CRANBERRY TISSUE TESTING

The only reliable means of assessing the efficacy of a fertilizer program is tissue testing. The correct time to collect tissue and soil samples for analysis is late August through early September. 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 effective.

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, or walk from one corner to the opposite corner collecting samples along the way. 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. If the lab is ASCS certified you can be sure of reliable results.

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 1997).

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.

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.*

More information about tissue sampling is found in the bulletin A3642 "Cranberry tissue testing for producing beds in North America". This bulletin was mailed to all marshes last year. If you need additional copies contact your county Extension office or Teryl Roper at UW-Madison.

Teryl Roper, UW-Madison Extension Horticulturist

PESTICIDE SPILLS

For any pesticide spill, regardless of how large or small, you must control the spill, contain the spill and clean up the spill. Have a plan for dealing with pesticide spills on your marsh and make sure all employees who deal with pesticides know the plan. Keep supplies and equipment readily at hand that are required to deal with a spill. These would include absorbent pillows and dikes. You should also have containers to hold contaminated supplies once used.

Control the spill. Keep the spill from becoming larger by preventing continued release of the material. Shut off the valve or pump, put a leaking container in a larger container. However, stopping leaks from large containers or trucks is difficult.

Contain the spill. It is most important to keep a spill from contaminating a larger area or volume of soil or water than is possible. The smaller the area affected, the easier it will be to clean up later. Don't hose down the area; this will only increase the spread. Cover spills of dusts, powders or granular formulations with a tarp or other cover if rain is threatening.

Clean up the spill. Before performing a clean-up operation it is best to obtain instructions from the manufacturer. If the spill is significant directions may be given by the Wisconsin DNR and WDATCP.

All pesticide spills must be reported to the Wisconsin Spill Hotline 800-943-0003 (*24-hour service*). When you call you need to know:

- The chemical name of the compound released
- An estimate of the quantity released
- The time and duration of the release
- The medium into which the release occurred (water, soil, etc.)
- Anticipated health risks
- Precautions regarding the release (evacuations?)
- Contact names and phone numbers

Planning to prevent spills is the first priority. Second is to have a plan to deal with a spill should one occur.

Weeds Protecting Our Environment

This time or the year is depressing because we have combated weed pressure from early spring and now we seem to have a brand new crop of weeds. Our spring herbicides are seemingly gone and those fall species of pests are growing wild. Goldenrod is at an all time high, beggars tick, ragweed, steeple bush, water horehound, and more are invading the marsh. We are busily wiping every inch of weed we can reach with the hockey stick or by hand. But what about duckweed? As we look into the ditches we see duckweed just about everywhere on our route. What is it doing there?

In researching duckweed, I was pleasantly surprised to find out that it is actually a good thing. While reading Britannica's 1998 "Science and the Future" encyclopedia I read this: "The environmental benefits of plants have long been recognized; they recycle carbon dioxide from the atmosphere and produce oxygen. In the past 15 years, however, new advantages have been discovered as scientists search for ways to remediate contaminated ecosystems. By means of a technology known as phytoremediation, a term coined in 1991 by Iiya Raskin of Rutgers University, New Jersey, growing plants may join microorganisms in helping to restore the world's environmental quality. Scientists have identified many types of plants that can be utilized in a variety or environmental cleanup jobs. Viet Ngo of the Lemna Corp. St. Paul, Minnesota, for example, has developed a water treatment system that uses floating plastic grids to contain mats of duckweed. The thick layer of duckweed prevents the growth of oxygen-producing organisms and thus provides the anaerobic conditions necessary for the degradation of raw sewage. In addition to facilitating the breakdown of organic materials, the plants absorb the abundant nutrients routinely found in wastewater, including nitrogen and phosphorous, reducing the levels of these pollutants to the point where the treated effluent can be safely discharged into near by lakes and rivers. With special harvest equipment these weeds are then added to farm fields as a nutrient rich soil amendment."

So the next time you see duckweed in the ditches, let's look at it with a little different perspective.

Jayne I. Sojka, Lady Bug IPM

Reporting Orbit Use

The section 18 permit for the fungicide orbit (propiconazole) expired on July 31, and now is the time to report use of this product in Wisconsin. All cranberry growers in Wisconsin have received, or soon will receive, a form to record their use of Orbit. If you used Orbit, you MUST provide the information requested on the form and return it to me (my address on the form) no later that September 5, 1997. Reporting Orbit use is required by the EPA, and future Section 18 or regular labels for Orbit will not happen if we don't provide them with use data. Reporting Funginex (triforine) use is not required by EPA, but this information would be useful for cottonball control. If you have questions about reporting fungicide use, call me at 608-265-2041. I will be away from my office August 6-13 and again August 18-21.

Patty McManus, UW-Madison Extension Plant Pathologist

Girdler Biocontrol Availability

Following a corporate takeover and late negotiations, the biocontrol nematode *Steinernema carpocapase* will be available for cranberry growers in Wisconsin, Massachusetts, and British Columbia. This product was previously marketed as BioSafe-N and BioVector by the now-defunct Biosys. Quantities available are expected to be at levels similar to what was sold last year. Cole Grower Services will handle distribution in Wisconsin.

Timing for girdler control is based on pheromone trap catches of adult moths. Nematodes are applied to control larvae about 2

weeks after peak adult flight. Refer to the product label for specific mixing and application instructions.

Patty McManus, UW-Madison Extension Plant Pathologist

Hot Weather and Withering Uprights

The hot weather of late July was ideal for bringing on upright dieback caused by *Phomopsis vaccinii*. I wrote an article on upright dieback earlier this year (June 5 issue of CCM Newsletter), so I won't go into all the details here. But the main point is that *Phomopsis* infects uprights during shoot elongation and exists in a latent state within healthy-looking uprights. Then, if vines become stressed during hot summer weather, symptoms start showing up in the form of bronze-brown uprights. Determining weather one has dead uprights from *Phomopsis* or some other cause (e.g., root-damaging insects, or plain old drought stress) is not always simple, but knowing what you did and did not do culturally can help narrow down the possibilities. Also, remember that now is not the time to apply fungicides for control of *Phomopsis*; the fungus is inside the plant and out of reach of the protectant fungicides. Please refer to the June 5 article for more information on how to identify and manage *Phomopsis* upright dieback.

Patty McManus, UW-Madison Extension Plant Pathologist

Fireweed and/or Purple Loosestrife

There has been some confusion with these two weds lately. Here's some information and illustrations side-by-side so one can clarify any misidentification.

FIREWEED: Usually found from July thru September. The flowers are in a spike, with four mauve petals and eight prominent stamens. The plant is somewhat unusual in that there are seed pods, open flowers and unopened buds on the stalk at one time. The unopened buds hang down, the blossoms stand out at an angle, and the seed pods are held erect. The leaves are willowlike and alternate. The seed pods split open to release seeds bearing a silky down which are dispersed by the wind. By late summer the 3-6 foot plants are little more than dull stalks tipped with fluff, giving no hint of their earlier colorful array.

PURPLE LOOESTRIFE: Can be found from July thru September, too. It has a number of odd characteristics that have enabled this plant to spread and thrive luxuriously. The 2-6 foot spires may contain up to 3,000 flowers in the leaf axils of one stalk, and each flower produces a seed pod with as many as 100 seeds- astronomical productivity for one plant. There are three different kinds of flowers on different plants, with different lengths of styles and stamens, increasing the likelihood of cross-pollination by stamens, increasing the likelihood of cross-pollination by insects. In addition, the plant can sprout from portions of the root or even from broken stems. The roots form a dense, touch mat that is all but impossible to destroy once the plants are established. The peak blooming period lasts a scant two weeks, and the large stands become a dull rust color, evident then only by their abundance.

To the unsuspecting, both of these flowers are just beautiful. But for us that know, "the rest of the story" we look beyond that pretty bloom and see trouble from Purple Loosestrife. Be on top of the potential problems of this weed pest's invasion.

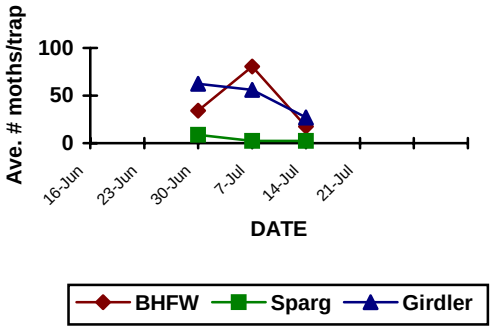
Jayne Sojka - Lady Bug IPM

1997 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

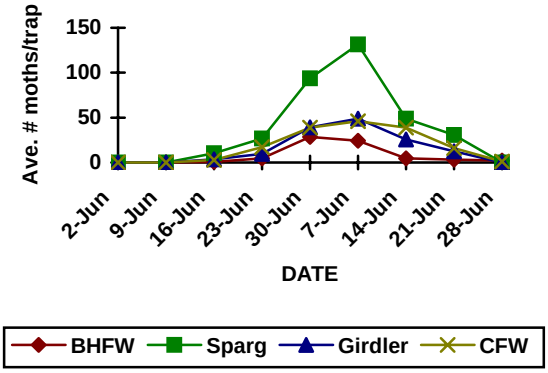
Please note that different regions may have different scales on the left axis. Doing this allows greater accuracy in determining actual values within a region. However, comparisons between regions are more difficult. Please use caution in making comparisons of these averages to trap counts on your marsh.

Northwest Area



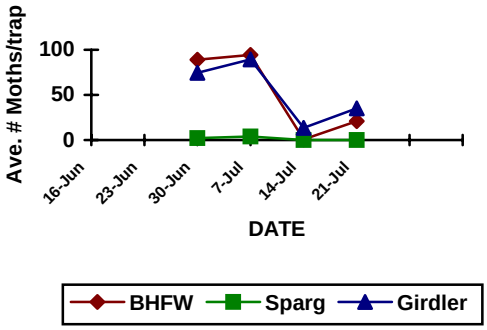
Means from 9 growers

Warrens Area



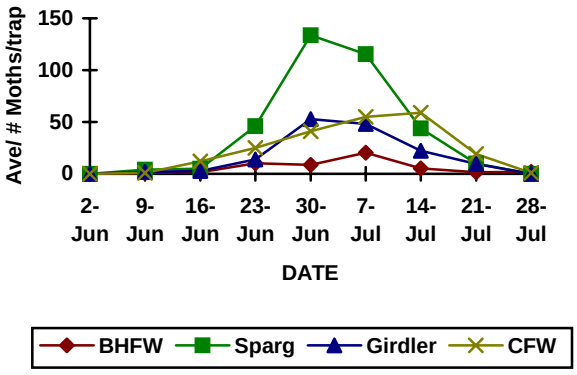
Means from 27 growers

Northeast Area



Means from 0 growers

Cranmoor Area



Means from 34 growers