RUNT 2-wheel tractor is made and repaired with a wrench using all off-the-shelf components.

2-Wheel Tractor You Can Build Yourself

The makers of modernized Allis Chalmers G tractors (Vol. 41, No. 1) are making a 2-wheel walk-behind for even smaller farms. Like the 4-wheel "Oggun G", the 2-wheel RUNT is an open-source design. It's available fully assembled, in a kit for self-assembly, or as plans with a no-cost license to build for personal use or a license to manufacture.

"The license to build option is similar to the current one for the Oggun tractor," says Horace Clemmons, Ronnie Baugh Tractors. "We have orders for three assembled units. Information on ordering has been posted on Facebook and LinkedIn."

RUNT was developed in collaboration with DAUST (Dakar American University of Science & Technology) in Senegal. The goal was a low-cost, 2-wheel tractor that could be built (and repaired) with a wrench using all off-the-shelf components.

"We designed it with a toolbar that will allow attachment of most implements used by small 4-WD tractors, including planters, cultivators, tiller/spaders, and roller crimpers," says Clemmons. "Even old BCS implements can be modified to work with it."

The tractor is designed for easy modification of clearance and row spacing/center of gravity needs. Dimensions include a ground clearance of 8 1/2 to 27 1/2 in. and between the wheel widths of 33 1/4 in. to 41 1/4 in.

The frame is 40 1/2 in. long, while the total length of the RUNT is 93 3/4 in. from the front of the frame to the handlebar grips at the rear.

"We wanted a design that would let the user decide what clearance height or row spacing they wanted," says Clemmons. "It also allows the user to slide wheel mounts forward or backward to adjust weight distribution and counterbalance heavier front-mount implements."

While the RUNT was designed primarily for limited-income farmers in Africa and Asia, Clemmons sees its open-source and off-the-shelf nature as having value throughout the world. Supply chain interruptions have created shortages and backlogs of products from international suppliers.

"With our open-system architecture, we're providing a platform that can be assembled with any compatible part," says Clemmons. "Builders of the RUNT can use any component they want as long as it meets or exceeds the specifications of the recommended part. We're all realizing that if you can't make something locally, you probably won't get it in a timely fashion."

The RUNT is designed to take advantage of its zero-turn capability with all controls at the hand grips, including a dead-man switch. Clemmons notes that fine-tuning the hand controls was one of the bigger challenges.

Another design requirement was to ensure that new technology could be field upgraded, e.g., more horsepower or electric drive.

"We didn't go with a geared transmission, so we needed a stepped control system," says Clemmons. "That took time to figure out."

To make the basic design, Clemmons and his collaborators looked at competitive units in all price ranges. They identified needed features and modeled their design accordingly.

"It's been fun as we do things and learn from our mistakes," says Clemmons. As with all open-source designs, every model is to some extent simply the latest prototype. We welcome any design suggestions that we can include as we move along," he says. "We continue to learn with every prototype we introduce."

Tractor has zero-turn capability with controls at the hand grips.

With ongoing increases in steel prices and other components, the Oggun 2 4-wheel tractors are now priced at around $23,000 (gas engine only) fully assembled. By comparison, the RUNT is currently priced at $7,250. Clemmons notes that a RUNT manufactured in the local economy under license would cost much less due to shipping costs.

"We'll provide a list of suppliers for the components we're using with the license to build for personal use," says Clemmons. "In many cases, we can get wholesale prices. If our prices are cheaper than what a customer can get for a quantity of one, we'll sell the component at our price."

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Guidance System Adapted To Old Tractor

Brad Farmer made a custom bracket for the steering column of his Deere 8440 so he could install a guidance system on the tractor.

In the spring of 2022, Brad Farmer had great success with two Wheelman Pro autosteer systems from Ag Junction, installing one on his planter tractor and another on his tillage tractor. "The systems didn't require a subscription, and they worked so well that I decided to put a third unit on our Deere 7520," Farmer says.

After Farmer bought the system, he quickly realized it wouldn't work on a 49-year-old tractor. Not to be deterred, Farmer spent many hours of research cross-checking steering wheel part numbers. "I finally found that the steering shaft and spline counts on a Deere 8440 were the same as the 7520," Farmer says. "When I figured that out, I dove right into installing it."

Everything went according to the directions except for installing the anti-rotation bracket. Farmer says that wouldn't work on the older 20 Series Deere because the throttle lever rotates the column, which turns the linkage below the injection pump. Farmer produced a custom bracket and mounted it under the center shields that run parallel with the column, slides over a T bracket, and bolts to the back side of the steering module. "That simple modification worked really well, so the tractor now has customized autosteer," Farmer says.

Precision steering for the 8520 was a big priority for Farmer because he uses the tractor to pull his custom-made 42-ft. field roller. "I learned from experience that we only need about 6 in. of overlap with every pass, and the only way to achieve that is with autosteering," Farmer says. "There's always a lot of dust while rolling, so the autosteer keeps us right on track regardless of conditions. We wouldn't be able to use this tractor without it."

Farmer says installing the Wheelman Pro didn't take long once he figured out how to modify the bracket for the steering column. "It's a very good system priced at a little over $4,100, a very reasonable price, without any annual subscription, which is another big plus," Farmer adds.

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Pipes Make Strawberries Easy To Pick

Kevin Johns took the back-breaking work out of picking strawberries, lettuce, radishes, and more. He plants them in irrigation pipes hung at easy-to-access levels.

"I'd seen rain gutters used, but we had gated 8-in. irrigation pipe that wasn't used anymore," says Johns.

Kevin and his wife Janet raise fruit and vegetables for themselves and share them with their children and their families. In addition to what they eat fresh and preserve, they sell some at local farmers markets.

"When we first got the hoop houses, it was so we could start things earlier," explains Johns. "Now with dicamba drift problems from cotton and soybean fields, a greenhouse is about the only way you can raise tomatoes and peppers."

To set up the pipes, Johns cut away portions of each, leaving sufficient metal to maintain pipe integrity. He hung them in multiple levels from support posts centered in the hoop houses. He'd previously installed the posts for added support in heavy snowfalls before adding the pipes.

Kevin and Janet garden in two 20 by 72-ft. hoop houses and one that's 20 by 24 ft. He refers to one of the hoop houses as their strawberry house. It has day-neutral strawberries in a vertical configuration of three levels of two pipes each.

"I have tomatoes growing up strings to either side of the hoop house," says Janet.

In the smaller 20 by 24, they have pipes on two levels with one pipe to either side of the support posts on each level. Those are used for lettuce, baby carrots, radishes, beets and onions.

Each pipe is filled with a growing medium of composted manure from around hay rings in the cattle yard. Johns scrapes it up each spring and sets it aside for a year.

"We put compost in and then a soaker hose running the length of the pipe," says Johns. "If we're planting strawberries, we spread a layer of straw or wood chips around the plants, so the fruit doesn't touch the compost."

Kevin and Janet prefer day-neutral strawberries so they can pick all summer. In addition to easy picking, they appreciate how easy it is to weed. They also like being able to use the space beneath the pipes in the 20 by 24-ft. hoop house for other crops. It works well for determinate tomatoes that don't grow too high, as well as snap beans.

Johns notes that every season he learns something new. Among his suggestions for others is ensuring the pipes are not quite level. Even with drain holes and ends that can drain, he lost some plants when water pooled. He encloses the ends of the pipes with a mixture of wood pieces and duct tape, allowing plenty of drainage.

"Because the amount of soil is limited, the biggest challenge is watering," he says. "It's best to have your watering system on a timer. If I could justify the cost, I would use drip tape."

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