BE CAUTIOUS WITH COMPOST

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My phone rings a lot, and a common question regards discovery of some sort of compost. And, motivation is generally because it is cheap and they have been told it is a great substitute for peat moss. I wish the question had been asked **before** using the product, but often the compost has been put in use and the question now is in two parts; 1. Could the problem be due to my 'new' compost? And, 2. What can I do now?

My typical advice is "be careful!" Qualities of composts vary the full gamut --- from A to Z. But when analyzed with accuracy, my experience has been that few are in the A or B category and many types of compost are nearer to Z, particularly as it relates to being used as part of a container growth medium. The man made environment of a container is unique and very different from field soil. And as for actual value, I put most compost under the heading of "false prosperity". That is where you think you are saving money, but in the long run, it costs you more due to poor performance of plants in containers!

The massive surface area of Mother Nature's earth is much more forgiving and many types of compost can be used safely and effectively in gardens, landscape beds, etc. But even when used mixed into soil or as a mulch, my advice is still, "be careful!"

Much compost contains large quantities of calcium. This is not surprising as plant cell walls are primarily calcium pectate. As the plant tissues decompose, calcium is released. And, it depends where you are geographically and how you plan to use compost. If you are east of the Mississippi river and even a few hundred miles west, soils are typically acid and adding high calcium compost as a soil amendment to landscape beds may be helpful. On the other hand, if you are further west where soils are typically basic and calcium is already in excess, or sufficient lime has already been added, adding high calcium compost can accelerate problems.

But how high is high? In the April 2010 issue of Hort-Technology[1] appeared analysis of 30 samples of spent compost from commercial mushroom farms. Analysis on a dry weight basis showed calcium levels ranging from 37,300 to 77,000 ppm, with an average of 53,800. Potassium ranged from 17,800 to 32,000 and other nutrients were moderate to high. And these were water extract values. Using this material in a container mix would be a disaster. The potassium portion is unlikely to be a problem if the compost is applied to field soil. On the other hand, even when used in landscape beds, such a huge load of calcium quickly ties up iron and other micronutrients, often leading to chlorosis and stunted growth. And, once a high load of calcium is present in the soil, there is little that can be done about it in the short term. For comparison, fresh ground pine bark typically has a desirable level of from 1,500 to 2,500 ppm calcium and the peat samples I have had tested show only from 300 to 500 ppm calcium. Also be cautions about 'composted' ground pine bark as it is sometimes mixed with chicken litter or other manures which

[1] Fidanza, M.A. et.al. Analysis of Fresh Mushroom Compost. HortTechnology April 2010, vol.20, 449-453.

typically adds lots of calcium. If you need the calcium, this can be good, but if you already have an abundance of calcium, it can be undesirable. Also remember, calcium is the 'bully in the sandbox' so to speak and dominates availability of most other elements.

My suggestion is to have any new compost analyzed **before** it is used. If you want an accurate test done, send a gallon volume to Servi Tech Lab, 1816 E. Wyatt Earp, Dodge City, KS 67801, phone 620-227-7123, and ask them to do 'Whitcomb's 3-way extract test'. They will divide the sample into three parts, and extract one part with distilled water; ---this removes the very soluble elements.
The second part is extracted using ammonium acetate-DTPA, which is commonly used as an extracting agent on field soil samples. This shows elements that are freely exchanged from the particle surfaces.
The third sample is extracted using a 0.1 normal hydrochloric acid solution. This shows what is going to be released from particle surfaces over a few weeks or months. The acid is very dilute and does not cause decomposition of the particles, but rather provides a more aggressive exchange compared to the ammonium acetate. I came up with this procedure years ago, the dilute acid level was just a guess at the time, but it has proven a very effective tool in diagnosing problems. In most cases, the acid extract is the most revealing in terms of elements that are likely to affect plant growth. For example, the water extract and the ammonium acetate extract may show low to only modest levels of calcium. But the acid extract may show 10 to 50 times more. I consider the information from the water extract and ammonium extract to be useful but of only moderate value as the information relates to plant growth. The acid extract is typically much more revealing and more likely to correlate with plant response. If you wish some assistance relative to interpreting the results, simply add a note to the lab to send a copy to Whitcomb. I will give you my suggestions for a small fee.