Sustainable, Farm-Based Potting Mix

From a posting by Doug Jones 1/30/15 to Growing Small Farms Listserve

Seeing all this discussion about purchased ingredients, I decided I needed to weigh in with my radically different approach.

I have not used peat moss (often strip mined from non-renewable peat bogs), perlite, vermiculite, or mineral supplements for 30 years. Did a lot of experimentation with well-rotted materials, eventually arrived at a very simple, reliable method. Just TW0 ingredients:

(1) Very well-rotted leaves , sometimes referred to as "leaf mold". A pile of leaves (mostly deciduous, not too many pine needles which will be too acid) left out in the elements, will, after 2-3 years, become a uniform, black compost. It's ready when it has only a trace of the original leaves recognizable. In November and December, Pittsboro's Highway Dept. collects maybe100 tons of fairly clean leaves which quickly start heating a bit in the big piles at their facility. Heating is an indication that they do have some nitrogen. Other nutrients, too, of course. The only apparent deficiency I have encountered (2 years out of the last 20, and only in pepper seedlings) was iron, which I have supplemented with a tiny bit of diluted iron sulfate, when the need was indicated by inter-venal yellowing of youngest leaves of seedlings in the greenhouse.

As to concerns about herbicides on lawns, I figure that if herbicides were used on some lawns, that would have been during the warm season, would have been mowed off and/ or rinsed into the soil and degraded there by November when people are raking their leaves. I rarely see any sign of grass in the leaves collected by the Town. Sometimes a few pieces of plastic junk. I use lots of leaves for mulching summer crops, but I always keep a big pile going for an extra 1-2 years, to become my potting mix base.

(2) Worm castings or vermicompost (for nutrients and "probiotics"). I and my worms make vermicompost from various materials. For feedstocks I use some semi-rotted leaves plus semi-rotted manures from heated piles that were turned and observed to not have viable weed seed issues. Avoid manures with a lot of sawdust or wood-chip bedding (too much rot-resistant carbon). Another favorite feedstock is mowed cover-crops or hay crops that are fairly young and weed free, semi-dried after mowing and raked into a pile at least 2 feet deep and covered with clear plastic to get hot to kill any rogue weed seeds. When this stuff has turned brown (1-2 weeks), worms love it, and it's rich in nutrients.

WARNING - If importing manure to your farm, you MUST know whether those animals might have been fed hay grown with persistent herbicides such as "Grazon" - see previous postings on this issue over the past few years.

It's important that the vermicompost be quite mature, to avoid soluble salts that can damage seedlings. At 70 degrees this would be 2-4 months, depending on how many

worms you started with. (Cooler than 70 = slower metabolism = longer time) If you put a new batch of very moist feedstock next to, on top of, or under the theoretically finished vermicompost, and 95% of the worms have migrated to the new material after a week or two, then the old batch is done. There are various methods for deworming your finished compost so you can transfer the worms into new feedstock - if anyone wants to know my method, please ask - that's another whole topic.... If you notice a lot of worm cocoons in your compost, you may want to let it sit longer, so they can hatch and migrate to your new feedstock. The cocoons are about 1-2 mm in diameter, greenish yellow before hatching, translucent, and capable of hatching several worms per cocoon.

The big deal about vermicompost is: not only is it rich in nutrients, but it also is rich in "probiotic" bacteria which protect your seedlings from the fungi that cause "damping off".

I use 1/4 inch hardware cloth (steel mesh) tacked to the bottom of a wood frame as a screen to make my potting mix. Just put on gloves if needed, and rub the leaf mold and vermicompost through the screen. For easy, fast grinding, make sure ingredients are moist, but not wet. Discard large particles that don't go through screen. Mix thoroughly! For a mix for "bumping up" nightshades into larger containers, you can do okay screening through 1/2" mesh for the leaf mold, to give you a big volume fast.

FORMULAS (by volume): For commercial worm castings (fine screened, often manure-based, with fairly concentrated nutrients), 10-12% worm castings, 88-90% leaf mold. For home-made vermicompost, if manure was a major feedstock, stay with 15% well-matured vermi-compost. For plant-based vermicompost, try 20% vermicompost. Bottom line, if the lowest leaves of your seedlings start getting a bit yellowish before they reach full size (running out of Nitrogen), increase the proportion of vermicompost for your next generation of seedlings, and give your yellowing plants a little fish emultion diluted according to directions on bottle.

Excess of soluble salts is indicated by seedlings looking wilty and non-thriving even when potting mix is wet, and roots don't look normal (brownish instead of normal whitish color). (But those symptoms can also result from overwatering in some species.) Correction for soluble-salt excess in the flats can be accomplished by a one-time heavy overwatering to leach out the soluble salts (lots of water runs out of bottom of flat - do early on a sunny day). Then go back and correct your active vermicompost by watering it more and letting it mature a little longer.

I've grown many thousands of healthy seedlings with this mix, and the ingredients are on-farm or at least local. Once you have set up your composting and screening systems, you can get it to be pretty efficient. And pretty sustainable, in my opinion. Contact me if you want to see my system in person.

Doug Jones, Pittsboro