here are some of the varieties I feel are most worthy of attention, and why – including limitations.

Beauregard – Yielded the most high quality attractive normal roots. Yielded as much as 30 lbs per 12 plants where protected from deer. Flavor is average, but consumers will recognize it as a typical sweetpotato, most like those available in supermarkets. Slips widely available. Early. Safest bet for commercial scale production.

Georgia Jet – Most roots were very badly cracked, reducing marketable yield and storability. Yields shown in table are low because of field location (deer damage, flooding). Yield potential was high (20 lbs/12 plants in better areas), and flavor was very good. Slips are widely available. May have less cracking in a different year. Early. Maybe a good choice for home use.

Japanese –Unusual white flesh with pinkish skin, several tasters rated it their favorite. Smooth texture was also unique. Non-uniform size and shape, and roots seemed to be easily damaged during harvest. May have niche market appeal.

Frazier White – Best of the white varieties. Roots fattened early. Very sweet, excellent flavor. Aesthetic limitations – scurf on the outer skin, and flesh of some roots had an unappealing green/gray color when cooked. Limited slip availability. A nice addition to a diverse collection.

O'Henry and **White Yam** – Both high yielding white varieties. OHenry skin had tendency to green in sunlight and have skin blemishes, and White Yam had poor flavor - very starchy and not at all sweet.

Regal – Roots were very attractive, nice shape and red skin color. Flavor good. Later than Beauregard and Georgia Jet, so perhaps better in areas where early planting is possible.

Carolina Ruby – Very attractive brilliant orange flesh, deep garnet-colored skin. Skin has unusual rough thick texture and roots tend to have unusual shapes, but the interior color wins people over. Flavor is average, but disappointing in comparison to color. Yielded well, and color adds to a mix if you are aiming for a diverse collection.

Vardaman – Outstanding flavor. Roots tended to be very small, and many had very minor cracks. With a longer, drier season this might do well for us.

Not Recommended – Centennial, Nancy Hall, Bush Porto Rico, Darby, Tainung 65, and Hernandez. Either didn't produce sizeable roots or produced very few extremely large roots.

ACKNOWLEDGEMENTS: Sweetpotato slips were purchased by Frank Mangan, UMass Vegetable Specialist. Rowcovers were provided by Ken-Bar Grower Products. Special thanks to John McLean, Evan Ford, David Goudreault, Otho Wells, and the rest of the crew at Woodman Farm for their technical assistance and advice.

New Hampshire Water User Registration and Water Use Reporting

Those who attended the 2006 NH Vegetable& Berry Growers' Annual Meeting may recall an update on NH agricultural water use regulations. I recently asked for clarification on year-end reporting requirements and procedures. Derek Bennett from NH Department of Environmental Services (NHDES) now oversees this program and provided the following information:

> "The New Hampshire water user registration and reporting program has been in place since 1987, but was recently revamped with the passing of house bill 215 during the 2005 legislative session. The passing of house bill 215 enacted RSA 488 which gave the Department of Environmental Services statutory authority to develop rules.
>
> Registration of water use is required of anyone using more than 20,000 gallons of water per day averaged over any 7 day period, or exceeding 600,000 gallons in total volume over any 30-day period (***Editor's note: 1 acre-inch, or one inch of irrigation water applied to one acre, equals 27,154 gallons. So you need to register if you apply over 5.25 acre-inches in any given 7 day period, or 22 acre-inches over a month***). Registration includes general information on the location, type, and amount of usage. In addition to completing a registration form, users are required to report monthly water use for the previous season for each registered source and destination. The reporting form is due by December 15th of each year."

The source of irrigation water doesn't affect reporting; it can be ground water, surface water, public or private. The amount used determines whether you need to report. You don't necessarily need metering devices; you can calculate water use based on flow rates and duration of irrigation. If you have any questions about the program or need a registration form please contact Derek Bennett at 271-4087 (dbennett@des.state.nh.us) or Deb McDonnell at 271-4086 (dmcdonnell@des.state.nh.us).

Subscriptions – This newsletter is free online at http://ceinfo.unh.edu/Agric/AGFVC.htm. Email becky.grube@unh.edu if you would like to receive email notification when a new issue is available. You can subscribe using the form available at the website above if you would prefer to receive a paper copy via U.S. mail.

Becky Grube
Extension Specialist – Sustainable Horticulture
(603)862-3203
email: becky.grube@unh.edu

UPCOMING MEETINGS AND EVENTS

Fri-Sat Jan.12-13. **Training for Initial Pesticide Applicator Certification Exam.** 4-9pm on Fri, 9am-noon on Sat. Bradford, NH. Contact: Rachel Maccini, 603-629-9494. **AC, O.**

Jan. 9, 18, 23 and 30. **Vegetable Growers' School.** 9:30am-3pm each day. Hooper Institute, Walpole NH. 4-part series includes Business Management, Integrated Pest Management, and Vegetable Production Basics I and II. Cost for all 4 workshops is $40. Contact: Carl Majewski, 603-352-4550 or Seth Wilner, 603-863-9200. **V, O, PAT.**

Jan. 9, 18, Wed-Thurs Jan 17-18. **Whole Foods Local Grower & Supplier Seminar,** Greenfield, MA. Free seminar for those interested in marketing locally grown foods to Whole Foods market. Contact:: Susan Phinney, 617-492-5500 ext. 3232 or email na.newitems@wholefoods.org. **AC, O.**

Fri. Jan 19. **Organic Vegetable & Small Fruit Meeting.** Meredith, NH. Topics include making compost, organic blueberry production, risk management, organic seeds, and organic management of vegetable insect pests. Snow date: Jan. 24th. Registration fee $10, lunch provided. Contact: Amy Ouellette, 603-527-5475. **V, F, O, PAT.**

Sat. Jan. 20. **NOFA-Mass Winter Conference.** Worcester, MA. Contact Jassy Bratko, jassyhighmeadow@yahoo,com or 978-928-5646 or http://www.nofamass.org/conferences/w2007/index.php. **AC, O.**

Tues-Thu Jan 30-Feb1. **Mid-Atlantic Fruit and Vegetable Convention.** Hershey, PA. For more information and registration: http://gloucester.rcre.rutgers.edu/midatlantic. **AC.**

Fri-Sat Feb 2-3. **New Hampshire Farm and Forest Expo.** Radisson Hotel, Manchester, NH. For more info, see http://www.nhfarmandforestexpo.org/. **AC, H, PAT.**

Sat. Feb 3. **Growing Wine Grapes in NH as an Alternative Enterprise.** 8:45am-3pm. Manchester, NH. Salon C, Radisson Hotel. Topics include variety selection, vineyard basics, risk management, and winemaking and fermentation. Co-sponsored by the NH Winery Association, UNH Cooperative Extension, and USDA Risk Management Agency. Registration $10 plus $5 admission to Farm and Forest Expo. Register online at: http://www.events.unh.edu/register.shtml?eventid=2689. Contact: Becky Grube, 603-862-3203. **F, O.**

Sat. Feb 3. **New England Vegetable and Berry Growers' Meeting**. 9:30am-3pm. Waltham, MA. Topics include phytopthora management, perimeter trap cropping, cost effective spray programs for pumpkins and winter squash, vinegar as an herbicide, and organic production. Cost $10 (free to NEVBGA members), lunch $16. Contact: John Howell, 413-665-3501. **V, PAT, O.**

Fri-Sat Feb 9-10. **Training for Initial Pesticide Applicator Certification Exam.** 4-9pm on Fri, 9am-noon on Sat. Brentwood, NH. Contact: Rachel Maccini, 603-629-9494. **AC, O.**

Tue-Thur. Feb 13-15. **Empire State Fruit and Vegetable Expo.** Syracuse, NY. Tuesday session focusing on Agricultural Labor; Wed-Thurs includes sessions on reduced tillage, tree fruits, different vegetable crops and much more. See http://www.nysaes.cornell.edu/hort/expo/ for more information. Contact: 315-687-5734 or nysvga@twcny.rr.com. **SF, TF, V, O.**

Wed. Feb 14. **Tri-Counties Fruit, Vegetable and Flower Seminar.** Alton, NH. Contact: Geoffrey Njue, 603-749-4445. **F, SF, V, PAT.**

Wed. Feb 21. **Greenhouse Production Basics.** Massabesic Audubon Center, Auburn, NH, 8:30am-3pm. This workshop covers basic information on getting started with greenhouse bedding plant & transplant production. Contact: Gail Ramsey, 603-649-5616. **F, V, PAT.**

Fri-Sat Feb 23-24. **Training for Initial Pesticide Applicator Certification Exam.** 4-9pm on Fri, 9am-noon on Sat. Lancaster, NH. Contact: Rachel Maccini, 603-629-9494. **AC, O.**

Wed-Thurs. Feb28-Mar1. **New England Farmers' Direct Marketing Conference & Trade Show.** Sturbridge, MA. Keynote speaker is Jane Eckert, 'Marketing with More Creativity than Cash'. Registration for both days $85, reduced fess for additional family members and scholarships are available. See http://www.harvestnewengland.org for complete schedule. Contact: 617-626-1700. **AC.**

Sat. Mar 3. **NOFA-NH Winter Conference.** Tilton, NH. Email info@nofanh.org or see http://www.nofanh.org/calendar.html for more information as it becomes available. **AC, H, O.**

Sat. Mar 10. **New Hampshire Vegetable and Berry Growers' Association Meeting**. 9am-4:15pm. Boscawen, NH. Contact: Becky Grube, 603-862-3203. **V, F, PAT, O.**

Meeting topics: F = flower, O = certified organic, SF = small fruit, TF = tree fruit, V = vegetable, AC = all crops, H = homeowner. PAT = pesticide applicator recertification credits available.

UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION

Sweetpotatoes grown at UNH Woodman Farm, Summer 2006

Variety	*Observations, 2006*	*Skin Color*	*Flesh Color*	*Supplier*
Tainung 65	Several misshapen, rattailing, huge variability in size. Not attractive.	rose	light pinkish	M
O'Henry	Uniform shape, tubers turned greenish under high sunlight, some skin blemishes	white	white/cream	SF
Beauregard	large tubers, mostly marketable and nice, some roots elongate at one end (rattail).	rose/copper	light-med orange	S
Regal	Beautiful shape, slightly too small. Later maturing?	red	med orange	M
Carolina Ruby	Unique rough red skin, many misshapen - round or very elongated. Strong sweetpotato odor.	dark red	deep orange	SF
White Yam	Slender but nice shaped roots, some scurf on skin, broken ends. Smell like irish potatoes.	white/tan	white, green streaks	S
Frazier White	Fat roots, high incidence of scurf, fewer skin blemishes than O'Henry. Early.	white	cream	M
Hernandez	Roots have tendency to elongate at one end (rat-tailing)	burnt orange	deep orange	SF
Darby	Long and skinny, most roots not filled out. Very nice color. Firm.	dark red	med orange	S
Japanese	Very uneven shape and size, ends broke off long roots, some damaged during harvest	rose	white	SF
Jewell	Some rat-tailing, slightly small and tend to elongate at one end, mild cracking tendency	light orange	pink/yellow orange	S
Vardaman	Most very small Nice root shape, need slightly longer season? Some longitidinal cracks.	gold/brown	med orange	S
Georgia Jet	Very early, moist flesh. Most cracked and scarred, all large ones severely cracked	red/copper	med orange	S
Centennial	Scrawny roots, shriveled roots. Bushy plants.	copper	med orange	S
Nancy Hall	Puny roots, cracking and very bad scurf	light tan	yellow	S
Bush Porto Rico	Scrawny, long and carrot-like roots; bush plants	tan/orange	yellow-orange	S

Suppliers:

MF	Mapple Farm, Weldon, NB, CANADA email Greg Wingate: wingate@nbnet.nb.ca
SF	Scott Farms, Lucama, NC. email: scottfarms@cocentral.com
S	Steele Plant Company, Gleason, TN. Email: orders@sweetpotatoplant.com

Dates:

Mapple Farm varieties arrived 5/1, and were transplanted into jumbo 606's in greenhouse until 6/22
Slips and plants were transplanted into the field on 6/22
Plants were spaced 9" apart on 3' wide raised beds with black plastic mulch
Roots were dug on 9/27, removed from field on 9/28 and cured in greenhouse until 10/10

For more information, contact: Becky Grube, becky.grube@unh.edu or 603-862-3203

UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION

Quality and Yield of Marketable Sweetpotatoes at UNH, 2006

Variety	*Yield (lbs) per 12 plants*	*rank*	*Yield (# roots) per 12 plants*	*rank*	*Brix (sugars)*	*rank*	*% Dry Matter*	*rank*	*Flavor*	*rank*
Tainung 65	27.9	**1**	24.0	**4**	8.3	**7**	22.3	**4**	3.6	**3**
O'Henry	18.7	**2**	29.8	**2**	8.6	**7**	24.6	**4**	2.9	**9**
Beauregard	16.6*	**2**	21.7	**3**	8.3	**7**	19.1	**5**	3.1	**7**
Regal	18.1	**3**	40.8	**1**	11.0	**3**	23.1	**4**	3.3	**6**
Carolina Ruby	14.4	**4**	18.0	**4**	10.3	**4**	23.4	**4**	3.3	**6**
White Yam	10.5	**5**	28.1	**2**	10.6	**4**	34.3	**1**	2.9	**9**
Frazier White	11.1	**5**	21.4	**4**	11.1	**3**	28.9	**2**	3.3	**6**
Hernandez	12.0	**5**	16.8	**4**	9.4	**4**	28.7	**2**	3.7	**2**
Darby	6.2	**6**	12.4	**5**	9.2	**5**	22.2	**4**	2.8	**10**
Japanese	8.3	**6**	11.9	**5**	9.1	**6**	31.5	**2**	3.5	**4**
Jewell	6.2	**7**	15.1	**5**	10.0	**4**	27.7	**3**	2.9	**9**
Vardaman	4.7	**7**	14.5	**5**	11.7	**1**	29.3	**2**	3.9	**1**
Georgia Jet	3.5*	**8**	6.7	**6**	9.7	**4**	22.4	**4**	3.7	**2**
Centennial	2.5	**8**	4.3	**6**	11.5	**2**	26.0	**3**	3.7	**2**
Nancy Hall	1.1	**8**	2.4	**6**	*nd*	*****	32.5	**2**	3.0	**8**
Bush Porto	1.3	**9**	4.4	**7**	9.1	**6**	27.8	**3**	3.4	**5**

For each trait:

Ranks is a simplified rating scale where 1 is highest.

Yields are from 3+ reps except for: Tainung 65 (1 rep), and Regal, Nancy Hall and Frazier White (2 reps).
* Yields in a larger trial of just Beauregard and Georgia Jet, yields averaged 30 and 20 lbs/12 plants, respectively.

Brix measurements are from 3 randomly chosen roots. Higher values = more soluble sugars = sweeter.
Dry matter measurements are from 2 samples each from 3 roots. Higher values = more starchy.
Flavor: Average rating of 24-40 tasters that rated baked samples on a scale from 1(poor) to 5 (excellent).

For more information, contact: Becky Grube, becky.grube@unh.edu or 603-862-3203