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Photos courtesy Lawn & Garden Tractor Magazine

Combine’s 5-ft. header is fitted with three 21-in. reel mowers mounted side-by-side.

## Half-Scale Combine Mows Lawns

Gary Luthman’s half-scale combine looks like a mini John Deere 45, but works like a lawn mower. The 5-ft. header is fitted with three 21-in. reel mowers mounted side-by-side.

“When I first decided to build a half-scale combine, my son Jeff suggested that it should ‘do something’, not just look nice,” recalls Luthman. “He figured we could make it mow grass.”

Jeff had been the driving force to get Luthman involved, first in garden tractor pulling and then in restoring a John Deere L, the smallest Deere farm tractor.

Initially Luthman planned to make a half-scale model of a Massey Harris 82 combine, which he recalled riding on in the 1950’s. But it didn’t match the components he had on hand. The John Deere 45 did. Plus a half-size 45 was big enough to ride, yet small enough to transport easily.

“We started with a Simplicity lawn mower,” says Luthman. “Its 12 hp Briggs & Stratton motor had seized up, but the deck looked like the control platform of a 45. I replaced the motor with a 14 hp Briggs with overhead valves.”

Luthman took some measurements of a 45 he saw at a show. However, his main guide for the project was an Ertl Precision Model of a 45.

The Luthmans were able to use the clutch, brakes and steering column from the Simplicity. They added a Deere 110 garden tractor 4-speed transmission.

“The 110 has a variable speed pulley on it, so we acquired one of those as well,” says Luthman.

A major challenge was converting the vertical drive from the motor to separate horizontal drives for the transmission and the header. “I needed to be able to reverse the drive, so I rotated one pulley 90 degrees clockwise and the other 90 degrees counterclockwise with belt clutch idlers on each for starting and stopping mowing or movement.”

Noting that the 45 was the first with unibody construction and no frame, Luthman’s mini combine also has no frame. He used a heavy-duty computer cabinet, mounting engine, transmission, axles and platform to it.

“Once I had the sides with the platform mounted in place, I had to figure out how to mount the header,” says Luthman. “I started with a feeder housing that uses steel plate for the sides. I fabricated the header from a steel shelf recycled from a local library and welded it to the steel sides.”

He bent the shelf to follow the arch of the auger. The auger consists of 3 1/2-in. tubing with flighting made from scrap metal. Both it and the reel mowers were mounted on steel rods that sit in pillow block bearings on the sides.

Power for the auger and the reel motors is delivered to the header through the housing. Unlike the original header, Luthman enclosed drive components for safety con-

cerns.

Power is transferred from the engine to belt pulleys mounted on the right side of the combine. Luthman designed them to look like the real 45 cylinder drive pulley. Instead of driving the cylinder, the shaft powers a belt conveyer adapted from an old side-delivery silage wagon. The conveyer belt runs through the feeder housing to drive the auger. A set of drive chain sprockets on the left side of the header transfers power to the reel mower. Sprockets are sized to allow the auger to travel slower than the reel mowers.

“I wanted to be able to see the auger move the grass clippings to the center,” says Luthman. “Once in the center, the clippings are carried by the conveyer belt through the feeder housing to the rear of the combine where they drop to the ground.”

Luthman designed the header/feeder housing for manual lift from the operator platform. Shafts with compression springs disguised as hydraulic cylinders are mounted under the feeder housing.

“The springs help the header float with the contour of the ground, as well as help lift the header,” explains Luthman. “The lift lever is on the left side of the steering column.”

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