Member Profile

A driven axle means

Hitchcock Farms in Suffolk has opted for a 6,000 litre capacity, 36m Landquip trailed sprayer complete with PowerTrac hydraulically-driven axle, creating a formidable six-wheel drive combo. *Geoff Ashcroft* found out more.

Dragging a dead axle is a criticism often levelled at trailed sprayers, particularly when operating in less than ideal conditions. But for Suffolk grower Hitchcock Farms based at Chapel Farm, Ringshall, having the ability to deploy extra traction through a powered axle, has become a game changer on the 1,250ha family farming business.

"Coming out of winter, our crops often need liquid fertiliser long before the ground conditions would let us travel with a trailed sprayer," explains Will Hitchcock, who farms alongside his sister Katherine, with parents Guy and Liz.

"Since we've changed to the Landquip sprayer with a powered axle, I can get out when the time is right, even if conditions are not as good as we'd like. If I make a bit of a mess, then so what? The gains from improved timeliness far outweigh a bit of damage on the tramlines," he explains.

The farm has steadily grown its area through contract farming agreements, which has enabled the business to upgrade much of its kit with savvy second-hand purchases for prime movers, to improve efficiency and productivity.

A change in tramline spacing from 24m up to 36m in 2018 coincided with Will Hitchcock returning home from Harper Adams University, to pick up the mantle of sprayer operator from his dad, Guy.

"We use our sprayer for pesticides and liquid fertiliser applications, so the machine does apply to a vast area of ground," he says. "Typically, we'll cover around 8,000ha/year, and making the switch to 36m means we've now got one third fewer tramlines across the farm. And that helps enormously with managing yield losses, particularly with fewer tramlines in sugar beet."

Hitchcock Farms grows winter wheat, winter beans, winter and spring barley, oilseed rape and sugar beet, across a range of soil types that extend from sand to heavy clay. Average field size is 9ha, with sizes ranging from 2 – 30ha, and blocks of land can be up to ten miles from base which puts its own logistical challenges in place for in-field.

Farm facts

Business: Hitchcock Farms, Chapel Farm, Ringshall, Suffolk.

Cropping: 1,250ha comprising winter wheat, winter beans, winter and spring barley, oilseed rape and sugar beet.

Staff: Four full-time family members plus two self-employed operators.

Sprayer: Landquip PowerTrac 6,000 litre/36m trailed.

trailed is not a drag

Novel bowser back-up

To get the most out of the sprayer's capacity, they use a bowser back-up – but it's not what you would expect.

"We run a hooklift trailer system from HM Trailers, which is also used with five, 10,000 litre capacity demount tanks," he says. "We can operate a relay system swapping full for empty, or position all the full tanks around the area farmed, ready to be used. It depends on the application rates of what we're applying, and to what crops."

As part of its machinery upgrades, the Landquip PowerTrac arrived in 2022 and continues a legacy of trailed sprayers at Hitchcock Farms, which had previously operated a succession of Knight models.

"Dad saw a report on the PowerTrac sprayer in a magazine. It was one of those innovations that made us think that a sprayer with a powered axle could provide a tangible benefit to the business," says Will.

PowerTrac is a £38,000 option, and uses Finnish maker Black Bruin's wheel motors to supply up to 130hp to the rear wheels.

A self-contained hydraulic system for the driven axle is integrated into the sprayer chassis and operated through the tractor's PTO. The sprayer pump is driven independently through the tractor hydraulic supply.

This intelligent power-on-demand system utilises a load-sensing, high torque axial piston pump, plus two traction motors offering two forward and two reverse speeds that can power the axle at up to 18km/h.

Steering axle

Hitchcock Farms' Landquip PowerTrac is currently the only one built that's equipped with its 20° steering system.

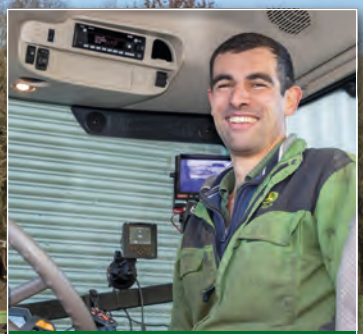
"I probably use the driven axle for around 15% of the time. And it's usually when applying liquid fertilisers, which means a heavier payload than pesticides.

Most of the time the sprayer is handled relatively easily by a John Deere 6R185 with AutoPowr transmission.

"With hindsight, maybe we should have had a 250 – 300hp tractor up front, but we don't need a second wheeled tractor that size. In summer, we can drop down to a 6R150 on row crop work, applying fungicides on sugar beet, for example," he says.

Applying liquid fertiliser on ploughed land following sugar beet is a prime example of when six-wheel drive is a benefit. In addition, the farm also has some steeply sloping land, which can see the tractor fighting for traction when climbing.

"Ahead of a combi drill, this is a great way to get crops off to a great start. Though we do need an occasional push uphill, particularly when fully loaded, as we're not over the top with tractor power. And having a driven axle lets the tyres climb up on top of ploughed soil rather than sink and perhaps get stuck," he explains.



Will Hitchcock says the PowerTrac sprayer improves the timeliness of all applications.

The PowerTrac's driven axle has created a six-wheel drive combination, boosting traction for a wide variety of field conditions, and greatly improving the timeliness of applications.

An Arag terminal with extended terminal looks after sprayer control and monitoring.

Also, when reversing into corners, the PowerTrac system will pull the sprayer backwards, making it easier to negotiate any open, headland furrows on ploughed land.

> **"PowerTrac is a great system that is fairly easy to use"**

"PowerTrac is a great system that is fairly easy to use," he adds. "I apply all my liquids at a fixed forward speed of 12km/h, and while the axle is speed-matching once activated, I can apply different amounts of power from 25%, 50%, 75% and 100% to the sprayer wheels as required, using the driven axle's own control box."

The 6,000-litre spray tank and 36m boom gives the Landquip PowerTrac a 7.2t unladen weight, with the powered axle contributing a big chunk of additional weight. A full tank of liquid fertiliser can easily increase the laden weight of the sprayer to around 15t.

Most of the time, the sprayer sits on 650 tyres, until swapped to 380 row crops.

"While we opted for the smallest 6,000-litre PowerTrac model, it gave us a larger tank than our previous sprayer and, with the focus on applying liquid fertiliser, an aluminium boom was also high on the wish-list.

"Having the powered axle does improve traction across the farm in less favourable conditions, and I'm often out long before our neighbours can travel," he says.

Will accepts that many would think he probably shouldn't be on the fields in such conditions – but he is a big believer of applying early nitrogen. "Some nitrogen is better than none," he says.

It is a point that came home to roost in early 2025, coming out of a very wet winter.

"Like many growers, we had poor rooting from 2024's wet autumn and our crops suffered. "A lot of our nitrogen simply didn't go on in front of the rain, and if I'd been brave enough to put my trust in the kit and get going sooner, I'm sure we'd have benefitted from an extra half-a-tonne/ha," he says.

Home made solution

His focus on fertiliser has seen the farm adopt a bulk-buying process using cheaper granular urea, then dissolving it in their own on-farm processing plant.

"I don't see the logic in buying and transporting water, hence the bulk urea approach," explains Will.

This, he believes, is a process that has eliminated scorching. "We're dissolving urea in cold water, which creates a 20% solution, so it's far less than the 27% of commercially bought liquid nitrogen. This weaker solution has stopped scorching, and it's much safer to apply to the crop earlier in the season."

The straightforward filling area is configured with 3in pipework. The sprayer pump that is driven hydraulically from the tractor, can fill the tank in about seven-to-eight minutes.

The PTO-driven hydraulic pump supplies up to 130hp to drive the sprayer's wheels.

Will adds the integration of Omnia with MyJohnDeere telematics has meant the farm has enjoyed a paperless recording system for the past twelve months, keeping cab clutter to a minimum. ISObus connectivity with an extended terminal provides sprayer visibility along with field maps, though screen swiping is needed to access pages for sprayer hydraulics and Norac boom height and levelling control.

While the tractor is equipped with Deere's CommandPro joystick, an Arag sprayer joystick has been installed to combat an issue of compatibility. "We're not quite there with the convenience of running the sprayer through the CommandPro joystick," he says.

Currently he has 13 boom sections, but Will says the dream-spec might one day involve PWM and individual nozzle control to combat variations across the boom width, plus individual nozzle lighting to replace the twin blue boom lights.

"You can't get away from boom speed changes when cornering, and this can have quite an impact on application rates across the full 36m width," he says. "We all know that the inside of the boom will over-apply and the outside will under-apply."

Tracks for traction

He is also considering the option of a track assembly to replace the wheels, to further improve ride quality and stability.

Replacing the sprayer's wheels with a retro-fit track system would be a logical further step forward, he suggests. "It would certainly take a lot of bounce out of the boom on rougher ground, particularly after beet. Tracks on trailed kit is a configuration favoured by a lot of American farmers but it hasn't really caught on, this side of the Atlantic."

Nozzle choices include Arag 110° flat fan, plus twin air induction ceramics operated at up to 5 bar, along with three sets of Streamjet nozzles that cover liquid fertiliser rates from 100 – 500 litres/ha.

Having 36m tramline spacings does mean headland turns can be gentle, although if tighter turns are made, the 20° steering axle limits the sprayer's ability to properly track with the tractor wheelings.

"While all our tramlines are in permanent locations we don't operate a controlled traffic system, but we do try to reduce traffic as much as possible," he says.

Will's focus on application timing extends to everything that goes through the sprayer – and it's been made much more practical using the PowerTrac sprayer.

"I'd be reluctant to have another sprayer without this capability. Six-wheel drive brings big benefits to what we do," he concludes.

Top tip

The well-built, linkage mounted mudguard extensions help to keep the sprayer clean.

Operator user rating

+ Pommier boom durability
+ Powered axle
+ Axle steering
- Arag joystick integration
- Dry sight gauge
- Pressure filter location