

Third Crops Boost Profits, Reduce Inputs and Help Soil, PFI Research Shows

by Drake Larsen

Adding a third crop is not only better for the environment, on-farm research indicates it is beneficial to the pocketbook as well. Bringing a third crop into the standard corn-soybean rotation has been shown to increase corn and soybean yields while simultaneously reducing input costs, since less herbicide and fertilizer are required for the three-year rotation. Longer, diverse rotations reduce weed and disease pressures and, depending on the additional crop, enable farmers to grow their own nitrogen.

Research from USDA, Iowa State University and University of Minnesota, recently published in the journal PLOS One (Oct. 2012), found a three-year rotation of corn-soybean-oats/red clover to be the most profitable. ISU agronomist Matt Liebman and colleagues saw increased soybean yields from 51 bushels per acre in a two-year rotation to 55 bushels per acre where a third crop was added. Similarly, corn yields averaged 11 bushels per acre higher for the longer rotations.

Effective weed control was achieved using six to 10 times fewer chemicals in the longer rotations compared to the corn-soybean rotation. The research demonstrates that longer rotations that can reduce input costs and maintain or increase yields can have an edge in profitability.

Central Iowa farmer Craig Fleishman is conducting on-farm research to study the effect of a third crop on his farm. The prospects for profits and additional long-term benefits that come from improved soil health speak to his bottom-line and his passion for soil stewardship. Practical Farmers of Iowa supports the on-farm research through its Cooperator's Program.

Finding the balance

Fleishman, of Minburn, is always fine-tuning his soil stewardship practices in what he calls a continuous search to find the "balance between steel and chemicals." When making management decisions, he always first considers the motivation for a given practice. He's found that many practices good for the crops and soil require a bigger time commitment. Driven by childhood memories of dust storms in the neighborhood, he doesn't mind the time.

to break onto the scene in a big way.

Recognizing that corn and soybeans will still be his dominant crops, Fleishman completed the first year in 2012 of a three-year trial that brings another crop into his farming system. His interest in adding a third crop has grown from his experiences with strip cropping and intercropping.

His on-farm experiment consists of four replications of a three-year crop rotation (corn-soybean-oats/red clover) for a total of 12 strips. Each strip is 30 feet wide by three-eighths of a mile long. The corn and soybeans were managed using ridge-tillage, as is used on the rest of the farm. Oats and red clover were planted using a Brillion seeder at 2 bushels per acre oats plus 14 pounds of red clover.

Measure return over time

The idea is to track the results across a full cycle of the three-year rotation. To understand profit over time, economic return is measured over three years instead of one year. Comparing year-to-year can be misleading, Fleishman points out, and expanding the economic timeline is essential to account for benefits gained from reduced weeds and home-grown nitrogen.

Fleishman doesn't claim to have any magic combination. He admits he is just learning, and sometimes the learning curve in agriculture can be steep.

Though the first-year results are not yet tallied, it's already been a learning experience. Looking back, Fleishman says his third crop treatments should have been planted earlier. The oats were baled as hay because the stand was uneven; a new seeder may be in order. Round-up on the corn and soybeans hurt the oats a bit too, though this is something that would have less impact in larger blocks. The clover performed well despite the drought, and biological nitrogen fixation continued long after fall harvest.



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Fleishman says he isn't trying anything new, merely relearning practices his parents and grandparents were doing before. Like many, his family farm shortened its traditionally diverse crop rotation when soybeans were adopted. Soybeans effectively displaced traditional third crops across the Midwest in the 1960s and 1970s. A challenger to small grains in the past, the story of the soybean is an important reminder that it is possible for alternative crops

Farm Sweet Farm Store Profile (cont'd)

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Until there are big changes in the available markets, Fleishman doesn't see a third crop taking over all his acres. There are markets if you seek them out, he says, but at this point it would be saturated fast if third crops catch on. The Fleishman farm doesn't have livestock, however having livestock to feed or graze third crops significantly increases the potential value to a farmer—especially in times of high feed prices.

Nevertheless, Fleishman knows he has places on the farm that are a natural fit for a longer rotation. After perfecting his techniques through on-farm research, he's thinking about some headlands and highly-erodible land that will be next as he scales up. In the search for a balance between steel and chemicals, a third crop seems like a practical piece of the puzzle. ■

Read the full research report online at www.practicalfarmers.org/programs/Field-Crops.php

from the sense of history emanating from that wood: The vast majority comes from old out-buildings, long since torn down, that once graced the Rosmann farm and Daniel's nearby land. A habitual repurposer, Ron had salvaged as much of that wood as possible and put it in storage for some future use. When he and Maria decided to build a farm store, they both knew immediately the new life that old wood should have.

"I'd say that 95 percent of [the wood] in this [main store] room, and the porch, is reclaimed wood," Maria says. "There's some new trim, but most came from old granaries, an old barn and old corn cribs. Some came from Daniel's nearby acreage that he bought – like the barn boards on the east side of the shop. That came from a very bad storm that took the barn down, and we salvaged it."

Ron cleaned and restored all the wood himself, some of which had sat outside for years, and erected the bulk of the main store structure, a task that Maria says "took an extraordinary amount of time." Other family members helped, or took over some of the farm work so Ron could focus on the wood.

Continuing Family Traditions

The family also incorporated recycled wood from an old school in the nearby town of Westphalia, the Rosmann family's historic hometown in Iowa. The school, built in 1872, was closed a few years ago. Now, wainscoting from the school lines the lower half of hallway walls in the store's back storage area – adding beauty and a daily reminder of the family's Iowa roots. Classroom lights, a chalk board and assembly room doors from the old school were also salvaged and repurposed in the store.

For Maria, owning and operating a store is personal on another level as well. Her grandmother, Helen Krokowski Smith, owned a neighborhood grocery store – Smith's Grocery – in Sioux City until it closed in the late 1950s. She has memories

of being a child in the store, just tall enough to peek over the meat counter. Maria later baby-sat in the building after it became a private home.

Now, several items from Smith's Grocery line the high shelves of Farm Sweet Farm: a popcorn tin; her dad's old metal lunchbox; vintage canisters; an Edelweiss Beer tin tray – still a shiny red.

Maria says she's proud to be carrying on the legacy of her grandmother, a Polish immigrant who successfully managed her own business. "I like to think that I picked up where she left off." ■



... Store Specifics

Hours of Operation:

Wed. – Friday: 9 a.m. to 5 p.m.
Saturday: 9 a.m. to noon

Location:

1222 Ironwood Rd.
Harlan, IA 51537

To Get There:

From the intersection of Highway 44 and Hwy 59, head 2 miles west, then 2.25 miles north.

Contact Farm Sweet Farm:

(712) 627-4653 – (store)
(712) 579-5660 – (cell)
farmsweetfarmiowa@gmail.com
www.rosmanfamilyfarms.com

Some of What You'll Find:

- Personal care items
- Environmentally-friendly laundry and cleaning supplies
- Rosmann Family Farms meats & popcorn
- Iowa and Shelby County foods – including Iowa wines and beer
- Hand-made aprons, blankets, wine bags and more
- Organic baby care items
- Baking and kitchen wares
- Coffee and tea selections – plus complimentary hot brewed coffee and tea