Organic Production - Where to Start?

Thursday morning 9:00 am

Where: Gallery Overlook (upper level) Room A & B
MI Recertification credits: 2 (COMM CORE, PRIV CORE)
CCA Credits: NM(0.5) PM(0.5) CM(0.5)
Moderator: Vicki Morrone, Outreach Specialist for Organic Fruit and Vegetable Growers, MSU

9:00 am	Knowing Your Place -- Combining farm specific knowledge with scouting to form organic integrated pest management plans • Adam Ingrao, Vegetable Entomology Lab, Entomology Dept., MSU • Jason Matlock, Entomology Dept., MSU
9:45 am	Application of a Soil Test for Organic Farms • Thomas Bjorkman, Horticulture Section, School of Integrative Plant Sciences, Cornell Univ.
10:15 am	Experiences from the Field -- Getting certified organic • Eric Pawlowski, Sustainable Agriculture Educator, OEFFA, Columbus, OH • Fred Monroe, Monroe Family Organics, Alma, MI • Pooh Stevenson, Owosso Organics, Owosso, MI
11:00 am	Session Ends

Application of A Soil Test for Organic Farms

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The first level of soil testing for organic farms is the same as what has been used unconventional farms for quite a long time. A regular soil test provides information on the soil pH, phosphorus and potassium status.

Some soils are naturally acid and need regular applications of lime to keep the pH in the desirable range (usually 6.5 to 6.8). Some composts contain lime, so growers buy in compost can see the pH rise to become undesirably alkaline. Plants require both phosphorus and potassium to maintain health. Purchased inputs that contain phosphorus and potassium can be quite expensive, so it is helpful to know how much to add. Phosphorus is constantly immobilized by the soil, so it is especially challenging to keep in the desired range.

Crops require great deal of nitrogen to perform well, but this mineral is the most difficult to measure. In agriculture, plants take up most nitrogen in the form of nitrates. Because nitrate is very labile, an organic farm will never have the whole season's worth of nitrogen in the form of nitrate. It is constantly being formed from organic nitrogen sources, and constantly being taken up by the crop. There are soil tests, such as the soil protein test, they give a measure of how much organic nitrogen is available for mineralization. The actual speed will depend on temperature, moisture, microbe activity and other factors. There is an in-season soil nitrate test they can be used just before a crop's peak demand to detect whether there is enough nitrogen at that moment. Is typically used in corn production to make a decision on whether to site dress. It has more limited management value for organic vegetable production.

We conducted a four-year trial in organic field crop rotation to determine whether the fertility recommendations from a conventional soil test predicted crop performance using two kinds of composted poultry manure. We base the application rates on the N-P-K values reported from the compost assay. The result was clear: the best application rates was the one predicted from the soil test. Lower application rates resulted in lower yield. Higher application rates resulted in undesirable phosphorus accumulation and more vigorous weed growth without any crop-yield increase. one of the composts included some woodchips in the feedstock to result in a higher-carbon compost. Because it also had lower nitrogen availability, it resulted in greater phosphorus accumulation. Organic growers using compost as a source of nutrition need to keep an eye on the phosphorus levels so that they don't get into excess. Having excess phosphorus is difficult to remediate and constitutes a significant pollution hazard.

One of the fundamental principles of organic farming is to feed the soil, and allow the soil to feed the plant. We have some new soil tests available that can help organic growers assess whether they are providing the soil with a balanced diet. Active carbon will be low if there is not enough organic matter returned to the system. It will respond within two or three years of a change in management. Soil protein will be low if the organic matter returned is to low in nitrogen. Cornstalks contribute well to active carbon but very little protein. A lush legume plow down is often so quickly digested that the nitrogen disappears. A more mature plants, with the carbon: nitrogen ratio of 15 to 20 or contribute to a longer-lasting pool of soil protein. Maintaining both of these numbers at desirable levels requires a surprising amount of organic matter. Having live roots for most of the year is helpful for keeping a useful amounts of growth.