

New England Grape Notes

May 6, 2011, Vol. 6, No. 5



UMass
Extension



Phenology: Budswell – 1" shoot

See <http://fruit.cfans.umn.edu/grape/IPM/appendixa.htm> for good chart on growth stages

Meetings: June 8, 2011, Twilight Meeting with Justine Vanden Heuvel and Anna Katherine Mansfield. Focus is on canopy management practices on hybrid varieties and review of winemaking considerations for hybrid varieties. **Location:** [UMass Cold Spring Orchard Research and Education Center](#), 391 Sabin Street, Belchertown, MA 01007. 5:00pm – 8:00pm. Donation of \$10 requested to help support meeting costs. Co-sponsored by the

[Massachusetts Farm Winery and Growers Association](#).

Resources: Comprehensive new viticulture website at: <http://www.extension.org/grapes>. Let me know what you think.

Don't forget our local New England Wine Grape Resource website at:

<http://www.newenglandwinegrapes.org/>.

Insect Management:

Early Season Insects:

Alice Wise and Greg Loeb, Cornell University

Generally early season insects are a curiosity more than a concern, the exception being European red mites. Scouting, which we all should be able to do at this time of year, is important in catching any developing problems. A reminder to check registration status of each and every material before purchase or use. Use the Cornell PIMS website and/or the NYSDEC list of registered materials. In recent years, we have stumbled upon several situations where a material is no longer legal to use but the information was not well publicized. Remember also that some materials are registered for use in NY but not in Nassau and Suffolk Counties.

- **Flea beetle** - Flea beetles or steely beetles are small (5 mm), shiny black beetles. They overwinter as adults. They attack both wild and cultivated grapes by boring into swollen buds, hollowing out the inside. Damage is more common near shrubby or wooded areas. Sometimes it is difficult to discern between flea beetle and cutworm injury. Sevin, Danitol and Imidan are labeled. Note Imidan still has a 2 week restricted entry interval.
- **Cutworm** - This general term applies to the larvae of a large number of lepidopterous species. These nocturnal feeders chomp on buds and will also feed on young leaves. In some eastern grape growing regions, cutworm is a pest problem that sometimes requires treatment. Infestations are apparently worse with cool spring weather as bud swell for an extended period gives the larvae more opportunity to feed. Damage is also more likely if there is mulch and/or weeds under the trellis as these provide daytime cover for larvae. This damage is not uncommon on Long Island but it does not appear to be so serious as to warrant treatment. As buds swell, take a couple of walks around the vineyard, particularly where previous cutworm damage has been seen. Danitol and Capture 2EC are labeled for control. Both are pyrethroids, harsh on predators. If the damage is extensive enough to warrant treatment, consider a spot treatment vs. a larger area.
- **Grape plume moth** - Signs of grape plume moth feeding have been increasingly common in local vineyards. First seen a few years ago on Long Island, this prebloom pest is actually the hairy larva of the plume moth. More advanced cases involve webbing together of leaves and even clusters. If the mass is examined, usually frass and sometimes the larvae may be present. You might also see a vine or part of a vine with basal leaves full of large holes. Expect to see more problems on edge rows. According to Cornell entomologist Greg Loeb, Danitol is currently the only labeled material. Dr. Loeb recommends a 20% threshold, that is, 20% of shoots/clusters affected before treatment is warranted. If the infestation involves primarily clusters, the risk of crop loss is higher and a slightly

more conservative threshold would be warranted.

Usually the window for treatment is gone by the time damage is seen. At the research vineyard, the level of damage has varied from year to year but it has never been widespread. Also, by the time the canopy fills the trellis, it can be difficult to tell where the plume moth damage has been.

- **European red mite** - Very stunted, pale shoots may mean a mite outbreak. Upon close examination of both upper and lower leaf surfaces, leaves are loaded with tiny red mobile mites. It is common for a small area – shoots in the head area of a vine seem to harbor mites but infestations also may occur on just one side of a vine. One vine or two vines might be infested while neighboring vines have few or no mites. Thus, these early spring outbreaks are usually not well distributed through a block. It is difficult to predict exactly where these infestations will take place. If you can't walk your blocks, tractor scouting is a good way to spot mite infestations because the pale, stunted shoots will stand out. Best treatment option – use of horticultural oil in early season sprays for powdery mildew will also provide control of ERM if coverage is good. Because of the widespread early season use of oil, these early infestations have not been a major problem in recent years. However, this is not an option if committed to a sulfur schedule or if using other incompatible materials such as captan due to the risk of phytotoxicity.
- **Thrips** - Tiny leaves, stunted shoots, leaves often somewhat tattered or shredded in appearance with necrotic (dead) areas may be due to a thrips infestation. An affected shoot can be next to a shoot with no symptoms. Thrips are impossible to see without a good hand lens or microscope. Older leaves are usually not affected. Thrips are more common bloom to postbloom. Thrips infestations are not common but do occur occasionally.

(Source: Long Island Fruit & Vegetable Notes, No. 7, April 28, 2011)

Disease Management:

Disease Management in 2011

[Editor's Note: below is a summary of Dr. Wilcox's annual disease management update. The full text can be found at]

PUTTING IT ALL TOGETHER - 2011

Wayne Wilcox, Cornell University

As I preface this section every year, we all know that there are as many good disease control programs as there are good growers and advisors. The following are some considerations among the many possible. As always, just because it isn't listed here doesn't mean it's a bad idea. And don't make this any harder than you need to.

1-INCH SHOOT GROWTH. A [Phomopsis](#) spray may be warranted if wet weather is forecast, particularly if the pruning/training system (significant inoculum retention) or block history suggests high risk.

Option A: Nothing.

Option B: **Captan, mancozeb, or ziram.**

The best one is whichever is cheapest and most convenient.

3- to 5-INCH SHOOT GROWTH. A critical time to control [Phomopsis](#) (Ph) rachis infections if it's raining or likely to be soon, especially in blocks with any history of the disease. Early is better than late if it looks like some rain is setting in. Late is much better than nothing if those are the only two options. This spray can provide significant benefit against fruit infections as well, since many of them originate from movement into the berries from infected rachises and berry stems. Also an important time to control basal shoot infections, since this is where the fungus will establish itself for the future if infected tissue is retained in canes, spurs, or pruning stubs.

Now is the time to start thinking about control of [Powdery Mildew](#) (PM) on *vinifera* varieties if temperatures remain above 50°F for long stretches of the day. This spray is much more likely to be important in vineyards that had significant PM last year (we're talking late season foliar disease more than fruit infections here) than in those that were "clean" into the fall; however, it may be beneficial even in relatively clean blocks of highly susceptible cultivars, particularly in cloudy, wet years when temperatures aren't severely limiting. And if you're already spraying for Ph, why not include something for PM on highly susceptible (and valuable) varieties while you're at it.

In NY, spending extra money for [Black Rot](#) (BR) control is almost never justified this early unless you're trying to clean up a severe problem block AND weather is wet and reasonably warm. In general, the farther south you go, the more important early sprays can become. Still too early for [Downy Mildew](#).

Option A: Nothing.

Option B: **Mancozeb or ziram** (BR, Ph).

Option C: **Captan** (Ph, some BR). Easier on predator mites than mancozeb or ziram, probably good enough against BR this early, but 3-day REI issue.

Option D: **Sulfur** (PM). As discussed above, historical pronouncements concerning reduced activity of sulfur at temps below 65°F appear to have been significantly exaggerated. It should be good enough, and is a cheap insurance option. With thorough coverage, sulfur sprays can eradicate incipient infections initiated during the previous week or 10 days (depending on temps since then).

Option E: **Rally, tebuconazole generics, Mettle** [except NY] (PM, BR). In theory, one of the difenoconazole (DFZ) products (Revus Top, Inspire Super, Quadris Top) should fit here, too, since they should all give **PM** control superior to that from the preceding materials and are equivalent against **BR**. The problem with any of the DFZ products so early in the season comes down to resistance management issues: We're trying to limit the use of all DMIs (combined) to a total of three applications per season. And all of the DFZ products are mixed with something that we'd rather not apply now because pressure from the target organism for the mixing partner doesn't justify its use yet and we're trying to limit the number of applications of these materials. (This is especially critical for Quadris Top, since it contains a strobile). Did I already mention the critical nature of dosage with the DMI products, how dosage is a function of spray coverage in addition to the amount of product in the tank, and the coverage problems with alternate row spraying?

Option F: **Rubigan/Vintage** (PM). An economical option, especially if BR control isn't an issue, and it usually isn't at this time. But the same issue with the need for limiting DMI applications and superior coverage at the low rates used early in the season.

Option G: **JMS Stylet Oil** (PM). Should eradicate young infections that have already occurred IF thorough coverage is provided, and can provide a few days of limited forward activity, although much of this protective capability washes away with less than ½-inch of rain. Can use with mancozeb or ziram, but not with or near captan or sulfur (plant injury).

Option H: **Nutrol, Armicarb, Oxidate, Kaligreen**. (PM). Should eradicate young infections IF thorough coverage is provided, but no forward activity. If choosing this option so early in the year, go with the low end of the label rate and use the cheapest one.

Option I: **Serenade** or **Sonata**, if you want to experiment with these "biocontrol" products while disease pressure is low (PM; maybe BR if there's a spore or two flying around).

Option J: One of the PM products plus mancozeb, ziram, or captan for Ph.

10-INCH SHOOT GROWTH. We once recommend not waiting any later than this to control **Black Rot**. Continued experience tells us that we can get way with withholding a BR spray at this time under most commercial conditions in NY unless this disease was a problem last year (inoculum levels are high) and weather is wet and warm. DO NOT wait any later than now to control [Powdery Mildew](#) on susceptible varieties. On Concord and other "moderately susceptible" cultivars, we normally recommend waiting until immediate prebloom. However, there have been seasons where we started seeing PM on ConCORDs around the 10-in shoot growth stage, and uncontrolled early infections spread to the clusters and really caused havoc. And I've had excellent Concord growers tell me that when they wait until prebloom, they see a little PM already established, which puts them behind the 8-ball right from the start. So, get out in the vineyard and see what's happening. No need to spray before you need to, but if you already see PM, or you have experience with early disease development and weather conditions are forecast to favor PM, it might be a good idea.

Remember, as crop load goes up, so does the need for good PM control and the ability to pay for it. Now is one of the best times to use a DMI, and a possible time to experiment with "alternative" materials if you're so inclined. It's also one of the best times to use an oil or other eradicator material against young "primary" infections that might just be getting started, particularly if the PM program up until now has been marginal or absent. [Downy Mildew](#) control should be provided on highly susceptible varieties, especially if disease was prevalent the last year or two and rains of at least 0.1 inches at temps >52°F are anticipated or have occurred recently. Rachis and fruit infections by [Phomopsis](#) are still a danger in wet years, particularly in blocks with some history of the disease.

Option A: **Mancozeb** (BR, Ph, DM). A broad spectrum, reasonably economical choice for everything except PM; tank mix with a PM material to complete the picture if necessary. Excessive use can lead to mite problems by suppressing their predators. You can substitute ziram if necessary or desired but will give up some DM control for in the process, although that might not be too significant this early.

Option B: **Captan** (Ph, DM, some BR). An alternative to mancozeb if you're trying or are forced to avoid it. The limited BR activity should still be sufficient if the disease was controlled well last year (limited inoculum) and good BR materials will be used in the next three sprays. Toss in something for PM where needed.

Option C: **Sulfur** (PM). Historical concern about reduced activity during cool weather is going down as we look at experimental data and temps should be going up now as we look at the calendar going forward. Post-infection activity may be useful against new "primary" infections before they have a chance to form new spores and spread to developing clusters.

Option D: **Revus Top** (PM, BR, DM). Superior PM control relative to anything else recommended at this stage of the season other than Quintec or Vivando [no Vivando in NY yet]. BR and DM control, and all at a highly competitive price. A combination that's pretty hard to beat if that's what you're looking for. Except on Concord and a few other cultivars (likely to cause injury).

Option E: **Quintec** or **Vivando** [Vivando still not registered in NY at the time of writing] (PM). Both are Cadillac PM material that should be limited to two applications per season each (they are unrelated to one another) for resistance management purposes. You'll get even more bang for your buck with a Cadillac PM material in another week or two, but if you feel that you need or want to start throwing the kitchen sink at it now, these are viable options.

Option F: **Rally, tebuconazole generics, Mettle** [outside NY] (PM, BR).

Option G: **Rubigan/Vintage** (PM). Limited BR activity usually is not a problem if effective materials are applied in the next three sprays, and is a non-issue if tank-mixing with mancozeb or ziram. Cost may be attractive, but higher 4-oz rate might be necessary where DMIs are starting to poop out.

Option H: **JMS Stylet Oil** (PM). If (and only *IF*) coverage is thorough, this spray should eradicate early PM colonies that may have started, should previous PM sprays have been omitted or incompletely applied. But don't waste your money if you can't cover thoroughly. Also may help with mites. Will provide a few days protectant activity going forward in addition to the eradicator action, although much of that residual activity will disappear after a rain. Mix with something offering forward protective activity if your next spray won't be for much more than a week from now. The petroleum-based PureSpray Green should have similar effects if you can find it, whereas the botanically-based oils are generally less effective.

Option I: **Nutrol, Armicarb, Oxidate, Kaligreen**. (PM). Should eradicate young infections IF thorough coverage is provided, but no forward activity.

Option J: **Serenade** or **Sonata**, if you want to experiment with OMRI-certified "biological" products before entering the critical period for disease control.

IMMEDIATE PREBLOOM TO EARLY BLOOM. A critical time to control [PM](#), [BR](#), [DM](#), and [Ph](#) on the fruit! Just stating to enter Bot season, too. This and the first postbloom spray are the most critical sprays of the entire season--DON'T CHEAT ON MATERIALS, RATES, SPRAY INTERVALS, OR COVERAGE!!

Option A: **Quintec** or **Vivando** [Vivando still not registered in NY at the time of writing] for PM control, plus **mancozeb** (for BR, DM, and Ph). Effective and no current resistance concerns in the real world, but let's keep it that way by avoiding over-use (no more than 2 applications per year of each one).

Option B: **Pristine** (PM, DM, BR, some Bot and Ph). We'd like to keep this one down to 2 applications per season, too, especially with the increasing risk of DM resistance the longer that we keep using it. The 12.5-oz rate of

Pristine will also provide significant protection against Botrytis, I wouldn't spend the extra money on the higher "Botrytis control" rate (18.5-23 oz/A) this early unless Botrytis pressure was really high and/or I was really worried. On highly susceptible cultivars, where DMI resistance is usually an issue to at least some extent and strobic resistance has occurred or is deemed risky, Quintec, Vivando (check NY status), or Pristine (plus sulfur) would be the materials of choice for PM, but don't forget about DM and BR. With Pristine especially, I'd toss in some sulfur, particularly in blocks where PM has already developed strobic resistance, just for additional insurance at this critical time.

Option C: **Revus Top** (PM, BR, DM), **Inspire Super** (PM, BR, Bot), or **Quadris Top** (PM, BR, DM). Discussed in detail under "New fungicides" at the beginning of this tome. Worth reviewing, especially if you're considering use at this time. If using Inspire Super, you'll need to add something for DM. I can't overemphasize the fact that the outstanding PM control we've seen with difenoconazole is due to the high "intrinsic" activity of this material, but that it's rate dependent and you'll start losing this activity--especially on the clusters!--if you get spotty spray coverage (i.e., only put a partial rate on your spray target).

Option D: **Abound or Sovran [plus sulfur, on cultivars where it can be used]** (PM, BR, DM [only moderate DM for Sovran]). Still an effective option in some plantings, particularly on native and certain hybrid cultivars that have seen limited use over the years, although the scuttlebutt is that they're slipping in some of these vineyards, too. As with most rumors, recognize this one for what it is and then apply your own experience in determining how much credence to give it. Refer to the discussion on strobilurin resistance in the "Fungicide Changes and News" section at the beginning of this epistle.

Option E: **Flint plus sulfur** (PM, BR, Botrytis at the 3-oz rate) plus one of the many options for DM. Substituting Adament for Flint is an option if the price is right. At the 6 oz/A rate labeled for Botrytis (equivalent to 3 oz of Flint + 3 oz of the former Elite or some tebuconazole generics), the tebuconazole should provide significant additional BR activity in a kick-back mode and some additional PM activity, although the latter will be limited in vineyards where DMIs have started to fade to any extent. It also adds one DMI application to the seasonal "cup", which shouldn't contain more than three applications for all DMI products.

Option F: **Rally, tebuconazole generics, Vintage/Rubigan, or Mettle** [no Mettle in NY] (PM, BR [except Vintage/Rubigan]) PLUS **mancozeb** (DM, BR, Ph) or **captan** (DM, Ph). One of the new DM-specific fungicides could also be used for this purpose, but they may give more bang for the buck after bloom unless there's heavy DM pressure early (clusters are highly susceptible now, after all). Add sulfur on *vinifera* and PM-susceptible hybrids (unless "sulfur shy"). Like the difenoconazole products, Rally, the tebuconazoles, and Mettle provide excellent postinfection activity against BR, which can make them especially valuable if significant unprotected infection periods occurred over the last week or 10 days. If wet, mancozeb (or captan) should be included for control of Ph fruit infections in blocks where this has been a historical problem (note some processor restrictions and poor BR control with captan).

Option G: Mancozeb + sulfur (PM, BR, Ph, DM). Used to be cheap and effective, particularly if used at shorter spray intervals; it's no less effective than before. Neither material is as rainfast as the strobies or SI fungicides, so shorter spray intervals can be both necessary and difficult in wet years. Of course, this is precisely when their activity is needed the most. Potential mite problems, as this mixture is hard on mite predators.

BLOOM. **Vanguard** (or Inspire Super), **Scala, Elevate, Flint/Adament** (3/6 oz rate), **Endura**, or **Pristine** for **Botrytis** control will probably be beneficial sometime around now on susceptible varieties, particularly in wet years. It's certainly easier to use or include one of these materials for Botrytis purposes in the "immediate prebloom/early bloom" or "first postbloom" spray, and from what we know of these materials' activities, they should be effective when applied then, although we've never directly compared these timings (results would likely be different from year to year anyway, depending on if and when rains fall through the pre- to post-bloom period). One problem with tank-mixing Botrytis-specific materials like the AP's and Elevate is that you'll be distributing them throughout the entire canopy, whereas the only place they're effective is on the clusters. Also, if sulfur was the only PM material in the previous (immediate pre-bloom) spray, reapply about now on highly susceptible *viniferas*, especially if it's been raining since then or will soon.

FIRST POSTBLOOM (10-14 days after immediate prebloom/early bloom spray). **Still in the critical period for controlling PM, BR, DM, and Ph on the fruit. And we're well into the start of Bot season. This and the immediate prebloom/early bloom spray are the most critical applications of the entire season--DON'T CHEAT**

ON MATERIALS, RATES, SPRAY INTERVALS, OR COVERAGE!! Shorten the spray interval and/or jack up the rate or PM material quality on PM-susceptible varieties if weather is warm and cloudy. For Botrytis-sensitive cultivars/blocks/seasons, make sure that this application has some Bot activity if you haven't used anything at for it yet. **Same considerations and options as detailed under IMMEDIATE PREBLOOM.**

Juice grape growers can substitute Ziram (very good BR and Ph, only fair DM) for mancozeb or captan if necessary, or just go with Abound or Sovran for everything if they're still working. Captan, mancozeb, or the strobies will protect against bitter rot and ripe rot, if/where those are concerns.

SECOND POSTBLOOM. **BR** control is still advisable under wet conditions and is should be considered critical if infections are evident on the vine, unless you're willing to bet part of your crop that it's not going to rain within the next few weeks; however, BR sprays can often be skipped from here on out on natives and hybrids if the vineyard's clean. Fruit are less susceptible to **PM** now, but those of *vinifera* varieties (and susceptible hybrids?) still need good **PM** protection, particularly to guard against later bunch rots and colonization by wine-spoilage microorganisms. Of course, new foliage remains highly susceptible to PM throughout the season, and it behooves you to keep it clean for purposes of leaf function in addition to reducing primary inoculum for next year. Concords can withstand a lot of foliar PM unless the crop is very large and/or ripening conditions are marginal. Minimal programs can stop now on this cultivar if the preceding crop/ripening conditions don't apply, although one more PM spray now is often justified. Try to avoid DMI and, particularly, strobie fungicides if PM is easy to see without trying. **Ph** danger is basically over unless very wet and a problem block. Clusters are still susceptible to **DM** and should be protected on susceptible varieties if weather is wet, especially if disease already is established (take a look and see). Foliar DM will remain a potential threat throughout the rest of the season, depending on the weather, and can quickly turn into an epidemic on susceptible cultivars if we get into a prolonged set of summer rains or thundershowers.

Option A: Pristine, Abound, Sovran, or Flint (or Adament). See previous discussions on all of these. They provide good residual control of the listed diseases if used now, but strictly limit their use to maintain viability. And if you think they might not be working against DM, don't wait for somebody from the university to confirm that before you switch to something else. Pristine and Flint (or Adament) will provide good Botrytis control when used at the appropriate rate as a pre-bunch closure spray.

Option B: Quintec or Vivando [Vivando still not registered in NY at the time of writing] for PM control + **captan** (DM, Ph) or **mancozeb** (BR, DM, PH, but 66-day preharvest restriction and mite issues) as needed for these other diseases. If DM is the only other issue, Ridomil (in a bad year), a phosphonate, copper, or one of the new DM-specific materials (see Chapter 1 of this book) are additional options. Quintec, Vivando, and Pristine shouldn't be applied in more than two consecutive sprays. You may want to save one of your two Pristine shots for veraison or later, to pick up Botrytis and other rots.

Option C: Revus Top (PM, BR, DM), **Inspire Super** (PM, BR, Bot), or **Quadris Top** (PM, BR, DM). Remember, these are discussed in detail under "New fungicides" at the beginning of this tome. Inspire Super will provide Bot control when applied pre-bunch closure, the low cyprodinil (Vanguard) rate that it provides might or might not be adequate, depending on pressure. If using this, you'll need to add something for DM on susceptible cultivars.

Option D: Rally, tebuconazole generics, Vintage/Rubigan, or Mettle [no Mettle in NY] (PM, BR [except Vintage/Rubigan]) PLUS mancozeb if still within the 66-day PHI limit (DM, BR) or one of the many DM options (captan, phosphites, new DM-specific materials discussed previously). Like the difenoconazole products, all of the DMI products except Vintage/Rubigan provide excellent postinfection activity against BR.

Option E: Sulfur (PM) + the options listed above for BR and DM. In most years, lessening PM pressure makes this economical option increasingly practical as the season progresses.

Option F: Copper + lime (DM, some PM). A good PM option at this time for Concord and other native varieties needing one (reasonable efficacy, no resistance issues, significant residual activity if this is the last spray), generally not good enough for *vinifera* and susceptible hybrid cultivars.

ADDITIONAL SUMMER SPRAYS. Check the vineyard regularly to see what's needed, the main issues will be **PM** and **DM** on the foliage (remember, you'd like to keep foliage clean of PM into September). Also **Botrytis** on susceptible cultivars, from veraison through pre-harvest. And the "**summer rot**" diseases (bitter rot, ripe rot) are potential threats in wet years, particularly in blocks or regions where they've occurred before.

On *vinifera* and other cultivars requiring continued [PM](#) control, use sulfur as an economical choice. However, this can be a problem as you approach veraison, as some wineries are setting fairly long withholding intervals. DMIs, particularly the difenoconazole products, also are options; Revus Top is particularly attractive for the combined reasons of PM/BR/DM efficacy and cost (except on Concords, of course). But pay attention to previously-discussed maximum number of applications for all of these materials. Quintec or Vivando (not yet in NY, etc.) will certainly provide outstanding control if you need/want it and haven't used up your seasonal allotment yet. Ditto for Pristine (save for later against Bot and other rots?). All of these materials provide the advantage of longer residual activity than sulfur. Copper + lime can be used on Concords, but mid-summer sprays for PM on this variety are probably worth the expense only under high crop and/or poor ripening conditions. Alternative materials such as Nutrol, Kaligreen, Armicarb, Oxidate, Serenade, and Sonata can have their place during this period, especially if you're trying to avoid sulfur, although they generally need to be sprayed more frequently and most of them are not cheap. The well-documented ability of oils to decrease photosynthesis and consequently decrease Brix accumulation makes me wary of recommending these products once the crop nears veraison, although a single application should be OK. For [DM](#), there's the whole raft of products discussed previously. **Summer rots** are controlled with mancozeb, captan, and strobies; the peak period of susceptibility appears to be near veraison. Strongly consider an "insurance" application against [Botrytis](#) at or soon after veraison (depending on the weather), then determine the need for a subsequent pre-harvest spray based on weather and the need to limit spread of the disease, should it be revealed by scouting. **BR** should not be an issue after the second postbloom spray, except in very unusual circumstances (disease is established in the clusters of *vinifera* varieties, wet weather is forecast, and it's possible to direct sprays onto the clusters). **Ph** should not be an issue, period.

Nutrient Management:

Prebloom Foliar Nutrient Sprays: *Alice Wise, Cornell University Extension*

Given the cost of fertilizers and fuel, it is important to think through the benefits of all foliar nutrients. Visual verification as well as petiole and soil analysis can be helpful in diagnosis of deficiencies, even at this time of year.

Nitrogen – Long term nitrogen (N) needs of vines, particularly in sandy soils, can be addressed in whole or in part by improving soil organic matter. Otherwise, N fertilization is best addressed via ground application whether using a dry product or dripping in liquid N. The benefits of foliar N are debated but experience dictates that periodic foliar applications can be of benefit in maintaining a green, photosynthesizing canopy. Some growers feel foliar N helps sluggish early spring growth; others feel the primary benefit is later in the season both in terms of maintaining canopy and helping to avoid sluggish and/or stinky fermentations. There are many different products from which to choose. Price may dictate what a vineyard can afford to use. Note that some phosphorous acid products contain nitrogen. If an organic product is preferred, liquid fish products are the primary choice. Experience with the efficacy of these products has been mixed.

Magnesium – Many growers include Epsom salts (magnesium sulfate) in a few of their prebloom sprays. Though replicated research trial results are lacking, there is universal agreement among growers that this foliar nutrient is essential in maintaining a green, healthy canopy.

Zinc – Considered essential for proper cluster development, berry set and normal shoot growth. Deficiency is seen early summer. New leaves are smaller, distorted and may be chlorotic with darker green veins. Straggly clusters and shot berries may also occur. Soil application of Zn is less effective because Zn can be tightly bound in soil (though past soil test recommendations for our vineyard were soil applications of zinc sulfate). Zinc sulfate, zinc oxide and chelated Zn are used as foliar sprays; follow label for rates and timing. Rely on your soil and petiole analyses to gauge the need for this nutrient. For all the micronutrients, there are proprietary liquid formulations that are OMRI approved. Some have both macro and micronutrients. Many are kelp based.

Boron – Another micronutrient that is required in very small quantities for proper fruit set. Distorted

basal 1-2 leaves at this time of year might indicate B deficiency. A good lab can verify this in a few days. Later deficiency symptoms are stunted zigzag growth and death of shoot tips, poor set with shot berries that are often flattened or oblong. Soil treatment is effective since boron (B) moves with the soil water, however this is best applied in the fall or with the spring herbicide. Common boron products include Solubor and Borosol. For foliar sprays, no more than 0.2 lb./a actual B in 1 or 2 prebloom sprays is the standard recommendation. The low rate reflects the high risk of phytotoxicity with boron. Improper calculation of foliar rates (the minute quantities required leaves less room for error), sprays applied too close together and overzealous soil applications have all resulted in toxicity symptoms. Boron interferes with the dissolving of water-soluble packets used for certain pesticides. When tank mixing, dissolve the packet thoroughly in the spray tank and then add B to the spray mix.

Manganese - Deficiency is seen mid-late summer starting as interveinal chlorosis on basal leaves. A herringbone pattern is characteristic. At soil pH's >6.0, e.g. properly limed soils, Mn availability in the soil is relatively low. Where a deficiency is confirmed by petiole analysis, foliar applications of manganese sulfate (2-3 lbs./100 gal.) are recommended as a corrective measure. Other manganese products used at label rates may also be effective. Foliar manganese oxide materials are considered to be less effective.

Calcium - Calcium deficiency is best addressed through the soil via liming and use of gypsum (calcium sulfate). However, some feel foliar app's are useful. These are very common in apples but the case for calcium sprays in grapes is a little murkier. If choosing to try this, 1) observe label cautions as phytotoxicity can be an issue; and 2) try to leave an untreated area to gauge efficacy. If getting calcium into leaves is the goal, then earlier sprays might be useful. To improve fruit integrity, make the application when fruit is present as the mobility of Ca in the phloem is very limited. (**Source: Long Island Fruit and Vegetable Update, No. 8, May 5, 2011**).

Weather data: (Source: [UMass Landscape IPM Message #10, May 6, 2011](#))

Region/Location	2011 Growing Degree Days (base 50° from March 1, 2011)	
	1-week gain	total accumulation for 2011
Cape Cod	57	118
Southeast MA	61	133
East MA	64.5	122
Metro West MA	69	119.5
Central MA	65	107
Pioneer Valley MA	63	126
Berkshires MA	76	138

Additional Weather Data is available form the following sites:

- UMass Cold Spring Orchard (Belchertown MA), Tougas Family Farm (Northboro MA), and Clarkdale Fruit Farm (Deerfield MA) at <http://www.umass.edu/fruitadvisor/hrcweather/index.html>
- University of Vermont Weather Data from several sites around the state at <http://pss.uvm.edu/grape/2010DDAccumulationGrape.html>
- New Hampshire Growing Degree Days at <http://extension.unh.edu/Agric/GDDays/GDDays.htm>
- Connecticut Disease Risk Model Results at <http://www.hort.uconn.edu/ipm/>

- Network for Environment and Weather Applications program run by the Cornell IPM team at <http://newa.cornell.edu/>. This will include the ability to run disease and insect development models for a wider area. Stay tuned.

FYI – check out the newly formed [Massachusetts Farm Winery and Growers Association](#) and [New Hampshire Winery Association](#) and the [Vermont Grape and Wine Council](#). These associations are of, by and for you! Join today!!

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We also acknowledge the excellent resources of [Michigan State University](#), Cornell Cooperative Extension of Suffolk County, and the [University of Vermont Cold Climate Viticulture Program](#). See the links below for additional seasonal reports:
[University of Vermont's Cold Climate Grape Growers' Newsletter](#)
[UConn Grape IPM Scouting Report](#)

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