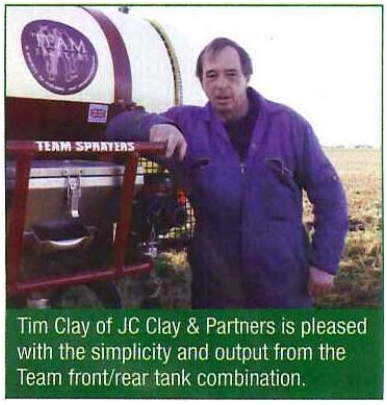
Tanks Team Up to Boost Output

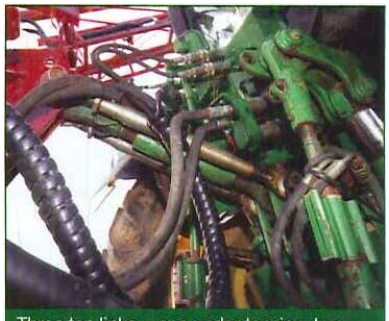
When specifying a new sprayer set-up many farms forget a tractor has two useful ends. While front end weights aid traction, a front-mounted spray tank boosts output. This is a philosophy that one Lincs farm, JC Clay & Partners, has fully embraced with its latest spraying outfit – a 100hp John Deere tractor carrying a 1,000-litre front tank and 1,400-litre/24m mounted sprayer. "We like the balance that a front tank system offers," says Tim Clay, who farms the 160ha Holly House Farm at Whaplode, Lincs, with his brother, Michael. "In addition, the extra volume boosts output, turning a small tractor into a serious spraying machine that provides a viable alternative to a far more expensive self-propelled."



Tim Clay of JC Clay & Partners is pleased with the simplicity and output from the Team front/rear tank combination.

This latest version is not the farm's first encounter with such a combination – the newly acquired Team Sprayers combo replaces a 1,000-litre/1,200-litre, 18m Case outfit that had performed well for the business. "We visited Team Sprayers to buy one of its applicator systems for treating bulbs going into store, and we ended up with a deal to change our old sprayer," he says. The farm opted for the largest Custom Delux model complete with 24m wide boom and 1,400-litre tank, combined with the firm's mid-sized front tank system. The latter is a 1,000-litre capacity polyethylene tank with its own stainless steel chemical induction hopper and hydraulically powered transfer pump.

It is a versatile outfit that can take on clean water at either end of the tractor. And for Mr Clay, the location of water tanks around the farm means it's easier to couple up to the front tank's transfer pump and push water to either end of the sprayer. "I do like the flexibility it offers," he says. "And while spraying, I can transfer any amount of chemical from the front, into the back tank, so I always maintain front axle weight – and traction – while spraying progresses."


Three top links – one under tension, two under compression – cut movement from between the sprayer and the linkage.

However, Mr Clay admits to being over-zealous with the transfer on one occasion, which saw the front end of the tractor becoming extremely light.

A 1,000-litre front tank and 1,200-litre tractor-mounted 24m sprayer affords Tim Clay considerable output for a relatively small outlay. And 100hp is all that's needed. The front tank has an integral transfer pump, used to shift the liquid between the front and rear.

Since then, he prefers to move lower volumes to maintain balance without affecting performance. "It's a pity there's no baffle in the front tank – its width does allow for a lot of movement when its contents are down to half capacity," he says. "When full, or almost empty, there is not the same level of slosh at the front." This aside, the new outfit has also brought an increase in boom width from 18m to 24m, and with it, a touch more in-field versatility.

"I can fold in the outer boom sections to create a 12m spray width, which is very convenient for small paddocks, which just wasn't feasible with our previous 18m boom," he says. "We have the option to spray smaller fields and tight headlands at 12m, if necessary." He says the boom folding system makes it easy to negotiate poles and other in-field obstacles simply by folding the outer section in and then unfolding once the obstacle has been passed.

Tempting as it would have been to look at trailed or self-propelled equipment to give a boost to output, Mr Clay chose to stay with the front/rear tank set-up for its overall size, weight and cost. "We cannot justify a self-propelled sprayer on our acreage, nor could we tolerate the physical size and poorer manoeuvrability of a trailed sprayer," he adds, "We have availability among our tractor fleet and while most of our crops are grown in beds, we chose this system to keep wheelings to a minimum."

Cropping at Holly House Farm extends to a mix of potatoes, daffodils, onions and sugar beet, with about a quarter of the farm down to wheat. "We have a lot of small fields, and with bulbs for example, we often split a field up into different blocks with small headland strips that enable us to manage beds for manual harvesting of daffodil bunches. So a compact sprayer – with good output – is everything." Typically, field sizes extend from 1.2-12ha, which determines that physical machine size can become a limiting factor. It also means the farm has to maximise efficiency within the constraints of its farming system. "We currently run at 60in wheel centres, and really need to get our bed systems out to 72in so that we can make the sprayer that little bit more stable," he says. "We have no hills or slopes to deal with, but I could probably spray at a bit higher forward speed if the tractor wheels were out that bit wider."

Wrapped around a John Deere 6310, the Clay spraying outfit is virtually in constant use, and as such, it's the only task the 11-year old tractor now carries out. It stays permanently shod on row crop wheel and tyre equipment, with 11.2 R32's up front and 300/95 R46 at the rear. With flat fields, Mr Clay is comfortably on top of spraying duties using less than 100hp – and the tractor has an easy time, with the engine running at just 1,250rpm to provide an economic and comfortable 10km/hr forward speed. "The tractor uses very little fuel when spraying and remains a comfortable place to work," he adds. "The whole outfit doesn't weigh a lot, though the new sprayer is considerably heavier than our previous version." He puts the extra weight down to the level of engineering that has gone into the sprayer. "There's been no scrimping on metal," he says. "The boom, back frame and chassis appear to be built to last. This one doesn't look like it will fall apart easily – so it shouldn't suffer fatigue like our previous sprayer."

With a hydrostatic transfer pump up front, filling both tanks with water can be done effortlessly from the front end of the outfit.

Like the overall construction of the sprayer, he says sprayer controls are straightforward and robust too. "We chose not to go for high level sophistication, as we follow some fairly well prescribed water volumes and regimes to get the best out of our crops. We operate with a fixed spraying seed and apply between 90 to 300 litres/ha. It is a fairly standard set-up, and a set of Hypro triple nozzle bodies meet the majority of our farm's crop spraying requirements," he explains. But, adds Mr Clay, a slight tweak was needed to the tractor. The JD 6310 has only three spools, and a fourth was needed for this new sprayer. An electric change-over valve was soon fitted, so one spool could double up on its functions. Cleverly, he also chooses to fit three top links to tightly anchor the mounted sprayer onto the back of the tractor. "There is always a certain amount of free play among linkage pins and holes, which means a mounted sprayer can move about and rattle when empty," he says. "We have always preferred to fit two extra top links – one on either side of the main top link – to allow us to gain a level of fixture that eliminates any slack from the mounting points." He sets the standard top link in its correct position and the two additional links are tightened to place all three in a state of tension and compression. This, he adds, creates a much more robust and solid mounting point. "The bigger the sprayer, the more they can move around on the back of the tractor," he says.

The sprayer is controlled by a straightforward switch box with toggle switches to turn the sections on/off.

Clearly pleased with the larger capacity combination, Mr Clay says he is far better placed to react to changing weather conditions. "With the limited number of spraying days and weather windows we seem to get, it is important to us that we can go spraying at the drop of a hat. Output is very important, but so is application accuracy. And with 2,400 litres of water and a 24m boom, we have the capacity that's needed to manage the spraying requirements for our rotation." Most of that higher output has come from the extra boom width, but with an extra 200 litres of tank capacity, it means fewer fill-ups when the pressure is on. "That extra 6m boom width has made a significant difference to spraying output. The boom rides very well, though I put this down to its weight, which helps to give some stability. The extra spraying width has also enabled us to cut down on wheelings and tramlines too, so we can make the most of plant populations and yield availability. In potatoes and bulbs, the rows adjacent to tramlines can be hard to lift – and the wider boom width means there will now be less of those tricky rows to harvest," he explains. (Taken from Pro Operator spring 2012).


Triple nozzle system suits the Clay's spraying needs – covering application rates from 90 to 300 litres/ha.


The sprayer's rear cover is opened on gas struts, providing easy access to the control valves and hydraulics while also offering good protection during work and when it is in storage.

Operator Tip

Three top links – one under tension, two under compression – create a more robust and solid mount to the linkage.

Operator User Rating

+ Boom stability
+ Sprayer simplicity
+ 12/24m folding

- 60in wheel centres
- Lack of baffle in front tank