



Teeth on big bucket rake allow water and silt to drain through while capturing vegetation and floating debris.

Weed Rake Cleans Waterways Fast

Third generation Idaho rancher Bill Fuchs developed a big bucket rake as an alternative to costly herbicides and other methods when cleaning out irrigation canals and ditches. It rakes out weeds, roots and debris to let the water flow freely. "I've been Water Master for our local canal near Chester, Idaho for the past 15 years," explains Fuchs. "We were using backhoes and having limited success. Herbicides were expensive and not always effective."

Fuchs developed his first prototype in 2008 for use with an excavator. The teeth on the end of the basket allow water and silt to drain through while capturing vegetation and floating debris. With the help of consulting engineers, he brought it into production in Idaho.

Fuchs says he has never had a dissatisfied customer. He has sold units from Idaho to Florida and Montana to New Mexico and Arizona. They've been used to remove moss, flowering rush, bulrush, cattails, lily pads and other plants.

"By removing the roots, it takes years for the vegetation to regrow," says Fuchs. "A friend of mine had a flowering rush problem in the canal he managed. The rake has virtually eliminated the problem in their canal system."

The teeth are the weak link, he admits. "If you hit rock, they can bend, but they also can be straightened or replaced," says Fuchs. "We

designed it so a tooth plate can be replaced by removing just 2 bolts."

The 12-in. plates are fabricated from heavy steel to stand up to the lava rock in the area where Fuchs lives and works. Every rake sold comes with an extra set of teeth and 10 additional basket rods. It can be quickly repaired in the field.

Rake widths range from 6 ft. to 16 ft. and are priced from \$10,000 for a small one used on a mini-excavator or backhoe up to \$22,000 for a large excavator.

"We make them to match the size of the excavator, as they need to be sized appropriately," says Fuchs. "You don't put a 12-ft. rake on a mini excavator."

One of the biggest challenges Fuchs has faced is the lack of uniform hitches among the different brands of excavators.

"All the brands have different configurations, even from one model to another in the same brand," says Fuchs.

One of the advantages is as vegetation is removed, it can be simply dropped on shore. Once out of the water, it dries and breaks down and can later be used as fill.

Fuchs notes that there are many applications for the rakes, from reclamation to flood debris removal.

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Trailer Jack Dumps Cargo

Dean Zimmerman needed a tilt trailer that could easily be loaded and unloaded, so he built his own 16-ft. single axle model using I-beams off an old steel truss building. The trailer is raised or lowered using a home-built, hand cranked, winch-operated hoist and jack attached to the trailer's tongue.

"It requires no power to operate and cost very little to build," says Zimmerman. "The jack's leg rides on a swivel wheel, and moves backward or forward on the ground to raise or lower the trailer. The winch was originally used to raise or lower the curtains on an old hog barn. I've used the trailer regularly for the last 30 years, and it still works perfectly."

He used 3-in. sq. tubing to build the tongue and welded the winch on top of it. The jack's leg is also built from 3-in. sq. tubing. Two lengths of 1-in. tubing are bolted to each side of the leg, and 2 lengths of 1-in. tubing are bolted to the front of the trailer. The winch cable is guided around a pair of pulleys and attached to the 2-in. tubing. A pin runs through the jack's leg to lock it in place.

To raise the trailer, Zimmerman removes another pin and then cranks the winch, which causes the 2 sets of tubing to push apart and



Tilt trailer is raised or lowered using a hand-cranked, winch-operated hoist and jack attached to trailer tongue.

automatically raise the trailer bed.

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Home-Built Wood "Dethatcher"

"I'm sending you photos of the homemade wooden dethatcher I pull behind my Deere 300 garden tractor. I use it to smooth out the ground before I plant grass seed to start a new lawn," says 89-year-old Robert Koch of Montrose, Colo.

He made the 3-ft. wide by 2-ft. deep dethatcher by bolting together 2 by 6's and 2 by 8's, with one 2 by 8 on front and one on back. It attaches to the tractor with a pair of chains that hook onto a trailer hitch on the tractor.

He drilled a series of holes a couple inches apart into the front board, then hammered square concrete nails into them. The nails extend about 2 in. below the board.

"I make a pass with the dethatcher to loosen the soil. Then after I spread grass seed I make a second pass. The nails turn the soil over and bury the seeds, and the 2 by 8 on back smooths out the ground," says Koch.

He says the nails he used run straight down and tend to plug up with grass. They're also square, which eventually caused the board to crack. "I had to screw a 1 by 6 board over the crack to keep the nails from falling out. If I did it over, I'd use 3-in. round concrete nails and angle them backward so they'd



Concrete nails extend 2 in. below dethatcher's front board to stir up soil and bury grass seeds.



break up the soil without picking up grass," notes Koch.

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Animals prefer infrared heat panels to heat lamps, says Therese Villa, and they deliver safer heat.

Infrared Panels Deliver Safe Heat

Therese Villa is delivering hospital-style comfort to puppies, calves, lambs and kids. Her infrared panel technology provides the same body penetrating heat as is used for newborns in maternity wards.

"Applications for their use are only as limited as your imagination," says Villa, Innovative Green Energy Solutions. "They can be used in places where traditional heat can't be used due to combustion concerns. Infrared heat is like what we get from the sun. You feel warm even if the air temperature is cold."

Villa is the only agriculture and canine focused dealer for Washington-based Prestyl infrared heating panels. The first time she saw one of the panels was while attending a presentation outside on a cool day in 2012.

"The presenter had this small panel in front of the audience, and I was 3 or 4 rows away from it," recalls Villa. "I gradually realized it was warming me. I didn't buy whatever that guy was selling, but I did find out who made the panels."

She soon went from customer to dealer for residential and commercial businesses, including agriculture. Initially, Villa marketed the panels to purebred dog breeders for their whelping kennels. Gradually she expanded her marketing to livestock producers, everything from chickens to cattle, sheep and more.

"Animals do better under an infrared panel than under a heat lamp," she notes. "Once they know it is there, they will choose it over a heat light. One user told me they can hang

5 heat lamps and 1 panel, and the area under the panel will be packed full of lambs with none of them under the heat lamps."

Villa notes that the panels are safe and portable. She adds that they are tough as well and can survive being knocked down and jumped on by young animals.

"I have a lot of Amish customers who use them with solar panels and batteries," says Villa. "They buy one to use over newborn dairy calves or puppies. In a few months they buy another one, adding a panel as they add more solar."

Villa offers 8 sizes of the 1 1/2-in thick panels. They range from a 12 by 14.4-in. 150-watt panel (\$195) to a 42 by 42-in. 1,100-watt panel (\$825). She helps customers size panels to the space to be heated.

"You could hang a small panel over a single hutch or a larger one over several pens," says Villa. "I had one sheep and goat producer who was going to buy a smaller panel for use in part of an 8 by 12-foot room. He decided instead to install a 550-watt panel to cover the entire room."

Villa requires only limited information to recommend an appropriate size unit. "I need the zip code to calculate energy needs for your area and weather," she says. "I also need a sketch or blueprints of the building."

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