

FINISHED GROWING MEDIA: MOISTURE & GAS EXCHANGE

Factors to keep in mind that impact substrate moisture and gas exchange in finished growing mixes.



Like with propagation mixes, water-holding capacity and porosity are major factors to consider when you select a finished mix. Ideally, you can find one type of growing media that meets the water-holding and porosity need of all your finished plant programs. If you grow a narrower range of crops or only operate your greenhouse for a short part of the year, this is an easily attainable goal. However, if you grow a wide variety of crops year-round in different types of production systems (such as indoor vs. outdoor), it may be beneficial to avoid the one-size-fits-all approach. Consider the following before you start to fill your finished containers with media:

Grow Time. When it comes to media components (peat vs. bark, coir, wood fiber, etc.), there are few commercially produced soilless mixes that 100% will not for short-term (about 4 to 8 week) annuals crops in flats or small containers. There's always a moisture management learning curve if you change mixes, but growers across North America manage to grow the same species in different soilless mixes every year without issue.

On the other hand, the longer plants are in production, the more important it is to use a mix that has lots of structure and porosity. Media components break down and compact over time,

which can drastically reduce rootzone pore space and increase water-holding capacity. Together, these factors increase the chances of rootzone disease and often make moisture management difficult. As such, you may want to use a coarser mix for long-term crops like perennials, garden mums, or combos in large containers (12 or more weeks in production) rather than a lighter, finer particle size mix that you use to grow annuals.

Growing Environment. This goes hand-in-hand with grow time in many ways. Since long-term crops are often grown outdoors for the majority (or all) of the crop cycle, exposure to heavy/persistent rainfall, high temperatures, and wind can hasten media compaction and particle breakdown. If your mix is too light/fine, roots of outdoor-grown crops will likely struggle to get adequate oxygen as they mature if your growing media cannot withstand the added pressure from the elements. Roots will stay wet for longer and—again—increase the risk of disease pressure. Be sure to use a coarse, resilient mix whenever you produce slower-growing crops outdoors.

Media Age. Have a good understanding of how much finished growing media you need, use all the media you order in a given year, and order fresh mix for next season as whenever possible. If you order extra media to combat potential supply chain shortages next year, be prepared to take some extra steps to ensure your media performs at its best.

Remember that most soilless media components are naturally hydrophobic (do not absorb water easily on their own) and wetting agents that help combat this breakdown over time. Wetting agents in your media can start to degrade within about nine months after they are applied and exposure to high heat during storage will hasten this process. Whenever you have to use older batches of soilless mix, break up the bags or bales thoroughly ahead of when you need to fill containers and check to see if the wetting agent is still active.

- Fill up a few pots, run them through your water tunnel, or set them on a bench and water them in as you would if they had newly planted plugs or liners in them.
- Let them sit for 20 to 30 minutes, then carefully flip a pot or two over in your hand.
- Slowly remove the pot and examine the soil column. Then, carefully break up the soil column and look for dry pockets within the column. If large, dry pockets are visible from the outside or when you break up the soil, apply additional wetting agent to this batch before use.

If you need to refresh the wetting agent, do so *before* you fill containers. Follow label instructions for your wetting agent and add some a little bit at a time as a fine spray to your

bale buster to ensure even distribution. If you only have small bags and/or do not have many bags that need additional wetting agent, a small concrete mixer that can gently tumble the mix as you add the wetting agent also works well. Also, if media is a too dry, you can use this opportunity to add a small amount of water back to the mix at the same time.

**Note: Avoid over-mixing, as this will abrade your soil particles and cause the mix to compact more quickly once crops are on the bench.*

Water-absorbing Polymers. Some growers include polyacrylamide granules (hydrogels) that absorb and hold onto extra water in their finished mixes. While avid users swear by them and these products *do* work as advertised, we find that they are frequently misused in finished production. When used in small container programs, increased algae growth is typical along with fungus gnat and shore fly issues, because growers do not reduce irrigation frequency appropriately to offset the added water-holding capacity. If you include water-absorbing polymers in your mix, check the weight of containers before you decide to water or feed and don't just base it off the color of the media at the top of the pots or flats.

On the other hand, these granules *can* be very helpful in hanging basket programs. The air temperature is often much higher up on basket lines, particularly in shorter Quonset-style houses, and this can cause baskets to dry down very rapidly on sunny days. Inclusion of the right amount of water-absorbing polymer in basket programs can help alleviate crop stress and reduce the need for frequent irrigations as the crop matures. Note that the right amount varies based on your growing environment and practices, so you need to experiment with how much is added to find the "sweet spot."

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