Integrated Cranberry Crop Management for Wisconsin

Cranberry Crop Management Newsletter

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COOLING CRANBERRY VINES

Wisconsin is in the midst of drought and some unusually hot weather. All of the state except a small sliver along the Illinois border is experiencing a moderate to severe drought and northern parts of the state are drier than southern parts of the state (see graphic elsewhere in this newsletter). Fortunately, cranberries are all irrigated so as long as the water supply holds up growers can meet the needs of the vines for water. As the season changes from summer to fall we usually receive rain that can be stored in reservoirs for harvest and winter flooding.

Heat also takes their toll on cranberry vines. Like all biological processes, photosynthesis is temperature dependent. When the temperature is colder or warmer than the optimal temperature for photosynthesis the rate of photosynthesis is reduced. When the rate of photosynthesis is reduced less sugar is available for export from the leaves to fruit, terminal buds, and roots. Some older research suggested that the optimum temperature for photosynthesis is in the upper 70's. This work needs to be repeated and updated since more accurate and more adaptable equipment is now available. The principle is that when vines are too hot, their productivity is reduced. What can be done to cool cranberry vines?

In arid climates people cool their homes with evaporative air conditioners. These are essentially metal boxes with a squirrel trap fan in the middle and the four sides of the box are replaced with pads and water is pumped over the pads to keep them moist. As the fan pulls air through the pads and into the home the water evaporates. Evaporation requires heat and this heat comes from the air, thus the resulting air is cooler than the outside air. This same principle can work on a cranberry marsh.

In order to test our hypothesis we set up a datalogger on a cranberry marsh on a couple of hot afternoons and had the manager turn off the sprinklers to one bed while we monitored the temperatures of the soil, canopy, 6 inches above the canopy and about 3 feet above the canopy. The data from our work is shown in Figure 1. Pre-treatment air temperatures at canopy height were about 81°F on the first day and about 93°F on the second day. Turning on the sprinklers in the afternoon caused an immediate drop in temperature of about 6°F on the first day and about 13°F on the second day. On the first day even with the sprinklers running the temperatures slowly rose during the 30 minutes that they ran. On the second day the

temperatures stayed at about 80°F during the irrigation. Once the sprinklers were turned off, the air temperatures above the canopy rose within about 10 minutes. The temperature at vine height rose about 3 degrees when irrigation ceased, but stayed cooler than the non-irrigated canopy temperature for at least 30 minutes afterwards.

These data support the hypothesis that irrigation will cool vines. The cooling effect was almost immediate when irrigation began and the effect lasted for upwards of 30 minutes after the irrigation stopped. Cooling the vines can reduce plant stress by adding moisture to the soil and by reducing the canopy temperature. Irrigation appears to be a plausible method to reduce the stress cranberry vines may experience during hot dry weather. This practice could easily be adopted on most marshes.

Matt Lippert and Teryl Roper, University of Wisconsin-Extension

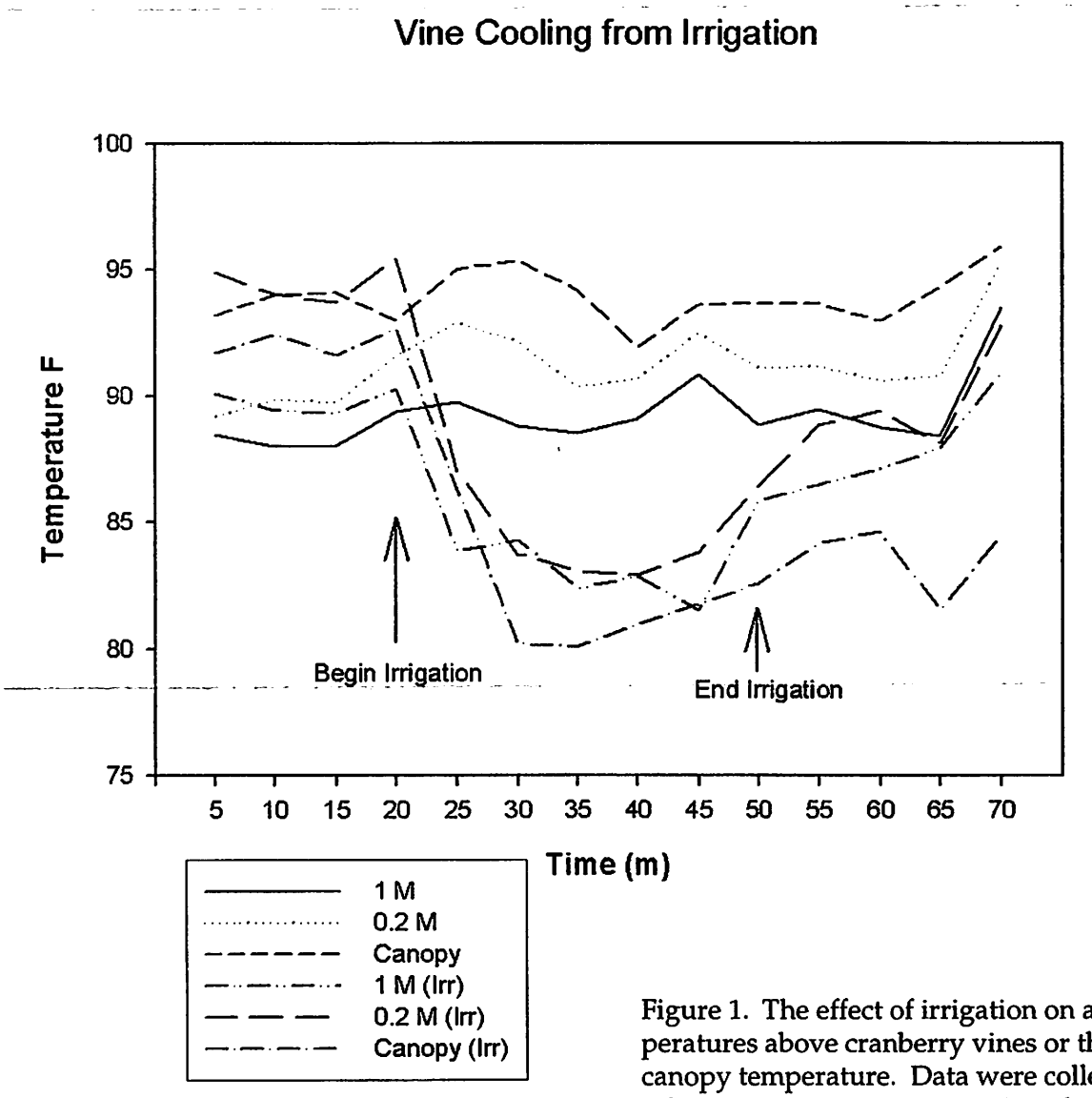


Figure 1. The effect of irrigation on air temperatures above cranberry vines or the vine canopy temperature. Data were collected on July 31, 2007 near Wisconsin Rapids, WI.

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. Read the label in its entirety before making any pesticide application. The pre-harvest interval is listed on all agricultural pesticide labels.

Pesticide	Preharvest interval (days)
Orthene	75-90
Confirm	30
Sevin	7
Bravo	50
Lorsban	60
Select	365
Diazinon	7
Admire	30
Roundup/glyphosate	30
Dithane & EBDC's	30
Mankocide	30
Marlate	14
SelectMax	60
Stinger	50
Funginex	60
Stinger	50
Orbit	45
Imidan	14
Entrust/Spintor	21
Actara	30

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

CALENDAR ITEMS

By the time you receive this newsletter the 2007 summer field day will be history. We thank Copper River Cranberry Co. for hosting us this year.

Planning is beginning for the 2008 Wisconsin Cranberry School. The WSCGA Education Committee will be meeting in August to make initial plans. If there is some topic that you would like addressed at cranberry school, or if there is a speaker you would like to hear please let us know. We greatly value input from the grower community. In addition, we review the evaluation forms from the 2007 school for ideas and criticisms and try to do better.

We'll also need willing hosts for summer field day for the coming years. If you are willing to host the field day at your marsh please let us know.

We often hear people excuse themselves for their uncouth manners and offensive language . . . but we ought to imitate the best speakers, and study to convey our ideas to each other in the best and choicest language. . . . Let not thy tongue give utterance to the evil that is in thine heart, but command thy tongue to be silent until good shall prevail over the evil.

Brigham Young

The best thing to give your enemy is forgiveness; to an opponent, tolerance; to a friend, your heart; to your child, a good example; to a father, deference; to a mother, conduct that will make her proud of you; to yourself, respect; to all men, charity.

Francis Maitland Balfour

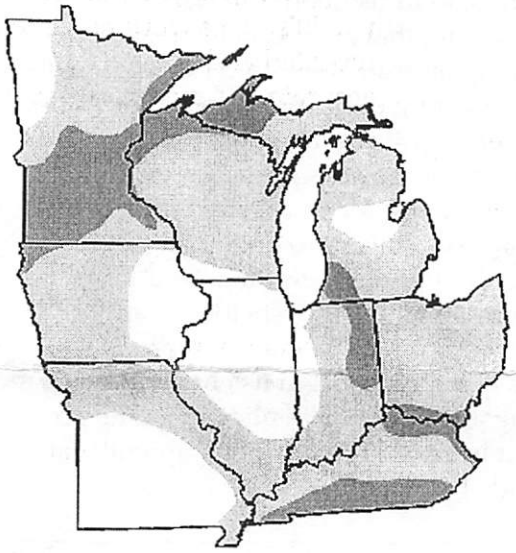
U.S. Drought Monitor

Midwest

July 31, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.5	74.5	48.3	16.2	0.0	0.0
Last Week (07/24/2007 map)	32.4	67.6	44.3	12.3	0.3	0.0
3 Months Ago (05/08/2007 map)	81.1	18.9	10.0	3.8	1.9	0.0
Start of Calendar Year (01/02/2007 map)	57.8	42.2	18.0	11.1	7.1	0.0
Start of Water Year (10/03/2006 map)	63.5	36.5	21.9	10.3	7.7	0.0
One Year Ago (08/01/2006 map)	49.0	51.0	34.2			



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, August 2, 2007

Author: Brian Fuchs, National Drought Mitigation Center

Drought conditions prevail over much of Wisconsin. Cranberry growers are fortunate to have irrigation to provide water necessary for crop development. Hopefully as summer changes to fall season rains will come to provide the water necessary for harvest and the winter flood.

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