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Hydroponic (Bioponic) Growing: Should It Be Called Organic?

Comments on the NOSB Crops Subcommittee Proposal
Hydroponic/Aquaponics/Bioponics, September 6, 2016

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Organic growing was defined by J. I. Rodale and his staff as "a system whereby a fertile soil is maintained by applying nature's own law of replenishing it – that is, by adding organic matter to preserve humus rather than using chemical fertilizers" (Rodale, J.I., et al., The Encyclopedia of Organic Gardening, 1971). This was simplified to a slogan "feed the soil, not the crop".

Hydroponic growing is producing crops in nutrient-rich solutions or in an inert, porous, solid matrix bathed in nutrient-rich solutions [rather than soil]. Organic hydroponic would be the same soilless production, but using natural fertilizers.

As is obvious, since hydroponic growing is growing without soil, then to include it as a type of organic production would necessitate a change in the basic definition of organic production. Of course, the powers in charge can legally do this, but should they? Should crops grown hydroponically be allowed to be labeled “organic” if those nutrient-rich solutions are derived from natural materials rather than from chemical fertilizers? I don't think so. Organic production is much more than a list of permitted fertilizers and other materials.

In 1990 Congress passed the Organic Foods Production Act (OFPA), and in 2000 the USDA National Organic Program (NOP) produced the final Rule that regulates and enforces the OFPA. Both Congress and the USDA did a very good job at writing regulations that represent what organic was before the movement to regulate it on a national level. This is particularly true with respect to meeting the founding definition set forth by Rodale and the other founders. For example, Section 205.203 requires, and does a good job describing, management of soil.

They (the NOP), similar to all the certifiers regulating organic production before them,

based their standards on the history of the organic farming movement, which began in the early part of the 20th century, pioneered by farmers and academics who were responding to obvious problems with "modern" agriculture, such as soil erosion, depletion of soil fertility and structure, decline of livestock health caused by feed lacking quality, etc. The pioneers (Sir Albert Howard, Lady Eve Balfour, Rudolf Steiner, Jerome Irving Rodale, Aldo Leopold, William Albrecht and others) fostered the notion that the success and sustainability of farming relies on managing soil health. Most at that time referred to this as humus farming. They recognized that the soil is a complex system of countless biological interactions and that ordinary practices of crop production weaken these interactions and lead to loss of soil fertility and health.

The kingpin of what they termed "humus farming" – named after the very stable organic matter at the heart of healthy soil, later to be called "organic farming" – is that in order to maintain and increase productivity, the soil needs to be restored continuously by "manuring," managing crop residue, composting, cover cropping and adding natural rock powders, etc.. In other words, organic production is not a simple listing of prohibited and permitted materials, but rather a whole set of farming practices based on principles of improving the farm's soil.

There are some soilless productions, such as mushrooms or sprouts, which could be labeled organic so why not hydroponics? These products may not be produced in soil directly, but they are a part of soil based production and so meet the basic organic principle. Mushrooms are not photosynthetic plants, but rather eat food (similar to livestock), and the key to whether they are organic or not is based on whether their food is organically produced. Sprouts are not actually producing any new plant material, but rather are simply germinated seeds. The key to whether they are organic or not is whether or not the seed was grown organically. Labeling such crops as organic is in line with the founding principles of organic production because their production is indirectly based on organic management of soil. In contrast, to label hydroponic crops grown without soil (i.e., crops that are simply fed continuously in their container with available nutrients that are not the result of the soil system) would require a change in the fundamental principles of organic production, and would redefine what has been accepted as organic since the beginning.

My subcommittee of the USDA's Hydroponic Task Force concluded that organic production should take place in soil. The crux of our conclusion is the distinction between organic and conventional fertility management. In organic management, the bulk of the crop nutrients come from the biological activity decomposing complex organic molecules (compost, manures, seed meals, etc., as well as the mineral fractions) in the soil. In contrast, in nonorganic production, the bulk of the crop nutrients are supplied as synthetic chemicals in available forms. Soil management is at the heart of organic production, while fertilizer management is the basis of nonorganic systems. Hydroponic production is similar conventional production in that it is based on fertilizer management. Even if there is some biological activity in the hydroponic solution, the bulk of the plant

nutrients are being supplied directly to the crop by the fertilizer. Clearly this is not building soil and does not meet the historical definition of organic production. Even if the added fertilizers are natural, a system based on feeding the crop directly is not organic by the historically accepted definition.

The USDA now has the legal authority to say what is or is not organic, based on the OFPA and the NOP Rule. Of course they can modify or interpret rules and regulations to allow hydroponic production to be labeled organic. But should they? I do not think so. Organic farmers have worked very hard over decades to build respect in the marketplace for the type of farming they do. Hydroponic production may be environmentally friendly, produce a healthful, good product, etc., however it is not organic in the traditional sense of the word. To allow hydroponic (bioponic) production to be labeled organic would be a taking of the respect, and the value in the marketplace that organic farmers have built over decades around that founding premise that organic farming is all about "...a fertile soil is maintained by applying nature's own law of replenishing it".

Thank you,

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PS: This issue is very pressing. Organic farmers have lost market share, and the situation is getting worse and worse. Please address this problem as quickly as possible.