



Curt Forde modified this 12-ft. wide IH Vibra-Shank field cultivator to clear sticks and roots off a 1-acre field. All the front shanks had already been removed to mount on other cultivators.

## Field Cultivator “Root Rake”

Curt Forde, Viroqua, Wis., had to clear off a small 1-acre field that was covered with 6 to 8-ft. tall sapling trees. He knocked the trees down with a heavy disk and then ran back over the trees several times, cutting the saplings into 2 to 4-ft. long sticks.

“We wanted to use the field for small test

plots and it would have taken many hours to clear the sticks and roots off the field by hand,” says Forde.

That’s when he got the idea of using a 12-ft. wide IH Vibra-Shank field cultivator that was sitting unused on the farm with many of its shanks missing. All the front shanks had been removed to mount on other cultivators, leaving 7 shanks on the back bar spaced 20 in. apart.



He removed the shovels from all the shanks, then added 2 shanks between the center 3 ones. That created 10-in. spacing to catch smaller sticks.

“I removed the shovels from the shanks and added 2 shanks between the center 3 shanks, creating 10-in. spacing to catch smaller sticks.

“Then we ran back and forth across the field, dragging loads of sticks to the edge of the field and lifting the cultivator to dump them off. The 10-in. spaced shanks worked okay but made it a little more difficult to dump the sticks. If I did it again, I think I’d

space the shanks 15 in. apart,” notes Forde.

He’s thought about making a rock rake with the same design, spacing the Vibra shanks about 4 in. apart to pull rocks to the edge of the field for easier removal.

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## Two-Wheel Tractor Converted To Electric Power

Reid Allaway converted a two-wheeled BCS-brand walk-behind tractor from a gasoline engine to a battery-powered electric drivetrain.

A DC motor originally used in a Motrec utility cart delivers power and torque for the tractor. It’s powered by a pair of battery packs made from 24-volt modules pulled from a Chevrolet Volt battery pack. A pallet truck controller regulates power delivery to the motor. Allaway installed a thumb throttle and rocker switch to provide the precise control and smooth response that he says were sometimes lacking in the original configuration with the gas engine and cone-type clutch.

Allaway removed the clutch and fabricated an adaptor plate and shaft coupler to mate the DC motor to the BCS transmission’s input shaft and bell housing. He also eliminated the mechanical reverser, opting to have the motor controller simply reverse the motor whenever reverse is needed. Gear changes of the original all-gear BCS transmission are accomplished whenever the drivetrain is stopped. That’s done whenever the thumb throttle is released.

The battery packs are removable and assembled inside waterproof ammo cans. A spare pair of batteries provide extended runtime as each pair of batteries lasts an hour or more. Recharging takes only a couple hours with a 500W charger.

“Maneuverability, safety and precision operation are all greatly improved with the new controls,” says Allaway, “and power is comparable to the original 11 hp. Honda engine without any noxious fumes.” The BCS is used almost exclusively indoors in his large unheated greenhouses. For a BCS that spends most of its time outdoors, the cost and complexity of the conversion probably aren’t worth it,” he says.

Using primarily second-hand parts Allaway figures he spent about \$1,000 to \$1,500 on the conversion. He thinks that a conversion using all new parts might double the cost. He also warns that keeping the assembled package compact requires fastidious attention to detail and made the fabrication time consuming for a one-off project.

“Now that really good lithium batteries are out there and available at more and more accessible prices, this kind of project can be pursued,” Allaway says. “Front to rear balance is obviously crucial for a two-wheeled



Two-wheeled, walk-behind tractor is operated by a DC motor off a Motrec utility cart. It’s powered by a pair of battery packs off a Chevrolet Volt.



Allaway removed the clutch and fabricated an adaptor plate and shaft coupler to mate the DC motor to the BCS transmission’s input shaft and bell housing.

tractor. Battery-electric power simply wasn’t conceivable in the era of lead batteries because the machine would fall on its nose with 500 lbs. of lead where I now have 50 lbs. of lithium.”

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