

# PLANT & PEST ADVISORY

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## Boosting Organic Agriculture

*Reprinted from the Northeastern Weed Science Society Newsletter, August, 2001.*

**O**rganic crop and livestock producers will receive a boost from the USDA to the amount of \$1 million to help assist in defraying the cost of obtaining organic certification in 15 states. To be eligible for the assistance, producers must have been certified by a certifying agent as of December 21 of last year in the following states: Connecticut, Delaware, Maine, Maryland, Massachusetts, Nevada, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Utah, Vermont, West Virginia, or Wyoming. Recipients of the funds will be eligible for up to 70 percent of the cost of certification, a maximum of \$500 for each certification. The funds are specifically for the transition to the National Organic Program. However, producers cannot use the USDA organic seal on their products before October 22, 2002. For further information see <http://www.ams.usda.gov/nop>.

According to a July 12 news release, Canada will establish an Organic Food Research Center at the Nova Scotia Agricultural College (NSAC) in Truro to help Canadian farmers compete against its international competitors for a larger share of the growing international market for organic food. The Center is designed to give Canada's producers an advantage over international competition. Agriculture and Agri-Food Minister Lyle Vanclief announced \$854,700 in federal funding for the facility that will be known as the Organic Agriculture Centre of Canada. Canada's organic sector is enjoying \$1 billion-a-year in retail sales and a 20 per cent annual growth rate. Significant opportunities to take this growth even further exist in several major markets such as the United States, Europe and Japan. Mr. Vanclief also announced \$27,000 to help Canada's organic industry develop a strategy to focus on its priorities in the domestic market, and strategies for competing in international markets. A team of partners, including the NSAC, will coordinate the strategy. These two initiatives come on top of \$600,000 in federal funding for the organic sector announced by the Minister in early June, and \$1.3 million in support for regional organic projects, bringing total funding for organic agriculture to about \$2.8 million. A copy of the complete July 12 Canadian News Release is posted at: <http://aceis.agr.ca/cb/news/2001/n10712ae.html>.

*Submitted by Bill Sciarappa, Monmouth County Agricultural Agent. □*

# Soil Sampling for Nutrient Deficiencies Detection

Reprinted from CSANews, September, 2000.

When there is a problem with crop growth in certain areas of a field, some soil tests may be necessary to find the cause. George Rehm, soil scientist with the University of Minnesota Extension Service, suggests collecting three soil samples: one from an area where the crop is growing well; the second from an area where the stunting or abnormal growth is most severe; and the third sample should come from an area where symptoms are just starting to appear. Dr. Rehm says an evaluation of combined results of the analysis of each sample can often identify the cause of a problem, if a nutrient deficiency is the cause.

The soil sampling depth should be the same as for fertilizer recommendations: 0 – 8 inches for immobile nutrients, 0 – 6, 6 – 12, 12 – 24, and 24 – 26 inches deep for mobile nutrients such as nitrogen.

Dr. Rehm adds that this process will provide much more information than analysis of a single sample that is supposed to represent the whole field.

Submitted by Joseph Heckman, Specialist in Soil Fertility. □

# Conversion Factors for Soil Test Laboratory Reports

Joseph R. Heckman, Ph.D., Soil Fertility, and Jean Rilling, Research Assistant

Soil test laboratories use several different units of measurement and chemical expressions for nutrients when reporting the results of a soil test. Depending on which lab you use, it may report the levels of nutrients in either pounds per acre (lbs/acre) or in parts per million (ppm). In addition, nutrients such as phosphorus, potassium, magnesium, and calcium may be reported either as elements (P, K, Mg, Ca) or in the form of oxides (P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, MgO, CaO). When comparing the test results from several laboratories or consulting tables of nutrient sufficiency (such as Rutgers Cooperative Extension Factsheet FS719, Soil Fertility Test Interpretation - Phosphorus, Potassium, Magnesium, and Calcium), conversion factors (Table 1) are helpful for converting between the various methods of reporting.

For example, 25 ppm phosphorus (P) is equal to 50 pounds P per acre [25 ppm P x 0.5 = 50 lbs/acre P], which is also equivalent to 114.5 pounds P<sub>2</sub>O<sub>5</sub> per acre [50 lbs/acre P x 2.29 = 114.5 lbs/acre P<sub>2</sub>O<sub>5</sub>].

Note, however, that soil test levels expressed as pounds per acre should be interpreted only as an index of nutrient availability and not literally as being equivalent to actual pounds of available nutrients per acre. In addition, while it is possible to convert between the different units of measurement and chemical expressions used by testing labs, it would be incorrect to draw comparisons between the different soil tests, such as the Mehlich-I and the Mehlich-III tests, as each uses different chemicals and procedures to extract nutrients. The results from different labs are comparable only when they are using the same soil test method.

Table 1. Conversion table. Multiply the initial form by the multiplication factor to obtain the final form.

Initial Form x	Multiplication Factor	=	Final Form
<b>Units of Measurement<sup>1</sup></b>			
lbs/acre	0.5		ppm
ppm	2.0		lbs/acre
<b>Nutrients</b>			
P <sub>2</sub> O <sub>5</sub>	0.44		P
K <sub>2</sub> O	0.83		K
MgO	0.60		Mg
CaO	0.71		Ca
P	2.29		P <sub>2</sub> O <sub>5</sub>
K	1.20		K <sub>2</sub> O
Mg	1.67		MgO
Ca	1.40		CaO

<sup>1</sup> When depth of soil sample = 6 inches

Reference.

Heckman, J.R. 1998. Soil Fertility Test Interpretation - Phosphorus, Potassium, Magnesium, and Calcium. Rutgers Cooperative Extension. FS719. □

Attention: Organic Blueberry Growers

## Cranberry Fruit Composting Workshop

Sponsored by  
**Rutgers Cooperative Extension**  
September, 20, 2001, 8:30 - 1:30

Please join us for a free half-day workshop for cranberry and blueberry growers interested in cost effective disposal and beneficial use of excess cranberry fruit.

Location: Phillip E. Marucci Center for Cranberry and Blueberry Research, 125A Lake Oswega Rd., Chatsworth, NJ.

LIGHT LUNCH WILL BE PROVIDED FREE OF CHARGE

### Workshop Schedule

- 8:30 Program registration, coffee and doughnuts
- 9:00 Welcome - Uta Krogmann, Solid Waste Specialist; Barbara Rogers, Soil Ecologist; Saratha Kumudini, Crop Physiologist, RCE
- 9:10 Composting Basics - John Hogan, Research Scientist, Rutgers University, Department of Environmental Sciences
- 9:40 Composting of Cranberry Fruit - Speaker TBD
- 10:10 Siting Criteria for On-Farm Compost Piles - Janice Reid, District Conservationist, NRCS
- 10:40 BREAK
- 11:00 On-Farm Composting of Vegetative Waste Rules - FerdowsAli, Agricultural Water Specialist, NJ Department of Agriculture
- 11:20 Adjusting Pesticide Application with Mulch - Ray Samulis, Burlington County Agricultural Agent, RCE
- 11:40 Mulching Blueberry Plants - A Case Study for End Product Use - (Tour of demonstration site at the Center for Cranberry and Blueberry Research)- Barbara Rogers and Saratha Kumudini, RCE
- 12:30 LUNCH

### Registration

Please register by *September 14* for this free meeting supported by a New Jersey Agricultural Experiment Station grant so that proper arrangements can be made for lunch and meeting space. Call for directions.

Phone: 732-932-4871, Barbara Motherwell, Mon. through Fri., 8:30 am. — 4:30 pm.

Fax: 732-932-8644, 24 hours.

Mailing address: Composting Workshop, Dept. of Environmental Sciences, Rutgers, the State University of New Jersey, 14 College Farm Rd., New Brunswick, NJ 08901-8519. □

## Plasticulture Short Course Offered in October

A two-day short course on Plasticulture and High Tunnel production will be offered on October 24 and 25, 2001 at the Rutgers Cooperative Extension Office in Clayton, Gloucester County. The short course is presented by the American Society of Plasticulture and is sponsored by Penn State Cooperative Extension and Rutgers Cooperative Extension. Attendees can register for one day or two days. Fees include program materials, breakfast, lunch, and afternoon refreshments. Participants are urged to register by October 12, 2001, since space is limited. Key topics include: vegetable production systems, drip irrigation design, water and fertigation management, colored mulches, strawberry and small fruit plasticulture, weed management, soil fumigation, row covers, high tunnels, integrated pest management, cut flower production, and marketing and economics of plasticulture crops.

Producers and agricultural industry representatives will not want to miss this informative, one-time short course. To receive more information or a registration form contact Pat Heuser at the American Society for Plasticulture at 717-238-9762 or Michelle Infante-Casella at 856-307-6450 ext. 1. Proceeding booklets will be included with your attendance and will be given out at the short course. □

# Helpful Equations for Calibrating Airblast Sprayers

Jeremy Compton, Tree Fruit Technician,  
Rutgers Snyder Research and Extension Farm

Organic growers have the same obligations as all pesticide applicators for safe application methods, minimal use of materials, and avoiding drift, even if the products used have lower human and

environmental health and safety risks. Calibration of sprayers is an essential part of the process for safe and efficient crop production. Below is a quick and easy reference for procedural steps and equations involved in efficient airblast sprayer calibration. The equations in the following examples are necessary for determining sprayer output and calibrations. The italicized numbers in the equations are for example only, and growers should substitute numbers that pertain to their situation. If you have any questions, please consult your County Extension Agent.

In order to calibrate, we need to know 3 things:

1. Sprayer travel speed in miles per hour (mph).
2. Pump discharge rate in gallons per minute (gpm).
3. Water volume requirements per acre (gpa).

To find travel speed of your tractor:

$$\text{MPH} = \frac{\text{Distance (ft)} \times 60}{\text{Time (seconds)} \times 88}$$

- Mark off 100' (This should be in field conditions)
- Time how long it takes for you to travel that 100' distance
- Multiply distance traveled (100') x 60 (this is a constant)  
100 x 60 = 6,000
- Multiply time of travel (*33.9 seconds*) x 88 (this is a constant)  
33.9 x 88 = 1,988.8
- $\text{MPH} = \frac{\text{(Distance)} \quad \textit{100 (ft)} \times 60}{\text{(Time)} \quad \textit{33.9 (sec.)} \times 88}$

MPH = *2.01 mph*

$$\text{GPM} = \frac{\text{gpa} \times \text{row spacing} \times \text{mph}}{495}$$

$$\text{GPM} = \frac{\textit{300 (gpa)} \times \textit{25 (ft)} \times \textit{2.01 (mph)}}{495}$$

Target GPM = *30.45 gallons*

- Find the nozzle capacity of the disk/core combination you are using in correlation to your selected pressure. The Tee-Jet Catalog provides a nice chart to aid with this when using Spraying Systems nozzles.
- Fill sprayer to capacity.
- Operate machine for 3 – 5 minutes.
- Measure amount of water needed to refill the tank.
- Add up the nozzle capacity of each nozzle on the sprayer.

Example: *D7/45 at 300 psi = 1.94 GPM per nozzle*

16 nozzles x 1.94 GPM per nozzle = 31.04 GPM

- Differences <10% of target GPM = adjust pressure and re-test
- Differences >10% of target GPM = change nozzle configurations and re-test

To find GPA:

$$\text{GPA} = \frac{\text{GPM} \times 495}{\text{Row spacing} \times \text{MPH}}$$

$$\text{GPA} = \frac{\textit{31.04} \times 495}{\textit{25 (ft)} \times \textit{2.01 (mph)}}$$

GPA = *305.76*

SEE WORKSHEET ON PAGE 5

# IR-4's Methyl Bromide Alternative Program Incorporates Biopesticides

*Sandy Perry, IR-4 National Outreach Specialist, Michigan State University*

Methyl bromide, a soil fumigant long used to kill pests and weeds in the soil before planting, is due to be phased out of farm use in 2005 because it has been identified as an ozone depleter. The loss could cost farmers millions of dollars in lost revenues. The Agricultural Research Service (ARS) branch of USDA began the search for a replacement and was joined in 1999 by the IR-4 Project. IR-4 is a USDA-funded agency that seeks to expand the range of pest control products available for use on minor crops such as fruits and vegetables. IR-4 has worked to organize input from university researchers, industry, growers and commodity groups for side-by-side field trials of Methyl Bromide Alternative (MBA) in actual commercial strawberry and tomato field sites in Florida and California.

First year research results from strawberries show that a biopesticide, DiTera® ES (Valent Chemical Co.), in combination with the synthetic pesticides chloropi-

crin and metam sodium has been a consistently excellent treatment. DiTera is a natural product derived from a fungus. It significantly reduces the soil population of parasitic nematodes.

Other biopesticides are included in the current IR-4 strawberry research trials. Messenger® (Eden Biosciences) is a protein-based substance that enhances a plant's ability to suppress insects, mites, nematodes, plant diseases and boost plant growth. Rootshield® (BioWorks, Inc.) is a biological fungicide made from live spores of a beneficial fungus. Help® (Stoller Enterprises, Inc.), a combination of Stabilizer® and Rezist®, contains chelated micronutrients. It reduces nematode populations and enhances plant resistance to some fungal and bacterial diseases. Each biopesticide is paired with a synthetic weed control material in the research trials. Results will be available in early 2002.

Stabilizer and Rezist are registered in most states as fertilizers. DiTera, Messenger and Rootshield are newly registered biopesticides and may not yet be registered for use in all states. If you have interest in using these products, check first with the New Jersey Department of Environmental Protection or with the manufacturer. For more information on IR-4's methyl bromide alternatives program, contact Dr. Jack Norton, [norton@aesop.rutgers.edu](mailto:norton@aesop.rutgers.edu). □

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#### WORKSHEET FROM PAGE 4

Now that you are calibrated:

- Arrange spray pattern
- Check deposition and coverage
- Make records of calibrations
- Keep the sprayer calibrated and functioning

A simple field test to assure proper calibration:

- Flag out 100 feet
- Fill sprayer to capacity
- Drive the marked footage with the nozzles open (as you would if you were spraying) on both sides of the sprayer
- Fill sprayer back to capacity using a measuring device (a 2.5 gallon jug will work nicely)
- Record that number(s)

Applied solution (S) = 17.52 gals. water

- Multiply number of feet traveled (100 feet) by row spacing of field (25 feet)
- Multiply square feet of an acre (43,560 feet) by recorded number(s) then divide by square feet of treated field (2,500 feet)
- $$\text{GPA} = \frac{43,560 \text{ (1 acre)} \times \text{amount applied solution (s)}}{\text{linear feet traveled} \times \text{row spacing}}$$
$$\text{GPA} = \frac{43,560' \times 17.52 \text{ gals.}}{100' \times 25'} = \frac{763,171.2}{2,500}$$

305.27 gallons per acre

- If field results are similar to calculated totals, then calibrations are accurate
- If field results are not similar to calculated totals, then the sprayer needs to be re-calibrated.

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