

Tractor-tanker combi negates need for SP sprayer



A front-and-rear mounted combination has been the preferred sprayer package for many years across the acreage of cereals and swede farmed by Stewarts of Tayside. There are precious few spraying windows for the Perth-based business though, so switching to a JCB Fastrac for the sprayer's motive power has boosted daily outputs. That's not just due to its high road-speed capability, but also because the tractor, as well as bearing its twin-loaded tanks, can simultaneously haul enough water for more than two refills when heading to the field.

Stewarts of Tayside was established in 1975, and is still owned and managed by the Stewart family. Originally, the company grew a range of crops including swede, potatoes, sprouts, calabrese and soft fruit. But in the early 1990s, these were rationalised to crops best suited to the business' geographical location, namely swede, strawberries and raspberries. Stewarts now grows an annual 1400ha of soft fruit, cereals and swede, and processes and packs, stores and transports its own produce. The balance

of the business' cropping consists of 400ha of winter wheat and winter and spring barley. Swede drilling runs from mid-April to June, and the crop is harvested for ten months of the year, beginning in July through into the winter.

Wide radius

With the ongoing need to find good clean ground for swede production and farmers prepared to accommodate the crop in their rotations, land is rented in a wide radius from the Stewart base at Glencarse, near Perth, spanning some 65 miles from end to end. That means tractor road travel is considerable, and the advent of 50km/h (31mph) transmissions was a welcome development in conventional tractor design, says Liam Stewart, part of the family team that runs the business. The convenience, versatility and relative road capability of a tractor means it's long been favoured over a hydrostatic self-propelled machine for spraying duties, he explains.

"We were running a 24m 2800-litre Berthoud front and rear combination on a 50km/hr John Deere 6930 for

spraying both cereals and turnips," says Liam Stewart.

"But we were using contractors to do a lot of the cereals work, and we reached a stage where we weren't keen to rely on them so much for such time-critical work as spraying.

"Last year we decided to move from 24m to 36m tramlines to boost output in our cereal spraying, and at the same time we also looked to add extra capacity to help get around all our crops at the best timings. We chose to dedicate the existing 24m sprayer combination to work on swede, and looked at the options for adding a second sprayer with 36m boom and more capacity for cereals.

"While a self-propelled sprayer would give us the capacity we were seeking, the steep ground we have in places and the amount of road work that's required means a hydrostatic-drive machine isn't really suitable, and with a tractor/sprayer package we have the tractor available for other work. What's more, mounted sprayers suit our fields, are less costly and require less maintenance."

Moving from 24m to 36m booms, and to a true high-speed tractor able to tow a trailed bowser while carrying a front/rear sprayer combination, is speeding up spraying operations for a Scottish combinable and root crop grower.

By Martin Rickatson



“In 15-20 mins, we can drop the front tank off the front linkage, demount the sprayer, and be ready for a different task.”

Having considered a number of options, they decided the extra capacity would be best achieved by moving from a rear linkage-mounted sprayer to a load platform-based demountable one. That would keep the tractor’s rear end clear for hitching up a bowser, and so allow one man to take enough water and chemical to keep him in the field for a good while, without the need to tie up another tractor and operator.

They also wanted to have the vehicle available out of season for other work, so this ruled out specialist load-carrying vehicles. The Stewarts narrowed their choice of power unit down to JCB’s Fastrac, and resolved that this was the only tractor on the market compatible with a demount sprayer.

“We’d previously run two four-wheel steer 2135 Fastracs and a 3185 a few years ago, as we were looking to speed up road travel, and at the time the Fastrac was one of the few tractors available with a 50km/h top speed. As conventional tractors on the market began to offer the same, though, we moved back in that direction, as the 135hp rating of the 2135 wasn’t enough for some of the jobs we were asking of the tractors.


“But when we wanted to go to a demount combination with greater capacity, and the ability to tow a bowser, the larger 3000 series Fastracs appeared to be the ideal machine, particularly as they’re capable of 80km/h, which is significantly more than any other tractor. Since we’d last run one, JCB had also introduced a full powershift transmission, another



Sticking with a front-and-rear combination for their latest sprayer, Stewarts of Tayside opted for a JCB Fastrac 3230, with the sprayer on its load platform.

feature which made the machine more appealing.”


The one concern was the lack of four-wheel steering on the 3000 Fastracs, ▶




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Liam Stewart and Stuart Robertson have been pleased with the new outfit's performance since its arrival in March.

► and the larger turning circle of an equal-wheeled tractor with front-wheel-only steering. But after seeing a 3000 series machine at work, any concerns about tramline-following and crop damage were put to rest, and an order was placed for a 230hp 3230 with P-Tronic powershift transmission.

"Four-wheel steering would've been nice, but the lack of it was more than made up for by the higher hp and faster road speed than either the smaller Fastracs or the tractor we had been using, and the bigger build that gives the ability to carry a bigger sprayer combination. With JCB recently introducing a bigger 4000 series 4WS Fastrac, we might look again at this configuration in future."

Selecting a suitable tractor to carry a demount and tow a bowser may have been relatively straightforward, but there were a number of possible sprayer make and model alternatives. Moving to 36m tramlines, though, meant the weight and strength benefits of aluminium booms were particularly appealing, especially as it would also allow for the maximum sprayer tank size to be placed on the platform. So discussions began with Suffolk sprayer maker and aluminium boom sprayer specialist Landquip about a front-and-rear demount combination to meet the farm's needs.

Load-carrying capacity

The company offers 4000-litre sprayers for mounting on a 'stretched' Fastrac tractor chassis, but the Stewarts wanted to keep their tractor in its original format so it could still be used for non-spraying work. Landquip's suggestion for achieving the same capacity without modifying the 3230 was to pair a 1500-litre tank on the tractor's front linkage with a 2500-litre demount sprayer on the load platform. This would maximise the tractor's

load-carrying capacity while still leaving its rear-end to hitch up a bowser and so create a self-contained unit.

To enable this, Landquip designed the sprayer, which features its latest tri-fold Alu-light 36m boom, with a hydraulically driven pump rather than a pto-powered unit. Further specification includes an Arag Bravo 400S controller with auto switching that controls 72 individual nozzles, each via a small electric motor. Where an air system would need 72 individual air valves, this is claimed to be a less complex method of achieving the same result.

Up front is Landquip's 1500-litre Vision tank, with sculpted sides, wired-in road lights and convex mirrors to help the driver see out of gateways, as well as flashing lights to highlight its presence to other road users. Rather than working separately to the sprayer's tank, it's plumbed in to work or empty simultaneously, for the best weight balance and maximum traction. A unique two-position valve enables filling of the front and then rear tanks from a rear fill port.

Tractor's versatility

The laden weight of the combination is around 2.5t heavier than some self-propelled sprayers of equivalent capacity. But this is compensated by the tractor's versatility, being able to tow a 10,000-litre bowser while simultaneously carrying the laden front-and-rear sprayer combination, and being capable of a range of other tasks. In the field with laden tanks front and rear, weight distribution is almost sprayer equal, with 48.13% on the front axle and 51.87% on the rear.

Manufactured by Arbroath firm McDonald Agri, the air-braked Vegcraft bowser was the final piece in the new spraying set-up, and is more than just a tanker. At the rear it has an integral Profill filling station, centred on a 50-litre induction hopper and twin can-wash unit, which is connected up to the intake coupling at the rear of the sprayer, filling the front and then the rear tank. As a result, the redundant induction hopper has been removed from the sprayer, with both water and chemical transferred directly from bowser to sprayer, the Profill unit taking a water feed from the clean water intake in the same way a conventional sprayer set-up would.

"Previously we'd been using a 5,000-litre bowser to back the Berthoud when it was our only sprayer,"



The aluminium boom on the Landquip sprayer means the move to 36m has come without a big weight penalty.

Liam Stewart explains

"We chose not to go down the route of hauling pre-mixed loads with a bowser, as in order to keep the sprayer on the go as much as possible, that would entail having a second tractor driver mixing and transporting loads.

"With this system we've essentially cut by half the labour required for spraying, making it a one-man operation for about a quarter of the year, until we need to put the second machine, which we retained for swede work, into action. When our other sprayer was doing the whole job, it was a much slower operation."

The sprayer, bowser and Fastrac were delivered in March this year, in time for the beginning of the farm's main spraying season, and sprayer operator Stuart Robertson has been the man at the wheel since then. Spray plans on Muddy Boots



The Vegcraft bowser with integral Profill filling station allows operator Gavin Johnstone to work unaided.

software are transferred to and from the farm computer to the tractor via a memory stick.

"The ability to be able to travel at 70km/h between sites makes a big difference to daily output," he says.

"It's cut half an hour off what was a two-hour journey to some of our furthest land, and given me an hour's more spraying time in a day.

"The bowser and Profill set-up has also made a big difference. It takes me around 15 mins to re-fill the sprayer, and when I need to re-fill the bowser I'm able to hook up quickly and run back to the nearest farm base. There's a camera fitted above the tractor drawbar, which has been converted to a Rockinger quick-hitch, both making hitching up fairly easy."

The Landquip demount sprayer configuration has a hydraulically-driven pump, while a camera above the tractor drawbar and a Rockinger quick-hitch both make hitching up fairly easy.



The extra sprayer capacity has also been welcomed. Despite the move to 36m, when spraying at usual rates of 200 l/ha of water, the new rig is capable of 20ha per fill, as opposed to 14ha under the old system.

Spraying takes place for a total of roughly 90 days/year, beginning with pre-emergence herbicides on swede ground, before moving onto disease and weed control in cereals and then foliar feed for the swede crop. The Fastrac runs on 680mm-wide tyres for early season work, and once crops start pushing into the tramlines, switches to 420s. A Trimble auto-steering system on the Fastrac was specified to aid early season work, before the tramlines are fully visible.

Significant savings

While it's early days yet, Liam Stewart is expecting significant savings to be achieved by the investment in individual nozzle switching, controlled via a Trimble RTK system which is also used for variable-rate fertiliser spreading.

"The initial cost was steep, but it should quickly save us a good deal more in chemical than a conventional section shut-off system," he believes.

Away from its spraying duties, the plan



A linkage-mounted, sculpted front tank is an integral part of the sprayer, and has a number of features to maximise road safety.

is for the Fastrac to earn its keep applying NPK with the business's Amazone ZG-TS 8t trailed fertiliser spreader, as well as working ground with a 6f reversible Kverneland plough and general cultivation work. Given its speed capability, trailer haulage is likely to also feature prominently on its task list through the winter.

"A self-propelled sprayer simply wouldn't have been able to turn its hand to those sorts of jobs," points out Liam Stewart.

"In 15-20 mins, we can drop the front tank off the front linkage, demount the sprayer, and be ready for a different task." ■

Farm facts

Stewarts of Tayside, Glencarse, Perth, Scotland

- **Area farmed:** 1280ha
- **Cropping:** 800ha swede, 400ha cereals (winter wheat, winter and spring barley), 80ha soft fruit (strawberries, raspberries)
- **Soils:** Light loam, some sand, some clay
- **Farm staff:** Assistant manager plus ten tractor operators
- **Tractors:** JCB Fastrac 3230 P-TRONIC, John Deere 6170R x7, 7280 x 1, Case IH Puma 230 CVX x6, up to 25 further units hired in during peak season
- **Combine:** Claas Lexion 580TT with 9m header
- **Spreader:** Amazone ZG-TS 8t trailed
- **Sprayers:** 36m Landquip 2500-litre demount with 1500-litre front tank; 24m Berthoud 1800-litre mounted with 1000-litre front tank
- **Drill:** 4m Lemken Solitair
- **Handlers:** JCB TM310S x2, Loadall 541-70 x3

First outing new for new Fastrac 4000

It's claimed to be one of the most significant developments in the JCB Fastrac tractor range since its creation 23 years ago, and is bound to turn a few heads. Cereals 2014 sees the UK debut of the JCB Fastrac 4000.

The new series will replace the current 2000 models with various improvements in design, performance and driver comfort and convenience. It's been the culmination of two years' worth of work by JCB engineers, according to the company's agriculture managing director, Richard Fox-Marrs. "The new Fastrac 4000 Series is more powerful but more economical, stronger but more nimble, and more versatile yet easier to operate."

The new 4000 keeps the 'compact Fastrac' concept but steps up the performance potential with a new 6.6-litre six-cylinder engine, offering peak outputs of 180hp, 210hp and 240hp. A continuously variable transmission (CVT) comes for the first time with a Fastrac of this size and power.

The hydraulics have been beefed up, with variable output rather than a fixed-output gear pump, providing up to 135-litre/min flow.



The new 4000 keeps the "compact Fastrac" concept but steps up the performance potential.

A separate 30-litre/min unit is dedicated to the two-wheel and Quadtronic four-wheel steering system, which now boast an even tighter turning circle.

What you won't experience for the moment, until the commercial launch later this year, will be the "major" advances in JCB's patented suspension and control system. What you'll see on the Cereals stand, however, is the new cab design — this is more roomy, claims the manufacturer, while all-round visibility's improved.