Volume IX, Number 2, May 20, 1995

SOIL PH: MEASUREMENT AND MANAGEMENT

Cranberries require an acid soil to thrive. This is simply saying that cranberries prefer a soil with a high concentration of hydrogen ions. pH is a measure of the relative amounts of hydrogen ions (H+) in the soil. pH ranges from 0 to 14 with each whole number increment representing a change by a factor of 10. A soil with a pH of 5 is 10 times more acidic than a soil with a pH of 6.

Traditional wetland cranberry production areas typically have low pH soils. Newer upland areas may have naturally acidic soils that have been limed for production of other crops. Once the lime is gone the soil pH should drop. However, other upland soils are natively less acidic and will need adjustment. Another potential problem is the pH of irrigation water. Alkaline water will raise soil pH over time.

Before planting cranberries in a new bed, growers should have a routine soil test and adjust soil pH before planting. Elemental sulfur is the most common material used to adjust soil pH. The sulfur effect has a biological and a chemical component. Soil bacteria must first oxidize the sulfur to sulfuric acid which can release hydrogen ions and thus reduce soil pH. University recommendations are to apply no more than 500 pounds of sulfur per acre per year, preferably in split applications of 250 lbs each. Because of the bacterial component the reactions take time, the change in pH is not instantaneous.

Sulfate containing fertilizers such as potassium sulfate (K_2SO_4) or ammonium sulfate ($(NH_4)^2SO_4$) have no effect on soil pH. These salts contain no free hydrogen ions (H+) that are responsible for pH reduction. The one caveat is that when ammonium ions are taken up by plant roots a H+ ion is released, thus reducing soil pH.

Growers should keep an eye on soil pH. When the pH is too low or too high poor plant growth will result. You can sent a soil sample to a registered lab for analysis or you can measure soil pH yourself with an inexpensive pH meter using the following procedure.

You will need the following supplies:

- Clean containers (Medium paper cups work well).
- Soil probe or trowel to collect samples
- Distilled water (don't use tap water)
- Spoon or stirring rod
- Measuring cup
- pH meter

Take about 10 soil samples to a depth of 6 inches randomly in a bed or uniform portion of a bed. Getting a good sample is important. The results will be no better than the sample you collect. Mix the samples in a clean bucket or bag. Remove any plant material, rocks and other debris. Place equal volumes of soil and distilled water in a clean container and mix them well for at least 1 minute. Let the sample equilibrate for 2 to 5 minutes. Place the probe in the water and read the pH. This can easily be done on the tailgate of a pickup truck in a few minutes or collect several samples and do the test in the shop or break room.

Soil pH is one factor affecting cranberry production that growers can manage. Regular soil pH monitoring will allow assessment of management practices and can eliminate soil pH as one potential limiting factor.

Teryl Roper, UW-Madison

Note: Much of the material from this article was collected from Jonathan Smith's article "Measuring and Managing Soil pH" in the 1995 Wisconsin Cranberry School Proceedings, pages 11-15.

SOURCES OF INEXPENSIVE pH METERS

Ben Meadows Company
3589 Broad Street
Atlanta, GA 30341
800-241-6401

Cole-Parmer Instrument Company
7425 North Oak Park Avenue
Niles, IL 60714
800-323-4340

Edmund Scientific
101 East Gloucester Pike
Barrington, NJ 08007-1380
609-573-6250

Fisher Scientific
1600 West Glenlake Avenue
Itasca, IL 60143
800-766-7000

Forestry Suppliers, Inc.
P.O. Box 8397
Jackson, MS 39284-8397
800-647-5368

Gempler's
P.O. Box 270
Mt. Horeb, WI 53572
800-382-8473

Lab Safety Supply
P.O. Box 1368
Janesville, WI 53547-1368
800-356-0783

Markson Scientific
10201 South 51st Street
Phoenix, AZ 85044
800-528-5114

A suitable pH meter will have an accuracy of 0.1 units. This is just a sampling of sources. pH meters are sold by a variety of vendors and other sources are suitable. Inclusion on this list does not constitute endorsement by the University of Wisconsin or other supporters of this newsletter.

Teryl Roper, UW-Madison

LADY BUG NEWS

For the past several years we have analyzed buds to determine whether they are reproductive or vegetative. Our dissections have been limited to suspected bud injury such as hail or frost injury. This year an April cold snap has many growers concerned because some could not get the entire marsh flooded in time for the cold weather. The Lady Bug team along with many other people in the industry have dissected buds throughout the central growing area and our findings raise even more questions. Yes, we are finding injured buds in those marshes that have not been flooded, but we are also finding injured buds in areas that were flooded. Just what is this telling us? We did have stress in April, but we must have had stress prior to that as well. Experts from the East coast share that in any year one can expect 10 to 15% overwintering bud stress. What can we expect here in Wisconsin? When are our buds the most vulnerable? Remember that 1994 gave us an extended growing season. We harvested the same time, but because the vines were more green than usual did we keep water on them after harvest? Did we protect them in any way? In the spring we are very conscious of the temperatures and with any bud movement we are there with all that TLC. What about those fall temperatures? Is that bud "hardened off" enough to withstand the cold?

The Wisconsin Cranberry Board has funded a study by Jiwan Palta that will address Wisconsin frost tolerances. Perhaps this will change many of our current practices. I am confident that the University will be happy to keep us abreast of the findings. Stay tuned. . . .

Jayne Sojka, Lady Bug IPM

Kind words cost no more than unkind ones,. . . and we may scatter the seeds of courtesy and kindliness around us at so little expense. If you would fall into any extreme let it be on the side of gentleness. The human mind is so constructed that it resists vigor and yields to softness.

Jeremy Bentham

1994 GYPSY MOTH UPDATE

40,000 traps were in place to survey Wisconsin's Male gypsy moth activity. We are pleased to see a decline in numbers. In 1993, 35,000 male moths were trapped and in 1994 only 10,336.

The trapping coordinator, Melody Walker, has documented all the trap counts per county. The map below details those counts. Please note Door County's activity. Christopher Batio shares a theory for this shocking count. I quote, "We believe the numbers in Door County are so high due to male moths blowing in from Michigan. A blow-in of male moths does not threaten Wisconsin since adult females (which are flightless) would not be blown across the lake. We have found only a few egg masses and the peninsula offers a poor feeding environment for the moth since it has to significant tracts of oak forest. Now when you look at Oconto and Marinette County, even though the numbers of moths we caught were much lower we feel that these areas are more threatened because of the significant number of egg masses we found and the high density of oak forest."

22 different sites will be treated with B.t.k. Those counties are Door, Kewaunee, Marinette, Oconto, Brown, Sheboygan, Manitowoc, Ashland, Eau Claire, Marathon and Dane.

Lady Bug is pleased to be a cooperator of this program. We are actively trapping in 6 counties, all cranberry growing areas. It is our goal to be on top of this potential pest problem. 38,000 traps will be set throughout the state this year by many individuals.

Jayne Sojka, Lady Bug IPM

Editors note: For more information about Gypsy Moth biology and its potential as a pest, see Dan Mahr's article in the Wisconsin Cranberry School Proceedings, 1994, 5:44-48.

PRISM LABELED FOR NON-BEARING CRANBERRIES

PRISM herbicide has just received a label for non-bearing cranberries. PRISM has a similar effect as POAST and FUSILADE and will control grassy weeds if applied according to label directions. Apply PRISM at 13 to 17 oz /A at the appropriate stage of growth for grassy weeds listed on the label. Always include crop oil concentrate at the rate of 1 pt/A.

The restricted entry interval (REI) is 12 hours. Required personal protective equipment is listed in the agricultural use section of the product label. The pre-harvest interval for PRISM is currently 1 year. Do not apply PRISM to bearing beds.

Herb Hopen, UW-Madison

Wisconsin Cranberry IPM Newsletter
Department of Horticulture
1575 Linden Drive
Madison, WI 53706-1590