



Photo courtesy of Terence E. Richardson (www.picturethisfineartphotography.com)

Cleanacres Atlas sprayer-based harvester with header that pushes apples into windrows for collection into the hopper.

They Make Custom Apple Harvesters

When British demand for cider skyrocketed in the 1990s and again in 2008, apple growers responded by planting tens of thousands of new trees. Matthew Barnett's family orchard grew from 34 acres to 90 today. Barnett and his brother Russell responded by building

ever-larger harvesters, first for their family and then for others as MRB Engineering. They also designed and built an RTK-guided, tractor-mounted machine to plant up to 6,000 trees daily.

Terry Richardson detailed their efforts in a

recent issue of *Classic Tractor*. He describes how MRB repurposes components from self-propelled sprayers, potato harvesters and more. These are then married with enhanced hydraulics, custom-designed chassis, and unloading systems loosely based on sugar beet harvesters.

In a single generation, the Barnetts progressed from hand-picking and a 5-hp. walk behind to 95 and 110-hp., 4-WD, 4-wheel steer, hydrostatic drive power units. The walk behind collected apples in baskets dumped into crates by hand. MRB harvesters follow an MRB-designed tree shaker with a gentle grip through the orchard. A front-mounted, V-shaped paddle system on the tractor-mounted shaker windrows already fallen apples to each side of the row.

The MRB-designed header directs fruit to elevators that load the mounted hopper. The harvester can collect up to 150 tons of apples per day. When the hopper is full, unloading elevators reach up and over bulk trailers to unload 4 1/2 tons of apples per minute. Amazingly, they do so gently with minimal damage.

Space is at a premium in tight orchard row spacing. To make room for harvester hoppers, the Barnetts relocated the engines on the

power units from longitudinal to transverse and lowered the cab. This also placed the operator closer to the ground and with a better view of the header.

A key element of the Barnetts fleet is the low ground-pressure tires. They've learned in their own orchards the importance of low ground pressure to avoid ruts that make harvest difficult at best.

As processor expectations for cleaner fruit grew, the Barnetts added a step before loading the bulk trailers. This cleaning machine tumbles the crop onto a hedgehog belt before transferring the fruit to a set of Dolman rollers. As a final cleaning step, jets spray the apples with water before elevating them into the trailers.

MRB also makes specialty equipment for non-orchard customers, services and repairs equipment, and fabricates steel-framed buildings.

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Tritordeum barely wheat cross.

New Grain Makes Better Bread

By Jim Ruen, Contributing Editor

Spanish researchers successfully crossbred durum wheat and wild barley to create a new grain with superior taste and richer color than conventional wheats. It also requires less water, fertilizer and fungicide. After 30 years of selection, Tritordeum is making inroads in Europe, Asia and Australia. It's an alternative grain for malt, baking flour and durum wheat for pasta. The Spanish biotechnology company Vivagran owns the rights to the non-GMO, conventionally bred, hybrid crop.

"Tritordeum started as an academic project, crossing durum wheat with wild barley, a barley native from Chile," explains

Etienne Vassiliadis, CEO of Vivagran. "Our company obtained the exclusive license for the germplasm commercial exploitation, which, after 30 years of breeding, no longer looks like the original germplasm."

Vassiliadis notes that Tritordeum doesn't look or taste like durum wheat or barley. It has a buttery, golden-yellow color that comes through in the flour. It also has a sweet taste with a toasted aroma.

"After tasting bread and pasta made with Tritordeum, products made from common wheat taste blah," he says. "With its rich taste and color, people get hooked on it. I've worked in the baking industry for 10 years

and bake at home. I've never tasted anything like it. After tasting it, people are buying the flour at a high premium."

Tritordeum is higher in protein and has health benefits superior to wheat, including 30 percent more dietary fiber. It's high in oleic acid, associated with cardiovascular health, and lutein, an antioxidant that reduces the risk of eye disease. It has also reduced levels of immunogenic gliadin peptides from gluten, which are responsible for gluten intolerance.

Tritordeum was bred and selected for the hot and dry climate of Spain, Italy, Greece and southern France. Vassiliadis reports that it has a very small yield penalty against some wheats and outperforms others. Even a slight yield penalty is offset by lower input costs.

While not originally developed for areas with better soil and water, Tritordeum has been successfully grown in the Netherlands and recently trialed in Germany, Austria and Poland with promising results. About 10 advanced lines are now being screened in Europe and Australia. Several offer potentially significantly higher yields.

"We have three lines that provide 25 to 50 percent greater yields than our commercial varieties," says Vassiliadis. "They appear to be almost unaffected by rust or other disease. They promote soil health and fit with regenerative agriculture."

Vivagran is licensing Tritordeum

germplasm to seed producers, growers and processors in Europe and Australia. Government approval is required to grow it in the U.S. and Canada.

"Tritordeum is also a genetic resource for breeders," says Vassiliadis. "It's easy to cross it with other grains and pass on its remarkable traits, like the rust resistance. We're testing crossing it with durum wheat, barley and other wheats, and it could also be crossed with triticale."

Vivagran is working with Boortmalt, the second-largest malting company in the world, headquartered in Belgium. Tritordeum malt is now available commercially, and some has been shipped to its American subsidiary, Prairie Malt. However, the flour is still excluded due to regulatory paperwork and shipping costs.

Vassiliadis has sent a small shipment to the innovation center of a major U.S. food company. Malt has also been sent to several brewers. Vivagran hopes to establish more contact with North American food companies and researchers. Eventually, Vassiliadis expects to license it there for seed and grain production.

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An intuitive mobile and desktop dashboard connects all smart devices with data, information and alerts.

Full-Service Bin Monitoring System

A Western Canadian precision agriculture company is creating a full-service grain monitoring system for North American farmers.

"We're taking all our existing products and equipment and building them into one all-inclusive ecosystem of technology addressing

the challenges of in-bin grain monitoring," says Adaptive Agriculture owner Steve Rogoschewsky.

The product lineup includes the Bindapt Bin Monitor, which remotely reads existing or newly installed temperature and moisture

bin cables. It's compatible with modular plenum and CO2 headspace sensors.

The BinHalo device features all the standard Bin Monitor capabilities plus adds a modular control output to automate aeration, exhaust or supplemental heating.

The Bindapt+ is a standard monitor with an integrated plenum sensor and modular control output. This combination allows the system to automate and achieve a target bin moisture level plus estimate completion times.

For farmers needing two control outputs for remote automation of the drying and cool-down cycle, the Bindapt+ Pro is the right option. It delivers all the benefits of Bindapt+ with more inputs and outputs.

An intuitive mobile and desktop dashboard connects all smart devices with data, information and alerts.

Units plug directly into standard 110-volt receptacles or 220-volt power from an aeration fan.

"All products have an optional halo head to monitor headspace for CO2 levels. They

send alerts of problems 1 to 2 weeks before traditional grain cables give notice of a heating event," Rogoschewsky says.

Local Wi-Fi or a cellular network are required to run the technology. When Wi-Fi is used, no subscription or platform fees are added.

The units are manufactured in Saskatoon, Sask., and are available throughout North America.

"Farmers can try the Adaptive Agriculture Bin Monitoring system starting at \$399 for basic bin monitoring," Rogoschewsky says. "Most try it on one bin to get a feel for the visual farm system and then add automation. It's attractive because it's easy to install, has no setup fees, and has a low price point before committing to a large installation."

Adaptive Agriculture hopes to add U.S.-based distributors and dealers.

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