REPORTING SECTION 18 USE OF ORBIT

By now all cranberry growers in Wisconsin should have received a form for reporting their 1996 use of the fungicide Orbit. If you have not received the form, please contact the WSCGA office at (715) 423-2070. The EPA will not grant future Section 18 or regular labels for Orbit unless this information is reported. Completed forms should be returned by September 6 (or ASAP thereafter) to Patty McManus, Department of Plant Pathology, 1630 Linden Drive, Madison, WI 53706. Any questions regarding Orbit or the reporting form should also be directed to her by phone (608) 265-2047; fax (608) 263-2626; or e-mail psm@plantpath.wisc.edu.

FIELD DAY

Thanks to WSCGA and the McFarland family for hosting a very successful field day in Manitowish Waters. Sharing stories, ideas and questions among new and old friends and seeing new approaches to cranberry farming were all facets of this field day.

UPRIGHT "CANKER" MYSTERY

Thanks to IPM consultants in the state, I've been introduced to this mysterious malady known as "canker" that is affecting uprights, especially Ben Lear. Of all the weird stuff and questions I haven't been able to answer during my first season in cranberries, this one takes the cake. For those who may not be familiar with the problem, let me explain the symptoms. One-year old and older portions of the uprights are swollen and rough, have split and peeling bark, and usually no leaves. This year's growth is stunted. If you look closely with good light and a lens, you see bumpy galls that appear to emerge from under the bark. Soaking the upright in water for a few minutes plumps up the galls and makes them easier to see.

Looking at a cross-section of the stem under the microscope, the swelling appears to be outside the vascular cambium. The vascular cambium is a cell layer from which new food- and water-conducting cells are born. So, if the cambium is still functioning, uprights should be able to function. Field consultants and growers have told me that their vines do recover, but it takes two years to get back into production.

As others before me, I do not know what is causing the galls. But I am investigating possibilities, including bacteria. Certain bacteria cause galls on other fruit and nut crops. You might be familiar with crown gall, a bacterial root and crown disease of many fruit crops. I must emphasize, however, that other aspects suggest this is not a disease, but rather a disorder brought on by environmental factors.

If you have uprights with the symptoms described above, I'd like to hear from you. The more information we can piece together, the better the chance of figuring this one out. My number is (608) 265-2047.

Patty McManus, UW-Extension

True education does not consist merely in the acquiring of a few facts of science, history, literature or art, but in the development of character. True education awakens a desire to conserve health by keeping the body clean and undefiled. True education trains in self denial and self mastery. True education regulates the temper, subdues passion and makes obedience to social laws and moral order a guiding principle of life.

D.O. McKay

CRANBERRY TISSUE TESTING

The only reliable means of assessing the efficacy of a fertilizer program is tissue testing. **NOW** is the time to collect tissue and soil samples for analysis. Cranberries require proper amounts of 13 mineral elements in addition to carbon dioxide, water and sunlight. When any of these items are in short supply growth and yield will be reduced. However, if they are in adequate supply, adding additional amounts will not increase growth or yields. Tissue testing is the single reliable means of determining if adequate amounts of the 13 required mineral elements have been supplied and to gauge if your fertility program has been adequate.

Good tissue testing requires consideration of three factors:

- Sample at the correct time
- Sample the correct part
- Normal nutrient ranges

Taking a sample

Collect tissue samples during the last two weeks of August through the first week or two of September. The reason to take samples during this time is that the concentrations of the 13 required minerals are stable during this period so the exact date you take the sample is less critical. Also, the standard values against which the results are compared are based on sampling in this time frame. Samples taken at other times are not interpretable based on these standards.

Sample the correct part

A good cranberry sample consists of current season growth from both fruiting and non-fruiting uprights. Clip the uprights just above the fruit and be sure to get only current season growth. Collect about 20 tips from about 10 different locations within a bed. Don't collect all the samples from one corner or along one edge. Walk a zigzag pattern throughout the bed. Collect from about 10 separate locations within a bed. The total sample will consist of about 200 uprights or about 1 to 1 ½ cups of tissue.

Do not wash or rinse the uprights. Washing will remove soluble nutrients and give you an inaccurate test. Allow the sample to dry overnight before mailing. Use paper bags or envelopes to mail the samples. Please don't use plastic bags or cellophane (except vented Ziploc brand vegetable bags). Be sure to label each bag with a bed number or other identification code. Submit the samples promptly to a reputable laboratory. Your county Extension office can help you locate a suitable lab.

Soil Testing

Take a soil test at the same time you collect tissue samples. Use a trowel or soil probe to sample to six inches. Collect the soil samples in the same area where you collected tissue samples. The UWEX lab will run a routine soil test accompanying a tissue test at no additional fee ($18.00 in 1996).

Interpreting the results

Once the results come back from the lab you should compare the results against the nutrients standards for North America and against previous results for the bed or section.

In addition to the lab results you should pay attention to vine growth. Vigorous growth or weak growth may be explained by your test results and will help you alter your fertility program for the following year.

The report will not tell you how much fertilizer to apply next season, but will allow you to monitor the efficacy of your current program and point out potential concerns to watch out for later. If you plot the results of tissue testing over time you can begin to see patterns of nutrient changes over time and work to prevent deficiencies.

Never make a promise in haste.

Mahatma Gandhi

Table 1. Cranberry tissue standards for producing beds in North America

Nutrient	Normal Concentration[1]
Nitrogen (N)	0.90-1-10%
Phosphorus (P)	0.10-0.20%
Potassium (K)	0.40-0.75%
Calcium (Ca)	0.30-0.80%
Magnesium (Mg)	0.15-0.25%
Sulfur (S)	0.08-0.25%
Boron (B)	15-60 ppm
Iron (Fe)[2]	>20 ppm
Manganese (Mn)[2]	>10 ppm
Zinc (Zn)	15-30 ppm
Copper	4-10 ppm

1. Normal levels are based on samples taken between August 15 and Sept. 15.
2. Cranberry researchers have not found a normal range for Fe and Mn.

Teryl Roper, UW-Madison Extension Horticulturist

CRANBERRY E-MAIL LIST

For cranberry growers who have e-mail a cranberry e-mail list is available through UW-Extension. The list is meant to facilitate communication among cranberry researchers and growers. Questions and observations can be posted to the list and perhaps someone who receives your message will have an answer (or at least an opinion).

To post a message to the group send your message to:

cranberry-list@wisplan.uwex.edu

To subscribe to the list send an e-mail message indicating you wish to subscribe to me: trroper@facstaff.wisc.edu

We hope lots of you will subscribe so we can communicate easily via this new medium. The list allows messages to be sent to multiple people through a single address. Don't you wish you could do this with Christmas cards!

OBSERVATIONS FROM THE FIELD

The week of August 16 we have started our crop forecasting. Dropping a "no cheaters square foot guide" we are harvesting all the berries that we can find; counting and weighing them on a gram scale. When all the results come in we will share the numbers with you. Thus far (generally) we are very disappointed in the weights per berry. In some cases we are harvesting blossoms instead of fruit!

The dreaded cutworm still plagues us. Now that nocturnal pest fancies eating holes in our fruit! This critter is enormous and very difficult to get rid of. Because it feeds at night, an evening application is important. We have used a fruitworm spray during the daylight hours (as usual) but guess what? It didn't seem to slow down this creepy looking monster. Historically, we could see circular feeding patterns. During bloom it worked the blossoms and the areas would stick out like a sore thumb, but now it has a way of hiding itself by selective feeding. You have heard of the old cliché "book worm", well it appears that this is a well read pest! A WORM THAT HAS READ THE BOOK!

We are seeing signs of early dormancy in the vines. Some of the buds have a dark cast, as in over-wintering, yet some appear to be on the move, as in blasting. Because most of our crop is on the light side, we have a strong urge to push the fertilizer in hopes of gaining more size and take on weight. The age old question is: Does my fertilizer go to the fruit or will I hurt my 1997 crop if I push at this time of the year? Will the vines be dormant enough to harden the buds or will the uprights be grass green and still thriving after harvest? Have these cool temperatures put our plants into a "turn-off" mode, and any attempt to turn things around would be in vain? Questions each of us ask daily.

Jayne Sojka, Lady Bug IPM

FRUIT GROWTH

This time of year cranberry growers are very interested in getting their fruit to size. This year in particular fruit size is smaller than growers hope. The question inevitably arises, "What can I do to get these small fruit to size?" The answer, unfortunately, is that there is likely nothing you can do as a management practice to cause small fruit to get bigger between now and harvest. Fruit are composed of water, organic compounds and some few mineral elements. Lets discuss these components.

Most fruit are about 85% water. Water is important for a variety of reasons. Adequate water allows the stomates in the leaves to be open, thus facilitating carbon dioxide entering the leaves and oxygen and water to leave the leaves. Water is the driving force for carrying minerals to the leaves and fruit. Water causes cells to expand, leading to larger fruit. Most growers have had more than enough water this year, nor have we had significant stretches of hot dry weather that would cause water deficits. In general cranberries require at most an inch of water per week to meet their demands.

The structure of plants is about 95% carbon, hydrogen and oxygen. These are materials like cellulose, lignin, proteins and lipids. Photosynthesis is the origin for all of the carbon contained in these compounds. The amount of carbon that can be fixed through photosynthesis is important to ultimate crop yields. Provided there is enough water and carbon dioxide, light and temperature are the primary limiting factors to cranberry photosynthesis. It takes about half of full sunlight to achieve the maximum mid-day rate of photosynthesis. Light clouds or haze should not reduce photosynthesis. However, heavy clouds will block sufficient light to substantially reduce photosynthesis.

Even with good rates of photosynthesis our calculations predict that, on average, a fruiting upright fixes enough carbon to support the growth of two fruit per upright. (see 1993 Wisconsin Cranberry IPM Newsletter 7(8):1-2)

The optimal temperature for cranberry photosynthesis is about 75°F. At temperatures higher or lower than this the rate of photosynthesis declines. One recent study showed that for the five cranberry producing states the best predictors of fruit growth rates were not degree days nor simply the number of days. Rather, it was the number of moderate temperature days with lows above 60°F and highs below 86°F. 1992 was a cool year in Wisconsin with many more nights below 60° than 1993. It took 11 more days in 1992 for a fruit to gain one-half gram of weight than in 1993. Unfortunately, we have no control over the weather.

The last component of fruit is minerals. Minerals are required above certain concentrations for plants to grow and fruit to develop. Once the concentrations are at or slightly above these levels adding more won't improve plant performance. Consider your fertility program like putting gas in your truck. When the tank is empty the truck won't run. But when the tank is full the truck won't run farther or faster by putting the nozzle through the window and filling up the cab! Once your plants have adequate fertility you won't make any more fruit set or get any larger than they would have gotten anyway by adding more fertilizer. In fact, the nitrogen fertilizer you apply this year has little, if any, effect on this year's crop (see Wisconsin Cranberry School proceedings 1994, 5:18-21) even on a bed diagnosed as deficient.

What is the point of this rambling? First, fruit growth is largely controlled by the weather. We have no control over the weather so we have to be satisfied with doing the best we can given our conditions. Second, adding fertilizer this year will not cause fruit to be larger or more fruit to set this year. Good overall management will provide the best chance of salvaging a crop this year. There are no magic potions that will change this.

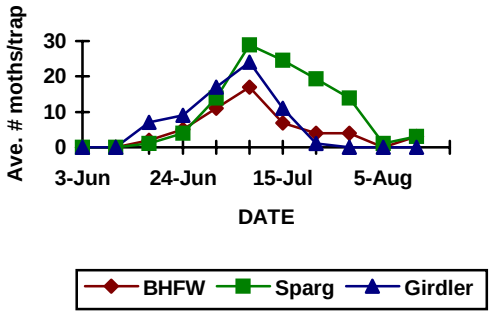
Teryl Roper, UW-Madison, Extension Horticulturist

1996 Pheromone trap counts

Cranmoor area includes:	Adams, Portage and Wood counties
Warrens area includes:	Jackson, Juneau and Monroe counties
Northeast area includes:	Forest, Lincoln, Oneida, Price, and Vilas counties
Northwest area includes:	Barron, Burnett, Douglas, Rusk, Sawyer, and Washburn counties

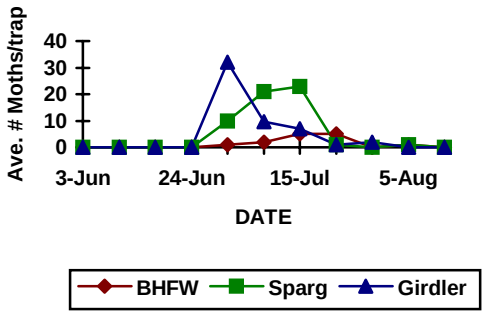
Please note that different regions may have different scales on the left axis. Doing this allows greater accuracy in determining actual values within a region. However, comparisons between regions are more difficult. Please use caution in making comparisons of these averages to trap counts on your marsh.

Northwest Area



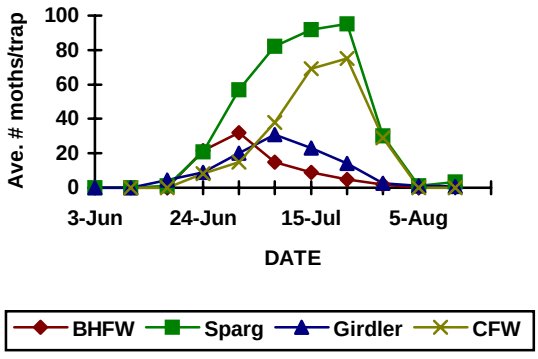
Means from 8 growers

Northeast Area



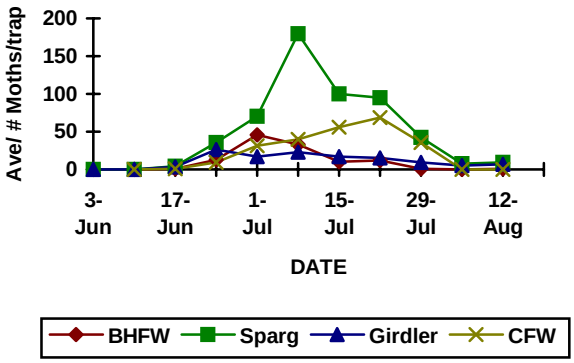
Means from 2 growers

Warrens Area



Means from 13 growers

Cranmoor Area



Means from 10 growers

Wisconsin Cranberry Crop Management Newsletter
Department of Horticulture
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Madison, WI 53706-1590

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