From Forest Nursery Notes, Summer 2008

144. Count down the most common growing media questions: part 1. Cavins, T. and Evans, M. Greenhouse Management and Production 28(2):15-16, 19. 2008.

Have growing media questions? Time in as 2 experts count down the top 20 queries from growers.

By Todd Cavins and Michael Evans

Count down the most common growing media questions

Composted materials have different physical and chemical properties. The materials, composting process and compost age affect the properties.

MANY TYPES OF GROWING MIXES can be used to produce ornamentals. With this variety, the diversity of crops produced and varying cultural conditions, it is inevitable that problems or questions related to growing mixes continually arise.

Over the years, we have collected a list of the most common questions about which growers have contacted us. We have ranked these questions in our own top 20 list from the least to the most common. In this issue, we share questions 20 through 11 and provide answers.

20. How many containers will a bag of mix fill, and why did the bag volume decrease from 3 to 2.8 cubic feet?

The exact number of pots or flats that can be filled from a bag of growing mix is variable. It depends on the density of the mix (i.e., bark versus peat), its moisture content and, most importantly, how the mix is handled.

To maximize the number of containers that can be filled, fluff the mix before filling containers. Even the yield of a loose-fill mix can be increased if it is subjected to gentle mixing to reconstitute the pore spaces that can be compressed during packaging and shipping.

This is an example of a municipal compost. Composts can be highly variable in their physical and chemical properties.

If a mix is not at the appropriate moisture level, this is a good time to add enough water to bring the mix to the desired 50 percent before placing it into containers. Avoid overmixing as this can result in undesired breakdown of the mix particles.

Changes in bag sizes relate to how mix manufacturers are required to measure bag volume. For many years, a bag of mix was filled based upon the volume of mix that would fill three 1-cubic-foot boxes. Now mix companies are required to use a single box that is 3 feet tall.

If a bark mix weighs 20 pounds per cubic foot and 40 pounds were stacked on top of 1 cubic foot of mix, significant settling would occur. Therefore, the weight of the mix causes compression on itself.

Most mix manufacturers that list the mix volume as 2.8 cubic foot are still putting the same amount of mix into the bags. However, due to new measurement requirements, the manufacturers guarantee a slightly lower volume. If a mix is properly

fluffed, it is possible to obtain 3 cubic feet of mix from a 2.8-cubic-foot bag.

19. How can calcium be added to a mix before planting without increasing the pH?

Adding calcium sulfate (gypsum) would be the first suggestion. The actual amount incorporated depends upon the objective, but a common recommendation is 1.5 to 2 pounds per cubic yard. The calcium can also be added after potting by dissolving 12 ounces of calcium sulfate per 100 gallons of warm water.

Calcium sulfate is poorly soluble in water so this solution will not dissolve completely and could cause problems with some injectors. Applying the calcium sulfate through a 16:1 siphon injector or sump pump may work best.

Calcium sulfate does not significantly affect pH (a small pH decrease might be observed if added to a mix containing acidic peat) but does increase electrical conductivity.

18. Why does foam appear from the top of a growing mix when it is irrigated?

This foaming is most likely caused by an error in the amount of wetting agent added to the mix. With newer wetting agents this tends not to be as noticeable and with the increased safety of the newer chemistries, rarely are plants negatively affected. This foam could also come from a surfactant used in a pesticide or from a new water hose.

17. What makes a mix organic?

Organic and sustainability are increasingly becoming major buzzwords. There are some confusing articles being published and numerous organizations are claiming they are authorities on what is deemed "organic." The authority recognized by the federal government related to all issues organic is the National Organic Program (www.ams.usda. gov/nop), which is a branch of USDA's Agricultural Marketing Service.

While there are lists of acceptable and unacceptable materials and inputs for products to be considered organic, a simple interpretation can be that synthetic substances are not allowed.

For organic potting mixes, the liming agent should be a naturally occurring mined limestone, the wetting agent should be a plant extract such as those from yucca or other plants, and any fertilizers should be from an organic source such as "meal" from a forage crop.

16. Does a growth retardant drench rate need to be adjusted with bark-based mixes?

This issue has been noted for A-Rest and Bonzi in particular. A-Rest addresses this on its label. It is not well-determined for Topflor or other products.

There are data to suggest that the physical properties (highly porous and well draining) of bark mixes may have more impact than the actual media components. The bottom line is that if a chemical is in contact with the roots longer, it likely will be more effective.

15. Why does coconut coir have a high electrical conductivity level?

Coconut coir has been shown to have electrical conductivity (EC) values ranging from 0.3 to 3.9 millimho per centimeter. Coconuts are halophytes, meaning that they take up salts from the soil and thus coconut coir may have high concentrations of salts. Sodium (Nat), potassium (K±) and

Coconut coir is used as a growing media component to provide water-holding capacity. Some coir sources may have higher-than-desirable electrical conductivity levels.

chloride (Cl^-) ions are the primary contributors to the electrical conductivity of fresh coir.

Regardless of its origin (coastal versus inland), any coconut coir source may have a high EC. Through proper processing, EC levels can be maintained in acceptable ranges. Many coir producers have quality-control programs in place to guarantee that acceptable and specified EC ranges are supplied. It is a good idea when new supplies of coir are obtained that an EC test be conducted on the new coir to confirm appropriate EC levels.

14. Why does coconut coir have a low pH?

Coconut coir typically has a pH in the range of 5.6 to 6.9. If the coir has an abnormally low pH, it likely came from deep within an old coir pile where organic acids may have built up while awaiting processing. As with EC, a quick on-site pH test will ensure that the pH is in an acceptable range to avoid problems.

13. Can composts be used as a component in growing mixes?

Composted materials have different physical and chemical properties. Uniformity within a given type of compost may also be a serious issue.

The materials, composting process and compost age affect the properties. To ensure uniformity, strict quality-control procedures need to be implemented. Be aware that municipal or industrial composts may contain undesirable materials, have unsuitable properties and display a high degree of variability.

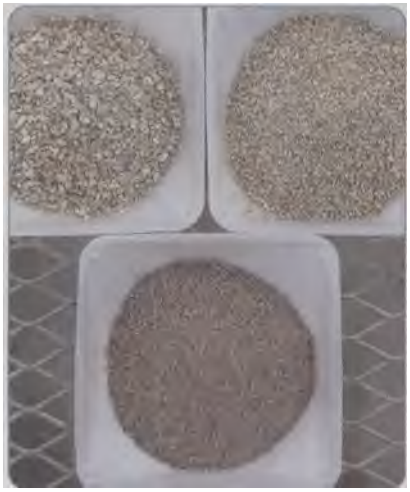
Composted manures and green wastes may be used in certain applications and in small amounts. However, composted manures may contain high levels of nitrogen and have a high EC. Composted barks tend to be fairly uniform whereas composted rice hulls can be highly variable among suppliers.

12. The limestone source was changed and did not work as well as before. What's going on?

Chemical composition, grind size, hardness and application rate all affect how limestone reacts in a growing mix. The limestone source used for most mixes is dolomitic limestone. Being a naturally occurring mineral from the Earth there can be variability, especially when sourced from different mines. Generally, the larger the grind size and the harder the mineral, the slower the reaction rate. Always trial any new limestone source before making wholesale changes.

11. The vermiculite source changed, resulting in a mix with a different pH. Why did this happen?

Different vermiculite ore sources have different pHs and chemical properties. African vermiculite typically has a higher pH than American sources and the pH



Vermiculite comes in different size grades, which affects its physical properties. The source of the ore used to make vermiculite can have a significant effect on its chemical properties.

of Chinese ore can be variable. African sources also tend to have more magnesium than Chinese sources, which may have a higher sodium concentration than other vermiculite sources.

In March *GMPRO*, we will continue our countdown to the No. i growing mix question. Look for questions regarding mushrooms, sticks, rice hulls and weeds.

Todd Cavins is technical specialist, Sun Gro Horticulture, (405) 533-3751; toddc@sungro.coin. Michael Evans is associate professor, University of Arkansas, Department of Horticulture, (479) 575-3179; mrevans@uark.edu.