Report provides options for organic soybean growers

October 21 2016

Edamame. Credit: University of Illinois

Although soybeans are one of the most widely grown crops in the U.S., few soybean farmers are using organic practices. A new University of Illinois report details organic products and practices to combat pathogens and insect pests. New growers may be motivated by a strong profit margin for organically produced soybeans.

Soybeans were planted on nearly 84 million acres in the U.S. in 2016, but only a tiny fraction—less than 1 percent—were grown organically. This number has been increasing in recent years, and a group of University of Illinois researchers wants to give organic growers the tools they need to combat pathogens and insect pests.

"We wanted to give organic growers some opportunities. We summarized some practices to fight diseases and pests organically. It's not an easy task, but it can be done," says U of I and USDA ARS crop pathologist Glen Hartman.

Hartman, along with colleagues in the Department of Crop Sciences, produced a comprehensive report summarizing the disease and pest problems faced by soybean growers in the United States. For the first time, the report compiles specific organic management practices and products tailored for each scenario. By detailing the tools needed to successfully grow organic soybeans, the researchers hope more growers will give it a try.

"There is a movement for organic agriculture, but so far, soybeans haven't been a major player," Hartman notes.

The researchers want to encourage small-scale vegetable farmers that are

already using organic practices to add soybeans to the mix. The expansion of the organic meat and dairy markets, combined with strong consumer interest in organic soy-based foods like tofu and edamame, are increasing the demand for organically grown soybeans. Over half of organic soybeans are imported, but several companies and entrepreneurs are working to increase the domestic supply.

Those who are selling organic soybeans today are getting almost twice as much per bushel compared to conventional soybeans. "Organic meat is probably double or triple the price compared with conventionally raised meat. And that's partly from the cost of organic feed. Whoever's producing this is going to make some money," Hartman says. "Bags of frozen edamame sell for about $3 at the grocery store, and there might be 40-50 pods per bag. That's equivalent to one or two plants. You can grow maybe 100,000 plants in an acre. You can do the math, and that's a rough calculation, but there could be a lot of profit involved."

Graduate student Theresa Herman also sees the potential for increased edamame production in the United States. "I have talked to school food service companies about incorporating edamame in school lunch programs. It's a good source of protein, and kids eat the beans voraciously. They're crazy about edamame," she notes.

Soybeans grown for edamame appear to be more prone to insect and disease problems than grain soybean, and non-GMO grain varieties available to organic growers may not have the disease and pest resistance that is present in many elite conventional cultivars. However, there are organic solutions for both. In the report, the researchers lay out strategies in a number of categories, including biological control, cultural practices, breeding priorities, and organic pesticide products.

"Rotations to different crops are commonly used by organic growers," Hartman says. "Organic producers have cover crops and alternative

crops that are not used in most corn and soybean systems. They might have a four- to six- to eight-year rotation, which is one of the best ways to reduce diseases."

Although the researchers point to the promise of longer rotations and cover crops, they would like to know more about the effectiveness of organic products and practices in real-world settings.

"We want to be able to experimentally test some of the products growers are using in organic soybean systems. We want to learn what their constraints are, and how we can help them," Hartman says.

Herman adds, "A lot of people are happy with the way they do things, but they want to know more about why and how their system is working."

Current and potential organic soybean growers can contact Hartman directly, and can read the new report, "Organically grown soybean production in the USA: Constraints and management of pathogens and insect pests," published in *Agronomy*.

More information: Glen Hartman et al. Organically Grown Soybean Production in the USA: Constraints and Management of Pathogens and Insect Pests, *Agronomy* (2016). DOI: 10.3390/agronomy6010016

Provided by University of Illinois