Air-cooled 50-hp. engine mounts behind the cab, which came off a combine. Operator has a wide open view of the up-front 4-row cultivator.

Front wheel mounts to a yoke made from 1-in. steel plate. A hydraulic motor chain-drives a sprocket welded to a steel shaft to steer. Another motor direct-drives hub.

ROAD GRADER DESIGN

By Bill Gergen, Associate Editor

"The View Is Great" On 3-WD Cultivating Tractor

You've never seen anything like this 3-WD drive "cultivating tractor" built by Victor Larson of Freesoil, Mich.

The 20-ft. long tractor looks like a road grader with a single steering wheel on front and two 28-in. wheels on back. The cab, rear axle, and transmission are off an old Case combine. A length of 8-in. dia. heavy-walled pipe (leftover natural gas pipeline) runs from the axle to the front wheel. A 4-row, 3-pt. cultivator mounts just behind the front wheel. An air-cooled, 50 hp diesel engine is mounted on a frame just behind the cab.

Larson built the tractor three years ago and has used it to cultivate 200 acres of corn, soybeans, and sunflowers each year.

"It works better than anything I've ever used before to cultivate," says Larson. "I had been using a 3-pt. cultivator but I got tired of looking behind me all the time. Now I have a great view in front which results in less crop being plowed out. I'm switching to organic farming and giving up herbicides so I have to do a good job cultivating."

Hydraulic hoses run from a rotary steering valve in the cab through the pipe to a hydraulic motor on the front wheel assembly that's mounted on a 1-in. thick steel plate. The motor chain-drives a sprocket welded to a steel shaft at the top of the arm that the front wheel support arm turns on. This steers the tractor. Another hydraulic motor bolts directly to the wheel hub to drive the wheel.

A Cat. II 3-pt. hitch is welded to the back of the wheel assembly and is raised or lowered by a single hydraulic cylinder. The 3-speed transmission was originally belt-driven. Larson removed the variable speed pulley, clutch shaft and pressure plate and then connected a hydraulic motor directly to the transmission.

"The combine cab has its original steering wheel, seat, and hydraulic valves. The tractor goes from 0 to 15 mph. I cultivate in second gear at about 7 mph," says Larson. "I use the combine's original steering and hydraulic control levers. The rig isn't articulated but the front wheel steers a full 180 degrees. I can turn right around at the end of the field and cultivate the next four rows with no problem. The front wheel would sometimes spin so I mounted tractor weights above it for better traction and balance.

"I use a Westgo S-tine cultivator with the tractor most of the time. However, in tall corn I replace it with a rolling cultivator equipped with three disc blades on each side of the row. The blades throw dirt up to 4 inches high in the row. I may use the rig someday to do other jobs such as planting.

"I only have about $1,000 invested in the tractor. I got a lot of the parts at sales or for free. I paid $200 for the engine and $100 for the combine cab and axle. The pipe elbows are seconds and I was able to buy all the hydraulic hoses I needed for $25 at a sale. I got the front wheel free from a garbage hauler. It had a big hole in it which I patched up. The rear wheels are off an Allis-Chalmers tractor.

"In the future I plan to install an electric valve in the cab and microswitches behind the front wheel so that the tractor will automatically guide itself and cultivate down the row."

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Sept.-Oct., 1999

Self-Propelled Ladder Makes "High Jobs" Easier

By Janis Schole

Farmer-inventor Dale Beamish of Jarvie, Alberta, was tired of having to lug around a heavy, awkward ladder and then worrying about his safety while climbing.

So he decided to self-propel an industrial-strength aluminum ladder. He mounted it on a carrier frame made from 2 3/8-in. dia. pipe. He powered the unit with a 3 1/2 hp mower engine and a 3-speed transmission from a riding lawn mower. Wheels are mounted on a 9-ft. wide axle for stability.

To make the wide axle, Beamish used the lawn mower's rear end. He extended either end of it with U-joints and drive shafts that drive home-built stub axles.

The seat and steering wheel are located on the left side of the ladder. The unit has three forward gears and one reverse, traveling at a maximum of 6 mph.

Beamish used spider gears out of a pickup rear end to supply an angle drive for steering the single front wheel. As a result, the unit can turn on a dime, he says.

The ladder has a 13-ft. minimum height and extends to 36 ft. It tilts and telescopes with hydraulics. The hydraulic pump was taken from an old combine and is driven off the engine.

"It's very stable and you don't have to worry about the ladder kicking out or the wind blowing it over," Beamish says. The self-propelled ladder took about 40 hours to design and build and cost about $1,000 in out-of-pocket costs.

Self-propelled ladder extends up to 36 ft. It has three forward speeds and one reverse.

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