

Big Farmer Raises Old Variety Beans

By Jim Ruen, Contributing Editor

Rick Clark has started planting old variety bin-run soybean seed that better fits his fields and way of farming his 7,000 acres. He thinks all farmers should at least consider finding varieties of bin-run seed that are adapted to their soils and farm.

"When I was young, I asked my dad why we planted bin-run soybeans every year," recalls Clark. "He said he felt that the soybeans had adapted to the farm's soils and weather and kept getting better every year."

When he took over the farm, Clark went down the road of commercial soybean seed. His thinking began to change when he first adopted no-till, then cover crops, and finally planting into green, growing cover crops. As he added more diversity to his cropping program (he now grows 7 crops), he went down the regenerative ag road and found he was using fewer inputs. His fuel, fertilizer and crop protection product costs fell dramatically. Eventually, he eliminated most off-farm inputs, aside from manure received from a local dairy farm. Doing so allowed him to gain premiums by certifying his acres as organic.

"In 2020, we saved \$2 million dollars in off-farm inputs," says Clark. "We can make money with 150-bushel corn and 40-bushel soybeans."

Developing a line of soybeans adapted to his farm was his next step in input independence. "Geneticists today breed for yield with maximum commercial inputs," says Clark. "Our system is built around soil, plant and human health. We feel older varieties are a better fit for what we do."

With the help of Hunt Wiley, a long-time soybean breeder, Clark defined needed traits. "We looked for varieties that had good vigor and a health package that would help them get up and go," says Clark. "We picked 10 varieties and grew them out. We then culled them to 5 that we are growing out in carefully managed field plots this year. They were hand-planted and weeded, nothing like our normal fields."

Clark began by looking at varieties that were off patent. One source for old seeds is the National Lab for Genetic Resource Preservation, a USDA seed bank located in Fort Collins, Colo. Others include state departments of agriculture.

"We started with coffee cans of seed and multiplied them with each planting," says Clark. "Next spring, we will have each of the 5 varieties ready to plant in our fields in our no-till, cover crop system."

Clark has already identified a favorite. However, it will have to prove itself in the field. Once one of them does, the process will just be starting.

"I think it will be important for us to stay with the same genetics and raise them out. As they evolve, they will be more prolific in our system," he says.

It is an approach he plans to adapt to off-patent corn genetics and eventually to each of the diverse crops he now raises. Clark also operates Farm Green Consulting, helping



Rick Clark has been able to reduce farm inputs using off patent varieties of soybeans and growing them out over time.

other farmers practice organic regenerative agriculture.

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Weed Seed Destroyer Mounts Inside Combine

A new weed seed killing device that mounts inside combines uses a blend of heat and intense blue light to destroy weed seeds before they exit the combine. While development has reached the prototype stage, the device itself doesn't yet have a name.

"We are calling it the Weed Seed Destroyer for now," says Jon Jackson, of Global Neighbor Inc. (GNI).

What it does have is effectiveness. "We have consistently had greater than 90 percent control," says Jackson. "In germination chamber tests at Ohio State University, only 8 out of 1,200 treated palmer amaranth (pigweed) seeds grew. By comparison, 97 percent of untreated seeds grew."

Central States University experimented with 4 different weeds, including morning glory, foxtail and ragweed and had a 95 percent kill rate.

The Destroyer consists of an auger through which seeds and chaff pass before exiting the combine. The diameter and speed of the auger determines the volume of material the Destroyer can handle. A heating unit warms the seeds and chaff before they pass through blue light from LED bulbs. This process kills more than 95 percent of the seeds immediately. The remaining 5 percent remain alive but are unable to send out a radicle (baby root).

The concept for the Destroyer was the result of Jackson's desire to find chemical-free weed control. His first attempt was a small hand-held unit for killing weeds in lawns and gardens.



The Weed Seed Destroyer uses heat and blue light inside the combine to kill over 95 percent of seeds. The remaining 5 percent remain alive but unable to root.

"My son pointed out that if light hits weed roots, they don't like it," says Jackson. "We developed the concept and then showed it to a university researcher and were told it wouldn't work. We built a unit, hit crabgrass with it, and 3 to 4 days later, the weeds turned brown. It worked!"

When Jackson learned the U.S. Air Force had put out a request for proposals to use directed energy to control tumbleweeds, he submitted his design. It was selected for funding in the first round and again in phase two. By then Jackson had secured patents and begun building and selling the Nature Zap (see Vol. 33, No. 4).

The next step was applying the directed energy concept to field crops. This time researchers at several universities agreed to evaluate effectiveness. Ironically, while it has been proven effective, understanding why it

works is still in question.

"We are looking for researchers to help us understand what is happening in the plant cell to stop the radicle from developing," says Jackson.

This fall, the Destroyer will be installed on a combine in Tennessee, and test units will be in Ohio and Louisiana. Jackson plans to sell 10 to 15 systems next year and then scale up to more than 100 units in 2023.

"Some customization is required for different makes and models," says Jackson. "We expect the cost will be around \$30,000 plus about \$3,000 for installation."

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Affordable DIY Drop Tubes

Stainless steel tubes from Totally Tubular made it easy for Gavin Spoor to drop starter fertilizer over his rows. All he had to build was the brackets and cut some poly tubing.

"I was going to buy stainless steel tubing and make the drop tubes myself, but it was easier to just buy Totally Tubular kits from C&R Supply," says Spoor. "They come in pairs ready to attach. Originally, I was going to use one on each side. I thought, why not mount one behind the row unit and make the liquid stream heavier. I like affordable, and this gave me two rows for the price of one."

Spoor ordered 3 sets, which was enough for his 6-row Deere planter. "I liked them so much I ordered 6 more sets for my 12-row Kinze planter."

Making the brackets required only a little blow-torch work. Spoor needed to bend six 10-in. lengths of 1 1/2-in. angle iron to match the bracket for the closing discs. He then had to straighten them out to line up the drop tube with the row.



Side view of tubes and brackets before adding feeder line to pump.

Poly tubing feeds a variable rate of 32 percent with ATS from the hydraulic pump to the drop tubes. At the other end of the drop tubes Spoor clamped short lengths of 3/8-in. rubber tubing. They deliver the liquid fertilizer to the row surface.

"Usually once I build something, I see things I want to change," says Spoor. "With



these, I wouldn't change a thing."

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