Mesophyllic fertilizer and soil culturing

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Every year, all the local organic farmers meet for the split up of the feather meal truck in Pittsboro, NC, go home and dump the stuff on our fields. One day about 12 years ago, I decided that the feather meal smelled so horrible (and smelled even worse when it rotted) that it and every other bad smelling thing would be forever banned from Turtle Run. It was tough getting the right nutrients until we made a chance discovery about five years ago.

We accidentally left an open 50-pound bag of alfalfa pellets under the roof overhang of the barn. That night the rain dripped into the bag and in the morning there was steam rising up from some extremely fragrant alfalfa. We shoveled the hot soggy bag into a tub and later dumped it out into the closest row crop as mulch. When harvest time came around we observed that the part of the bed where we put the hot pellets was more vigorous than the rest of the row.

We had been using alfalfa meal for years as a fertilizer by just walking down the row pouring dry pellets out of the bag onto the raised bed. Alfalfa has many beneficial compounds in it and we would often try to fulfill our nitrogen requirement with it, but since it is less than 3% nitrogen we needed lots of expensive bags. It wasn't really practical.

The next season we started making controlled alfalfa/water batches and soon learned

that it worked better if we first tossed in a handful of soil. After a couple of hours in the insulated vat, the mixture started giving off a strong smell which reminded us of lawn clippings that get left in the catcher for a while. It is a fruity or nutty smell in the early stage of decomposition with aerobic microbes going after the fresh food source. The mix heated up to 105-110 degrees F and needed to be stirred with a shovel occasionally. About 48 hours into it we had to call it quits because the smell was becoming unbearable, quickly changing from good to bad.

With the next batch we stopped earlier when it still had the fruity smell. We then made one more discovery. After the sun had been shining on the soil for a few hours and warmed it up we would pour the steaming mixture onto the raised beds and quickly scratch-till it in. An amazing and powerful smell started rising up out of the soil as the fungi, yeast and bacterium went to work on the organic crop residue.

Over the last five years we've continued perfecting the recipe. We call the final product "meso," short for "mesophyllic" which means middle-temperature microbes. The gut of an animal has a similar process going on which is why manure makes such good fertilizer and has a rich smell. The experiments have paid off for us in increased crop yields and at this point we do not plant anything out before adding the meso first to the soil. Other than crop residue and a little Chilean Nitrate in the irrigation drip lines later in the season, the meso became our main nitrogen source.

The whole experience has led me to two new radical theories about organic farming. The first is that nitrogen is not a crop requirement but a symptom of microbial activity. The "pounds of nitrogen" needed for any planting should be corrected to read "pounds of good-smelling microbes." This answers the age old conundrum of why compost makes for big healthy plants but is very low on nitrogen.

Now for the second theory: Water can be added to dry material to create even more pounds of fertilizer because the water becomes incorporated within the microbial bodies! The amount of decay product in the batch of alfalfa mix or soil can be measured by the smell it puts off. The better and more powerful the smell, the better it will work as fertilizer because the plant roots will work with the microbes to uptake nutrients.

Here is the recipe if you want to give this a try:

1. Divide a 50-pound bag of dry, 100% Alfalfa pellets into two big plastic tubs. (*NOTE: Do not use brands of alfalfa that use beef tallow or soy oil as a binder. Only use 100% dehydrated pellets.*)

2. Place the tubs into two additional tubs for insulation (four tubs total, two with pellets

and two for insulation).

3. Throw one handful of rich soil or compost high in organic decay into each tub.

4. Pour 4-1/2 gallons of hot water into each and swirl the pellets around with a shovel until the water is absorbed evenly and the batch is uniform texture.

5. Cut some cardboard to fit and place down on the meso mix. Cover with both tub lids and put as much insulation as possible on top, such as old blankets. Cover with a tarp to act as a final insulator and to keep the rain off.

6. As it begins to decay it tends to cake up, so stir it at about 4-6 hours, then once again at about 24 hours. The batch should be ready around 36 to 40 hours (depending on outside temperatures).

7. Watch out for stuff left too long in the vat! If the decaying material smells bad, there is either too much moisture or low oxygen content.

8. Depending on the crop, we usually use one 50-pound bag of pellets (now weighing 122 pounds with the water added) per 500 square feet of raised bed.

Kevin, Kim, Erin and Clare Meehan *are Carolina Farm Stewardship Association members and own and operate Turtle Run Farm, a small vegetable farm in the historic village of Saxapahaw, NC near Chapel Hill. In business since 1996, they grow produce without the aid of sprays, pesticides, herbicides or other harmful chemicals. Kevin is also the inventor of the "Use-Yer-Foot," a lightweight portable sink that provides fresh, running water in places without conventional plumbing. They're especially handy for CFSA's farm tours! Find out more at: www.useyerfoot.com.*