



Liquid fertiliser for OSR establishment:

# Feed, seed and cultivate in one pass

For joint venture farming group NDR Arable, the quest to reduce its fertiliser bill has resulted in some out-of-the-box thinking. One of the adopted approaches has been to use a liquid fertiliser applicator when establishing oilseed rape with a subsoiler

**E**stablished in 2008, NDR Arable has been on a mission to trim costs across its 1,272ha of crops in Oxfordshire. The group was initially formed by three members, and a fourth member signed up last year. One of the members, Ed Deeley, is responsible for day-to-day running of the group's farming operation.

"The group is now at a good size. We're all a similar age and want the same things," explains Mr Deeley. "We still have plenty of capacity and could happily take on extra land, either as a contract farming agreement or as an individual contracting job."

Each group farm is responsible for buying and selling its own produce, whereas items such as wearing metal, diesel and machinery are looked after by the joint company. Each member also has a tractor to hand, which can be put to work during busy periods and hired to NDR.

Rather than heading down the popular route and plumping for one monster prime mover, the majority of the group's cultivation work falls to two Case IH Magnums. Mr Deeley says that, after working through the figures, he still finds it cheaper to run the two smaller tractors, a Magnum 310 (2008) and a newer 335. These two units clock a respective 400 and 600 hours each season, with the more powerful tractor tackling cultivations with a Väderstad TopDown 500 across the majority of ground under NDR Arable. A 6m Rapid takes care of the drilling.

For its first season working as a group, NDR employed a Simba SL 400, equipped with a Stocks seeder, to cover the then 954ha. The group subsequently boosted its cultivation armoury for the '09 campaign with a He-Va



By working together, Ed Deeley says that NDR Arable's four group members can spread costs and focus on other parts of their businesses. Total cropped area farmed by NDR is 1,272ha.



For the past two seasons NDR Arable has been using a subsoiler and OSR establishment set-up. Liquid fert is applied with the seed (see pics on p55). Power comes from a Case IH Magnum 310.



The in-cab control box enables the operator to alter the liquid fertiliser rate on the move.

five-leg subsoiler, with an Opico Hatzenbichler seeder for establishing oilseed rape in one pass. Critically, this latter combination also has the capability to apply liquid fert to get the crop off to a strong start.

Mr Deeley explains that the soil types can change dramatically in the same field, ranging from heavy clay to sand. NDR Arable uses a four-year rotation, with all group members working together to decide on what crops to grow and the 1,272ha split four ways. A first wheat tends to be followed on by rape and then another wheat crop. The remaining block of 300ha is usually divided between linseed and spring beans.

Group oilseed rape establishment is generally underway by mid-Aug. Conventional seed is sown at 60-80 seeds/m<sup>2</sup>, whereas this target is dropped to a slightly lower 40-55 seeds/m<sup>2</sup> for hybrids, although both figures can still be tweaked depending on the prevailing sowing date, soil type and conditions.

The original subsoiler plan was to remove some pressure from the main cultivation rig while also carrying out rotational lifting/loosening, with the result that the Simba SL would be responsible for two thirds of the rape establishment and the He-Va outfit

would deal with the rest. For its first year with the subsoiler-based seed and fert combination, NDR decided to use it on just some of the lighter land. Mr Deeley points out that the combi worked well, taking pressure off the Simba SL as intended. The subsoiler also helped to remove compaction, so that the SL's tines could be kept up at the 20-30cm mark and not used for pan busting.

"Although we initially restricted the subsoiler to the lighter land, for our second season we also ran it across some heavier ground - but only when conditions were nice and dry. If this ground gets wet, we start bringing up livery muck," says Mr Deeley. "You do have to get your head around the fact



The subsoiler band sows the rape seed into 60cm wide strips above the loosened soil.

that you are not tilling a seedbed and the crop still grows quite surprisingly. There's also less volunteer germination on the untouched surface, but we still apply herbicides for controlling any residual brome and blackgrass that's in the ground," he adds.

Depending on the amount of soil heave from the legs, oilseed rape sown behind the subsoiler can receive two passes of the rolls to improve seed/soil contact and moisture



Liquid fertiliser drops down directly behind each of the He-Va's five subsoiler legs.

## FARM FACTS

### NDR Arable

Staff | Two full-time, three part-time

Area | 1,272ha

Soil type | Sand to heavy clay

Rotation | Oilseed rape, winter wheat, winter barley, spring beans and linseed

Cropping | 600ha winter wheat, 300ha OSR and 150ha beans/150ha linseed

retention. With the Case IH Magnum 310 up front, the five-leg He-Va subsoiler is capable of covering 16-20ha per day at a travel speed of 8-12km/hr. At this rate the 9.0-litre Cummins motor consumes up to 25 litres of diesel per hectare, depending on leg depth and soil type. As far as wearing metal is concerned, each of the five points costs £45 and needs changing after about 60ha. When it comes to contracting work, NDR Arable charges the He-Va subsoiling rig out at in the region of £50/ha.

As previously mentioned, NDR's subsoiler is also equipped with Opico's Nitro Jet liquid fertiliser kit for giving the plant an additional growing boost.

"Because the fertiliser is applied in a targeted band at 30kg per ha of N, the optimum take-up of fertiliser is achieved. In contrast, if this was a blanket application across the entire working width we'd end up with fert on the ground without any seed underneath, and that would be a

waste of money," comments Mr Deeley. Oilseed rape crops established behind the subsoiler receive 80l/ha of N37 to provide the nitrogen requirement at planting and a further 120kg/ha of N in the spring with

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The Househam self-propelled sprayer is contract hired and backed up by an owned Frazier Phantom Agribuggy. A Kuhn Axis 40.1 spreads the solid fert.



Once finished on the subsoiler the Case IH Magnum 310 moves on to drilling NDR's winter wheat area with a 6m Väderstad Rapid drill.

55kg/ha of sulphur at stem extension stage. All of the area farmed by NDR Arable is subjected to a soil nitrogen test and green leaf area index check to assist with calculating application rates. In comparison, the oilseed rape established with the Stocks broadcaster on the SL gets a total of 185kg/ha of N plus 100kg/ha of SO<sub>3</sub>.

And the crop feed story doesn't end there. For next season the group will apply a large amount of compost, coffee waste and sewage sludge, Mr Deeley explaining that the 24,000t of product not only improves soil structure but also represents a very valuable source of sulphur. Industrial coffee waste from Banbury is applied after the oilseed rape as a soil conditioner, whereas sewage sludge is spread on to land destined for spring cropping and winter wheat. A 5m wide Väderstad TopDown tine/disc cultivator, which replaced the 4m Simba SL during last season, carries out most of the incorporation work, with a 6f Kverneland reversible also being used ahead of spring cropping; a 5m Carrier is available for other tilling tasks including the knocking down of furrows. Equipped with 80mm points, the TopDown's tines have been cultivating to a depth of 15cm, but the plan for the coming season is



Trailers are on the update list. So far, a pair of K-Two 14 tonners has been bought, with a third unit possibly due to follow. Carting power is provided by the Case IH Puma 165 and MXM190.

**OSR ESTABLISHMENT COMPARISON**

System	Subsoiler	Cultivator
Working width	3.0m He-Va	5.0m TopDown
Tractor	Magnum 310	Magnum 335
Forward speed	8-12km/hr	10km/hr
Fuel use	25l/ha	16l/ha
Daily output	16ha	40ha
Wearing metal	£3.75/ha*	£1.50/ha*

\*Approximate

to go to the slightly narrower 50mm point so that the tines can be worked deeper if required. Mr Deeley adds that, even though the TopDown measures 1m wider than the old SL, the Magnum is still able to maintain the same forward speed. A BioDrill will also be fitted for next season, helping to improve oilseed rape planting accuracy. And for a further boost to both output and accuracy,

the current Magnum 335 tractor is being upgraded to a new version, specced with auto-steer to keep any overlapping to a minimum when operating the group's wider implements. Once the smaller Magnum 310 is finished on the subsoiler, it is hitched to the 6m Rapid cultivator drill for planting wheat. Drilling ideally starts by Sept 15th, and daily outputs are in the region of 50-60ha/day.

Come harvest time, NDR Arable adopts a two-pronged approach. It owns a 2007 New Holland CR980 and contract hires a Claas Lexion 570 Plus. Both harvesters carry 9m cutterbars, run on tyres rather than tracks and clock up 250 hours each season. Together the combines are expected to clear about 1,400ha/yr over a geographically spread-out area, which is one of the main reasons for running two combines.



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## FLEET FACTS

### NDR Arable

**Tractors** | 2010 Case IH Magnum 335, 2010 Puma 165, 2008 Magnum 310, 2006 MXM190

**Loaders** | Members have own handlers

**Combines** | 2010 Claas Lexion 570 Plus, 2007 New Holland CR980

**Applications** | 2010 Househam AR4000, 1997 Frazier Phantom Agribuggy, Kuhn Axis 40.1 spreader

**Cultivations and drilling** | Väderstad Carrier 500 disc cultivator, Väderstad TopDown 500 disc/tine cultivator with BioDrill, Väderstad Rapid 600 drill, He-Va subsoiler with Opico seeder and Nitro Jet applicator, Cousins 10m rolls and Kverneland PM six-furrow plough

to stacks in field corners by a contractor. At the moment NDR is currently updating its trailer fleet to 14t K-Two trailers pulled by 40km/hr tractors, which Mr Deeley adds makes them a bit more student-proof by reducing the temptation for overloading and running flat out. On the subject of labour, the farm has one full-time operator, Adrian Thornton, who is joined by two students for the busy summer period as well as harvest regular, Robert Corbett.

Besides the two Magnums, the group has a Puma 165 that annually clocks 1,000 hours on all sorts of jobs including fert spreading, while a 2006 MXM190 Pro also covers up to 800 hours per year. In addition to carting work, the heavier MXM can be hitched onto the subsoiler or plough if the Magnums are busy, and its extra bulk and stability is also useful for handling the hedge cutter during the winter months.

As with the combine harvesters, NDR chooses to operate two self-propelled sprayers, with the majority of the spray application work in the hands of a contract-hired Househam AR4000 model, backed up by a Frazier Agribuggy Phantom. The AR can work at its maximum width of 30m, but also has the capability to travel in the Agribuggy's 24m wide tramlines when required.

Fertiliser applications are split 50:50 between liquid and granular products, with a top-spec Kuhn Axis 40.1 weigh-cell machine looking after the solids. Mr Deeley adds that in the future the group plans to carry out just a filling-in pass for its P and K requirement rather than an entire blanket application.

**Summary:** Giving OSR a helping hand at establishment time is one way that NDR has been able to trim its fertiliser bill. It is also embracing a host of other methods of improving nutrient levels and soil health. Rotational subsoiling/seeding brings the dual benefit of planting some of the group's crops while, at the same time, reducing the workload on its main cultivator.

Mervyn Bailey



Two harvesters tackle the 1,272ha of combinable crops. The New Holland CR980 is owned, whereas the Claas Lexion 570 Plus is on contract hire. Land spread is the reason for running two machines.

"It costs us up to £6/t to dry wet grain, and by going to one machine I am not sure if we could save that much," explains Mr Deeley. "Also, milling wheat is currently carrying a £25-30/t premium, so we want to be able to cut the crop when it's ready. We can do this with one combine while the other one is wrapping up the oilseed rape." All of the winter wheat (and barley if it's in the rotation) straw is baled and then chased

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