WISCONSIN CRANBERRY CROP MANAGEMENT NEWSLETTER

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YIELDS AND HOT WEATHER

Growers in Central Wisconsin have been wondering how this hot weather in June and July will affect yields in October. Since weather patterns are unique from year to year, it is impossible to look at individual cases and draw broad conclusions. However, a little research has been done relating weather and yield. A study in New Jersey examined the relationship between weather and yields for the period of 1906 to 1984 and two subsets within that time. These researchers found that temperature and sunshine are two important variables. In general, warm temperatures from mid-May to late June, mid-October to mid-November and cold temperatures in early-February through March corresponded to good yields. Sunny weather in early May through mid-June also corrsponded to high yields. On the other hand, hot temperatures (above 90°F) during the immediate pre-bloom period (400 to 530 GDD) or during July corresponded to lower yields.

In a two year study of hybrid cranberry cultivars in the five cranberry growing states, we found that the rate of growth of cranberry fruit was best predicted by the number of moderate temperature days, between 60 and 85°F. This accounted for more than 80% of the variation in rate of fruit growth across states. One cool year in Wisconsin slowed fruit growth by 11 days compared to a more average year the year following. Including sunlight intensity improved the prediction above 90% accuracy.

A recent study of berry scald in New Jersey found that a severe scald event in 1990 included clear skies, air temperatures above 80°F, canopy temperatures up to 106°F, soil temperatures at 1 inch at about 80°F, dry soils from lack of rainfall **AND** dry air (dew points <54°F). However, growers who sprinkle irrigated during the heat of the day reported much lower incidence of scald (<0.5%) than on unirrigated beds (≈25%). The rule of thumb used by New Jersey growers is to begin irrigation when air temperatures reach 84°F. Irrigation replaces lost soil moisture and serves to cool the vines from the cooler water temperatures and from evaporative cooling.

What can growers do to alleviate the detrimental effects of extremely hot weather? Four suggestions follow.

1. Make sure soil moisture is adequate and continuous. Irrigate in the mornings to saturate the root zone. Morning irrigation minimizes evaporation.
2. Check soil temperatures. Unvined areas on sand may be very hot and will lose soil moisture quickly.
3. Irrigate during the heat of the day. Vine and soil temperatures will be reduced from the cooler water temperatures as well as from evaporation (although with dew points in the upper 70's evaporation is slow). Water droplets remaining on vines **DO NOT** act like little magnifying glasses leading to scald spots on vines. This has no basis in fact!
4. Consider draining mainlines if you plan to irrigate during the heat of the day. Water sitting in aluminum pipe heats up quickly and will scald vines when it is pumped through the sprinklers.

Careful thought and good management practices will allow you to beat the heat and still produce good yields.

Teryl Roper, UW-Madison Extension Horticulturist

ROUNDUP REMINDERS

With flowering over and fruit setting growers will once again be thinking about wiping weeds with Roundup. Be sure to read the product label before you begin an application. A few points warrant reminders:

- Coverage is the most important variable. You must have good coverage of the weed's leaf surface in order to get enough material throughout the plant to kill it completely. Dyes added to the wiping solution help you tell where you have wiped.
- Increasing concentration does not make Roundup more effective. Concentrations that are too high may be detrimental as they can kill the contacted tissue before enough is translocated to kill the roots. A 10 to 20% Roundup solution works for most people.
- Cut stump applications are allowed for woody brush. Cut the plant off then treat the stump with a Roundup solution. Making an emulsion with lanolin and then applying to the stump will help keep the Roundup on the surface so it is absorbed for a longer period of time.

- Adding ammonium sulfate per the label specifications can help entry of the active ingredient and will improve performance.
- Roundup requires a 6 hour rainfree period following application to get into the plant. Don't apply if rain is imminent.
- Remember the 30 day PHI.
- Wear appropriate PPE. This includes a long sleeved shirt and long pants and shoes plus socks. Waterproof gloves are not required, but are prudent.
- Keep the wiper surface clean. If dirt, weeds or other debris covers the wiper too little solution will accumulate on weed leaves.

Teryl Roper, UW-Madison Extension Horticulturist

PRE-HARVEST INTERVALS

While harvest is still some time off, now is the time to think about pre-harvest intervals to assure that any pesticide residues remaining on fruit are within the legal tolerances. A listing of the pre-harvest intervals and re-entry intervals for pesticides labeled for use in Wisconsin is found on page 10 of *Cranberry Pest Management in Wisconsin* (A3276). You'll want to review this information throughout the year as you make decisions about what pesticides to apply and when. Part of the table is reproduced below.

Pesticide	Preharvest interval (days)
Aliette	3
Bravo	50
Carbamate	<28 d after mid bloom
Confirm	30
Diazinon	7
Dithane & EBDC's	30
Funginex	60
Fusilade 2000	365
Guthion	21
Imidan	14
Lorsban	60
Mancocide	30
Marlate	14
Orbit	45
Orbit	45
Orthene	75
Poast	60
Ridomil gold	45

Roundup	30
Select	30
Sevin	7
Stinger	50
Touchdown	365

Please note that most of the pre-emergent herbicides are not listed in this table because if applied during the dormant period either in late fall or early spring the pre-harvest interval is not relevant.

Teryl Roper, UW-Madison Extension Horticulturist

I believe in the United States of America as a government of the people, by the people, for the people whose just powers are derived from the consent of the governed; a democracy in a republic; a sovereign Nation of many sovereign states; a perfect Union, one and inseparable, established upon those principles of freedom, equality, justice and humanity for which American patriots sacrificed their lives and fortunes. I therefore believe it is my duty to my country to love it, to support its constitution, to obey its laws, to respect its flag, and to defend it against all enemies.

William Tyler Page (1918)

LIQUID FERTILIZERS

"How much nitrogen did I give my vines? I just put out a quart per acre of a 20-20-20 liquid fertilizer." This question was posed to me a couple of years ago. When I got back to my office I pulled out a specimen label book for a popular liquid fertilizer manufacturer and looked at the products. I found a 20-20-20 liquid fertilizer. I was surprised by a couple of things I found.

This particular product had 25% of its N as nitrate (5% by weight). It is well known that cranberries only utilize ammonium nitrogen so 25% of what was applied was useless. Cranberries will take up nitrate, but they can't utilize it.

I could not find any indication if the analysis was on a weight or volume basis nor what the weight per gallon of the product was. Without that key piece of information it was difficult to calculate how much actual N the grower had applied. Here are calculations based on one of two assumptions:

Version 1.
Assume product to have the same density as water (8.3 lbs/gallon).
8.3/4 = 2.1 * 20% (0.2) = 0.415 lbs N/A

Version 2.
Assume product to have the same density as liquid N (11 lbs/gallon).
11/4 = 2.75 * 20% (0.2) = 0.55 lbs N/A

Regardless of which colleague is correct the amounts of N applied in either version are very small, almost to the point of being inconsequential. In either case about ½ pound of actual N had been applied per acre.

Considering the current price for cranberries, what makes the most sense economically? I called 2-3 fertilizer suppliers to get some prices on liquid or soluble products and common granular products that are currently used by cranberry growers. The results of the phone calls are in Table 1.

Product	$/lb	$/lb N
6-24-24	0.138	0.008
21-0-0	0.113	0.023
9-20-19	0.134	0.012
13-13-13	0.126	0.016
10-45-10 (soluble)	1.00	0.10
20-20-20 (soluble)	0.72	0.144

If I were trying to hold the line on costs this would be a pretty easy decision for me. I would not choose either of the soluble products that I priced on the telephone. I did not include any products like fish emulsion or chicken manure, but they would be more expensive still.

Is liquid fertilizer available to plants faster than granular fertilizer? We did some tests last year to address that question in an indirect way. We applied labeled (^{15}N) fertilizer to plots and watered them off of the vines and into the soil. This would be similar to irrigating after a granular fertilizer application.

We found the fertilizer in the uprights within 24 hours after application. It would still take a day or two to get the fertilizer N incorporated into amino acids and then proteins that would be of value to the vines, but since fertilizer gets into the plant via the roots within a day I see no advantage to foliar fertilizers.

If you do choose to use a liquid or a soluble fertilizer for a foliar feed, make sure that all of the N is in the ammonium form. If you buy a product with N in the nitrate form you are wasting money and since nitrate will leach you may add nitrate to the environment.

In my opinion, these high cost products offer no biological advantages to lower cost products with similar analyses.

Teryl Roper, UW-Madison Extension Horticulturist

Wisconsin Cranberry Field Day

The 2002 Wisconsin Cranberry Field Day will be held Wednesday August 14 at Tamarack Flowage Cranberry Company near Three Lakes. Registration materials will be sent by the Wisconsin State Cranberry Growers Association.

This is a beautiful, well maintained property. I'm confident there will be something for you to learn at this field day. Please put this date on your calendar and plan to attend.