

From Forest Nursery Notes, Winter 2013

**80. Navigating the organic route: how to use organic fertilizers.** Burnett, S.  
Greenhouse Management 32(1):67-69. 2012.

By Stephanie Burnett

# Navigating the organic route

How to use organic fertilizers

Homeowners have become interested in organically grown vegetable and herb plants for their gardens. While there may be a market for organic ornamentals as well, a survey of Maine gardeners indicated that they are willing to accept a 5 percent higher price increase for organic vegetables and herbs than for organic ornamentals. About half of these gardeners were motivated to buy organic because they felt organic was "healthier for the individual/family," which could explain their preference for organic edible plants.

As part of that trend, some growers may see increased demand for organically grown vegetable and herb transplants for the home garden. It's estimated that the acreage of organic nursery and greenhouse production has increased approximately 83 percent since 2004.

If you are considering growing organically, making a transition to organic fertilizers from conventional fertilizers may be a challenge, but here are some guideposts to start you on the path to developing a successful organic fertilizer program.

## Key Points

- 1 More growers are turning to organic crops, even more so for vegetables than ornamentals.
- 2 Know the differences between organic and conventional fertilizers so you can make the best decision for your crops.
- 3 You may have trouble relying on electrical conductivity readings alone to monitor fertility in organic production systems.

### The organic difference

First, when developing an organic fertilizer program, you have to answer the questions: what are organic fertilizers and how do they differ from conventional fertilizers? Organic fertilizers are naturally occurring or made from natural materials.

For example, they may be made from animal waste or minerals while conventional fertilizers are manufactured or produced. The Organic Materials Review Institute (OMRI) produces a list of certified or-



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ganic fertilizers ([www.omri.org](http://www.omri.org)) to simplify the process of finding organic-certified fertilizers. However, organic fertilizer companies must pay to be OMRI listed. Some choose not to do so, but they may meet National Organic Program (NOP) standards. If you have any questions, you should check with your local certifying agency to ensure that any material you would like to use in production is truly certified organic.

#### Select your fertilizer

Second, you have to select a type of fertilizer. There are a few general differences between organic and conventional fertilizers that are important to keep in mind while growing. The greatest difference is that organic fertilizers tend to be slow-release in nature – even if they are in

a liquid form. It is difficult to quickly reverse nutrient deficiencies. The release rate of organic fertilizers will vary quite a bit. Typically, nutrients are released more quickly in conditions that favor microbial activity. If your media is warm, the soil is not waterlogged, and you have a healthy microbial population, nutrients will be released more quickly than in cold, overly wet soil. Microbial activity also tends to be greatest when the soil pH is greater than 5.5.

There are two main options for providing fertility in organic production: liquid organic fertilizers and pre-incorporated granular fertilizers. Commercially produced liquid fertilizers include fish emulsion or fish hydrolysate; some commonly used organic liquid fertilizers are presented in Table 1.

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Some growers make their own compost tea to use as a liquid organic fertilizer. Compost tea includes a compost extract, which is made by suspending high quality compost in water for up to two weeks. This extract is then brewed with one of several microbial agents to create compost tea. The microbially active agents could include molasses or kelp. Several companies produce compost tea brewers that could be used on-site to make ready-to-use compost

tea. They include: Growing Solutions Inc.; Soil Soup Inc.; Microb, Brewer; Compara-Xtractor; and EPM Inc. – Earth Tea Brewer.

Growers and researchers have reported mixed success with compost tea. Some people find that it provides fertility and reduces soil-borne pathogens. Other people report no benefits from using compost tea. Success likely varies with the source of the compost and the process utilized to produce the tea.

Commercially produced liquid organic fertilizers are a generally reliable source of nutrients. Application rates for using liquid organic fertilizers would be similar to those for conventional fertilizers, which would make transitioning relatively straightforward.

However, one drawback to using them is that they are much more expensive than conventional organic fertilizers. For this reason, many growers use a pre-incorporated granular fertilizer as a starter fertilizer and supplement that fertility with more expensive liquid organic fertilizers. Pre-incorporated sources of fertilizer include blood meal, bone meal, alfalfa meal, soybean meal and others. According to a publication from the National Sustainable Agriculture Information Service, the largest tomato transplants can be produced with the following pre-incorporated organic fertilizers: crab-shell meal (8.2-1.5-0.5); blood meal (12.5-1.1-1.0); dried whey sludge (5.3-2.5-0.9); feather meal (13.6-0.3-0.2); or fish meal (10.1-4.5-0.5); meat meal (7.7-3.1-0.7); or cotton seed meal (6.5-1.1-1.6).

#### Other considerations

While you are building an organic fertilizer program, it's also a good idea to select short-term crops, at least while you are starting out. Most of the fertilizers described above provide early, short-term fertility well, but, it's much more difficult to provide fertility late in the cropping cycle than early. Crops with a four- to six-week production cycle (basil, tomatoes, lettuce) would be easier to manage than crops with long production cycles (lavender, rosemary).

There are a few other issues that you may encounter with

Table 1. The organic fertilizers below are certified organic and are produced from a variety of naturally found materials.

FERTILIZER	FORMULATION	SOURCE
Neptune's Harvest	2-4-1	Fish Emulsion
Neptune's Harvest	2-3-1	Fish Emulsion and Seaweed
Drammatic 'O'	2-5-0.2	Fish Hydrolysate
Drammatic 'K'	2-5-0.2	Fish Hydrolysate and Seaweed
Daniels Pinnacle	3-1-1	Seed Oil Extract

organic fertility to keep in mind as you proceed. One thing that differs between conventional and organic fertility is monitoring. In conventional production, it is recommended to monitor fertility non-destructively using the pour-thru method. Using this method, you can monitor the electrical conductivity (EC) of the pore space in the media. In a conventional growing system, the EC correlates very well to fertility. However, in organic growing systems, electrical conductivity may increase due to the presence of non-fertilizer salts in either the substrate or fertilizer. It may be difficult to rely on electrical conductivity readings alone to monitor fertility in organic production systems.

Growers have also found difficulty with organic fertilizers not providing balanced nutrients. In Table 1, for example, you will notice that none of the organic fertilizers provide a balanced ratio of N to K, while in conventional fertilizers, it is very easy to find a balanced fertilizer. It may be necessary



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to use different fertilizers or to rotate fertilizers to provide all the nutrients needed for long-term growth. Lack of specialized fertilizers also makes it difficult for growers to correct nutrient deficiencies when they arise.

There are many options for organic fertilizers to use in organic production. The most successful approach may be to use both pre-incorporated and liquid organic fertilizers for short-term,

edible crops. Hopefully further research in the future can address issues facing growers who use organic fertilizers such as how to monitor fertility non-destructively and how to provide nutrients to crops for long-term growth. **GM**

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