



"We built it because we needed a better way to seed cover crops on our hilly ground," says Charles Martin about his "high boy" seeder.



Photo shows a cover crop in standing corn. Besides seeding their own cover crops, Martin and sons do custom work.

By Jim Ruen, Contributing Editor

"High Boy" Rig Designed To Seed Cover Crops

Seeding cover crops into standing row crops is easy with this new "high boy" seeder built by Charles Martin and his sons. With its on-the-go adjustable height and width, hillside leveling, and multiple tracking, Martin's seeder offers features not found in any commercial field machine on the market.

"We needed a better way to seed cover crops on our hilly ground," says Martin, a dedicated no-till farmer. "We built the seeder and used it last year. We made some changes and are using it a lot this year."

What Martin built is a 22 ft. long high boy power unit with a 14 ft. long frame that can stretch from 102 in. to 132 in. in width. It can also raise itself from 6-ft. clearance to 9 1/2 ft. and do that on all four wheels or on one side or the other. The 45-ft. air boom is adjustable in height and pitch to follow the contour of the land.

An 85-hp Deere industrial engine powers the machine. The hydraulics system it drives consists of an Eaton 2500-psi hydrostatic pump with two in-line hydraulic pumps and a 35-gal. reservoir.

While a local hydraulics shop produced all the hoses and fixtures, nearly everything else, including the reservoir, was made by the Martins. They designed the system and installed it.

The hydraulic system drives the wheel motors, raises and lowers the frame, and raises and pivots the boom. Cylinders also control the width of the machine to match row widths

or to narrow the machine for transport or driving between fields.

"The sides each narrow 15 in.," explains Martin. "At its widest, it can straddle four 30-in. rows. To load it on our gooseneck trailer, we bring both sides in."

The wheel mounts are also hydraulic accumulators that provide suspension and up to 3 1/2 ft. of lift. Each side can be raised independently for leveling on a side hill, or the entire machine can be adjusted in height to match the crop.

The 4-WD uses a flow divider front to back and side to side to ensure constant traction. For example, should the left rear wheel come off the ground or lose traction, a differential lock engages on the right, front wheel.

It's the three-mode wheel control that is amazing. There are no mechanical controls between the wheels, only hydraulics. The seeder is capable of 4-wheel steering, so it can track perfectly on turns with the rear wheels following the front wheels exactly. On hillsides where the back end of any machine tends to drift down hill, the wheels can be set so the rear wheels are slightly uphill from the front wheels.

"We have mirrors on the cab that let us look down at the rear wheels and adjust as needed," explains Martin. "We can also disengage rear wheel steering all together."

The air seeding system and the four-way adjustable boom are also quite impressive. Martin used a Deere seed impeller and seed



Machine is equipped with an air drill blower and manifold (left) and a 45-ft. boom.



flutes from a drill. Everything else, including the blower, seed bin, and the manifold, was built in their shop. The seed drops out of the bin, through the flute and into a mixing cup where it enters an air stream that carries it to its exit point on the boom.

The 45-ft. boom has a 102-in. center section with two 18-ft. wings that fold back against the frame when not in use. A triangular brace hinged to the front frame of the seeder ends in a ball joint at the boom. Hydraulic arms at either side of the frame can raise and lower the entire boom or pivot the boom.

"If we are on a side hill and have leveled the frame, the downhill end of the boom could be 15 ft. in the air and the uphill side hitting the ground," explains Martin. "This allows the boom to always be parallel to the ground."

Besides seeding their own cover crops, Martin and sons do custom work for others

up to 90 miles from their Loysville, Penn. farm. Interest is building in the machine, says Martin.

"The first year we used it, no one showed much interest," he recalls. "This year we are being asked to do quite a few fields and plots."

Martin estimates they spent \$50,000 on components and raw materials. Labor was not tracked. While the family is interested in building the units to sell, pricing is yet unknown.

"We would need to do some fine tuning and locate component providers," says Martin. "We're waiting to see what the response is. If we could get orders for ten a year, it might be worth it."

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He'll Rebuild Any Antique Carburetor

Matt Gall, Motec Engineering, hasn't seen an antique carburetor he couldn't rebuild if given the time. If he doesn't have the parts or can't find them, he'll build them. While he specializes in Minneapolis Moline's, he has rebuilt carburetors for most tractor brands.

"The biggest challenges are the ones with missing parts," says Gall. "A guy sent me the top half of a carburetor from a 1918 Moline Universal. It was a Holley, and they didn't make many for tractors at that time. It took me a year, but I made all the parts based on pictures in a book and found a bowl from a different brand that I could make fit. It worked perfectly when I sent it back."

Gall tests out all rebuilds using a test engine and dynamometer before returning the carburetor. "I know that it will work when I send it back," he says. "Of course, sometimes the carburetor wasn't the problem. People often assume it's the carburetor when they have an ignition problem. Then they put the rebuild on, and the engine still won't work."

Standard treatment is to tear a unit apart, clean, repair or replace parts and reassemble with all new screws, seals and gaskets. Cleaning involves baking the casting at tempera-

tures of up to 1,200 degrees and then bead blasting it.

Gall does all of that for a flat rate, even if he has to make all replacement parts. He charges \$75 for Minneapolis Moline style TSX Marvel Schebler updraft carburetors and \$100 for Zenith, IH, Deere and others. Shipping is extra.

More complex jobs get spread out over a longer time frame. Gall fits in work when time is available, as opposed to working on one job from start to finish. He has a complete machine shop including mills, lathes, surface grinder and saws.

In addition to carburetors, Gall also rebuilds governors, distributors and even entire tractors for area collectors. While most of the work he does is brand neutral, one area of concentration is Minneapolis Moline wiring harnesses. The brand is a favorite of his as he both restores and "pulls" with older Minneapolis Moline's.

"I realized that nobody was making wiring harnesses for Minneapolis Moline's," says Gall. "I started making them, and now I have a guy who does them for me. I'll probably sell 200 of them this year."



Before and after photos of an antique carburetor rebuilt by Motec Engineering.

Gall also makes, rebuilds and sells other niche Minneapolis Moline parts that are hard to find. He also buys old parts he can rebuild. Currently he keeps about 30 Minneapolis Moline tractors, some restored or for restoring and others for parts.

"I have a 1928 Twin City model 1728, which was one of the brands that merged to make Minneapolis Moline," says Gall. "It has four valves per cylinder and twin cam shafts, one for intakes and one for exhausts. People got excited when that style engine was

introduced in cars a while back. The Twin City had it back then."

It was tractor pulling and collecting that led to the parts business. "I started making parts for myself and realized I could make money making them for others," he says. "Now I'm doing it full time, and I hardly have time to work on my own any more."

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