

# GROWERTALKS

## Features

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### Soil vs. Soilless Growing: The Organic Debate

*Jennifer Duffield White*

It's a debate about what the founders of organic farming intended and it's also become, in large part, about whether or not soilless media, bioponics, and perhaps even containers, can carry the USDA Organic label in the future.

One side of the organic industry argues that soil (and sunlight) must be present to create an organic system. The other side argues that these containerized production methods can conform with organic if they use the correct inputs and support balanced biological processes that cycle nutrients. Who's right has yet to be decided, but either way, the USDA needs to clarify its standards, which don't adequately spell it out at the moment.

With the growth of both organics and hydroponic systems, the issue has reached a heated frenzy, with a lot at stake for both sides, economically and ideologically.

#### **The background**

While organic farming has its origins in the 1940s and certification had existed for decades, it wasn't until 2000 that the USDA published the National Organic Program (NOP) standards and brought it under one umbrella. (It's important to note that those standards didn't originally address greenhouse production.) How containers and hydroponics comply with the standards has been up for debate. By 2010, the National Organic Standards Board (NOSB), a federal advisory board made up of industry volunteers that offer guidance and recommendations to the USDA, had presented the NOP with a recommendation to not allow hydroponics, aquaponics or soilless systems to be certified organic. But NOP didn't act on that recommendation. Instead, in 2015, the USDA created the Hydroponic and Aquaponic Task Force to further explore the issue.

According to the NOP, they were having trouble drafting regulations based on NOSB's recommendations. They thought there was "insufficient information to draw a line between hydroponics and other types of production in containers/enclosures," among other things.

#### **The current status**

In July 2016, the Hydroponic and Aquaponic Task Force released their report, which, in its nearly 200 pages, never makes a clear recommendation. Instead, it presents each side's argument. One subcommittee clarifies the case for the 2010 recommendation to disallow hydroponic certification, as well as several other forms of containerized production. The other subcommittee presents arguments on how containerized production can comply with organic certification. (A third committee briefly looked at alternative ways to modify the organic label, such as USDA Organic-Soilless.)

The NOSB will now consider the task force report and make a recommendation to the USDA on how to proceed.

### **The pro-soil argument**

For long-time organic tomato grower Dave Chapman of East Thetford, Vermont, who grows in soil in glass greenhouses, it boils down to the original philosophy of organic farming.

"Organic farming began and forever was about building and maintaining fertility in soil," he says. Dave was part of the recent task force examining the issue and helped shape the pro-soil recommendations.

"Hydroponics is based on 'feed the plant,'" says Dave. The elimination of pesticides and synthetic fertilizers—which most consumers equivocate with organic—is meant to be the result of organic, not the reason it is organic, he explains. While he appreciates that there's an economic opportunity in organic growing now, he says many are missing the deeper meaning of organic.

NOP regulations require soil management in several regulatory sections and, thus, the subcommittee writes in its report, it is "implicitly requiring" that organic production must take place in soil. In addition, they say that the majority of the plant's fertility should come from the soil, rather than from fertigation. That would rule out the use of compost teas, for example, as a primary source of fertility. Their report goes into detail on the role of soil biology, as well as water conservation, carbon sequestration and nutrient cycling. They also suggest that smaller containers where the crop is being grown to maturity may not contain enough biological activity to create available nutrients for plants and that the NOP should either prohibit the production of crops to maturity in containers or require containers of a size such that they can get the bulk of their nutrients from soil.

The subcommittee suggested that some products—such as transplants, mushrooms and aquatic plants—could be grown without soil and still be organic as long as it "does not naturally need soil to live and grow." Microgreens offer another dilemma, but the subcommittee report says that microgreens can be grown in compost-based media and could meet the requirements with that method (but hydroponic production of microgreens would be another story).

### **The case for containerized production**

Martin Gramckow, vice president of Southland Sod Farms in California, grows in both worlds—in soil and in containers. He says, "Substrate systems are every bit as organic as soil-based systems. I live this every day on my farm. We adhere to the USDA standards and utilize all of the same inputs as soil production. Containers are a sustainable, legitimate and sensible part of our organic future."

He agrees that root zone biology is an important, if not essential, part of growing organic plants and he also

agrees that the bulk of nutrients should come from complex organic molecules. But he disagrees with the idea that the soil is the crucial component “rather than the actual biology that can happen in many growing media, such as soil, substrate or even water.”

Lee Frankel, executive director of the Coalition for Sustainable Organics—a group that sprung up to support the certification of containerized production—believes that original intent of the organic system is about the biological processes in the system, as well as overall sustainability.

“Organic, at the end of the day, is really about using natural resources and cycling resources to create a sustainable, balanced biological process—one that saves water, reduces nitrogen runoff, reduces pesticide use,” says Lee. He argues that organics should make room for new ideas and address new challenges, including regional issues such as arable land.



While most other countries currently don't allow hydroponic production to be certified organic, they do offer various allowances for certain crops and container systems.

“The U.S. is the most important market in the world for organics, and we have to decide what's best for our producers and consumers,” says Lee.

The subcommittee report in favor of certifying containerized production lays out an extensive list of ways in which biaponics and containerized production can be in alignment with current organic standards, as well as suggestions on how to change the USDA standards to adequately address their unique circumstances. They write that “it is important to understand that the hydroponic systems that should be considered for organic alignment are only those that specifically achieve, promote and maintain a soil-microbial ecosystem that soil or a compost-equivalent would achieve.” They reason that if compost and soil can achieve the same functions (as the NOSB recommendation suggested), then it goes to reason that “a properly designed bioponic system that is capable of achieving the same function as compost” should be eligible for organic certification.

### **The prediction?**

Both Dave and Lee say they don't have a good sense of what way NOSB will lean when they review the issue. But Dave thinks that ultimately, given the market forces, organic will probably be redefined. “I believe we're in the process of tarnishing what's left of the organic label,” he says.

Martin also worries about the integrity of the organic label, but for different reasons.

“When a task force of producers attempts to define one allowable production method that works for their specific crop in their particular production region, it effectively protects their profits, while stifling innovation of others and sustainability for all,” he says. **GT**