

Micro Drainage Catching On Fast

Leon Buckholder has a lot of first-hand experience with micro drainage, which consists of 2-in. dia. tile lines buried just 2 ft. deep.

In fact, he remembers talking about the idea with Mark Martin before it became a reality. Martin developed a 3-pt. mounted plow for MDC (micro drainage concept) with his nephew Elton Zimmerman (Vol. 37, No. 2). Buckholder was the first to put the prototype plow and MDC to work.

"About 8 years ago, we installed it on 10 acres with all the laterals on contours," recalls Buckholder. "Our land is rolling with slopes from 0 to 6 percent. With their articulated plow, they can make a pretty tight curve, which is important for contours."

"Micro drainage calls for 2-in. lateral lines buried only 2 ft. deep on 20-ft. or less centers with main lines as little as 6 in. in diameter and buried only 3 ft. deep," explains Zimmerman, who co-founded Richland Micro Drainage with his uncle.

Most conventional drainage is with 4-in. laterals buried deeper and on 40-ft. centers. While MDC uses more tile, it is less expensive tile and requires a smaller, less expensive plow.

After his initial installation, Buckholder did another 100 acres. "Conventional tiling contractors charged 22 to 24¢ per foot, while Richland charged 12 to 15¢ per foot," says Buckholder. "They use a smaller tractor and a 2-man crew. Conventional contractors use larger tractors and usually have one guy getting the grade, 2 guys hooking up tile with one on the plow and often with the farmer pulling a tile cart."

Eight years later, he remains enthused about the concept and says others in the area are as well. "I don't know anyone who had deep drainage that has tried this and then gone back to the old way," says Buckholder. "They're all tickled with the shallow drainage."

One reason, he notes, is the improved drainage. "When a bare field dries down, you



Richland Micro Drainage recently started using this dozer-mounted tile plow in their micro drainage business.

see the tile lines with conventional tiling," he says. "That is hardly possible with this system. It all dries down at a uniform rate."

Other benefits cited by Burkholder and Richland Micro Drainage include better root development, less compaction and better soil health. Faster infiltration and dry down gets operators back in the field sooner after rains.

For the first few years after introducing MDC, Martin and Zimmerman made the equipment needed and laid tile. In the years since, drainage contractors from New York, Pennsylvania, Ohio and Missouri have adopted MDC. Today the two are focusing more effort toward educating contractors and farmers to the concept.

"We realize we need to help people understand why MDC is better," says Zimmerman. "We are also working with custom installers and letting them use our trademark."

Richland Micro Drainage has added a dozer mounted plow requiring even fewer horsepower and creating even less compaction than their wheeled tractor system. They also plan to start producing their own 2-in. poly pipe this coming September with a price projected at half current pipe costs.

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One Machine Dispenses Round Bales Three Ways

Livestock producers will like this new machine that combines feeding, spreading and bedding in one implement that mounts on a tractor 3-pt. hitch or on the front of a big loader or tele-handler. There are only 4 grease points and no electronics on the machine, which can unroll or spread a bale in minutes.

As a bale feeder the Crossfire BFR-180 from Wessex International uses 5.5 ton-rated chains with zinc-plated crossbars and a high-output Danfoss hydraulic motor to gently roll hay, straw or baleage from either side of the machine.

With the Crossfire straw spreader attachment, the BFR-180 throws baled straw in its original length without shredding it up to 30 ft., easily bedding corrals and pens in loafing barns.

The BFR-180's 3rd mode, called the Sidewinder, uses an extension conveyor for high-level feeding into a trough or manger from the left side of the machine. In this mode the right side of the machine is still configured for bedding.

Each mode works individually if the power unit only has one double-acting hydraulic spool. Two double-acting hydraulic spools or one spool with a diverter valve are needed to operate all 3 modes in one hookup.

The BFR-180 handles round bales up to 5 by 6-ft. in size and weights up to 1,500



Telehandler equipped with BFR-180's Crossfire straw spreader attachment (above) throws baled straw to use as bedding. A sidewinder attachment feeds bale into a trough (below).



lbs. Early in 2018 the BFR-180 received an Innovation Award in the UK for best new product or innovation in livestock production equipment in Europe. There's no dealer in the U.S. or Canada yet.

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Robotic strawberry picker spans 6 rows, using multiple picking heads to select and pick ripe berries.

Robotic Berry Picker Nearly Ready For Market

Gary Wishnatzki is getting closer to having a robot pick his strawberries. The Florida grower and his chief technical officer, Bob Pitzer, have been working on the robotic picker for about 4 years. Mounted on an autonomous vehicle, the robotic heads select and pick fresh, ripe strawberries. Berries are then sent to a packing area, where they are placed in containers by weight and covered for shipping.

"It can gently cup a berry with its soft silicone claws and pluck it without damaging it," says Wishnatzki, Harvest CROO Robotics. "We can't say it can reliably compare with human pickers yet. We've gone through several iterations and are still refining it. We still have some bugs to work out in the hardware and software."

Financing for the project has come from growers/shippers like Wishnatzki, the National Science Foundation, and others. Prototype pickers have progressed from a single head mounted on rails to units mounted on a modified tractor. The current prototype is a self-propelled platform with wheels spanning 6 rows. It uses GPS to travel through the field and LIDAR to avoid hazards.

The machine has 16 picking heads. Each has a high-speed video processor and opposing custom-built cameras to provide stereo vision.

"It processes images at about 30 gigabytes of high definition images per second," says Wishnatzki. "It is able to identify berries ready for harvest, as well as those that aren't, using a ripeness value. We set a threshold for each level of ripeness based on color. Anything that exceeds the threshold gets picked."

Each head consists of 6 sets of picker claws that rotate to pluck strawberries, as well as rotating around the plants looking for berries. Plastic fingers push the foliage aside to expose berries to the cameras and the claws.

The current picking rate is 8 seconds for a single plant. The machine moves between plants in 1 1/2 seconds and can pick up to 8 acres a day. The goal is to cut the picking



Each picking head consists of 6 sets of claws, which rotate to pluck strawberries without damaging them.

time in half.

Eventually, the robotic system will also collect data on each plant, recording productivity as well as insect pests and disease. Growers will have yield maps for fields and be able to accurately compare inputs and varieties.

Projected benefits include being able to operate at night and during the cooler part of the day, enhancing quality of the berries and reducing cooling costs.

"Every year we have learned things," says Wishnatzki. "We are still 2 to 3 years from commercialization."

When the picker is ready to be introduced, Harvest CROO plans to lease the machines to growers for less than they now pay field labor. Demand for the machines is already high among strawberry growers. Difficulty finding the field labor needed to pick a field every 3 days up to 40 times a season means plants can go unpicked.

Finding labor for picking high-value field crops isn't limited to strawberries. Wishnatzki also raises raspberries, blackberries and blueberries and sees potential for the picker with those crops as well. However, the demand doesn't stop there.

"We've been contacted by quite a few major crop and trade organizations, as well as individual growers/shippers from field tomatoes to bell peppers, table grapes and tree fruit," says Wishnatzki.

Check out a video of the Harvest CROO in action at FARMSHOW.com.

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