



Berry Notes

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STRAWBERRY

Planting Date and Crop Load

E. Barclay Poling, NCSU

We recently concluded an excellent Preplant Strawberry Meeting series, and I thank everyone who has been involved in this summer's programs! At each of these regional meetings, we talked a lot about the exceptionally cool weather this past April and May. Remarkably mild weather throughout the month of May allowed many growers to pick past Memorial Weekend and into the month of June. Most agree that 2005 was the best-ever crop of Chandler for flavor and yield. Camarosa got rave reviews as well. Most everyone is pretty far along with their decisions on plant suppliers and varieties, but I would like to share some of the discussions that have been taking place at the summer preplant meetings about planting dates and crop loads. At the Franklin-Nash-Wilson-Edgecombe meeting (August 16), several growers pointed out how impressed they were with the overall quality and yield of a specific Chandler plug planting in their area that was made in mid-October last year, as opposed to plantings made in late September and early October, and they thought that they would change to planting their plugs slightly later this fall as a result. I also saw in the Willow Spring area (transition coastal plain/piedmont, near Clayton research station), a significant difference between an October 1 and October 7 plug planting date for Chandler. The October 7 plug planting date produced the better crop in terms of berry size, ease of picking, and sweeter flavor than plants of the same variety set one week earlier. In 2005 we definitely saw important

differences in fruit load and quality that could be attributed to just a one week difference in planting date. The later-set plugs had a more desirable number of flowers and fruits per plant (less than 50); earlier planting dates sometimes approached 100 or more! In our follow-up discussions after the formal pre-plant program in Nash County, Nash County Agent Mike Wilder asked how to best manage the problem of excess plant size (plants with too many branch crowns). The best solution is not to plant too early. With slightly delayed planting dates, we can have much tighter control of the quantity and quality of the crop produced in the spring. We have learned over many years of research and experience, that it is best to try to manage Chandler to have from 35 to 50 fruits/ plant. This type of crop is associated with only three branch crowns in early March (for NC transition piedmont/CP area). Plants with six branch crowns at this same juncture can have very serious issues for harvesting (too much all at once), and marketing (fruit size is smaller and quality is only fair). In summary, growers who are willing to plant slightly later than the usual dates in their area will have a better

opportunity to produce plants that are only “modest” in size (ideally just 3 to 4 branch crowns), and these plants will produce crops with better fruit size and flavor than larger plants. Only plants of modest size are needed to produce 35-50 fruits/plant, an optimum crop load for Chandler yields and fruit quality in every season! A grower once said to me, “It’s a lot harder to know how to take those extra crowns off than to deal with a plant that may be on the small size in late winter.” I fully agree, and the 2004-2005 season was testimony to the benefits of not rushing to plant too early. More Thoughts on Planting Dates for Strawberries Slightly earlier plantings seem to be the norm this year. In talking with plant suppliers, I have learned that many growers much as a week earlier. This could end up causing a pretty serious problem with excess plant size and crop load in spring 2006 if the fall and winter are mild. If you do take a week earlier delivery this year, don’t rush to get them all planted right away. I would stick to the planting week that is recommended for your region (see chart to right), and you may wish to explore setting one-third of the plants in the early part of the week; one-third in the middle, and one-third at the end of the week that is recommended. Don’t be afraid to experiment with even later Chandler planting dates, especially if your site has good wind protection, and if you are interested in optimizing individual berry size for a specialty type market. If the fall is on the cool side, row covers can be applied in the late fall or early winter to promote some additional growth for later set plants. Also consider a closer in-row spacing for plants that are being set on the late side; I have even seen some excellent results with 12-inch in-row spacing in situations where the grower intentionally sets a portion of the crop a week later than normal. ❖ (Source: *The Strawberry Grower*, September 2005)

RASPBERRY

Late Leaf Rust on Raspberries

Annemiek Schilder, Michigan State University

Late leaf rust has been noticed on raspberry fruit in Michigan. Typical symptoms are bright orange-yellow, powdery pustules on individual drupelets (see photo).



Late leaf rust on raspberry fruit

These are the spores of the rust fungus, *Pucciniastrum americanum*. This disease is usually considered minor, but occasionally causes serious damage to susceptible red and purple raspberry cultivars. It usually appears late in the season. Losses are primarily due to fruit infection which may make the fruit

unmarketable. The fruit is susceptible during all stages of development.

The symptoms of late leaf rust on leaves are often rather inconspicuous. On the upper leaf surface, small chlorotic or yellow spots appear that eventually turn brown. On the undersides of infected leaves, small light-yellow pustules appear with powdery spores. Middle-aged leaves on actively growing plants are most susceptible to infection. Spore masses may also occur on leaf petioles, canes, and calyces. If the infection is severe, the canes may be defoliated prematurely, which can reduce plant vigor and increase susceptibility to winter injury.

The fungus produces uredospores, which are capable of causing new infections throughout the growing season. These spores are wind-disseminated and may also be spread mechanically from infected to healthy fruit during harvest. The alternative host for this disease is white spruce (*Picea canadensis*). However, it appears that spruce are not absolutely necessary for the rust to survive on raspberries, because the disease has been found in raspberries year after year in areas remote from any spruce trees. Raspberry cultivars known to be susceptible are Comet, Heritage, Caroline, and Festival. In Canada, the summer-bearing cultivar Nova was highly resistant to late leaf rust.

Unlike the orange rust fungus, the late leaf rust fungus is not systemic. Disease incidence can be reduced by any management practice that increases airflow and reduce leaf wetness duration within the canopy. Removal of old floricanes and infected primocanes during the winter should reduce the amount of overwintering inoculum.



Late leaf rust on the leaf

In areas with white spruce, removal of leaves and other debris from infected raspberry plantings should help break the disease cycle by reducing white spruce infection in the spring. Avoid establishing new raspberry plantings near white spruce stands. Fungicides effective against late leaf rust are Nova, Pristine, and Cabrio. (Source: *Michigan Fruit Crop Advisory Team Alert*, Vol. 19, No. 3, September 7, 2004)

BLUEBERRY

Control of *Phomopsis* Twig Blight and Canker in Blueberries

Annemiek Schilder, Michigan State University

Throughout the 2005 season, cane dieback was observed in numerous blueberry fields, including in Bluecrop, Duke and Jersey. Isolations done showed that the majority of the dieback was caused by the fungus *Phomopsis vaccinii*, although *Colletotrichum acutatum* (the cause of anthracnose fruit rot in blueberries) was also found. In addition, there were some other symptoms that I call "leopard spot," a bleached area with large black spots. The fungus causing these symptoms had yet to be identified. The severity of cane dieback, especially of one-year-old canes, can be traced to the very wet summer of 2004, when many of these canes got infected. The interaction of the disease with cold injury is not well understood, however, infected canes are likely more prone to winter injury, which could have contributed to the problem. Likewise, infected canes may be more sensitive to drought stress. Since the summer has been very dry, the risk of new infections would have been slight, unless overhead irrigation was applied, which would have provided the water splash for dispersal of spores and the wetness required for infection.

The *Phomopsis* cane canker and twig blight fungus can infect young canes and twigs directly if they are wet for a long period and also enters the canes through wounds caused by harvesting equipment or pruning activities. The fungus overwinters in infected canes and twigs and produced spores from April to September, with a peak in May to June. An aggressive program to combat *Phomopsis* would look something like this:

1) Prune out dead and diseased canes and twigs, including green canes with lesions. If the bushes look very bad, mow off everything, and let new canes come up. Use fungicides to protect new canes from infection.

2) Destroy diseased canes. Ideally, they should be removed from the field and burned. However, because of the labor involved, most growers just bushhog the canes and leave the remnants lying in the row middle. This is probably not a big concern, because *Phomopsis* spores are dispersed by rain splash and consequently won't go very far (usually within a few feet of the source). It may only be a problem if the canes are lying close to or are left in the bush. While the canes are a potential source of spores, if they break down quickly,

the *Phomopsis* fungus will also be destroyed. So the better they are chopped up and in contact with the soil, the quicker *Phomopsis* will be gone.

3) Prevent canes from getting herbicide burns or other wounds (e.g., from a harvester or other equipment) which may predispose them to infection. Irrigate during dry periods (including in the fall) to reduce plant stress.

4) Protect canes and twigs with Topsin M+ Captan or Topsin M+ Ziram on a fairly regular schedule (e.g., a spray every two weeks) from early pink bud through pea-size fruit. Indar (fenbuconazole) is also very good against *Phomopsis*, so if you are spraying Indar for mummy berry anyway, you are also covered for *Phomopsis*. Bravo will also work, but can't be sprayed after bloom. Other effective products are Pristine and Cabrio. In years with a warm and wet early fall, a post-harvest spray may be useful to protect newly developed buds and young canes as well as older canes wounded by harvesting from infection. Previous research has shown spore activity to cease in early September, so sprays should not be needed after mid September.

5) Lime sulfur can be put on in the fall after leaf drop and/or as a delayed dormant application in the spring. This will reduce inoculum and fewer fungicide sprays may be needed the following season. We are currently investigating liquid sulfur and copper as dormant sprays. These products are much less expensive than lime sulfur.

6) Don't feel discouraged if you do not start seeing results immediately. One needs to keep up this program for at least two years, because it may take a year for existing infections to show. A hard winter with lots of winter injury may also make the bushes appear in worse shape.

7) There are other canker diseases out there, including *Fusicoccum* canker (in northern Michigan and the Upper Peninsula) and possibly cane anthracnose (found recently in Michigan). The control methods mentioned above should also be effective against these diseases. However, if you are not sure what is going on in your field, send in a sample to the MSU diagnostic lab for a proper diagnosis. (**Source:** *MSU Fruit Crop Advisory Team Alert, ol. 20, No. 17, September 6, 2005*)

Blueberry Website Developed

Annemiek Schilder, Michigan State University

A comprehensive website (www.blueberries.msu.edu) has been developed that provides information on all aspects of blueberry production and management. The site can be navigated easily through 'clickable categories' that include blueberry production, varieties, diseases, insects, nutritional and other disorders, weeds, pest management (with links to MSU Fruit Management Guide and pesticide labels), weather (with links to the MSU Agricultural weather network and a national weather website), and related industry and

academic links. The site was developed by a team of blueberry research and extension specialists with funding from the MSU GREEN project and the Michigan Blueberry Growers Association. The website is currently being finalized and will be updated on a regular basis; feedback on content and layout is welcome. (*Source: MSU Fruit Crop Advisory Team Alert, ol. 20, No. 18, September 20, 2005*)

GRAPE

Grape Diseases at Harvest

Jim Travis, PSU Extension

Weather conditions across the state are very variable this season. Some areas are very dry while others have received normal rainfall amounts. However, bunch rots caused by several different grape rotting fungi and sour rot organisms are not uncommon across PA vineyards. If growers observe the clusters carefully, they may be able to discern the cause of the rotting fruit.

Growers may find Botrytis (gray mold), sour rot (sour smell and fruit flies) and grapes that are shriveling into mummies. Black rot will cause berries to become mummies early in the season but the number of black rot mummies don't continue to increase the closer it is to harvest. Also, if black rot has caused berries to mummify there should be typical black rot lesions on leaves and shoots near the affected clusters. If the number of mummies is increasing as the Brix levels increase, the rot may be caused by Phomopsis or Ripe Rot. The best way for a grower to identify if mummies are caused by Phomopsis is to look for leaf or shoot lesions. There should be an association of Phomopsis leaf and shoot lesions in the area of the mummified fruit. Ripe rot is a newly recognized bunch rotting problem to us in PA. It probably has been here for years but we are just beginning to identify this problem in ripe grape bunches. The problem appears as soft fruit on red varieties that progresses to mummies as the fruit ripens above 18 Brix. On white varieties the berries appear first to be brown and then turn into black mummies. Identification can become confused since it appears that in some cases, sour rot may follow the initial ripe rot infection.

It is very important to make a correct identification this season because next seasons control strategy is based entirely on which of these rots is occurring in a

vineyard. The rots and their importance will vary by vineyard. The chemical controls and timings will be different for each vineyard and bunch rot organism. At this point in the season there is not much you can do to control these rots. In most cases the infections are occurring early in the season. They remain latent in the rachis or fruit until ripening. Preventing fruit damage will always reduce bunch rots. If you know the problem is Botrytis, a fungicide may provide some additional protection as berries ripen. Follow pre-harvest label requirements carefully. Many growers and researchers believe Botrytis is best controlled prior to bunch closure. In the case of 'ripe rot', the fruit can appear sound until it reaches 20 degrees Brix and then the rot progresses rapidly from infection that occurred earlier in the season.

If you would like to send a sample of the bunch rots in your vineyard to Penn State's Fruit Center, we will evaluate the clusters and let you know what we believe to be the problem organism. We are offering this service at no charge. The quality of our diagnosis is dependent on the quality of the fruit samples we receive. Please follow the following instructions in collecting and preparing your sample.

- Choose clusters with typical rot symptoms that have not progressed beyond 25% of the cluster. Send 2 to 3 bunches for each sample.
- Place the clusters in a plastic bag in a box for shipping with packing material that will prevent the clusters from damage during shipping.
- Mark each bag with the variety, your name and the vineyard name and the date collected. The Brix level at picking would also be helpful.

- If there are leaf lesions in the area of affected clusters, send some along in a separate plastic bag, marked the same as described above.
- Please provide any helpful observations as to how and when the rot developed.
- Provide your telephone number, address and email address.
- Send the sample early in the week so that it doesn't spend the weekend in a hot truck or warehouse.

Send the samples to:

Noemi Halbrendt
 Fruit Research and Extension Center
 The Penn State University
 P. O. Box 290
 330 University Drive
 Biglerville, PA 17307

(*Source: Grape & Barrel Newsletter, Vol. 1, No. 5, Sept. 19, 2005*)

Cool Climate Viticulture in Pennsylvania: Lessons from our Neighbor

Mark Chien, PennState University

I get inquiries from every corner of this state from people who are passionate about wine and want to grow grapes. I used to scratch my head when calls from the “frozen north” arrived but with ever-improving viticulture, what was once considered very risky business may actually be viticulturally and financially rewarding. New hybrid varieties developed in Wisconsin and Minnesota that barely flinch at -30°F make growing wine in cold places possible. But there is still hesitation about planting vinifera where winter temperatures can plunge. I discovered on a recent trip to the Finger Lakes, Riesling, one of the truly great noble European varieties, has excellent hardiness and durability in challenging climates and it can make wines of great distinction.

Why cool climate viticulture? Well, beside the fact that I'm just not a cab or butter chard kind of wine consumer - in my humble estimation, many (most?) of the best wines in the world are from cooler regions. These would include Pinot Noir, Chardonnay and Riesling. Most wine people probably do not associate “cool” with Pennsylvania. We break down into four regions – Erie and the southeast corner below the mountains are our “warm” regions with GDD exceeding 3000 and a growing season sometimes more than 200 days, making many varieties possible. But there is a cool Pennsylvania as well and they can be found in areas around southwest and northeast Pennsylvania where temperatures decrease as elevation and latitude increases. In these places the season shortens and grape culture is challenged but possible. In the U shaped section of the far north central part of the state, only Eskimos survive.

In every wine region there are two imperatives that affect variety choice – viticulture and marketing. My preference is always to plant grape varieties that are best suited to the site realities. However, to ignore market realities would be as foolish as to plant in a valley with rich soils. While Riesling was considered

DOA or MIA in the American wine market even as recently a few years ago, the variety is making a strong comeback based on a new generation of winegrowers in Europe who are focusing strictly on quality. I am encouraged that Riesling may be candidate for planting outside the warmer Pennsylvania regions. It offers a distinctive wine of great elegance that can be crafted in a variety of styles. Other varieties like Cayuga White, Chardonnay, Vidal and Traminette, are great compliments to Riesling and on the red side Marechal Foch, GR7, 73.0136.17, 70.0809.10 and other NYSAES numbered varieties, and Chambourcin, while a late ripening variety, is a contender (thanks to Dr. Thomas Henick-Kling for his advice on these choices). Among the Minnesota varieties, Frontenac, St Croix, Sabrevoir, LaCrescent, LaCrosse and others offer their own distinct flavors and while they may never sell in fancy restaurants in the city, they offer their own distinctive appeal to non-snobby palates. They are the bread and butter wines that pay the bills and survive even the harshest winters.

Site, cultivar, clone and rootstock selection are the key to success and sustainability in these cooler regions. The primary goals are to fully ripen fruit for wine quality and wood for cold hardiness. Elevation, both absolute and local, are critical factors in achieving just the right zone to ripen varieties like Riesling yet not expose the vines to drastic winter low temperatures or spring/fall frosts. Warm sites in a cool region are preferred with very well to excessively well drained soils. West to Southeast slopes of >5% with soils containing a high percentage of rock fragments is ideal. Viticulture must be performed at the highest possible level of competence to assure healthy and strong vines that will resist disease and cold. I have written before about “extreme viticulture” which is, in essence, extremely good viticulture. This is no big secret – great canopy management, rigorous crop regulation, disease and pest control, and getting the vines in balance. In cool climates, where ripening to full maturity is often a challenge, top notch viticulture is essential to attain a consistent and high

quality wine. We have the additional concern of cold hardiness but fortunately, almost anything a grower does to ripen the grapes will help to ripen the wood as well. I met John Santos at Hazlitt and John Wagner at Wagner, two of the best wine growers I have ever met, anywhere. They are innovative, observant, meticulous and hard working. Given the right tools and funding, I know they could give the best European Rieslings a run for their flavors. Hit with two consecutive winter injury years, John Wagner developed a 3-pt vine planter that mechanizes replanting while lowering costs and improving replant quality. It is an ingenious device that he hopes to patent. As they plant more acres, vine densities are increasing and care of soil selection is more serious.

I had the pleasure of attending a tasting organized and hosted by Dr. Thomas Henick-Kling and his enology group at the NY State Agricultural Experiment Station in Geneva. The invited guest was Mr. Stuart Pigott, a Brit living in Berlin who has written extensively about German wines and continues to write about wine for a variety of European publications. Along with 40 wine growers, we tasted 40 Riesling wines from around the world. It was a fascinating exercise and revealed the versatility and true charm of this grape. I'll admit right away my own bias. It was in the vineyards of the Rheingau in Germany that I first fell in love with vines, and later with wines. But I consider Riesling to be unmatched in quality and class among all white (and red?) wines due to its expressive nature and potential for character and complexity. Like Pinot Noir, it is a cool climate variety that is very terroir sensitive. In other words it is a vehicle for the true expression of typicity for a vineyard site. In the right place, like the Nahe or Mosel, the results can be unbelievably sublime. I would argue that there are fewer places in the world where truly great Riesling are grown than any other noble variety, including Pinot Noir. Fortunately, for all of us and especially the nice folks around the Finger Lakes, they are among the blessed few who share this unique terroir association. We tasted wines from great estates from Germany, Alsace and Austria. They have their own special character and, at least for me, Germany is still the benchmark. When my palate applied these criteria to a dozen Finger Lakes wines, I was able to write "classic" next to four of them and the others were pretty darn good besides. This bodes well for the lakes because if a region can make an intrinsic connection to a variety in the mind of the consumer (Napa/Cabernet, Willamette Valley/Pinot Noir) then the deal is sealed and you can go to the bank. I doubt that we can apply quite the same formula to Pennsylvania and cool climate wine growing, but if Riesling can be well made here, it can bring acclaim to sub-regions that might otherwise go unnoticed.

Riesling is a versatile grape, yet performs at peak quality only in special places. It can be harvested at low brix, bordering on unripe and still make a good wine. It is finished dry, semi and sweet with equal distinction and can offer a wide palate of flavors. And, of course, the late harvest wines with "noble rot" are among the most amazing and difficult wines to produce in the world. German wines elicit descriptors such as mineral, earthy, floral, citrus and adjectives such as racy, vibrant, and bracing. I tasted these attributes in many of the wines including those from the lakes. I am not sure what a Riesling from Sullivan County, for example, would yield in flavors but it would be interesting to find out.

The viticulture for great Riesling is daunting. Just try walking on any slope in the Mosel Valley and the absolute full concentration needed to avoid falling and rolling right down to the bottom, bouncing off the road and into the river. In his comments, Stuart told us about a visit with the great Nahe wine grower Herman Donnhoff and how he once showed him a "happy vine" that would produce phenomenal Riesling. I asked Stuart if he could quantify for me exactly what constitutes a happy vine. In our American obsession for statistics, data and parameters I mentioned measurements like cm²/g of fruit, pruning weights, shoots per meter and so on. He shook his head and made this analogy... all of that stuff, the golden rules etc., get the wine grower to first base, a significant accomplishment to be sure. But if he or she wants to make truly great wine and get to second, third and, in Herr Donnhoff's league, home plate, then you have to bring intuition, experience, art and craft to the wine growing process and know, intuitively, when you are standing in front of a vine, whether or not it is a happy vine – he used the example of Herr Donnhoff knowing how each leaf on the vine should be positioned. As my extension colleague Tim Martinson and I traveled around the lakes, it was clear that many growers had reached first, they have some of the most talented growers in the country, but none were rounding third... yet. If they are able to figure out site specificity, where the best soils are matched to the ideal mesoclimates, then the classic will become commonplace. All wines were tasted blind in flights and Mr. Pigott identified the Finger Lakes wines by consistencies or unexciting "sameness" in their style. He commented that they were perhaps a bit formulaic in composition and encouraged the wine makers to stretch their creativity in order to get more terroir expression. Here in Pennsylvania, we need to go through the same exercise. I think it exists at just the right elevation in many areas, mostly along the mountains in the Lehigh Valley, further north and the southwest quadrant of the state. After site selection, crop level and absolute top level management will ultimately decide the full potential of this grape by the lakes.

In the vineyards there were obvious drought stress symptoms in many vines we saw of all ages. The three hurricanes that blew through Pennsylvania in July followed

by humid weather with sporadic storms in August did not affect the Finger Lakes area. Only the remnants of Katrina added 3-4 much need inches recently. Alan Lakso, a vine physiologist at Cornell has done some leaf temperature and photosynthesis measurements this summer and his findings are interesting – leaf temperatures on irrigated or vines in deeper soils are normally a few degrees above ambient, but stressed leaves spiked over 100 degrees, shutting down stomates and photosynthesis. It is odd to consider that on a beautiful sunny day the vine is not working to ripen fruit but instead retreating into a protective mode. Tim reported on the beneficial effects of irrigation in a dry year on just about every measure of juice quality and vine performance, as well as subsequent cold hardiness. We clearly need to learn and understand more about the physiological response to drought and heat stress and the proper irrigation of grapevines in the East beyond our current shoot from the hip approach. Irrigation scheduling using evapotranspiration rates and crop coefficients as well as direct measures of soil moisture and leaf or petiole water status is imperative to fine wine production in dry years.

I like Riesling's chances for long term productivity in our region. The lakes have, as we have, been hit by three very significant cold injury events in the past five years which have particularly damaged vinifera vines. Yet, in a survey of 200 vineyards in the summer of 2004 by Tim, Riesling was exceeded only by Pinot Gris as the most durable of all vinifera varieties. In a similar survey in Ontario by Ken Slingerland, Riesling was the second most durable after Pinot Noir. To be fair, losses in both regions were around 50%, which is

economically significant. Protective measures such as hilling up over graft unions and wind fans may provide some of the insurance we need for these high value varieties.

It is exciting to see new growers appearing around the lakes with serious vineyards focused on quality. The future of the industry is dependent on their success. The lakes should spend more time and effort understanding just where the best vineyard sites are in a very complex terroir. Even just Seneca has its north, south, east and west areas, all certainly distinctive in many climate and soil characteristics. Until this is all sorted out, great wine will be a more a matter of chance than skill.

I would encourage all wine growers who are serious about Riesling to make a trip to the Finger Lakes to taste and learn about their wines. Better yet, go to Europe and taste the great wines in Germany, Alsace and Austria. Look very closely at the vineyards and talk to any grower who will share knowledge of growing and vinifying wines.

I would like to thank Dr. Tim Martinson for showing me around his neighborhood, Dr. Thomas Henick-Kling for the invitation to attend the tasting, and his intrepid staff for their hard work in hosting the event and all the wine growers we met who are so incredibly hospitable and willing to share their knowledge with others. This is a great business we work in.

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Riesling (Guides to Grape Varieties). Stuart Pigott. (1993). Viking Adult. ISBN: 06700824887.

(*Source: Grape & Barrel Newsletter, Vol. 1, No. 5, Sept. 19, 2005*)

General Information

Overview of Small Fruit Diseases During the 2005 Growing Season

Annemiek Schilder, Michigan State University

In contrast to the cool rainy summer of last year, 2005 was extremely dry and warm. Drought conditions were serious in the western and northern parts of the state and even affected fruit quantity and quality. The good news was that the dry weather resulted in lower disease pressure, therefore fewer fungicide sprays were needed and fruit quality (in terms of fungal rots, etc.) was generally better than in previous years. In areas that were overhead-irrigated, moisture combined with high temperatures may have actually increased disease pressure.

In general, cool, wet years promote fungal and bacterial diseases, whereas hot, dry years tend to have increased insect pest pressure. The latter can indirectly increase

disease pressure since some insects, like aphids, transmit plant viruses. Most fungi and bacteria need free moisture in the form of rain or dew to grow and infect plants and for spore production and dispersal. The lack of precipitation definitely thwarted pathogen activities in 2005. The only fungi that were content without rain were the powdery mildews, which were quite common on numerous crops this year. Also, diseases that resulted from infections last year or in previous years, e.g., cane diseases and virus infections, were evident but were obviously not related to the weather this year.

Even though dry weather generally suppresses diseases, extreme drought can cause plant stress and can thereby predispose them to certain diseases. It is therefore important

to reduce drought stress by irrigating as needed, even after harvest. Drought-stressed plants may also be more susceptible to winter injury.

Grapes

Due to the warm, dry summer, diseases were less of a problem in grapes than in previous years. Phomopsis was found in some vineyards, but disease pressure was generally low. Black rot was also detected here and there, but both incidence and severity were much lower than in previous years. For example, at our 'Concord' research plot in Fennville, black rot affected an average of about 4% of the berries compared to 60% of the berries in 2004.

Powdery mildew showed up somewhat later than expected, considering that we had moderate to high relative humidity during most of the season. However, rain is needed for the initial release of ascospores to get the epidemic started, and it is possible that the lack of precipitation early in the season could have delayed or reduced spore dispersal. A few cases of berry infection were reported in 'Concord' grapes. Powdery mildew on 'Concord' leaves showed up late enough to be of little consequence to yield or fruit quality. Infections of leaves and clusters were noted in susceptible wine grapes.

Downy mildew on fruit clusters and leaves of wine and table grapes showed up late and severity was low. Dew in August and September may have helped to move the disease along, but negative effects were minimal.

Anthraxnose appeared on some varieties that were severely affected last year. Lesions were observed on leaves, canes, tendrils, and berries, but disease levels were generally low. 'Mars' and 'Marquis' table grapes and 'Vidal' wine grapes are quite susceptible.

Some apparent Botrytis infections of clusters were observed soon after bloom, but in general, fruit quality has been excellent so far. Perhaps we will have 'noble rot' in more susceptible varieties as long the fall remains warm and relatively dry. This would be beneficial for specialty wine making.

Blueberries

In general, mummy berry pressure was light in 2005. Due to last year's relatively low infection incidence, there were few mummies to start with in at the beginning of the season. Few of the mummies actually germinated due to the dry conditions. Shoot strike incidence and fruit infection incidence were relatively low, except in very wet sites that historically have a lot of mummy berry pressure.

Cane dieback due to Phomopsis (*Phomopsis vaccinii*) and anthracnose (*Colletotrichum acutatum*) was a serious problem in a number of blueberry fields, with canes flagging and dying throughout the season. Flagging and cane death was typically caused by

girdling of stems by infections which most likely occurred during the rainy summer of 2004 or even the year before that, so they were not indicative of new infections. In fact, this is the first year that extensive anthracnose was found on canes in Michigan. This disease usually only affects the fruit. Dieback was particularly common in younger fields of Bluecrop, Jersey, Duke, and Elliott. The young green canes of these varieties appeared to be quite susceptible to infection. Further studies need to be done to fully identify the fungi involved in dieback in the different varieties. Infections of young canes result in a slow decline of the bushes, since many of the stems never make it past one or two years of age. This emphasizes the need to prune out diseased green canes and protect current-season growth from infection.

Anthraxnose was the predominant fruit rot and incidence was moderate to severe. Alternaria, Botrytis, and Phomopsis were also found affecting fruit in post-harvest rot tests but did not appear to cause problems.

Virus and virus-like symptoms were obvious in a number of fields this year. Infections by tobacco necrotic ringspot virus, tomato necrotic ringspot virus, and blueberry shoestring virus were confirmed in multiple locations. The first two diseases are nematode transmitted whereas the blueberry shoestring virus is aphid transmitted. Blueberry leaf mottle virus was also suspected in several fields, but not yet confirmed. This emphasizes the importance of planting virus-tested plants from reputable nurseries.

Strawberries

Dry conditions also resulted in low disease pressure in strawberries. Incidence of foliar diseases and fruit rots was generally low. Foliar diseases that were seen were Phomopsis leaf blight, common leaf spot, scorch, and angular leaf spot. In areas with little straw cover, leather rot was promoted by overhead irrigation. Among the post-harvest fruit rots, Botrytis gray mold was predominant, but some anthracnose also occurred.

In several newly planted strawberry fields, plant stunting and death was noticed and seemed mainly related to black root rot and lesion nematode infestation. In one case, a bean/soybean rotation may have contributed to high nematode levels.

Brambles

Some fields had suffered extensive winter injury, which was probably correlated with extremely low temperatures last winter. Leaf spot and spur blight appeared fairly late in the season. Cane blight was observed in black raspberries and blackberries. Botrytis gray mold was the most common fruit rot in summer and fall raspberries. Some late leaf rust was noted on fall-harvested berries. In general, Japanese beetles were more problematic than fruit rot diseases.

In several locations, fire blight, a bacterial disease, was diagnosed in 'Boyne' and 'K81-6' raspberries later in the summer. This disease is characterized by blackening of young cane tips that then bend over and form a 'shepherd's

crook'. Single berries or entire fruit clusters were also killed. The bacterium is a different strain from the one that causes fire blight in pears and apples.

Establishment problems were also noted in a newly planted raspberry field. Since the field was fumigated

prior to planting, the problem may have been related to quality of the planting material. (*Source: MSU Fruit Crop Advisory Team Alert, ol. 20, No. 18, September 20, 2005*)

Farm Bill Forum Comes to Connecticut

MARK YOUR CALENDAR'S FOR A SPECIAL EVENT: On Saturday, October 1, 2005, Connecticut USDA agencies will be hosting a USDA Farm Bill Listening Forum at the Berlin Fair. You are invited to attend and participate.

USDA Natural Resources and Environment Under Secretary Mark Rey will be hosting a National Farm Bill Listening Forum at the Berlin Fair, Berlin, Connecticut, from 9:00 AM to 12:00 Noon. These forums are designed to allow citizens to share their opinions on the needs for the 2007 Farm Bill. The Farm Bill authorizes many of the programs and funding for USDA agencies. Forum attendees will have the opportunity to comment on six topics, as well as a general comment period. Topics are:

1. The competitiveness of U.S. agriculture and domestic markets.
2. The challenges facing new farmers as they enter agriculture.
3. The appropriateness and effectiveness of the distribution of farm program benefits.
4. The achievement of conservation and environmental goals (this will be a focus topic of the Connecticut forum).
5. The enhancement of rural economic growth.
6. Opportunities to expand agricultural products, markets, and research.

For directions to the Berlin Fairgrounds, go to www.ctberlinfair.com. Forum attendance and parking is free.

For answers to questions or for more information, contact one of the following USDA Service Centers:

- Brooklyn Service Center, 139 Wolf Den Road, Brooklyn, CT 06234 - (860) 774-0224
- Torrington Service Center, 1185 New Litchfield Street, Torrington, CT 06790 - (860) 626-8258
- Norwich Service Center, Yantic River Plaza, 238 West Town Street, Norwich, CT 06360 - (860) 887-3604
- Wallingford Service Center, North Farms Executive Park, 900 Northrop Road, Suite A, Wallingford, CT 06492 - (203) 269-7509
- Windsor Service Center, 100 Northfield Drive, 4th Floor, Windsor, CT 06095 - (860) 688-7725

THIS IS A UNIQUE OPPORTUNITY TO HELP DESIGN USDA PROGRAMS THAT WILL MEET CONNECTICUT'S NEEDS. ANYONE INTERESTED IN FOOD AND NUTRITION POLICY, CONSERVATION, RURAL DEVELOPMENT, AND PRODUCTION AGRICULTURE SHOULD ATTEND.

Marketing Specialty Jams and Jellies to Gourmet Consumers

Wen-fei Uva, Cornell University

Although this article and the marketing study it is based on apply to the Northeast, many of the points will be relevant in many regions. Increased global supply has intensified competition in all agricultural and food commodities. Nevertheless, the Northeast offers premier marketing opportunities for high quality, specialty food products all along the Washington to Boston corridor, especially those perceived as having gourmet appeal or health benefits. In a recent marketing project, we interviewed gourmet consumers in the New York City metropolitan area to better understand their preferences when purchasing "specialty jams and jellies" and to explore marketing strategies to capture

this high end market effectively. This article describes some of those findings.

Gourmet Jams and Jellies Are a Treat - Gourmet jams and jellies are perceived and used as self-indulgent luxuries by many of the consumers interviewed and, therefore, are eminently giftable. In fact, many consumers were introduced to their favorite gourmet jams and jellies as business gifts, host gifts, and personal gifts from friends and relatives. Some also gave them as gifts themselves. They ate these jams and jellies with their friends at special occasions, or when they wanted to reward themselves with a treat. Gourmet consumers were generally very excited about trying new products, as new products evoke their curiosity. They are willing to pay a higher price (upwards of \$10.00

per jar) for it if they perceive the product to possess the exceptional characteristics that appeal to them. Packaging combined with price is the primary tool that consumers used to judge these products were gourmet, giftable, and otherwise special. These consumers also indicated that the higher the price, the more quality they expected when they tried the products. Therefore, a successful packaging and pricing strategy can induce consumers to try the product for the first time, but only good quality will get them to purchase the product again.

What Packaging Says “Gourmet”, and Where Do They Buy It? Among the consumers interviewed, brand plays virtually no role in gourmet jam and jelly purchase decisions. Thus, without a brand image and often with no experience, these users are essentially reminded or prompted to buy by the packaging. Packaging, if appealing, is extremely important in terms of portraying the gourmet image and inviting sampling. Comments from consumers about gourmet packaging included – it should be

“authentic,” “homey,” “... have a country look,” “... look homemade,” “pretty,” “exotic,” “very clean, like glass,” “smaller,” “wide-mouth jar (to fit spoon)”.

However, caution should be exercised in fashioning “homemade” packaging to a point where the look might not justify premium pricing, a core value to the appeal of the gourmet jam and jelly market. Consumers interviewed in this study indicated that they purchase gourmet jams and jellies from various independent stores or farm markets and not from supermarkets. Many of these stores are small; thus, they do not have burdensome slotting allowances for processors to sell to, but the number and geographical spread and diversity of these stores may make them difficult to service. Focusing on stores and markets with gourmet reputations in a target market area would be more effective for specialty jam and jelly marketers.

What Should Gourmet Jams and Jellies Taste Like? In jams, the quality of a gourmet jam is measured by the pieces or “chunks” of fruit in it. Some consumers described it as, “...feel that you have to chew”. And in jellies, the gourmet quality is measured by a pasty, non-runny consistency, and the color of the jelly, which should look like the fruit in it. This study showed that some consumers have a strong preference toward jam or jelly, and more gourmet food consumers preferred jam than jelly. The gourmet jam and jelly consumers claimed that they could definitely tell the difference in the quality of gourmet items versus mass-produced products, and Smucker’s was used as an example of the mass-produced products. They indicated that the taste of gourmet jams and jellies should not be too sweet, no added sugar when possible, and natural –

no preservatives, additives, or aftertaste. The most mentioned positive comments for their favorite jam or jelly products, include:

- “Made of interesting or exotic fruits”
- “Fruity, not much sweetness”
- “It was not too sweet or too tart”
- “I liked the consistency, thick and chewy”; “Rich and pasty”
- “Texture is extremely smooth”
- “Flavor was more full and more interesting”.

When asked why they did not like a jam or jelly product, the most mentioned comment was “too sweet”. It was associated with too much sugar, chemicals and preservatives, low quality, and cheap. Other negative comments include:

- “It tastes like regular jelly”; “Ordinary tasting”; “Very supermarket tasting”
- “I don’t like the consistency; too much like Welch’s or other supermarket brand” • “Texture is runny
- “Way too sweet and too fake”
- “Too tart”
- “Color was off, not like the fruit”.

Marketing Opportunities This study showed that urban gourmet consumers are very interested in trying new specialty jam and jelly products. A distribution opportunity could exist through gourmet food stores, farmers’ markets, and bed & breakfasts in key Northeastern markets, as well as national gourmet food catalogs. The products could be sold individually or packaged as gift items with other gourmet products. That also presents additional new product opportunities for tie-in products. When marketing specialty jams and jellies to the premium food market, special attention should be paid to packaging that conveys a gourmet image and portrays other intangible image characteristics of the product, including history, any exotic nature and health benefits, or geographical tie-in of the fruit, the farm and the region. When selling to gourmet consumers, excitement counts. However, product quality and consistency is still the key for long-term profitability.

* Information presented in this article is derived from a marketing study conducted for the project “Beach Plum – A New Crop for New Markets”. This project was supported by a joint research and extension program funded by Cornell University Agricultural Experiment Station and Cornell Cooperative Extension with funds received from the Cooperative State Research, Education, and Extension Service, USDA, and by a grant from the USDA [Sustainable Agriculture Research and Education \(SARE\) Program](#).

** For more information on the Beach Plum Project, see <http://www.beachplum.cornell.edu/>.

(Source: *New York Berry News*, Vol. 4, No. 8, August 18, 2005)

Upcoming Meetings

DATES FOR WINTER VEGETABLE AND BERRY GROWER MEETINGS

Dates have been set for the regular all-day vegetable and berry meetings that are sponsored by the New England Vegetable and Berry Growers Association and New England States Cooperative Extension.

- **Meeting # 1.** Saturday November 5, 2005 Location: Westport MA, at White's of Westport, 66 State Road, Route 6 Exit 9 east or Exit 10 West off I-195 Time: Registration 9:30 am. Program 10:00 am to 4:00 pm.
- **Meeting # 2:** Friday, January 6, 2006 Location: Chicopee, MA at Day's Inn at the Parwick Centre 450 Memorial Drive, Next to Exit 5 off I-90
- **Meeting # 3:** Saturday, January 28, 2006 Location: Waltham, MA at the Eastern Massachusetts Extension Center 240 Beaver St.

Time: All meetings begin with registration at 9:30 am. The program runs from 10:00 am to 4:00 pm. Pre-registration required for lunch.

Contact John Howell at 413- 773-0412 for pre-registration

Contact hours for pesticide recertification credit will be offered.

October 14-15, 2005. Passive Solar Greenhouse Workshop. 1522 Lefever Lane, Spring Grove, Pennsylvania. **Contact:** Steve and Carol Moore (717) 225-2489.

October 14-15, 2005. Highbush Blueberry Council (USHBC) Fall Meeting, Amway Grand Plaza Hotel, 187 Monroe NW, Grand Rapids, Michigan. **Contact:** 616-885-2000

Wednesday October 19, 2005 Appleton Farm CSA, 219 County Rd., Ipswich MA 3:00-5:30 pm Appleton Farms, as a whole, is a 900+ acre farm and conservation property in Ipswich, managed by The Trustees of Reservations. The farm includes a 430-share CSA (Community Supported Agriculture) in its fifth year; a grassbased 40-head Jersey dairy; educational programs, hay lands, wetlands, woodlands and public trails. The twilight meeting will focus on Appleton Farm CSA. *Light refreshments will be served.*

Directions: From Rt. 95/128N: Stay on 128N when the roads split. Take exit 20A, Route 1A north toward Hamilton – this exit comes quick and is a sharp curve. Go about 7 miles north on 1A (1A is County Road in Ipswich). Look for a road sign that says "Entering Ipswich". Appleton Farms is on the left, the driveway is set back immediately after a guard rail. Turn left onto the dirt drive, then bear left at the fork in the road toward the big hay barn with green doors. This is the CSA barn, and our fields are just beyond it. Park in the lot in front of the barn.

Contact: Jenny Hausman, Appleton Farms CSA, 978-3565728 or 978-356-1655. appletonfarms.org or Ruth Hazzard, UMass Vegetable Program 413-545-3696 *One hour of pesticide recertification credit will be given for attending this meeting.*

October 20, 2005, 1 to 4 PM - Raspberry High Tunnel Open House. Cornell University invites you to attend a Hi Tunnel Open House to observe raspberries growing and fruiting in late October – well past the time when they are normally in season. Come by Cornell's East Ithaca farm on Thursday October 20 between 1:00 and 4:00 to meet with researchers, taste fruit, and study this new technology and market opportunity. For more information contact Cathy Heidenreich, mcm4@cornell.edu or call 315-787-2367.

December 6-8, 2005. Great Lakes Fruit, Vegetable, and Farm Market EXPO. DeVos Place Convention Center, Grand Rapids, Mich. www.glexpo.com.

December 13, 14, 15, 2005 – 2005 New England Vegetable & Fruit Conference, Expo Center of New Hampshire, Radisson Hotel, Manchester New Hampshire. For more information see <http://www.nevbc.org/>.

January 4–6, 2006. North American Berry Conference and Southeast Regional Fruit and Vegetable Conference; Savannah International Trade and Convention Center, Savannah, GA. For more information see news brief below or contact Georgene Thompson, 717-243-1349, georgenethompson@comcast.net or visit <http://www.nasga.org>.

January 31 – February 2, 2006. Mid-Atlantic Fruit and Vegetable Convention. For more information contact the Pennsylvania Vegetable Growers Association at pvga@pvga.org or visit <http://www.pvga.org/>.

February 15-16, 2005. NABGA Regional Meeting, at the *Empire State Fruit and Vegetable Expo*. More info to come.

Massachusetts Berry Notes is a publication of the University of Massachusetts Extension Fruit Program which provides research based information on integrated management of soils, crops, pests and marketing on Massachusetts Farms. No product endorsements of products mentioned in this newsletter over like products are intended or implied.