



Todd Graus (right) and his 2-man landscape crew produce up to 150 tons of grass clippings per season, compressing the clippings into high quality silage.



Battery-powered BioPac'r compactor is loaded by hoist into pickup bed.

## Compactor Turns Lawn Clippings Into Silage Bales

Lawn clippings headed for the landfill may soon be headed to feedlots instead. Green Turf Landscapes' BioPac'r compresses 3 to 4 pickup loads of grass clippings into one. With the bagging attachment, the compressed clippings quickly turn into high quality silage.

"It eliminates trips to the landfill and gives lawn care companies a product they can sell," says Todd Graus, owner of Green Turf Landscapes' Yellowstone Compact & Commodities Corp. (YCC). "Colorado State University (CSU) researchers have told us the lawn clipping silage produces higher gain than traditional feeds. We think it may be worth \$100 per ton."

Graus says his two-man landscape crew produces 135 to 150 tons of grass clippings in a season. "Using the BioPac'r, they save about \$15,000 in labor from reduced landfill trips and make more than \$6,000 worth of silage," he adds.

Graus says his prototype is designed to fit in the back of a full-size pickup. It has a compression chamber that is 30 by 40 in. and about 70 in. deep.

The chamber is loaded from the top. A

rear-mounted compression plate operates on screw rods driven by sprockets and a chain. A very high torque, 24-volt motor running off two car batteries powers the drive.

"I wanted an easy-to-maintain mechanical drive with no potential for oil leaks," says Graus. "The battery-powered unit is self contained, and the batteries only need to be charged up once a week. We are considering offering an option for a solar panel-powered trickle charger."

He also wanted an easy-to-handle compressed product. If it's to be made into silage, the compressed grass block slides into an attached bagger. Graus is working with a plastics company to make a bag strong enough to carry the weight of the compressed grass.

If the grass is going to the landfill, the operator simply backs into position and unloads the compressed bale off the end of the pickup bed.

"We can take the BioPac'r in and out of the pickup with a standard engine hoist," says Graus. "The prototype weighs 1,200 lbs., but we hope to get it down to 1,000 lbs."

Graus points out that proper compression

is the key to handling lawn clippings. Too much pressure and the high moisture grass liquefies. Not enough pressure leaves too much air in the grass, letting it heat and rapidly mold. Graus is confident he has it just right and considers that pressure level a trade secret, one he hopes to soon put to use on a larger scale.

"We are getting bids from several manufacturers for building the BioPac'r," says Graus. "We hope to get the price under \$12,000 and perhaps as low as \$10,000."

Graus is also getting ready to capitalize on the availability of a new feedstock. He started YCC to sell both the BioPac'r and to serve as a silage broker for landscape firms making silage.

"I will try to find buyers and sellers and get them together," says Graus.

Part of his work will be to ensure quality control. He has developed a pesticide residue kit for grading silage safety. The CSU researchers assured him that any pesticide residue on the grass clippings is broken down by the biological action during the fermentation process. That has been borne out.

"After three weeks, you can't find anything," he says. "As a market develops for the grass silage, we hope it will encourage reduced use of pesticides on lawns. We have found that our customers are less concerned about weed escapes when they know the grass is going to feed cattle."

The BioPac'r can also serve double duty compressing solid waste, notes Graus. "It can crush beer cans and compress bagged loose trash just like a commercial garbage truck does," he says. "It could be used as a satellite solid waste station."

Graus says one Midwestern state is considering installing BioPac'rs at landfills in the state. Lawn waste would be compressed and bagged for sale as biofuel or simply compressed to take up less space in the landfill.

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## ATV Cart Folds Out For Big Loads

The Backpacker Cart from McConkey, Inc. rides on the back rack of an ATV when empty. Fold it out, and the two-wheel cart can haul an 800-lb. load over rough terrain.

"When you are ready to use it, you just lift it up and back up," says Gordon McConkey, McConkey, Inc. "It unfolds as you go. Set it down on the ground, slip in the tongue pin, and it's ready to go."

The cart was originally intended for use as a big game cart for hauling deer, elk, moose or bear out of the backcountry. McConkey wanted something light, durable and easy to use.

"We make the cart out of hardened aircraft aluminum, except for the steel wheels and high speed bearings," says McConkey.

Total length of the cart is 78 in. The main frame is 52 1/4 in. long and 32 in. wide with 6 cross slats. Each wheel is mounted in an independent wheel frame at either side of the bed instead of riding on an axle under the bed. This gives the cart a full 13 in. of ground clearance. The wheel frames give the cart a total width of 49 1/4 in. and a wheelbase of 43 in. This allows the cart to track directly behind ATV wheels.

The design offers several other benefits as well. The angled wheel frame protects the wheels from trees, rocks and other obstacles on or off trail. They also make it possible to lower the bed to the ground for easier loading.

The front ends of the wheel frames are attached to the midpoint of the bed with spring-loaded pins. Lever arms that extend forward from the wheel frames attach at the front of the bed. At the rear, the wheel frames are mounted to an axle that runs the width of the bed. Release the lever arm and spring loaded pins and pivot the wheel frames out of the way. This allows the bed to drop to the ground. Once the cart is loaded, rotate the wheels back into position to lift the bed off the ground. The lever arms attached to the wheel frames provide the extra leverage needed to replace the wheels. With the spring-loaded pin, lock the bed back in place.

Returning the cart to transport position is simple. Pull the tongue and lever arm pins, and flip out two hanger brackets at the front of the bed. Slide the lever arms into holders on the wheel frames and pick up the back end of the trailer. Grab the side rails, walk forward and fold the cart back into place, hanging it on its brackets on the ATV rear rack.

The ATV Backpacker Cart is priced at \$669 plus shipping in the continental U.S. Call for quotes for Alaska, Canada and other countries.

Contact: FARM SHOW Followup, McConkey, Inc., P.O. Box 1362, Seeley Lake, Mont. 59868 (ph 308 641-2058; www.atvbackpackercart.com).



When empty, Backpacker Cart rides on the rear rack of an ATV. To use it, you just fold it out and hook it up to the ATV. Works great for hauling logs, etc.