

Could Fonio Be A New Cash Crop?

The good news about fonio, a cultivated grain in the millet family dating back to 5000 BC, is that it grows well in hot, dry regions. It's nicknamed the "lazy farmer's crop" because it requires little input during the growing season. The bad news is that it's labor intensive to harvest, clean and process in West Africa, where most of it's grown. So far it hasn't caught on in North America.

Some call it the "new quinoa" because it's gluten-free, scores low on the glycemic index, and has macronutrients, fiber, amino acids, and five times as much protein as brown rice. Chefs are incorporating the fast-cooking (5 min.) grain into sweet and savory dishes. It can be used the same way as rice or couscous or ground into flour.

The seed is broadcast seeded on loosened light, sandy soil and lightly dug into the soil with a hoe. No fertilizer or weed control is needed as it grows rapidly ahead of weeds. It grows well in temperatures between 77 and 86 F with an average rainfall of 35 in. The grain is ready in 6 to 8 weeks.

Then the work begins. West African farmers cut the stalks of grain with knives or sickles and gather them into sheaths for drying. The dried plants are beaten to loosen the grain, which must be dehulled with a mortar.

Imported fonio grain and flour are available



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online, starting at \$13/lb. Recently, a U.S. Agency for International Development grant awarded \$1.9 million to create 13,000 jobs and establish a direct trade of fonio to the U.S. from Mali, a country in Africa.



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Ranch Rover Automates Livestock Feeding

The idea for a robotic machine to feed livestock came from Texas rancher River McTasney, who claims he's been riding around in a feed truck his entire life. He went looking for a way to automate the monotonous chore and the result is the V1 Ranch Rover.

After McTasney launched his prototype, it came to the attention of investor and consultant Hunter Allemand. The pair soon joined forces and became co-owners and founders of the specialized vehicle.

"It's essentially a pickup truck without the cab," says Allemand. "It's made completely from steel with a feeding bin and platform. It has all-wheel drive that uses a hydraulic propulsion system taking mechanical energy from a Honda gas motor and turning it into hydraulic wheel power. It's great in mud and on hills. In our demos, we take it to different geographies and weather systems to show how robust it is."

Allemand says sensors and cameras guide the vehicle and the GPS tracker helps it arrive at the proper destination. Routes are preprogrammed as part of the company's onboarding setup.

"It's smart enough for object avoidance too," Allemand says. "If something like a small calf is in the route, it will wait for it to move, or try to drive around it. It would never

run over it. It even has a horn along with a siren to call the cattle to feed."

The Ranch Rover comes equipped with a computer and phone app to run and schedule missions. While it's currently focused on feeding livestock, they're hoping to add machine learning and adapt the software to be intuitive enough to count and eventually identify sick animals. A companion drone to act as eyes for the Rover, helping to check fences and water sources and locate missing cattle, is also in the works.

"We're ready for customers now but as a special opportunity," Allemand says. "We're not trying to force the market but want to improve our quality and add reliable features. It's pretty bulletproof, but not completely right now."

The company, Smooth Ag. Solutions, has decided to use a leasing option as a way for all ranchers to get in on a flat monthly payment and receive both service and maintenance. A purchase opportunity will also be available with the cost of the unit roughly mirroring the price of a new pickup truck.

Contact: FARM SHOW Followup, Hunter Allemand, Smooth Ag. Solutions, Abilene, Texas (info@smoothag.com; www.smoothag.com).

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Portable Band Saw Goes To The Woods

Pat Burrington says using his portable 3-pt. tractor-mounted bandsaw in the woods to cut firewood is a lot quieter and more efficient than running a chain saw. "With this rig, I can cut much smaller pieces into kindling and get more wood out of a downed tree. I can take a log or branch and saw it while standing upright like I'm working on a raised table. The cut pieces go into my ATV cart and the brush goes into a burn pile."

Burrington says he built the portable saw because his back was getting tired from constant bending while using a chain saw, and he was leaving too much usable wood for scrap. "I just wanted to be done with the chain saw and all that bending," he adds.

Framework for the saw is made out of scrap iron from Burrington's metalwork shop. "I made a main frame out of channel iron with a 3-pt hitch for the front so I could haul the saw with my tractor," Burrington says. He's used it on several smaller horsepower tractors and says it works fine on all of them.

The main horizontal beam holds a 4-hp. Briggs & Stratton engine on one side and supports the center-mounted vertical pulley pole. A small metal platform at the base of the upright holds the gearbox and a bracket for the lower blade pulley. The top idler pulley

is mounted 48-in. up on the center upright with a guide platform in between. Flat metal bracing keeps the setup sturdy.

"The whole idea was simple," Burrington says. "I bolted the engine to the frame so I can keep the v-belt that drives the gearbox tight. For the 1-in. 10-12 TPI blade, I used two 12-in. pulleys. The bottom one drives and the top one spins and has a blade tensioner. The blade guides are some inexpensive bearings. I bought four saw blades online and it was pretty much done," Burrington says.

"Using this saw I'm amazed how much more kindling and small diameter wood I can get from a tree compared to a chainsaw. I have a chain supporting the cutting platform so I'm always standing and cutting. With the chainsaw, I'd get tired and leave small branches, and now that's usable wood. I built the saw over one weekend 8 years ago for about \$600, but that would be considerably more now with more expensive materials. It's been a great investment without any problems."

Contact: FARM SHOW Followup, Pat Burrington, Rapid Creek Cutters, 130 Garnet Dr., Stevensville, Mont. 59870 (ph 406-642-3155; www.rapidcreekcutters.com).

Alley Cropping Can Double Profitability

Meghan Giroux, director of Interlace Commons, is heading a program to promote Alley Cropping, the practice of interspersing rows of trees with farm crops.

Interlace Commons recently joined forces with PASA Sustainable Agriculture to provide grants to train farmers in alley cropping. Three Pennsylvania farms are enrolled in the program.

It might seem counterintuitive to pair trees and cash crops together, but many researchers think otherwise.

Perhaps the most significant benefit of alley cropping is its potential to double the productivity of cropland while improving its health in the long run. As Giroux explains, "Many times, conservation efforts seem to be at the expense of profitability for farmers. With alley cropping, we show farmers that conservation and production can go hand-in-hand."

One of Interlace Common's current test sites is Weaver's Way, a co-op in Philadelphia. There, the organization is converting an old orchard into an alley cropping system with annual crops planted in rows between the established trees. The idea is to provide the orchard with additional harvest opportunities as it waits for the fruit to ripen.

There will be two training events at Weavers Way in the fall of 2022 for all



farmers interested in alley cropping. Each will provide an opportunity to learn about the advantages of this practice and the benefits of planting trees vs. rehabilitating existing ones. Registration and further information are available at www.pasafarming.org.

Interlace Commons is also working on a book, available soon, about their agroforestry and alley cropping research.

Contact: FARM SHOW Followup, Meghan Giroux, Interlace Commons (info@interlacecommons.org).