

Improve Farm Efficiency with a new Spider E-Tractor

By Robert Turner

Want to take your farm to the next level? Four companies are now manufacturing strange looking beasts with belly mounted implements that can help small organic farmers bring it up a notch. And it's all based on old technology from the 1940's and 50's, when everything was grown organically and before the rise of the Big Ag chemical companies. The technology comes from a time when farmers killed weeds mechanically, and before all the harmful pesticides took over.

I was introduced to cultivating tractors when I first purchased an old 1946 Farm All Model A tractor (more as a man-toy than a useful piece of farm equipment). I noticed a mounting bracket for attachments under the belly of the machine, which I thought was a strange place to attach a farm implement. I also noticed that the engine was slightly offset to one side, and the seat and the steering wheel on the other, and the design opened a line of sight to the dirt right between my legs.

I didn't really put it all together until I realized how important visibility is when you're out cultivating in the field, and the genius of the design finally hit me. The guy who first bought this tractor in 1946 didn't have chemicals to control weeds back then. He needed a tool like this one to tear them out of the ground, and he needed to see what he was doing so he didn't rip out his crop at the same time.

The Model G was a small tractor made by the Allis-Chalmers Manufacturing Company for a brief period from 1948 to 1955, and they built less than 30,000 of them. At the time of its introduction the Model G was unique as a center mount implement carrier with a rear-mounted four-cylinder engine. The Allis-Chalmers 'G' was designed just for small farms and vegetable gardeners, and a line of implements was specifically designed to go along with it, including ploughs, planters, and cultivators.

The design of the Model G allowed for increased visibility of the belly-mounted implements located right between your feet (with no engine in the way) so you didn't rip up any crop plants as you cut out the weeds. It allowed you to cultivate with precision and you didn't have to keep looking back over your shoulder at a rear mounted attachment, which can cause stress and aches in your neck and back. In the end, it allowed you to go faster in perfectly straight rows. And by synchronizing the spacing of your crop rows with your seeder, your cultivator attachments, and your tire spacing, the magic happens—speed. Go ahead, run it in fourth gear.

Many small growers are finding and refurbishing old G's, including turning them into electric tractors with readily available parts, motors and batteries, like Quinn Bonney did as a student at Warren Wilson College in Swannanoa, North Carolina.

A small company by the name of Ronnie Bough Tractors has developed a small tractor or "tool carrier" that they affectionately named the "Oggun". It's a gangly looking thing that many say

resembles a spider, but it's all based on the original Alice-Chalmers G design. The company can build one for you, but they also offer the plans for free to anyone who wants to build it themselves under an Open Systems Platform License agreement. Many of the parts that are used to build and repair the tractor can be purchased at your local auto parts store, which is a huge benefit. The high clearance and easy visibility are what make tractors like this very effective tools.

The Tilmor company also makes a similar tractor based on the Alice-Chalmers G with lots of handy attachments for the small grower, called the Tilmor 520 Cultivating Tractor, and it's priced at around \$33,000 with a liquid cooled diesel engine. And while the price is a little steep for many small growers, some farmers have claimed that it paid for itself in one or two years just in labor savings. It's not for the backyard grower. Your farm must be at some farming scale to achieve labor savings like that, of course, with perhaps five or more acres in vegetable production. Attachments include handy finger weeders, basket weeders, tine weeders, sweeps and hillers that can be adjusted and customized to your rows and crops.

"There's a huge gap between the equipment that is available to large farmers versus what's out there for smaller farmers," says Aaron Martin from Tilmor. "We're here to try to fill that gap and give smaller and mid-size farmers the tools that they need to succeed."

A third option based on the old Alice-Chalmers is made by the Tuff-bilt company that comes with a 22 horsepower Kohler Twin engine priced at around \$28,000 plus implements. A diesel version is offered at around \$30,000.

For organic weed control at scale, there's nothing better or faster than these machines. But you still may need a solution for primary tillage, or busting new sod with a plow or moldboard, which probably means another larger, more powerful tractor, and perhaps a disc harrow to break up the soil clumps, and maybe a rotavator or rotary tiller to pulverize the soil into a fine garden bed. It can be a rabbit hole, I know, but it requires a capital investment to mechanize, and it's not for everyone because of the scale you need to recover those costs, which includes for one thing, longer rows so you're not constantly turning around.

Gaia Herbs in Brevard, North Carolina is an early adopter of this new equipment based on the old ideas of farming. Gaia grows up to 40 species of herbs and makes 200 herbal products sold nationally. The Gaia farm uses no insecticides or herbicides in their organic and regenerative production model, and they've stopped using plastic ground cover for weed control because it's a petroleum-based product with a short life span. Gaia equipment manager Todd Stiles and assistant farm manager Zach West needed efficient ways to cultivate the land and weed between rows of herbal crops without all the chemicals.

They discovered the "Oggun" tractor and never looked back. It just made sense on their 350-acre farm, and it cut labor cost so dramatically that they quickly purchased another one.

"This is where small growers need help and technology—new, labor saving, cost-effective equipment based on organic production models," says Stiles.

That sounds like a big opportunity for inventors, engineers, and entrepreneurs. A new start-up company called Spider Tractor is answering the call.

The Next Level E Tractor

Spider Tractor is using the open-source design offered by Ronnie Bough for the basic design of their tractor and supercharging it with the latest lithium-ion battery technology to give it the power and longevity farmers need out in the field. And because many of the parts can be found at your local hardware and auto repair store, repairs and replacement parts are easy and inexpensive. Best of all, the cost for the new tractor should be just under \$20,000 when the company begins full production at its new Fletcher, NC facility.

A dream of the company is to produce E Tractors that are inexpensive enough to ship to Africa, and that can be shipped with solar panels. Mechanized production will reduce the inefficient use of labor-intensive hand tools while greatly increasing food production on a continent that is expected to add over 1 billion people by the year 2050. Farm efficiency is the key to feeding a growing world population. So is reducing dependence on harmful and expensive chemicals. The spider tractor does both.

