

GROWERTALKS

Culture Notes

3/1/2008

Compost Teas

Alison Kutz-Troutman

Their practical use in the greenhouse

(from the March 2008 issue of *GrowerTalks*)

As creative greenhouse growers, we often find ourselves adapting techniques or products from our close cousins in field production. This is especially true now in the case of integrating modern biological approaches into greenhouse production. The use of composts and compost teas is a perfect example. Field applications of compost and compost tea have increased greatly in the last few years. These larger growers require the most efficient means with which to improve soil biology and the production potential. Many success stories and innovative discussions leak over into horticulture, and those listening carefully perk to attention. We are all asking similar questions at the same time:

- What are the limits and advantages of working compost into our potting soils?
- What then, might be the advantage of adding compost teas to a growing program?
- How efficiently could this fit into current management and production systems?

Firstly, plenty of research is there to show us the benefits of compost being added to growing systems. A simple “google” will inundate you with the works of Dr. Harry Hoitink and associates and plenty of data to support that discussion. We also know that the challenge of adding a consistent and high-quality biological charge to container blends has been really difficult for soil blenders to contend with. Compost has been more easily and commonly utilized in the world of woody plant production, where larger containers and longer crop times add certain advantages. Bedding plant growers with an interest in adding a little bit of compost to their mediums have found strict limits to what their soil blenders can comfortably advise and stand behind. All composts are certainly not the same. While this area is gaining the needed research and attention, most soil blenders are erring on the side of caution. Simultaneously, soil blenders are much more comfortable with media incorporations of worm castings, as they are stable and highly concentrated. One worm casting material recently gaining favor is called Worm Power from New York. It's pre-composted (heat process) before even being fed to the worms, under controlled conditions. The lab reports on both the chemistry and biology of this ingredient are excellent. This is where the rubber hits the road: where compost teas can help complete that synergistic equation.

What can it do for you?

A well-produced compost tea can provide complementary biological value with which to “kick start” the fertility and nutrient cycling in potted production. Even in soilless mediums lacking in compost, the compost teas will stimulate

the breakdown of materials in potting soils and turn them into food for the plants. A perfect example would be recent work with PBH (parboiled rice hulls) added to potting mediums in Washington state. In trials, we saw a clear interaction when adding teas to these soils. Plants treated with compost teas at a rate of one part tea to five parts water showed a much greater nutrient cycling than non-treated.

Our observations? Beneficial bacteria in the compost teas are constantly producing their own metabolic byproducts, namely enzymes and amino acids. These potent ingredients help the beneficial bacterium by degrading and chelating lignin-rich food resources, like the rice hulls, in the potting medium, converting them (indirectly) into food resources for the plants. This added nutritional punch helps us get the most out of our soil blends, especially when the teas are applied regularly to keep the biological activity at a nice, even clip. Adding compost tea alone can save 20 to 40% of your other nutrient needs. These numbers are dependant on your soil blend, the quality of your compost tea and the concentration and frequency of those applications.

Our greenhouse

As a commercial grower with over 30 years in this industry, our business, Cascade Cuts in Bellingham, Washington, has been operating in this fashion with compost teas for 13 years, in not just the herb program but throughout production of “conventional” bedding and floral items.

Working closely with the first compost tea machine manufacturer, Growing Solutions out of Eugene, Oregon, we started with a small 50-gal. brewer. We quickly recognized that the addition of these materials marked a pivot point in our approach to more sustainable production and matched our closely held philosophy of adding as much of nature to the pot as possible, especially with herb production being so important to our bottom line. We had already done what we could with compost and minerals in the soil blend, so these “fermented extracts” became a practical and efficient way to stimulate nutrient cycling in the pots, without over feeding.

The idea was more of “nutrients upon demand,” which matched our growing philosophy of running plants on the lean and cool side, training them for their exploits in the real world of retail stress, and ultimately, the garden. Our customers have been very responsive to the fact that our plants come complete with a free “vaccination” of good biology as well as beneficial insects. We not only give them a value-added bonus, but they love making a public ordeal about how we do what we do.

What other growers are doing

Innovative growers across the nation are seeing the benefits of adding biological products to their systems, whether they are registered mycoinsecticides, biofungicides or other labeled “bugs in a jug.” Many of these products are so effective that they are usurping conventional chemistries. As conventional growers gain trust in these new products, the growing environment inherently becomes more conducive to a more biological management system. Adding beneficial insects for biocontrol, or compost teas, only adds biodiversity to what we used to consider a fairly “sterile” system.

With the expanding body of supportive research on compost teas plus a groundswell of growers' experience, we are also experiencing an accelerated exchange of information taking place. As a consultant (Sound Horticulture), I've the privilege of working with a huge array of successful growers customizing their soils and compost tea programs to match their crop needs.

The economic incentive to reduce our reliance on petroleum-based fertilizers is certainly a key “driver” to these decisions. With costs skyrocketing on all our supplies, growers like Cascade Cuts and Van Wingerden Greenhouses in Blaine, Washington, see the cost/benefit ratio in savings on fungicides. Poinsettia growers will appreciate this, in addition to observations of how otherwise-brittle varieties become more resilient and flexible for

sleeving.

With the beneficial microbial community ruling the soil system as well as the foliar surfaces, there's little room for pathogenic organisms to take hold. Even in a perfect world, a biological material such as compost tea won't be the answer to all your prayers; nobody out there claims that compost tea is a panacea. Even the best growers experience occasions when environmental conditions for certain disease organisms to overwhelm a good biological system. In the case of powdery mildew, for example, if foliar lesions cover more than 10% of the leaf surface area, you may as well come in with a product like O-Tol to clean up the system, and return a day or so later with compost tea to re-establish a healthy balance in the microbial community.

For both plug producers and finished growers, the addition of the teas through modified injectors can save valuable time. Elzinga & Hoeksema Greenhouse (see page 46) in Michigan had all these things in mind as they ramped up to produce a potential 1,000 gal. per day of the teas as a key fertility component to their new 4-acre organic range. The teas, coupled with a worm-compost-fortified potting media, will provide much of what they need to power the growing system.

The problem in this larger setting was taking the well water at 60 psig and then adding the tea at 20%, and delivering it to the boom watering system at 84 gpm. Mark Elzinga was already working on a massive geothermal heat pump system with GMB Architects-Engineers, so they enlisted the onsite pump wizards to set things up. The resulting system has grower Roger Rosenthal smiling from the driver's seat. Instead of using typical piston-driven pump injectors, the decision was made to use variable-frequency drive pumps and flow meters, much like an agricultural grower would use teas in pivot irrigation on potatoes or row crops. This move has been key to allowing Roger to vary the flow rate at any time during the production cycle, as the crop dictates. Additions of Daniel's Organic Pinnacle (3-1-1), Acadian Kelp and other ingredients are incorporated through the system as well.

This is a great example of a nursery looking at the whole picture, from soil health to crop protection. They are also fine tuning their beneficial insect program and educating their customers about our truly "green" industry along the way. Selling much of their product to the Meier chain, they have not only become certified organic, but they are marketing themselves well in the process. In the end, the customer wins, getting a value-added plant with much more of a built-in "buffering capacity" to withstand the rigors of the garden center (drought and stress tolerance) since the diverse microbial habitat will help hold and move nutrients into the roots in a controlled fashion over time. When the end customer transplants into the garden, most of those beneficial organisms should survive and continue to propagate, if fed properly.

--Alison Kutz-Troutman, [Sound Horticulture](#), Bellingham, Washington