



NEW HAMPSHIRE VEGETABLE, BERRY & TREE FRUIT NEWSLETTER

BECKY GRUBE, EXTENSION SPECIALIST, SUSTAINABLE AG, SMALL FRUIT & VEGETABLES
GEORGE HAMILTON, EXTENSION SPECIALIST, TREE FRUITS

Vol. 1:5

August, 2005

- Summer Vegetable Diseases
- Preharvest Drop Control in Apples using ReTain
- Strawberry Plasticulture with Fall Plugs
- UNH Veggie Varieties – Brent Loy's Latest
- Upcoming Events



Summer Vegetable Diseases

This is a sampling of the vegetable diseases we're seeing around the state (or expect that we might see!)—and some effective control strategies.

Peppers

Bacterial Leaf Spot – Leaves turn yellow and drop, and scab-like spots may appear on fruit. Likes warm and wet weather, thrives when plants are experiencing nutrient stress (plants that have nitrogen deficiency or too high magnesium or calcium are very susceptible!). Many newer varieties are resistant to the races of BLS (1 and 3) that we have in this area. Copper and maneb sprays are effective in controlling BLS, and several copper materials are acceptable for organic production.

Field Tomato

Early Blight & Septoria – Both cause spots on older leaves, and like warm, wet weather. Early blight lesions have concentric rings, whereas Septoria spots are smaller and have small black fruiting structures within the lesion. Aside from sanitation, routine fungicide applications on a 7-21 day schedule after first fruit set will control both diseases. Effective fungicides include strobilurins (e.g. Quadris, Cabrio), boscalid (Endura), mancozeb/maneb, and chlorothalonil (Bravo). It is essential to rotate between fungicides to avoid pathogen resistance. Organic control options include copper products and Serenade – though the residue with the latter can pose problems.

Bacterial Spot & Speck – Both are bacterial diseases that cause small water-soaked lesions on leaves, defoliation, blossom blight and fruit lesions. Spot prefers warm conditions while speck prefers cool conditions. Applying maneb with fixed copper materials will prevent spread. Actigard, a plant defense activator, is also labeled for both diseases.

Late Blight – We haven't seen any late blight yet in 2005, which makes sense since this disease prefers cool, wet conditions. Infected plants have indefinite water-soaked areas on leaves and fruits, and may have white fungal mycelium in very wet weather. This is caused by *Phytophthora* (which also infects pepper, potato, cucurbits, and many more!). Several fungicides are effective: chlorothalonil (Bravo), mefenoxam (ridomil), strobilurins such as azoxystrobin (Quadris) or pyraclostrobin (Cabrio), among others. Make sure to rotate between groups!

Greenhouse Tomato

Powdery Mildew – Leaf yellowing and superficial mycelia growing on leaf surfaces are typical symptoms. Potassium bicarbonate sprays will help, and many are acceptable for organic production.

Botrytis & Fulvia Leaf Mold – Conditions have been very favorable for both of these diseases. Good ventilation/air flow/pruning is the most effective control, but thorough coverage on leaf undersides with Mancozeb will help.

Cucurbits

Powdery Mildew – Watch for characteristic mildew spots on upper leaves. Resistant cultivars show less PM than susceptible ones, but they are not immune and will eventually develop symptoms. At the first sign of symptoms (1 or more leaves infected out of 50 examined), a weekly spray program will slow its spread. Once established, PM cannot be controlled well. Rotate between the sterol inhibitors (Nova, Procure, etc.), strobilurins, and benzimidazole

(TopsinM), and tank mix every time with a protectant like chlorothalonil or maneb.

Plectosporium – This disease likes cool, wet weather, and we haven't heard any reports yet in 2005. Scout for small diamond-shaped white lesions on stems or leaves. Weekly sprays with chlorothalonil or the PM spray program above will control the disease.

Preharvest Drop Control in Apples using ReTain

The active ingredient in ReTain (Valent Biosciences) is aminoethoxyvinylglycine (AVG), a plant growth regulator that reduces preharvest drop for apples by inhibiting the production of ethylene in maturing fruit. Here are some tips on effective rates and application techniques from Dr. Jim Schupp at Penn State.

ReTain (AVG) is an expensive chemical to produce, and the maximum rate of AVG allowed by the label is at the low end of the effective range for most apple varieties. For most applications we need every molecule we apply to be absorbed and do its duty. One exception to this rule is low ethylene varieties. Low ethylene producers such as Gala are strongly influenced by AVG, while ethylene production is much harder to control for high ethylene varieties such as McIntosh.

Rootstock also has a big effect on tree response to AVG. The ReTain label specifies the rate of AVG that may be applied per acre; however the tree row volume for a dilute spray in apple orchards typically varies from 200 to 400 gallons per acre, depending on the rootstock. It follows that if ReTain is applied at the same rate per acre to both standard and dwarf trees, the dwarfs are getting a much stronger dose of AVG. Since the dose response to AVG is linear, a much stronger response can be expected in blocks of smaller trees.

Fruit maturity of low ethylene varieties such as Gala on dwarfing rootstocks can be slowed with 7.5 oz (about two thirds of the full label rate) of ReTain, if timing and application recommendations are followed closely. Most varieties however, require the full labeled rate of ReTain (1 pouch or 333 grams per acre) in order to obtain satisfactory results. Trees under stress (mites, drought, etc) are less responsive to ReTain and are poor candidates for its use.

After timing, the key to getting good results with ReTain is to maximize coverage and absorption. Use a 100% organosilicone surfactant, such as Silwet L-77 or Sylgard 309 at 12 oz. per 100 gallons of finished spray mix. For optimum results, apply ReTain with 100 gallons of water

per acre and spray each row from both sides. Split applications do not enhance the performance of ReTain. A single well-timed spray will give the best delay in maturity and best control of preharvest drop.

Ideally no rain should fall for at least six hours after ReTain is applied, however if the coverage was good, the ReTain spray was applied with a full rate of Silwet, and the residue dried before it rained, you probably got most of the benefit of the spray; just monitor drop and fruit maturity closely in this block.

Application of ReTain under slow drying conditions is thought to be beneficial for uptake. Conversely, spraying ReTain on wet foliage can result in a loss of performance; due to the material dripping off before it can be absorbed. Wait until the foliage dries to apply ReTain. If you must apply ReTain to damp foliage, reduce the rate of Silwet to 6 fluid ounces instead of 12 to reduce the sheeting action and possible runoff. Another tactic that can work on a limited scale if time is running out is to first drive slowly through the block to be sprayed with just the fan on before applying the spray.

Reprinted with permission from Dr. Jim Schupp, PSU Fruit Research and Extension Center, Biglerville, PA

Strawberry Plasticulture – Establishing Fall Plugs

Several NH growers have successfully adopted an annual fall-plant plasticulture system for strawberry production—and many more are showing interest. The main differences between this system and the standard matted row system are the starting material (live plugs from rooted runner tips vs. dormant crowns) and the timing of planting (early fall vs. late spring). Advantages include improved weed control and less crop management time before the first harvest – disadvantages include higher establishment costs and fewer variety options.

Matted row timeline:

- Year 1 – plant dormant crowns in late spring/early summer; control weeds and remove runners throughout summer; apply straw mulch and/or row-cover in fall
- Year 2 – first harvest mid-June to early July; renovate bed in mid-July.
- Year 3 – second harvest; renovate or remove planting.

Fall-plant plasticulture timeline:

- Year 1 – cover crop or plant early vegetable crop; prepare beds and lay plastic mid-Aug; plant plug

plants in late Aug/early Sept; apply straw mulch between rows and row-covers in Oct.

Year 2 – first harvest late May to early July; renovate bed in mid-July.

Year 3 – second harvest; remove planting.

For those who want to try this system, here are some tips for success:

Soil preparation – Because plastic limits your ability to broadcast amendments after planting, take care of pH and nutrient needs before laying the plastic and planting the crop. Pre-plant prep should include good weed control during the preceding early summer vegetable or cover crop (Sudan grass or Japanese millet work well).

Bed preparation – The bed should be moist before laying black plastic, and drip tape should be centered. A common spacing is staggered double rows with 12" between plants on plastic beds spaced 5' on center. This is high-density, corresponding to roughly 17,000 plants per acre.

Timing of planting – Sept. 1 is a good target date; avoid planting later than Sept. 15. This is based on temperatures in Durham. If you are in a colder area, you may want to plant earlier. If plants set a lot of runners, remove them in early October.

Plug Production – Plug availability is limited, and nurseries tend to sell out early on a pre-order contract basis. Plugs can easily be produced by rooting runner tips in mid-July, but this requires a cool environment with a mist setup. For any patented varieties, you will owe royalties if you propagate them – USDA varieties (such as Ovation) can be propagated at will. Make sure to check the status of any varieties before you propagate!

Preparation for winter – Apply floating row-cover in mid-October. The goal is to provide warmth that lets the plants continue to grow and develop into late fall, but the row-cover will also promote early flowering in spring. If you want to avoid that, remove the row-cover in December, and mulch with straw for winter protection. Either way, apply straw mulch between the rows to limit contact between fruit and soil.

Post-harvest – Renovate berries on plastic by mowing foliage 2-3" above the crowns. Remove runners, either by tilling/cultivating or with a directed herbicide spray between rows. You'll probably need to remove runners again in late-September. Application of floating row-cover in October of Year 2 is optional, depending on whether you want earlier harvest the next year.

Varieties – In Bill Lord's trials here in Durham, Chandler was the most productive variety he tested using the fall

plug planting system, averaging 23,000 lbs per acre over 2 years. Cavendish, Noreaster, Jewell, Seneca and Allstar were not as productive, but still did well. Many others that he didn't test were specifically bred for plasticulture systems, including Sweet Charlie, Camarosa, and Gaviota. Adaptation and quality are probably the most important factor for most growers—so varieties that do well in matted rows for you may be worth a try in a plasticulture system. A last note - few varieties are currently available as plugs, and these sell out quickly – so it pays to plan ahead!

For more information, see the 2004 NRAES bulletin - 133, 'Production of vegetables, strawberries and cut flowers using plasticulture', available from Cornell Cooperative Extension online at: <http://www.nraes.org/nraesform.html>.

UNH Veggie Varieties – Brent Loy's Latest

Brent Loy, Professor of Plant Biology and Genetics, joined UNH 38 years ago. In the early days, his breeding work concentrated on adapting high quality melon to northern climates and increasing yield of processing squash (*Cucurbita maxima*) used for pumpkin pie filling and baby food. Locally, Brent may be best known for his hull-less seeded pumpkins that produce delicious pumpkin seeds for snacking. Plant breeding is a slow and meticulous process, but the fruits of Brent's labor are certainly paying off. Here are some highlights...

Melons Brent's melon breeding program is commercially successful, with Earligold (1986), Earliqueen (1991) and Passport (1991) melons selling widely in northern states and internationally. In 2005, two Galia-types with powdery mildew resistance (PMR) – Visa and Diplomat - reached the seed catalogs, along with an 'Earliqueen' type with PMR and fusarium resistance, called Halona. Currently, Brent is breeding PMR into Athena-type melons. Athena-type melons are characterized by their oval shape and lack of ribbing. They ripen mid-season, ship well for a ripe-picked melon and have excellent flavor. Athena-type melons are grown extensively in Georgia at present. Brent hopes to have two varieties available to northern growers in the next year or two.

Jack-o-lanterns UNH's hybrid Jack-o-lanterns represent a large portion of the commercial pumpkin market. One of Brent's goals in his pumpkin breeding is to introduce PM tolerance into hybrid varieties. Two popular pumpkins are Racer, developed jointly with Rob Johnson of Johnny's Selected Seeds, and Gold Standard, co-developed with Rupp Seeds. Gold Medal, a joint effort between Brent and Rupp's Seed Co., is now one of the best selling large hybrid pumpkins. Trickster, Hybrid Pam, Pik-a-Pie, Neon and Orange Smoothie are hybrids worth noting. Neon turns yellow to orange instead of green to orange and has a strong black stem. Neon, because of its earliness, is an exceptional choice for

double cropping. Orange Smoothie's shrivel-resistant handle and thin flesh make it a great small carving pumpkin for school groups. Brent has a new small pumpkin with a nice, uniform shape, pretty color, PMT and it's a snap to pick...this one sounds like it will be an excellent pick-your-own variety. The stem actually snaps right off the vine.

Ornamental Gourds In the near future, egg gourds will be available with several different color and pattern types. The plants are compact and high yielding. Also, a spoon gourd with 5 bands of alternating yellow and green or orange and green bands will hit the seed catalogs soon.

Glabrous Summer Squash Glabrous varieties of summer squash have smooth glossy stems, largely spineless, that can be picked comfortably. Imagine picking squash without getting itchy, irritated hands! The first variety is tentatively scheduled for commercial sale this winter.

Tomato Orange Blossom, an early orange variety with good-tasting medium sized fruit, was offered for the first time last year by Johnny's Selected Seeds. This variety has a high content of the cis form of lycopene (an orange pigment) which has more antioxidant benefits than the common red form (trans-lycopene) found in most tomato varieties. Brent is currently selecting for a larger hybrid orange tomato that will perform well when trellised.

Acorn and Sweet Dumpling Squash Brent is also developing acorn and 'Sweet Dumpling' types of squash with PM tolerance and better eating quality. Grower response to one of the new acorn hybrids has been very favorable, and tentatively, a seed company has planned production of this new hybrid. A new type of squash, somewhat resembling the high quality Sweet Dumpling, will be released in the near future, and promises to raise the bar in squash quality for this species. This new hybrid is being field tested for the first time this year.

Contributed by Amy Ouellette, UNHCE Agricultural Resources Educator, Belknap County

UPCOMING NH TWILIGHT MEETINGS AND OTHER EVENTS

UNH – WOODMAN FARM. This last statewide Twilight Meeting for 2005 will be held on August 16 in Durham. We will be highlighting research including variety trials (colored bell peppers in high tunnels and open field, and vegetable soybean – edamame), Brent Loy's breeding programs (featured in this newsletter), tree fruit IPM, and much more. We'll also unveil the new classroom at the farm – the OthoWells Room – and will serve refreshments featuring our own fruits. For more information, contact Cheryl Estabrooke at (603)862-3200.

- Thurs-Sun Aug.11-14, **NOFA (Northeast Organic Farming Association) Summer Conference**, Amherst, MA. Phone (978)355-2853 or email nofa@nofamass.org. **V, F, SF, TF, O**
- Wed. Aug. 17, **Beginning Farming on Leased Land, South Village Garden**, Acworth, NH. Contact NOFA-NH (603)224-5022. **O, V, F**
- Thurs Nov 10, **High Tunnel Workshop**. Location TBA. For more info, contact George Hamilton at (603)641-6060. **F, V**
- Tues-Thurs. Dec 13-15. **New England Vegetable and Fruit 2005 Conference**, Manchester, NH. For more info see <http://www.nevbc.org/>. **V, SF, TF, O, F**

Meeting topics: F = flower, O = certified organic, SF = small fruit, TF = tree fruit, V = vegetable

This newsletter is a cooperative effort of the Vegetable, Small Fruit, Tree Fruit, and Sustainable Agriculture Specialists and Extension Educators at the University of New Hampshire. It is published monthly throughout the growing season. Its purpose is to keep you updated on issues and research relevant to production of vegetable and fruit crops in NH.

Comments and questions are welcome. Address corrections, additions and deletions should be faxed to (603)862-2717, emailed to becky.grube@unh.edu, or phoned in to Cheryl Estabrooke at (603)862-3200.



Becky Grube
(603) 862-3203, becky.grube@unh.edu



George Hamilton
(603) 641-6060, george.hamilton@unh.edu

The use of trade names in this newsletter is for information purposes only and does not constitute endorsement of the product names or discrimination against products not specifically mentioned

DO YOU WANT TO CONTINUE TO RECEIVE the New Hampshire Vegetable, Berry & Tree Fruit Newsletter??

IF SO, please take action and subscribe to help us reduce unwanted mailings!

IF NOT, do nothing and we will remove you from the list. (Either way, you'll still receive mailings about statewide and local twilight meetings).

PAPER COPY: You can still receive a free paper copy if you request it. We are asking you to subscribe so that we can reduce the number of unwanted copies we mail out, both to cut costs and make the turn-around time faster!

ELECTRONIC DELIVERY: Do you have access to print PDF Files from the WWW? The newsletter is available online at: <http://ceinfo.unh.edu/Agric/AGFVC.htm>. If you sign up for electronic delivery, we will notify you via email whenever a new issue is available, usually about 2 weeks before the hard copy is mailed.

If you want to continue to receive a PAPER COPY, please fill out, fold and return this pre-addressed form (with a stamp), or fax to (603)862-2717.

If want an ELECTRONIC COPY, please **EITHER** return this form, or **EMAIL** the following information to: Becky.Grube@unh.edu.

Name _____
Address _____

Town, State, ZIP _____
EMail Address _____
Phone _____

Please check preferred method of delivery: Paper Copy Electronic Delivery

Type of Grower (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Retail | <input type="checkbox"/> Organic |
| <input type="checkbox"/> Wholesale | <input type="checkbox"/> Home Gardener |
| <input type="checkbox"/> Pick-Your-Own | <input type="checkbox"/> <i>Other (list):</i> |

Crops Grown (check all that apply):

- | | |
|---|--|
| <input type="checkbox"/> Strawberry | <input type="checkbox"/> Tomatoes – High Tunnel |
| <input type="checkbox"/> Blueberry | <input type="checkbox"/> Tomatoes – Field |
| <input type="checkbox"/> Brambles (Raspberry, Blackberry) | <input type="checkbox"/> Sweet Corn |
| <input type="checkbox"/> Grapes | <input type="checkbox"/> Pumpkins/Winter Squash |
| <input type="checkbox"/> <i>Other Small Fruit (list):</i> | <input type="checkbox"/> Pepper |
| <input type="checkbox"/> Apple | <input type="checkbox"/> Leafy Greens |
| <input type="checkbox"/> Peach | <input type="checkbox"/> Mixed Vegetables |
| <input type="checkbox"/> Peach | <input type="checkbox"/> <i>Other Vegetables (list):</i> |
| <input type="checkbox"/> Cherry | <input type="checkbox"/> Cut Flowers |
| <input type="checkbox"/> Pear | <input type="checkbox"/> Greenhouse/Bedding Plants |
| <input type="checkbox"/> <i>Other Tree Fruit (list):</i> | <input type="checkbox"/> <i>Other (list):</i> |

This newsletter is a cooperative effort by Specialists and Extension Educators at UNH Cooperative Extension. Its purpose is to keep you updated on issues and research relevant to production of vegetable and fruit crops in NH.

The University of New Hampshire Cooperative Extension is an equal opportunity educator and employer