



Two 46-in. mowers overlap the Cub Cadet's 48-in. deck by 4 in. and are mounted to a 9-ft. frame.

## Rear Decks Triple Mower Swath

Kenny Vandeverter clips a lot of lawn fast with his 11 1/2-ft. wide, triple deck mower. Two trailing 46-in. decks sandwich the 48-in. mower deck under his Cub Cadet lawn tractor. Each is positioned to overlap the center deck by 4 in. Vandeverter explains that building the mower was an act of neighborly payback.

"My neighbor used to mow my 5 acres along with his own," says Vandeverter. "When he moved out, I offered to mow his lawn until his daughter and son-in-law moved in."

Vandeverter is a "garage floor" engineer. To design his rear mowing system, he drew a chalk line on the floor of the garage and backed the Cub with its mower deck over the line. After setting the two newly purchased mower decks on either side, he set a long piece of 2 by 2-in., 1/8-in. steel tubing on risers over them.

"This gave me the 9-ft. length for the frame," says Vandeverter. "I could see I needed the frame 30-in. front to back to support the decks."

He used the same tubing for cross members to support the 18 hp. Vanguard engine he bought to power the decks. The engine mounts to steel straps running between the cross-members.

The gas tank was framed in with 1 by 1-in. steel tubing behind and to the left of the engine. To bring the fuel line safely to the carburetor on the right side of the engine, Vandeverter ran it through a steel tube lined with foam insulation tubing. The

tube was mounted to the engine support cross-members.

He used 1-in. angle iron to make a base for the 12-volt battery to the right rear of the engine. He ran the cables through a 1-in. steel tube mounted to the right-hand cross-member. It carries them to the front frame member where the starter switch, choke cable and throttle are mounted on a flat steel plate.

Vandeverter gave each mower deck its own lift system. He mounted a free turning 1 1/2-in. pipe between the end of the frame and the engine support cross-member. He did it without bearings or bushings, simply nuts and bolts.

"I fabricated small, slotted brackets from angle iron and welded them to the frame ends about 6 in. from the front of the frame," explains Vandeverter. "I cut pipes to fit and inserted bolt heads into their ends with nuts outside the pipes. When I had the pipes positioned where I wanted them, I welded the nuts to the brackets on the frame ends and to the engine support members."

Vandeverter welded pieces of steel plate to each pipe to serve as anchors. The first and the third in line are mounted at 90 degrees from the center one. A chain from the center anchor connects it to the front of the deck. Cables from the other two run back to pulleys on the rear frame and then down eyebolts in the rear of the deck.

A 1-in. square tube extending back from the front frame serves as a height retention device for the lift. Two short lengths of slightly larger tubing with pegs welded to

their underside, slide over the retainer tubing like sleeves. The lead sleeve and tube rest against a bolt which can be dropped into any of a series of holes in the longer tube. The second is secured in place with a set screw opposite the peg.

When a lever mounted to the pipe is pushed back, it turns the pipe on the bolt heads, lifting the deck. A short steel strap pinned to the lever is notched to catch the peg on the rearmost sleeve.

When the lever is released from the peg and rotated forward, the notched strap catches on the peg on the forward sleeve. To adjust the height of the mower, Vandeverter simply moves the bolt retaining that sleeve and peg.

The clutch lever is mounted to a similar pipe arrangement, just behind the front frame. Vandeverter hooked a heavy-duty spring between the lever and the mower clutch to feather the clutch on and off.



An 18-hp. Vanguard engine is used to power the two 46-in. mower decks.

Rear wheels are mounted to the rear frame on 2 by 2-in. tubing. He welded the mounts to the rear frame at a slight rearward angle after trimming off a couple of inches of three sides of the tubing. He then pinned the wheels to the fourth side.

While the decks can be raised and lowered, mounts front and back hold the decks in place left to right. On the front of each deck, a 2 by 2-in. tube angles down and forward from the front frame. A pipe welded to the end of the tube provides a pivot point for parallel links which are pinned to a bracket extending out from the mower deck.

At the rear of the deck, a short length of 1 by 1-in. tubing welded to the wheel mount, comes forward to the mower deck. A short length of steel strap is attached loosely with a bolt to the tubing. The other end of the strap is bolted loosely to a bracket on the mower deck. As in the front, the deck is restrained in side-to-side movement.

The mower decks were designed to receive belt drive from the front, not the side. Vandeverter needed to change the direction of the belt drive from the centered engine. To do so he mounted double pulley drives from bearings on brackets mounted to the front side of the mower frame. Belts from a double pulley on the engine driveshaft run left and right to the upper pulleys on the brackets. Belts then run from the lower pulleys to the decks.



Vandeverter mounted double pulley drives on the engine driveshaft that run to upper pulleys and brackets, then to the decks.

To make a hitch, Vandeverter butt welded a 3 by 3-in. piece of steel tubing to the center of the front frame. It extends toward the tractor for about 10 in. before dropping a few inches like a gooseneck trailer hitch to match the Cub's hitch height.

A repurposed auto jack pivots on the hitch where it meets the mower frame. A steel plate welded to the backside of the jack lets it pivot on the hitch and a notch on the other side of the plate locks it in place in its upright position.

"If I was doing it again, I would overlap the mower decks by more than 4 in. as when I turn sharp, I sometimes leave behind strips of grass," says Vandeverter.

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## Home-Built Hog Sorter

Before Bill Lenker of Wilton, Iowa, retired, he raised hogs, often doing most of the feeding and handling work alone. One job he found difficult was measuring and sorting the finished pigs from the smaller, lighter hogs.

"I was always alone without anyone there to watch the gate, so I thought I had to come up with a way to measure and separate them so I could figure out which ones were ready to go to market and which ones weren't," says Lenker.

He welded up an adjustable gate within a gate, using a 1 1/4-in. square steel tube frame. With a threaded rod for adjustment, he set an opening in the gate big enough for smaller pigs to pass but small enough that larger, finished animals weren't able to pass. The hog sorter gate was fastened beside a regular gate and whenever Lenker wanted to ship some pigs he would close the normal gate and let them go through the sorter. Any pigs unable to make it through the opening would be marked, sorted and shipped.

"Once in a while they'd get their hams stuck and I'd have to open it up a little and let them out," laughed Lenker. "But otherwise,



Adjustable sorter lets the smaller hogs through and keeps larger ones out.

it worked really well. I think it would be a helper on any size pig farm. The hog sorter did a nice job and is a good thing to have, especially if you're working by yourself."

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## Non-Toxic Microbial Cleaner

Bacto-Zyme is an enzyme-based microbial cleaner with multiple uses. It's produced and sold by Substrata and is used to control odors, degrease metallic surfaces and as a general cleaner for pressure washing, carpet cleaning and clearing drain lines.

"We've even seen it used in vertical farming systems that have developed sticky, hard to clean biofilm," says Alfonso Martinez, a Bacto-Zyme representative. "By flushing the system with diluted Bacto-Zyme, the biofilm wipes right off."

Unlike other cleaning products that merely mask odors, Bacto-Zyme actively removes them. The cleaner's high pH composition lets it penetrate and emulsify fatty substances that otherwise attract microbial activity, which leads to films and odors.

"The enzymes in Bacto-Zyme eat odor-inducing agents, eliminating the odor. We have customers that work with livestock that put Bacto-Zyme in their misting system to eliminate the odors associated with live animals," says Martinez.

Bacto-Zyme is 100 percent environmentally friendly. This organic formula won't damage



Bacto-Zyme penetrates and emulsifies fatty substances that attract microbial activity and cause odors.

surfaces, plants or animals it comes in contact with.

"A cleaner containing inorganic chemicals wouldn't be fit for hydroponic gardens," says Martinez. "The chemicals will leech into what's being grown. In contrast, Bacto-Zyme will not harm plants or those using it."

Bacto-Zyme arrives concentrated so users can dilute it to their desired strength.

Customers can purchase it in 1-gal. jugs, 5-gal. pails, 55-gal. drums or 250-gal. totes. Prices start at \$89.

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