



## Vermont Vegetable and Berry News – January 24, 2012

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### KNOW THE COST PER POUND OF NUTRIENTS IN ORGANIC FERTILIZERS

The NOFA-VT bulk order, which offers discounted prices for fertilizers and other supplies, must be mailed by February 10. The pick-up date is March 10 at sites around the state. You do not have to be a NOFA member to purchase, though there is a small charge for non-members. Before you order fertilizers it makes sense to compare the cost of the nutrients they contain on a per pound basis.

If your soil test indicates that a field has adequate P and K, then you should avoid blended fertilizers and only use those that are high in N content, but if you need multiple nutrients, i.e. N-P-K, then a blended fertilizer is usually a better deal. For example, the custom 5-5-5 blend at \$21.50 per 50 lb bag (pre-tax) contains 5 lb each of N, P, and K per 100 lb of fertilizer, at a cost of \$8.20 per pound of each nutrient. Using Cheep-Cheep composted poultry fertilizer, 4-3-3 at \$16.50 per 50 lb the cost is \$8.25 per lb of N and \$11 per lb of P and K. Many fields have adequate P but need N and K so the custom 6-0-6 makes sense; at \$25 per 50 lb the cost is \$8.33 per lb of N or K. Alfalfa meal 2.6-0-2.3 at \$21/bag has N cost at \$16.15 per lb and K at \$18.26/lb. For providing N only blood meal 12-0-0 is very expensive, at \$90/bag the N costs \$15/lb. Peanut meal 8-1-0 at \$22/bag has N cost at \$5.50/lb. Pro-Booster at 10-0-0 at \$29/bag has N cost at \$5.80/lb. Conventional soy meal (7-1-2 typically) if purchased at \$17 per 50 lb has N at \$4.86/lb. If you only need K then potassium sulfate 0-0-51 is the best deal, \$51/bag equals K at \$2/lb. Sul-po-mag 0-0-21 at \$37/bag has K at \$3.52/lb but it also supplies Mg, so if that is low and you will not be liming with high mag lime it may be a better choice. Keep in mind that nutrient availability varies among organic fertilizers. For example, 50 lb of greensand 0-1-7 costs \$17.50 so the price per lb of K is \$5 but most of this will not be available to plants in the short term. Always check with your certifier if you have any doubt about the status of an organic soil amendment. For details on the NOFA bulk order see: <http://nofavt.org/annual-events/bulk-order>

### SAVE ENERGY AND MONEY WITH NRCS ENERGY AUDIT

On-farm energy audits are once again available through the Natural Resources Conservation Service in Vermont. An Agricultural Energy Management Plan is an analysis of current farm infrastructure and management with recommendations on how you can be more energy efficient and save on your energy costs. New this year is assistance for installation of practices identified in your audit to reduce, or improve the efficiency of on-farm energy use. Certain greenhouse, dairy, and maple sugaring practices are offered. Contact your local NRCS field office for more details, eligibility information, and an application. See: <http://www.vt.nrcs.usda.gov/> or call Bob Kort at 802-951-6796 x233.

## TEST YOUR POTTING MIX, GREENHOUSE, AND TUNNEL SOILS CORRECTLY

Remember to test your potting soil and/or compost-amended greenhouse and high tunnel soils. Do not use a standard field soil test for these situations where a lot of organic matter has been added and immediate plant growth is expected. Instead, use the Saturated Media Extract test, also called Greenhouse Soil or Greenhouse Media test. Unlike field soil tests the SME test includes soluble salts, available nitrate and ammonium, as well as pH and water-extractable nutrient levels. It is relatively inexpensive and can help determine what type and how much additional fertilizer should be added prior to planting.

Make sure your mix or soil has been moist and warm (room temperature) for at least a week before testing. Bring some soil into your home if needed to allow it to incubate. Then send at least one pint to the lab, prior to adding any fertilizers or compost. Many labs offer this test including: University of Maine, <http://anlab.umesci.maine.edu/> or (207) 581-3591 and University of Massachusetts <http://www.umass.edu/plsoils/soiltest> or (413) 545-2311. The cost at UMaine is \$22 for the long-term high tunnel package, which is the SME plus organic matter. The basic high tunnel package is also \$22, for a relatively 'new soil' or if you have moveable tunnels; it is the field soil test plus soluble salts and nitrogen. The UMass SME test is \$15 but you should include a note asking for the organic matter test, too, and add \$5. If you wish, put my e-mail at the bottom of your submission form and I can help you interpret the results. For potting mixes I also suggest planting a test crop well ahead to time in the mix you plan to use, as well as testing another mix or two for a side-by-side comparison.

## GET GREENHOUSE FURNACES READY FOR THE HEATING SEASON

(adapted from fact sheet by John Bartok, on the UMass Extension Floriculture web site)

Protect fuel tanks. Twenty percent of all service calls result from dirty fuel or problems related to the flow of the fuel. Tanks should be located away from dusty locations and water tight fittings should be used. Outdoor tanks should be protected from harsh winter weather with an enclosure.

Service all heating units. The efficiency of most greenhouse heating systems can be improved by at least 5%; have a competent service person clean and adjust all furnaces. For oil furnaces: Change the fuel filter, it is surprising how much sludge and dirt collects in the fuel. Replace the nozzle. Wear increases the nozzle orifice opening increasing fuel usage. Select a nozzle with the correct spray angle to fit the firebox. Follow the manufacturers' recommendations. Replace and adjust electrodes. Inspect safety controls including cad cell sensor, transformer, limit switch and fan control. On propane units check gas regulators for proper pressure settings and to be certain the regulator and gas port vents are not plugged. Tank relief valves should be replaced every 5 to 10 years.

On larger systems an evaporator or vaporizer converts the liquid propane into the gaseous state. These heaters with safety valves and flame supervisor need to be checked and maintained. The mixer, a valve which combines propane gas with atmospheric air should be serviced and tested to manufacturers' recommendations. It is best to operate the furnace on a monthly basis during the year to check for problems.

Heat exchangers. Soot should be removed from heat exchanger surfaces. A 1/8-inch soot deposit can increase fuel consumption by as much as 10%. Brush and vacuum surfaces or clean them with special cleaning compounds. Exterior heat exchange surfaces, such as tubes, fins and radiators also collect considerable dust and dirt in a greenhouse atmosphere. Brush and vacuum surfaces to increase heat output. Clean blowers for efficient air movement.

Combustion Efficiency. Efficiency testing of a furnace or boiler is a 10 minute procedure that can indicate when problems begin to occur. It is the key to saving money on the heating bill. Increasing efficiency one or two percent can significantly reduce fuel consumption over the year. For example, a 2% increase in efficiency of a million Btu/hr burner operating 3300 hours from September to May will save about 650 gallons of fuel oil.

Combustion Air. The combustion process combines the carbon in the fuel with the oxygen in the air. The lack of adequate oxygen results in incomplete combustion and carbon buildup. A 400,000 Btu/hr furnace will require about 100 cu ft. of air/minute to operate efficiently. In tight poly and glass greenhouses, a makeup air supply of 1 square inch of intake area/2000 Btu/hr burner input should be available from a pipe or louver through the endwall unless a separated-combustion heater is installed. These are installed with a direct connection to outside air.

Flue pipe connections. These should be tight and the chimney should extend at least 2 ft. above the ridge of the greenhouse. The top of the chimney should be at least 8' above the combustion chamber and have a cap to prevent backdrafts and possible air pollution injury to plants.

Controls. Accurate controls are important to achieve high efficiency. The payback of replacing an old mechanical thermostat with a new electronic thermostats having a +/- 1 degree F differential is very short. The sensor should be shielded and aspirated with a small fan to quickly sense changes in the environment.

Heat Distribution. Air circulation will reduce temperature stratification in the greenhouse. Installing horizontal air flow (HAF) fans that move the air at 50 to 100 feet/min can limit temperature differences to no more than 2 degrees at any point in the growing area. Use 1/10th horsepower circulating fans located 40' to 50' apart to create a circular flow pattern.