



Kreitzer is working with Ely Lilly Co. to develop an automated process for putting earthworm eggs into capsules which he mixes with seed in planters or drills.

"BOOSTING EARTHWORM POPULATIONS INCREASES YIELDS"

He "Plants" Earthworms Along With His Crops

By Bill Gergen, Associate Editor

Someday soon, if Bill Kreitzer has his way, you'll be planting earthworms in fields right along with your crops.

Kreitzer, who owns farms near Elliott, Ill., has engineered a method to "plant" earthworms in fields at the same time the crop is planted, using "melt away" gelatin capsules containing earthworm eggs.

The University of Illinois is conducting three-year earthworm research test plots on his farm and he has joined forces with investors to form a company called Advanced Biotechnology Inc. (ABI) to market earthworm egg capsules under the brand name ET Seeds® (ET stands for Earthworm Tillage).

"Earthworms increase crop yields by burrowing to improve the soil's water intake," says Kreitzer. "Dr. Bill Becker, research director for ABI, has calculated that the burrowing done by 1 million earthworms is equivalent to adding about 4,000 ft. of 6-in. tile per acre to your farm. Earthworms also speed up the process of converting nitrogen in crop residue to useful levels during the growing season. They ingest much of the non-available nitrogen tied up in crop residue and excrete the digested material into plant-available form. Our research may even show that a healthy earthworm population may entirely eliminate the need to purchase phosphorus and potassium."

"Unfortunately the farming techniques of the last several decades have destroyed the earthworm populations in many fields. Most destructive of these techniques is the practice of tilling the fields after harvest in the fall, leaving little debris to cover the soil during the winter. The lack of ground cover removes valuable organic residues and disturbs the insulating barrier that protects earthworms. This combination of a reduced food supply and a fast ground freeze is the number one killer of earthworms. My goal is to help farmers restore their earthworm population to beneficial levels."

Earthworms reproduce by laying a cocoon. The number of eggs inside the cocoon varies depending on the species. Under ideal laboratory conditions, earthworm eggs hatch in 3 to 6 weeks. However, the eggs hatch only when soil temperature is right. At 3 months of age the earthworms are old enough

to produce their own cocoons. Kreitzer says he'd like to see a minimum seeding rate of one earthworm capsule per 100 sq. ft. or 435 capsules per acre which would eventually multiply to a population of 23 earthworms per sq. ft., or 1 million earthworms per acre. "This sounds excessive, but the soil can easily support 2 to 3 times that amount," says Kreitzer.

Kreitzer and Eli Lilly Co. are working together to develop an automated process for encapsulating earthworm eggs in gelatin capsules. The earthworm cocoon inside each capsule will hold up to 20 eggs depending on the earthworm species.

The cocoon will be coated with a substance that preserves the eggs to keep them viable until they're planted. The coating also adds weight to the cocoon to keep the capsule from shifting to the top of the planter box, ensuring that earthworm eggs are distributed evenly in the soil.

University of Illinois agronomist Thomas Bicki is testing two tillage systems and four worm seeding rates in a corn-soybean rotation. The tillage treatments include fall paratilling and no-tilling. No insecticides are applied to the earthworm plots. Native earthworms in the zero worm plots are killed with insecticide.

Kreitzer figures a common "planting" rate would cost \$10 to \$20 per acre. He has been exhibiting at farm shows to assist the University of Illinois in raising money for the tests. "Because of limited money available to land grant universities, we're asking farmers to help support this research. All contributions will be credited toward the purchase of earthworm capsules in the future and contributors will also be given the first opportunity to buy stock in the company. Contributions should be sent to Dr. Thomas Bicki, Agronomy department, Turner Hall, 1101 S. Goodwin Ave., University of Illinois, Champagne, Ill. 61801."

As a result of research, Kreitzer has also developed a miniature earthworm farm. It's similar to an ant farm and lets you see the results of planting ET Seeds worm capsules. Sells for \$39.95 and is on the market.

For more information, contact: FARM SHOW Followup, Bill Kreitzer, Advanced Biotechnology Inc., P.O. Box 1, Gibson City, Ill. 60936 (ph 217 784-4646).

PLANT MILO, SOYBEANS OR CORN IN MOIST SOIL, 30 OR 15 IN. ROWS

Turn Your Drill Into A Row-Crop Planter

"It's a great low-cost way to get double duty from your grain drill," says Kansas farmer Joe Elmenhorst, of Moran, who has a patent pending on the "O.J. Drill Conversion" he invented.

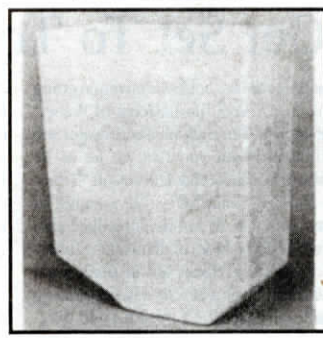
It consists of twin disk furrow openers, mounting bracket and a seedbox for each "planter" row.

"The furrow openers move dry dirt and trash out of the way, allowing you to plant in moist soil without getting the seeds too deep," explains Joe. "Kits we've made and sold locally have been used primarily to equip drills for planting milo in 30 in. rows. There's been a lot of interest from corn and soybean producers, many of whom ask if our kit can be used to plant row crops in 15 in. rows. It'll adapt to 15 in. rows but there could be a problem controlling the amount of dirt kicked up by the close-together furrow openers."

The kit, including twin furrow openers, vertical stem and mounting bracket, "tieup" straps for immobilizing drill rows not being used for planting, and a seedbox, sells for \$208 per row.

Individual seedboxes hold 48 lbs. of milo and can be purchased separately for \$40. They come with a strap and bolt for fast mounting, or dismounting, over the selected "planter" rows. The twin furrow openers (9.5 in. in dia.) are made of heavy (9 ga.) metal and each has a heavy-duty bearing on each side. Their working depth is adjustable in 1/2 in. increments.

"Once the furrow-opener mounting brackets are installed, it takes about an hour to convert a large drill for planting and tie up the unused rows, or to switch back to



"Planter" kit consists of twin furrow openers, mounting bracket and seedbox.

conventional drilling. "We currently have planter kits made up for Grain Plains and Crustbuster drills, but can make up brackets to fit most other makes," says Joe.

For more information, contact: FARM SHOW Followup, O.J. Drill Conversion; Joe Elmenhorst, Manufacturer; Rt. 1, Box 159; Moran, Kan. 66755 (ph 316 237-4379).

Indiana Shop Rebuilds Combine Straw Choppers

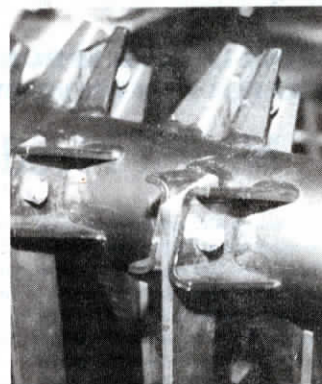
"We rebuild them better than new," says machine shop operator Bryan Willig, of Terra Haute, Ind., whose firm specializes in balancing and repairing most make and model combine straw choppers.

You can ship your chopper to him or, if you're within driving distance, set up an appointment to bring your chopper in and have it rebuilt while you wait.

Willig's shop performs two types of repair-conversions:

Regular Duty Repair: Warranted for one year, it covers: replace missing gussets, replace damaged bearing shafts and missing blade supports, and balancing. Cost ranges from \$465 for a Deere 4400 chopper, to \$565 for an 8820. Add \$50 for straightening the rotor, if needed.

Super Duty Conversion: Warranted for three years, it involves installing a complete new set of knives and mounting brackets. On Deere choppers, for example, it covers: remove chopper from housing, cut off all blade supports (gussets), grind rotor smooth, install new super duty supports with three welds, straighten rotor, install new bearings, bearing flanges, new chopper blades, heavy duty oversize bushings, and balancing chopper with all blades attached and in



"Super Duty" knife supports are built extra heavy and welded in 3 places.

their own bearings.

Cost of the Super Duty Conversion, including balancing, ranges from \$685 for Deere 4400, to \$845 for an 8820.

For more information, contact: FARM SHOW Followup, Straw Chopper Rebuilders, Division of All-Tran, 200 S. Ninth St., Terra Haute, Ind. 47807 (ph 1-800-457-0771, or 812 232-0981).