

# Focus on basics for growing oats

BY NICK OHDE

**D**AVID Weisberger, a graduate student at Iowa State University, has spent the last couple years traversing the state, working with farmers who grow small grains. Most organic corn and soybean producers need to rotate a third crop into their farming system, making organic a good place to start with small-grain research.

“The problem is farmers almost always lose money on those crops in this part of the world,” Weisberger says. So a group of researchers at ISU — Mary Wiedenhoft of the Agronomy Department, Margaret Smith of Extension, and Amber Anderson, then president of the Iowa Organic Association — secured funding to answer the question: What are the constraints to the organic production of small grains in Iowa? The researchers hired Weisberger in 2014 to work on the project for his graduate work.

First, Weisberger visited 40 farms across Iowa, collecting basic agronomic data on how small grains were being raised on organic farms and talked with farmers about how long they’d been growing the crops, where they sold their products and what they thought was holding back production. One major conclusion from this survey: Oats were far and away the most commonly grown organic small grain in the state.

From the list of 40 farmers, Weisberger contacted seven who agreed to do on-farm trials on a number of topics important to small-grain production in Iowa.

## Zero in on population

Weisberger worked with three farmers to conduct research on the effect of seeding rates on yield and profitability of organic oat production. “One thing stood out from the survey,” he says. “There were massive ranges in seeding rates of oats. Farmers over the two years of the study planted anywhere from 1.5 bushels per acre to 5 bushels per acre.”

All farmers he talked to thought about oat planting in bushels or pounds per acre, while they thought about corn and soybeans more precisely, in plant populations per acre. For this trial, three rates were evaluated: 22, 29 and 36 plants per square foot (this worked out to about 85, 112 and 138 pounds of seed per acre, respectively). That trial found no statistically significant differences in yield among the treatments.

Aaron Heley Lehman of Polk City was one of the participating farmers. “Based on these results, farmers can maybe achieve some savings with the amount of seed they’re using, within a certain range,



**GROWING OATS:** ISU’s David Weisberger spoke at a recent field day at the farm of Aaron Heley Lehman in Polk City. “Most of the farmers we work with recognize the importance of longer crop rotations, and planting small grains as a third crop,” he says. “But they’re all constrained by where they can market small grains, and they’re especially constrained if they don’t have animals in their farming operation. Livestock are an alternative economic use of oats and other small grains, when the crop doesn’t meet the quality characteristics of the food-grade market.”

and they won’t affect yield,” he says. But he says in addition to the results of the research, he learned a few things by taking part in the research project that will be perhaps even more beneficial.

“There’s quite a bit of variance in seed size in oats,” he says. “So knowing that, I found I would probably save some money if I made a practice of figuring out how many seeds there are per pound and using that as the planting basis rather than bushels per acre. It can vary your planting rate quite a bit if you don’t know exactly how many seeds per pound you have.”

## Calibrate for precise rate

Another bit of knowledge Lehman learned from the trial: It’s not that hard to calibrate the grain drill for a more precise seeding rate. “It’s something I’ll put into practice in coming years — definitely worthwhile.”

Lehman hopes more effort is put into similar research in the future. “Research on small grains hasn’t been kept up in Iowa,” he says. “As Iowa has become a corn and soybean state over the decades, we just haven’t done enough to answer

the important questions regarding small-grains research, so having David Weisberger work on it is really important.”

Lehman adds, “David is easy to work with from a farmer perspective, providing very relevant, important, basic information we need to know. I’m very happy he’s doing this work.”

## Rotary-hoeing oats

The farmer survey also found that weeds in small grains were a major management factor. “Based on this,” Weisberger says, “we wondered if there were ways of controlling weeds mechanically within an oat crop.” He says most of the research conducted on cultivation in small grains has been in Europe, where various types of harrows are more commonly used. “Not very many Iowa farmers have those tools,” he says, “but pretty much every organic farmer has a rotary hoe.”

To measure the impact of rotary-hoeing oats on weed populations and yield, Weisberger worked with two farmers to conduct trials on their farms in northern Iowa. The farmers planted oats in early

April; then made two passes with a rotary hoe at the one- to two-leaf stage of growth. Weisberger measured the effect on oat and weed populations before and after rotary-hoeing, and weed biomass and species composition later in the year, prior to harvest, along with oat yield and test weight.

In this study, there were no differences in yield or test weight between rotary-hoed and non-rotary-hoed oats. “Based on these results, we probably won’t rotary-hoe in the future, mainly because we grow our oats with an underseeding,” says Dan Wilson of Paullina, one of the research participants. “But any research we can get on how to grow a third crop better is beneficial.”

Although there were no effects on yield, the research showed rotary hoeing did impact weed populations, and that’s important information for farmers hoping to reduce their weed seed banks.

## Impact of underseeding

Weisberger also worked with Vic Madsen of Audubon to examine how an underseeding of alfalfa affected oat yield, and determined that it had no effect on yield. “The legume does good things for soil conservation and making nitrogen for the next year’s crop, so we’re happy it doesn’t hurt the oats,” Madsen says. He’s aiming at improving yield and test weight to try to sell food-grade organic oats to Grain Millers.

Weisberger conducted small-plot research at ISU’s agronomy farm at Boone on planting date and seeding rate. He looked at three planting dates over 22 days, as well as four seeding rates: the three seeding rates from the on-farm trials, plus one lower rate.

So far, he has one year of numbers back. “The results confirm what a lot of experienced growers already know: Planting as early as possible is really necessary for higher yields and test weights.”

One of the most important aspects of his research is putting some strong numbers to what is commonly known by farmers. “Good farmers like numbers,” he says, “when you can see that you’ll lose a bushel a day for every day you wait to plant, that’s going to provide incentive to plant early.”

Results of the research will be available on the websites of the Iowa Organic Association and Practical Farmers of Iowa this winter. Margaret Smith of ISU says ISU Extension will have out a new oat production guide for both organic and conventional producers based in part on this research by January or February, in time for oat production season. For more information on small grains, go online to [practicalfarmers.org/small-grains](http://practicalfarmers.org/small-grains).

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