GROWERTALKS

Features

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Growing Media: New Ways to Put "Dirt" to Work

Jennifer Zurko

Since soilless media was developed by Cornell University professors James Boodley and Raymond Sheldrake in the 1960s, suppliers and growers have strived to improve upon the current offerings, searching for “the next best thing” that will provide the optimum root zone environment for their crops. So, what’s new?

Media challenges

Before the advent of soilless media, growers dug their potting soil directly from the ground, resulting in diseases, weeds and residual herbicides. Thirty years later, growers’ media challenges now center on irrigation, salt content and whether to include organic materials.

“Maintaining correct pH during growing continues to be the No. 1 challenge,” says Shiv Reddy, technical specialist for Sun Gro Horticulture. “We get a lot of questions and we often see problems growers have due to pH.” He adds that coping with water restrictions is also becoming a challenge, along with providing enough water to prevent wilt and shrink at the store level.

Dr. Bill Miller, professor of horticulture at Cornell University, agrees that pH and EC still pose a challenge for growers; however, he says it’s the underlying substrate that matters most in the overall root zone environment. “The most important factors of container soils are the physical properties of the soil—water-holding capacity, drainage and aeration,” says Dr. Miller. “These are determined by the amount of peat moss, vermiculite and perlite that you put into it. If there’s not enough oxygen to grow the roots, the plant dies. The pH and the EC are not important unless you have all of the physical properties.”

Disease issues are still a hot topic. Recent incidents such as Ralstonia in geraniums, Phytophthora ramorum in redwood and E. coli in spinach have had concerned growers requesting proof from their suppliers showing that their media is free of plant and human pathogens, says Shiv.

Some challenges are directly related to the media the grower uses. For instance, peat moss has proven to be

one of the most innovative elements of growing substrates, but even this can be unreliable depending on the peat harvest.

“[Peat] could react a little differently from year to year,” says Janet Curry, business manager for growing and rooting media and nutrition for Ball Horticultural Company. “If you have a finer peat, it’s going to hold more moisture and have less air porosity. Every mix has a porosity spec, but whether you’re at the top end or bottom end of that can make a difference on the moisture-holding capacity.”

Additive arithmetic

As the horticulture industry grew, so did new ways of improving potting media. It wasn’t enough to just provide the product—suppliers had to prove their product was worthy with stringent testing and raw data. Many scientists, researchers and technical experts popped up on company rosters, whose small product offerings soon doubled. Today, most media suppliers have a large variety of growing mixes for everything from seedlings to plugs to Ellepots.

But the laundry list of soil additives, such as peat moss, vermiculite and perlite, still has growers scratching their heads. Which ones are the best?

Doug Cole of D.S. Cole Growers in Loudon, New Hampshire, purchases his media from Stender, a European supplier that provides the exact peat volume on each bale. “What I get confused about is whether an additive is a good amendment to a potting mix or substrate—is it really better or is it just more fluff?” Doug says. “I’m picking the right peat in the first place to get the water holding and the drainage how I want it.”

DIY media mixing

Some growers take the do-it-yourself route and make their own soil blend. Joe Moore, head grower/production manager for Lucas Greenhouses in Monroeville, New Jersey, says they currently buy some of their media from a supplier and also mix their own. Plans are in the works to develop a new mixing system so all of their media will be made on site.

“The biggest reason to make your own is cost savings,” Joe explains. “We can make a mix for quite a bit less than what it costs to bring in pre-made mix. It’s not that we’re dissatisfied with the job [the suppliers] do … With the proper equipment, we’ll have the ability to make all the mixes we buy in and it’s almost half the cost. You’ve got to push the pencil a little bit to see the exact savings, but it’s fairly significant.”

Soil(less) solutions

Whether custom-mixed or vendor-supplied, growers want to know what’s new in the growing media marketplace.

Some suppliers, such as Ball and Sun Gro, are offering a no-aggregate mix comprised of mostly peat moss, similar to what’s offered by European suppliers. Perlite, vermiculite and bark are premium components, so the more you have in your media, the more expensive it is. Aggregate-free mixes feature higher water-holding capacity and are economical because they are now being offered domestically.

Fafard has recently developed a face-to-face approach to their substrate customer service. In the spring of 2008, the company introduced the Fafard Research Leader Program, which has research and development

team interns conduct on-site media trials at commercial greenhouses. The technical reps partner with growers to test and evaluate their current growing mix and provide timely results. Dr. Jamie Gibson, director of research and development for Fafard, says many of their customers have greatly appreciated the benefits of the program.

“Oftentimes growers get busy in their greenhouse environment, so when a trial is in place and a grower is interested in a new additive or alternative media, it sometimes gets lost,” he says. “One of the benefits of the research program is to bring some extra labor in to take away that chore of studying the mix and how the plants are performing.”

Some growers make parboiled rice hulls their preferred additive. In 2005, Riceland Foods introduced the PBH Nature’s Media Amendment, a uniquely processed rice-hull product. It’s been a more economical replacement for perlite in growing media, with less dust residue, and many growers are using PBH with great success. It’s also OMRI-listed for organic production.

“PBH provides air, drainage and porosity development in the soil. The functionality is the same as perlite, but there are slight difference’s” says Mark Shepherd, eastern regional marketing manager for Riceland. “Water management is the key adjustment growers make. It has gained popularity with growers and manufacturers. They truly understand the benefits.”

While working with organic farmers, Michigan State University professor Dr. John Biernbaum found that using the proper compost in growing media improved pH management and lessened disease occurrence.

“I know if I put some compost in the media, I don’t need to acidify my water,” explains Dr. Biernbaum. “The compost puts back the exchange capacity because it has good nutrient retention. And we don’t use fungicides, because there are no disease problems.”

Irrigation aides

Since the 1990s, Bobby Barnitz of Bob’s Market in Mason, West Virginia, has been using a water-holding polymer called WaterWorks. Bobby first hydrates the WaterWorks crystals, then adds the expanded crystals to two types of soilless media he buys in. He has found the pre-expanded polymer crystals replace a percentage of the soil, allowing him to save on soil costs. WaterWorks also enhances moisture retention and releases additional water when the soil starts to dry.

“If you don’t stress the plants, you get a better quality plant,” Bobby says. “Once you incorporate WaterWorks into your soil and the roots grow and attach to the polymers, then it has supplemental water to keep the plant from stressing. If it’s a hot day, the plants need water and you’re two hours slower at getting to them, those plants are going to survive better and last longer without being stressed. And a non-stressed plant is healthier.”

One of the latest growing media innovations is AquaLok, a synthetic foam product originally developed for fighter jet fuel tanks. Its inventor, Joe Byles, has partnered with Florida grower Costa Farms to market AquaLok to the horticulture industry. Costa Farms’ extensive trials have helped them perfect the AquaLok process, finding growers can use the foam at the bottom of the pot or container and top it off with a layer of

soil.

Andrew Britten, manager of plugs and propagation for Costa Farms, says AquaLok will change the way growers, retailers and especially consumers look at watering.

“Because it traps air, you don’t get any root rot,” he says. “You can seal the container, flood the heck out of it, and the roots won’t die.” That, he explains, extends the irrigation cycle up to twice as long.

Some growers may be skeptical about growing in foam media, but the benefits to the end consumer and grower made it easy for Costa to get behind this product.

“We wanted to make sure this was the best avenue for us,” says Andrew. “We think that it’s the best thing out there currently—it’s just so different from anything else.”