Biological Agriculture

Making Farming Fun Again

"If you don't enjoy what you're doing, you better do something else," says Grinnell, Iowa, corn and soybean farmer Bryan Davis.

Things had nearly reached that point three years ago for Bryan and his wife, Donna. Farming land that had been her father's and grandfather's, and which had been worked by the couple since 1976, times were going from bad to worse.

"We were one of the biggest farms in the 1980s. Now I'm in the bottom half (in acreage)," says Bryan, who works just over 1,100 acres. He had farmed conventionally through 1988, then went 100 percent no-till for ten years.

At one time all six family members, three generations, made a living off a peak of 1,400 acres. But as agriculture, markets and times all changed, the elder generations gradually retired.

Then, starting in the 1995-96 crop year, yields on corn and beans began dropping, not just on one field, but across the entire farm. By the late '90s, yields on corn had dropped 23 percent from the five-year average, and on soybeans, 19 percent. Corn root mass was shrinking, and decreased nodulation showed that bean plants were fixing less and less free nitrogen.

"Compaction was our problem," Bryan knew, even though they were only on the field three times each year: planting, spraying, and harvesting. The ground was "rock hard."

By the winter of 2000, Bryan and Donna were considering giving it up, discouraged by ever-rising costs and sinking yields. "It's sad when one family can't survive on land that three families used to survive on," says Bryan. The Davises "were struggling" with yields of 38-40 bushels per acre of soybeans, down from 55; and corn at 120 bushels per acre or less, down from 150-160. "I was contemplating quitting," Bryan admits candidly. "We were searching for answers. We had to change or we weren't going to survive."

Bryan Davis in one of his corn fields, which have thrived under the biological farming system developed by Gary Zimmer.

His search for answers, help and change led him to biological farming. The Davises' attitude, farm, and life changed when Bryan attended a meeting where the featured speaker was Midwestern Bio-Ag's Gary Zimmer, biological farming advocate, educator and author. Zimmer talked about a "system" of biological farming.

Zimmer's words hit home for Bryan, and the ideas behind biological farming took root.

The Davises changed their farming operation, deciding that increasing fertilizer and chemical use wasn't the answer they were looking for. Through meeting with Midwestern Bio-Ag staff and consultants, Bryan learned how to read and understand his soil tests, and thus to see what the heavy doses of nitrogen and chemicals were doing to his land. The farm had a CEC of 15-18 and has high magnesium with low sulfur and low calcium as well as being low in several trace minerals.

Zimmer and Bio-Ag helped Bryan to see the situation "from a whole different angle." Through reading, studying, and learning from Bio-Ag consultants, Bryan realized he had excess nitrogen, low calcium and sulfur, and decreased bio-activity. "Biological activity was totally dead," he summarized.

Beginning in the winter of 2001, Bryan began taking major new steps, "changing

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tillage systems, fertilizer systems, and trying to eliminate chemicals." His goal wasn't and isn't to go organic, but rather to improve the health of the land while maximizing inputs and raising profits.

Bryan also realized that biological farming "is a system" and required not one magic bullet but numerous changes, which he included in a five-year plan for his farm.

His first step was going back to tilling the land. He bought a ripper and began working the ground, opening it up so the rainwater could penetrate. He also cultivated both corn and beans.

Second, he changed nitrogen sources, quitting anhydrous ammonia completely (he had formerly used 160-175 pounds per acre).

Third, he implemented a soil corrective program, understanding that the benefits of calcium and sulfur included loosening soil platelets and reducing the negative effects of high magnesium.

Fourth, he changed the fertilizers used, dropping potassium chloride and DAP. Instead, the Davises switched to balanced fertilizers, which include ammonium sulfate, MAP, VolCanaPhos, potassium sulfate, calcium sulfate and homogenized trace minerals.

Fifth, Bryan changed his application methods. He bought a new corn planter with dry fertilizer boxes to place fertilizer beside the rows. He no longer broadcasts P&K for his corn or soybeans.

Sixth, he began using short crop rotations, planting oats in early spring and plowing it down as a green manure crop, understanding how oats pull nitrogen and phosphorous out of the soil and bring it back in a more crop-available, soluble form. He's also trying rye as a green manure crop.

Finally, he significantly cut the use of NPK and chemicals.

In just two years, these changes have already shown tremendous benefits to the farming operation — and to Bryan and Donna's attitude and future plans. Farming is fun again for them.

Things began improving immediately. The first year, Bryan saw nodulation return in the soybeans. Yields started upward once again. Inputs decreased significantly. For example, three years ago, the Davises spent $26,000 on chemicals. In 2002, they spent $6,000. Where before they had spent as much as $37 to $38 per acre on spraying via helicopter to control water hemp, this past year averaged $7 per acre for chemicals on 530 acres of corn, 400 acres of soybeans, 65 acres of hay and 35 acres oats. Planting oats between corn rotations proved effective against rootworm.

Soil tilth has improved tremendously, land absorbs rainfall better (a 5-inch rain last summer left standing water in neighbors' surrounding fields, while on the Davis farm, the water soaked away), and erosion remains low.

Bryan's enthusiasm for farming is back. One cornfield, which three years ago produced just 75 bushels per acre, recently came through at 240 bushels per acre. His oats averaged 85 bushels per acre, with a 38-pound test weight — "The best oats we've had in 25 years. Just fantastic." His soybeans are back in the 55 bushels per acre range. "I have a lot of 60 bushel beans," he says proudly, "and 190-200 bushel corn." A 65-acre corn test plot, with 20 different hybrids, ranged from 190 to 231 bushels per acre, with an average of 208. Hay, a mix of alfalfa/orchard grass and timothy, came in at 11 tons per acre, far surpassing the local norm of 3.5 tons per acre.

Plants are healthy and disease resistant. Bryan dug up 24 plants this summer and found only one small rootworm lesion. Next spring he's going to plant oats on corn stalks and till them in before planting soybeans. "I'm hoping oats does the same for bean-leaf beetles that it did for rootworm."

In just two years, Bryan and Donna have already achieved the goals set out in their five-year plan, and are now aiming for even more improvement. He's excited about farming again, and it shows when he talks passionately about the changes he's made and more he plans to make.

Some of his neighbors, Bryan says with a laugh, "think I'm pretty crazy, think I'm odd." He was told he couldn't raise corn without chemicals, that he couldn't farm that way. He follows up with a phrase quoted often by Gary Zimmer: "Condemnation without prior investigation enslaves one to ignorance."

The nay-sayers are now beginning to take note. "The biological system works." Bryan sums up his philosophy simply. "How do we know where we need to go if we don't know where we've been?" He adds, "We have seen so much turnaround in two years. It's fun again."

Most recently, the Davises have been experimenting with foliar feeding chelated trace minerals to saybeans. In 2002, they say a 7-10 bushel increase per acre where the beans were foliar feed. In the 2002 corn crop, they produced a bushel of corn using only six-tenths of a pound of purchased nitrogen. The balance of nitrogen was produced with green manure crops and biological activity in the soil. The 2003 corn and soy crops are still in the field waiting to be tested.

The Davises are also working to educate others. In the spring of 2003, Bryan began doing consulting work with Midwestern Bio-Ag, helping other growers make changes in their operations, and for the last three years they have held a Field Day on their farm, helping people to learn about biological farming. Interest is growing — there were 15 people in attendance in 2001, and over 60 in 2003.

While Bryan knows he doesn't yet have years of accumulated data to fall back on, his eyes, his yield monitor and his checkbook clearly show him that biological farming is turning his farm around.

Midwestern Bio-Ag can be contacted at 1-800-327- 6012, website <www.midwesternbioag.com>.

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