

## 2nd in a 2-part series

Have growing media questions? Tune 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

IN THE FEBRUARY 2008 issue of GMPRO (Page 15), we shared the first 10 of 20 most-asked questions dealing with growing media volume yield, pH, electrical conductivity, mix components, organics and other issues. This month, we discuss the top 10 questions we receive from growers related to growing media.

## 10. My peat has a lot of sticks in it. What should I do?

Peat bogs are often in forested areas that were once covered with trees and small plants, so occasionally sticks or roots may be present. Peat companies process the peat and attempt to remove sticks while still maintaining the integrity of the peat.



Occasionally, sticks may be present in peat harvested from bogs that were once covered with trees and small plants.

The coarser the peat, the more likely sticks are to be present. Small sticks may provide more drainage, but an excessive number of sticks or large-size sticks can cause problems in automated machinery or small containers. If too many sticks are

present or if the quality of the peat changes, contact the peat manufacturer and discuss the problem.

## 9. Why are mushrooms growing out of my medium? Is this a problem?

The flower pot fungus (*Leucocoprinus birnbaumii*) is probably the most common mushroom found in commercial growing media. It tends to be most common where composts



Mushrooms, which are occasionally found in commercial growing media that contain composts, are promoted by cool, moist conditions.

(i.e., bark) have been included in the media. Its development is also promoted by cool, moist conditions. These mushrooms naturally grow on bark in nature and are rarely a problem except for aesthetics.

## 8. Why won't my peat wet up?

Sphagnum peat is naturally hydrophobic, and when dry, repels water due to the remains of the waxy



Continually remove weeds inside greenhouses and mow down weeds outdoors near production facilities and outdoor water sources.

cuticle that existed on moss plants. It can be difficult to get dry peat to absorb water without physical mixing or the use of a wetting agent.

It is very important that the growing medium be moist (typically, 50 percent) before it is placed in containers. A moist medium expands, which increases the total volume of medium and typically increases the total pore space and the air-filled pore space of the medium. If dry medium is placed in a container, water may channel, and wetting of the entire medium volume becomes very difficult.

Growing media manufacturers almost always include a wetting agent in their finished mix products to improve wettability. If you mix your own media, you may need to add a wetting agent or purchase peat with a wetting agent already added.

### 7. Why won't my composted bark wet up?

The most common reason is fungal growth over the surface of the bark under dry conditions. This problem generally occurs if insufficient turning of the bark occurred during composting or the bark pile was allowed to dry out. A wetting agent will help to break the surface tension and improve the bark wet up.

### 6. Why won't my medium dry out?

Growing media are composites of various materials formulated to have desirable physical properties. Drainage, water-holding capacity and air-filled pore space are a function of the pore shape and sizes of the medium. Typically, small pores hold water after irrigation while large pores drain and become air-filled pores.

To create a medium that holds less water, has a higher air-filled pore space and dries out faster, add (or add more) materials such as perlite, parboiled rice hulls and larger than 1/2"-screen aged bark that create large pores and increase air-filled pore space. Also, examine the air circulation in the greenhouse/ growing area to make sure it is adequate as well as the irrigation practices. You

may be irrigating too frequently. Also, by increasing the air circulation in the greenhouse, surface drying of the medium occurs more quickly.

### 5. Why are there fungus gnats in my medium?

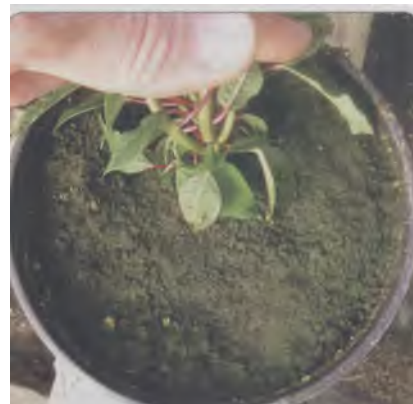
Fungus gnats occur in essentially all greenhouses. Overwatering and poor sanitation can allow populations of fungus gnats to increase and become a major problem.

Always discard dead or dying plant material and the growing medium and containers. Controls include cultural practices such as designing growing media that dry quicker, increasing greenhouse air circulation to improve the rate of surface drying of the media and reducing irrigation frequency.

You can apply natural enemies, including *Bacillus thuringiensis* bacteria or *Steinernema feltiae* nematodes, and chemical controls such as insect growth regulators or neonicotinoids. Follow label instructions with chemicals.

### 4. Why are algae growing on the surface of my medium?

Algae primarily need light, water and mineral nutrients (especially nitrogen) to develop. Therefore, the growing medium surface is often an ideal location for algae populations to thrive when the surface stays wet for extended periods. This problem can be exasperated when pond



The growing medium surface is an ideal location for algae to thrive.

water is used for irrigation or when plumbing has algae growing in it (which often happens when PVC pipes are exposed to sunlight).

The primary ways to reduce an algae problem include: using a medium that holds less water and has a higher air-filled pore space; increasing air circulation in the greenhouse; venting excessive humidity; and avoiding too-frequent irrigations.

You can use chemical controls such as peroxides or other oxidizers. Always follow label instructions with chemicals.

### 3. Should I use biological control agents in my medium?

Numerous biological products have been developed to be added to media to suppress soil-borne diseases. Some biological agents are strains of specific species of *Bacillus*, *Streptomyces* and



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*Pseudomonas*. Others are fungi such as *Trichoderma* or *Gliocladium*.

Evidence has been generated by private companies and universities that support the efficacy of biological amendments. However, there has also been significant university-based research that has raised doubts regarding their efficacy.

Many factors affect the efficacy of biological components added to growing media. They include the nature of the mix, the environmental conditions at application or immediately after, and the crop. Unfortunately, this information is generally not well-documented. The best course of action is to experiment with biologicals on a small scale to determine their efficacy under your growing conditions and with your crops. When conducting trials, include groups of control plants without the biological components so you can

determine the specific effect of the biological agent.

## **2. Why does the pH of my medium go up during production?**

Irrigation water with high alkalinity causes the medium pH to increase over time. The use of basic fertilizers such as calcium nitrate and potassium nitrate (or other basic premixed fertilizers) can cause the medium pH to increase, and some crops such as pansies increase the medium pH over time.

You can implement several strategies to maintain the medium pH, such as injecting acid to reduce the alkalinity of the irrigation water, using acidic fertilizers where possible (be careful of ammonium toxicity), rotating between basic and acidic fertilizers or starting the medium with a pH as low as is acceptable for

the crop produced.

In extreme cases where the pH has increased to unacceptable levels and the pH must be reduced, iron sulfate, aluminum sulfate or water injected with acid may be applied as a drench. Use caution when applying these materials to avoid an excessive drop in pH, excessive increases in electrical conductivity and staining or burning of plant foliage or flowers.

## **1. Why are there weeds growing in my medium?**

Weed seed may be found in some types of peat such as reed sedge peats. They are uncommon in high-quality sphagnum peat. Weed seeds are common in field soils and some composts (especially if stored outdoors after composting).

In most cases, weeds growing in plant containers come from the greenhouse. This may occur because



Unused containers should not be stored open and outdoors where they can become contaminated with weed seeds.

weeds are allowed to grow in areas outside of the greenhouse and the weed seeds find their way into the greenhouse and into the containers. Sometimes open, unprotected pots and/or flats are stored outdoors during summer and weed seeds find their way into these containers. When the containers are brought into the greenhouse for use, weed seeds come in with them.

One of the most common ways that weed problems occur is due to a lack of diligence in removing weeds from inside the greenhouse. During busy periods or when the greenhouses are shut down between crops, weeds are often allowed to germinate and grow. Although greenhouses are cleaned before new crops are brought in, weeds may have had time to flower and go to seed before they were removed. In this case, weed seeds have spread throughout the greenhouse and are waiting for suitable growing conditions.

Sanitation and keeping weeds out of greenhouses is continuous. Remove weeds inside the greenhouses and mow the weeds outdoors near production facilities to prevent them from producing seeds. Mow down weeds near outdoor water sources such as collection ponds. Do not store containers open and outdoors.

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