

TRACTOR TESTS · PROFESSIONAL · INDEPENDENT · UNIQUE

Driving impressions · Used machinery · Workshop · Management · Vehicles

May 2021

profi.co.uk

profi



**WORKSHOP:
MAKE YOUR
TANKER SAFER**

For farmers
and contractors

THE PROFESSIONAL FARM MACHINERY MAGAZINE

Seven 120hp tractors tested

Which belongs on your farm?

**GROUP
TEST**



£5.50
IRL €5.99

TESTED: Claas Lexion 5500TT



35t/hr from a five-walker!

GUIDE: Find your next combi



Our round up of baler wrappers

DRIVEN: Honey Bee ST21



Swather tackles big crops

WIN A NEW SPORTSMAN®

This is your chance to win a brand new Polaris Sportsman 570 EU! By taking part you will help the BOAT (Bicton Overseas Agricultural Trust) charity continue its valuable work in developing countries. Just £2 per entry! Enter as many times as you like.

COMPETITION EXTENDED

* Model colour may vary



www.polarisbritain.com

POLARIS

profi
THE FARM MACHINERY MAGAZINE

Working with and supporting



PLEASE FILL IN USING BLOCK CAPITALS

Title: _____ Full Name: _____

Telephone: _____

Email: _____

Address: _____

Town: _____ Postcode: _____

PAYMENT BY CHEQUE / DEBIT / CREDIT CARD

I am paying £_____ for _____ entries (insert number of entries you would like)

Please debit my: ☐ Visa ☐ MasterCard ☐ Visa Debit

Card number: - - -

Security number: Valid from Expiry date

Signature _____ Date _____

☐ I enclose a cheque made payable to Kelsey Publishing Ltd.

Please tick your ORV interests:

☐ UTV ☐ ATV ☐ Both

What does the B in BOAT stand for:

☐ Bicton ☐ Birmingham



Polaris and Kelsey Media Ltd may wish to contact you regarding various special offers or promotions we believe would be of relevance to you. We will not pass on your details to third parties and you may unsubscribe at any time.

☐ Yes, I am happy for the publisher, Kelsey Media to contact me.
☐ Yes, I am happy for Polaris to contact me
☐ I am over 18

Please tick the boxes to show us how you would prefer to receive these communications.

☐ Email ☐ Post ☐ Phone ☐ Text Message

We will not pass on your details to third parties and you can unsubscribe at any time.

HOW TO ENTER:

- 1) Online: www.winasportsman.co.uk
- 2) Complete this form and return in the post
- 3) Or visit our stand at one of the many agricultural events

Post to:

FREEPOST-RTKZ-HYRL-CCZX,
Kelsey Publishing Ltd, The Granary,
Downs Court, Yalding Hill, Yalding,
Kent, ME18 6AL

This promotion is run by Kelsey Media in conjunction with the BOAT Charity. Entrants must be residents of the UK or Rep. of Ireland and aged 18 or over. Multiple entries will be accepted, each entry costs £2. Closing date for online and postal entries is 30th June 2021. The first randomly selected correct entry will win and be contacted immediately on the email or telephone number provided. There is one first prize, which is a Polaris Sportsman 570 EU ATV. There is no cash alternative and the prize is non-transferable. The winner's name will be published in the appropriate Kelsey Publishing titles and their websites. Our full Privacy Policy and Terms and conditions can be viewed at Kelsey.co.uk. Entrants will be deemed to have accepted these terms and conditions and agreed to be bound by them.



Inside the May issue is the first part of our 120hp seven-tractor group test. In this segment of the market, owners demand versatility, so our Scandinavian and Dutch colleagues have been comparing models from Claas, John Deere, Massey Ferguson, McCormick, New Holland, Valtra and Zetor.



Mervyn Bailey
Editor, profi international

Dear Reader

They say April is a month for spring cleaning. Excellent. We'll take that as an excuse to air at least some of the contents of our grumble cupboard, to get a few machinery sector niggles off our collective chest.

Let's kick off with power requirement. Why is it that so many implement manufacturers publish minimum requirement figures that are optimistic at best and, in some cases, downright misleading? Cynics would suggest that, if a more realistic statistic was quoted, potential buyers might well look elsewhere, as they've been put off by the prospect of having to invest in a new and more powerful tractor to pull or lift their intended purchase.

So, what happens if, based on the questionable brochure claim, these customers do go ahead and buy? Ultimately, everyone loses out. The

implement manufacturer's reputation suffers, because its under-powered product doesn't work as well as it should; the existing tractor struggles and doesn't really perform up to par, either; and the end-customers are thoroughly cheesed, because neither their tractor nor the new piece of kit is doing the job it was bought to do.

'Get real' is our plea to implement makers. If, say, your power harrow drill needs 200hp to lift it, be up front about it. Don't quote 160hp in your literature on the basis that the smaller tug will just about heave up the snazzy new combi in the yard with no seed in the bin and without a few hundred kilos of dirt stuck to its packer.

Of course, commercial pressures may mean that this request for more realistic power requirement figures is a naïve one. Still, if you don't ask ...

Niggle two? An ongoing lack of clarity on the subject of farm trailer servicing, braking, testing and permitted payloads.

This particular topic has been a hot one for what seems like forever, although that's not entirely accurate. In truth, it's gone from being hot to cold to lukewarm ... and to just about every temperature in between. To be fair, many of the industry's leading organisations – the AEA, NAAC, BAGMA, the NFU and others – have completed some excellent research in an attempt to arrive at a conclusion. Yet the political will from government to make use of this work has been woefully lacking.

What farmers and contractors need is clear, concise guidance to keep them both safe and legal. Without this, how are they supposed to make informed decisions on the size/type of trailer to buy and how to most appropriately test and service it.

That's enough of a grumble cupboard clear-out for this month. On a more positive note, by the time you open this magazine we hope the sun will be shining, there's still enough moisture about, and the crops, both grass and arable, are motoring. We could all do with something to smile about after what has been a pretty grim winter ... on every front. A better spring for all farming sectors would be just the ticket. Fingers crossed, then.

Contact us via profi.ed@kelsey.co.uk or go to page 97 for further details

Mervyn Bailey, editor,
profi international

MACHINERY MISHAP OF THE MONTH

Team effort to extract the big trike

Even the light-footed capabilities of the Hydro Trike XL weren't enough for it to sail over this wet spot. When the extra lugging power of the first tractor proved to be inadequate, yet another tug was drafted in to pull out the bogged self-propelled. They all got to the other side ... in the end!





Tractor test: Page 12 Seven 120hp tractors

The 120hp sector is a tough part of the tractor market. Turn to page 12 to see how these seven models compare.

Driving impression: SMS Golem LV540 grassland roller

If you want a wider working flat roller capable of pounding stones back to Middle-earth, then the up to 11t LV540 from Czech firm SMS could be just the ticket for your business.

Page 44



Practical test: Claas Lexion 5500 combine

That extra threshing power in front of the five straw walkers has really bolstered the performance of the Claas Lexion 5500TT, as we're able to verify in our season-long test.

Page 18



Report: Grass seed mowing – Part 2

Dutch contractors have given self-propelled sprayers a new lease of life, taking on the task of cutting grass destined for seed. Steven Vale finds out how these machines were created.

Page 74





Page **60**

Workshop

Fitting Safeshaft hydraulic drive

Improved safety and better manoeuvrability are two of the virtues of fitting a Safeshaft Systems hydraulic drive kit to a slurry vacuum pump. Installation is a simple operation to carry out. Not convinced? Then flick over to our step-by-step guide on page 60, where we prove the point.



Page **58**

Workshop

Heynck Q-Jack 3519

We see exactly how useful the all-terrain Heynck Q-Jack can be when it comes to in-field tyre changes.

Market round-up

Baler wrapper combinations

Page **84**

With the grass now growing, you'll need to get a wriggle on if you're thinking of a new baler wrapper combination for this season. We round up what options are available to British and Irish owners.



Test

Seven 120hp tractors – Part 1	12
Claas Lexion 5500 combine	18
Rozmital SP-852H twin-rotor rake	24

Driving impression

Vogelsang BlackBird trailing shoe applicator	28
Honey Bee ST 21 draper header	32
Amazone Avant 6002-2 power harrow drill	34
SIP Air grass merger	38
Pöttinger Terria 6030 cultivator	40
SMS Golem LV540 grassland roller	44

Livestock

Cadman CMA umbilical system	46
-----------------------------------	----

Used machinery

Claas Xerion tractors	50
-----------------------------	----

Workshop

Heynck Q-Jack 3519	58
Fitting Safeshaft Systems hydraulic drive	60

Tuning

Bale trailers and handling	64
----------------------------------	----

Technical

FieldBee Autosteer	68
Strube BlueVision autonomous vehicle	72

Report

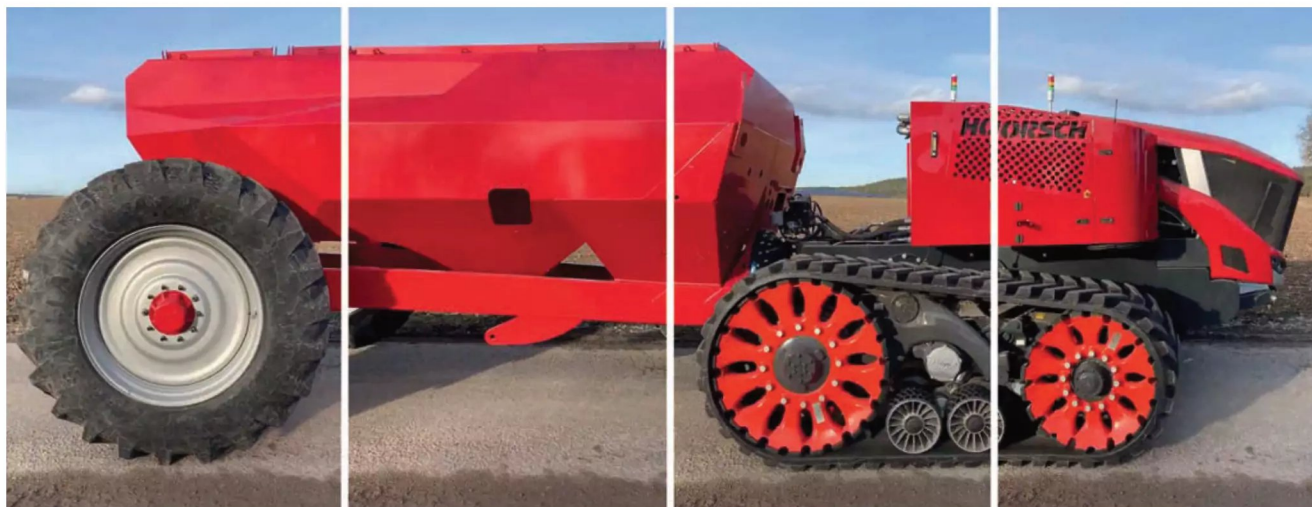
Mowing for grass seed – Part 2	74
Auction report	80
Comment: Nigel Thornborrow	83

Special

Market round-up: Baler wrapper combis	84
---	----

Regulars

Editorial	3
News	6
Preview	96
Spot the difference	98
Contractor prices	99



AUTONOMOUS HORSCH

Philipp Horsh recently posted a video of a self-propelled seed cart/hopper on Twitter. Our photographer Stefan Tovornik, stitched together the video footage to create this image. Mr

Horsch replied to a number of comments with additional information "it is a hydrostatic transmission to begin with, but we are working on a vario transmission for the series

production." He goes on to say that they will have the machine in the field in April/May and it is one of three different autonomous approaches. In the video you can clearly hear a

diesel engine, Mr Horsch adding that the power unit has 400hp. The prototype looks to be fitted with a Claas track system, the same as that used on the Axion 900 Terra Trac.



MORE SYNC FROM JOHN DEERE

Already enabling a combine to guide a tractor and trailer alongside the harvester, Machine Sync is now also available for on-the-move exchange of machine data to automatically control the speed and travel direction of self-propelled forage harvesters, tractors and trailers. The company reckons trailed potato, carrot and vegetable

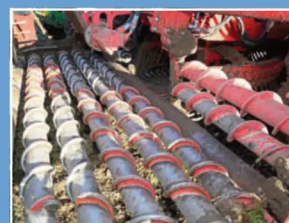
harvester operators will benefit from the technology, especially during long days and nights. Machine Sync is also claimed to deliver significant assistance and productivity gains during planting applications. Awarded with an innovation award silver medal at Agritechnica 2011, and introduced in 2012, Machine Sync requires JDLink telematics, a StarFire satellite receiver and a Gen4 Premium display with automation activation. Retrofitting of all of these is possible, but the company reckons most customers select all these ex-factory when ordering a new tractor and/or self-propelled machine.



BEET EATER ROLLERBED

Available in place of the existing turbine based system, the new rollerbed option from J Riley Beet Harvesters (UK) can allow for faster sugar beet harvesting speeds on certain soils. Currently suitable for the flagship six-wheel Vervaet Beet Eater 625 (anticipated that it will also be available for the four-wheel Q-Series in the near future), lifting is still carried out by rotating walking shares, and row width continues to be hydraulically adjustable from 45cm to 50cm. The shares are arranged in a straight line so that they present the lifted beet evenly to the rollerbed which is used in place of the two front turbines and consists of seven full-width 100mm diameter rollers. Roller speed can be varied from

the cab, with the first six grouped together and the seventh roller operated independently. If additional cleaning is required the seventh roller can also be operated in reverse so that it counter-rotates against the preceding roller for a more thorough action. Beet are discharged onto a central cleaning turbine. Even with a rollerbed in place of its first two turbines, the 625 still retains six turbines.



GRANGE GRASSLAND LOOSENER

The current Low Disturbance Loosener (LDL) models will do the job, but requests for a dedicated grassland machine have prompted Grange Machinery to develop the Grass Land Loosener (GLL). Available as a rigid 3.0m version and folding 4.0m, 5.0m and 6.0m models, the mounted implement is designed to alleviate compaction and remove the plough pan to improve drainage and allow air into the soil. The GLL shares the same cutting disc, leg, point and packer roller with the LDL. The main differences concern the packer depth adjustment and hydraulic rotation system used to engage the hydraulically operated discs. Also, the GLL's frame is a bit lighter.

The discs cut through the surface to enhance the loosening effect of the low disturbance legs and reduce soil build up. Working to a maximum depth of 300mm, the points are claimed to provide a full width lift with minimal surface disturbance. Adjusted using a pin system, the rear packer is detached by removing two bolts. Built at the company's premises on the outskirts of Hull, the GLL is available with shear bolt and hydraulic leg reset versions and a range of different packers. A 130hp-150hp+ tractor is recommended to pull the 3.0m GLL at adequate depth and forward speed to avoid damaging the grass surface. EPOA.



BORDER SPREADING CALCULATOR

The added value generated by Amazone's disc-integrated AutoTS border spreading system (available on trailed ZG-TS and mounted ZA-TS spreaders), compared with conventional systems, can now be calculated with an online border spreading calculator.

The idea of producing it was to try and demonstrate the significance of improved border spreading, explains

managing director Simon Brown of Amazone Ltd. "AutoTS generates a much sharper drop off at the edge of the field and so boosts yield in that first 6.0m around the border as well as minimising fertiliser wastage," he says. "It is also adjustable on the move between the different techniques so, if we are faced with a water course or public access around a field, then three sides of that field



JCB strengthens coverage

Compass Tractors and Redlynch Agricultural Engineering have been appointed as JCB Agriculture dealers in the south west of England. Covering Wiltshire, Somerset and Dorset, the appointment sees increased depot coverage across the territory with plans to invest in a new stand-alone JCB facility in the centre of the region.

McGinty takes on Strautmann

McGinty Tractors has been appointed as a Strautmann agent by IAM Agricultural Machinery. Based just outside the town of Donegal, McGinty Tractors, which was established in the 1970s, will handle the Strautmann franchise in the northwest of Ireland.

McLaren takes on McCormick

McLaren Tractors has been appointed as a McCormick tractor dealer across the Scottish Highlands. Based at Dingwall in Ross-shire, and run by George and Fiona McLaren, the business has a staff of eleven. "The new McCormick signage is up at our premises, we are well-stocked with parts, and our technicians are undergoing their service training," says George. "We've already added a trio of stock tractors to our fleet, which are all available for demonstration."

can all have a different approach without stopping spreading." By entering the yield and return for different crops, the online tool calculates the theoretical additional revenue that could be generated. "The data behind the calculator was generated by carrying out long term field trials that compared standard systems with the AutoTS and hence these figures are realistic and show the additional revenue that can be achieved."

Extended Kuhn coverage

Sales, servicing and spare parts back-up for Kuhn equipment is now available at the Inwood Farm depot at Nether Stowey, Bridgwater (Somerset), following the agreement for Hunt Forest Group to acquire Smart Ag Services. Hunt Forest, a John Deere dealer, has supplied the full Kuhn Farm Machinery arable, grassland and livestock machinery ranges since the merger of R. Hunt and New Forest Farm Machinery in 2018.

New dates for Cereals

The Cereals Event has moved to June 30 to July 1 (original dates June 9-10) to accommodate the maximum number of visitors and exhibitors following the Government's announcement of its lockdown exit strategy. The format of exhibitors, live demonstrations and seminar programme will remain the same. The show will be held in Lincolnshire.

Stable results

Lemken sales of €365 million last year were down just slightly on 2019 (€380 million). The company reports a healthy demand for seed drills, fertiliser spreaders and Steketee hoes. Exports accounted for 77% of total Lemken sales in 2020. The largest markets were France, Russia, North America and the UK.

Corvus partners with Ravenhill

Scottish company Ravenhill has been appointed as a Corvus 4x4 utility vehicle dealer by Boss Off-Road Vehicles. Covering the north and north-east of the country from its five branches at Aberdeen, Dingwall, Elgin, Maud and Turriff; the family-owned dealership is supported by a 90+ strong workforce and has an annual turnover of £28m.

ARION 400 CLIMBS TO 155HP

Claas has announced details of the fourth generation of Arion 400 tractors which sees them move to Stage V and the addition of a new, more powerful model.

There are now seven models in the Arion 400 line-up, which has proved to be the most popular range in the Claas tractor portfolio, in fact over 30,000 have rolled off the Le Mans production line since the range was first introduced in 2010.

The 470 takes over from the 460 as the new top model and maxes out at 155hp when you include the power boost for transport and pto work (rated power without CPM is 145hp). This extra power feature is available on all models from the 440 and above. The smallest model in the range is the 90hp 410. Still powered by an FPT 4.5-litre motor, the SCR and DPF unit are nestled under the exhaust stack so



as not to impede visibility to the right. While all of the tractors have a turbo, the 430 and above get a wastegate. Compared to the models they will be replacing, there is an 8% improvement in torque. In the transmission department not a lot has changed, with the choice of the 16x16 QuadriShift or 24x24 Hexashift on the slightly longer wheelbase 430 (2.53m) and up – the 410 and 420 have a 2.49m

wheelbase. Shuttle controls are available on the armrest mounted controller and the brake to clutch function is carried over from the previous range. Top speed is 40km/hr but the gross vehicle weight has been increased by 500kg to 9.0t resulting in a 3.8t payload. As a side note the new 470 has a power to weight ratio of 34kg/hp. As a good chunk of Arion 400s will be fitted with a loader from the



factory, there is a new 150l/min hydraulic pump option. This latest generation of Arion 400 is expected to start production in June, with the first units arriving in the UK and Ireland in the autumn.

VREDO TESTS SLURRY PROTOTYPE

The Dutch manufacturer has developed a dedicated linkage mounted umbilical hose system that connects to a wide range of different slurry injection units. Designed to meet requests to combine an umbilical system with the Dutch manufacturer's slurry injectors, the SSU umbilical hose unit can be used with existing versions normally secured behind trailed or self-propelled slurry tanks.

Equipped with its own control unit and load sensing hydraulics, the prototype is attached to a Profi 12.0m model with V shape disc and pneumatic GPS section control, but the SSU can be linked to all non-front foldable injectors up to 18.0m. While slightly longer than a normal linkage, the company says the centre of gravity remains close to the tractor, and having two rotating joints in the pivoting arm



allows the tractor to drive in reverse, with the supply hose positioned next to the towing vehicle. The 1.5t umbilical unit is available with ISObus control of the application rate and section-control



via the VT controller. Other options include a front tank connection. The company plans to build two pre-production units for 2022, and have the first commercial versions of the SSL ready for the start of the 2023 slurry season.

SPECIAL HYDRAULIC PARTS

Tractor Pumps, Spool Valves, Hose Repairs, Hydraulic Rams & Ram Repair service

Nationwide collection on units for repair
Fast turn round

For an unbeatable deal contact

HOWFORD HYDRAULICS

Tel: 01290 551428

Fax: 01290 550549

E-mail: sales@howford.demon.co.uk

www.howford-hydraulics.co.uk

www.matbro-spares.co.uk

profi

For the best
machinery
news



PROFI.CO.UK

MORE LARGER TRACTOR TYRES

The new tyre press installed at its Dutch facility in Enschede allows Apollo Vredestein to produce more Traxion XL tractor tyres to meet rising demand in Europe and North America. The new press will mainly produce XL tyres (up to 2.30m diameter and 550kg) for tractors from 200hp to 500hp.



NEW OWNER FOR SLURRY AERATION FIRM

Easyfix has acquired Ameram Slurry's Aeromix system in a deal viewed as a strategic step in the development of the Irish company's animal housing product portfolio. The Aeromix system, which is to be rebranded by Easyfix slurry technology, has no moving parts in contact with slurry. Instead, the technology injects compressed air into slurry at specific points via non-return valves. As the oxygen bubbles rise through the slurry they agitate it and keep it in a liquid state.

Main benefits include a significant reduction (up to 51%) in ammonia

emissions and increased production of nutrients in the slurry. Also, it eliminates the need for agitation and reduces odour during storage and spreading.

Grant-aided in the UK and Ireland, the concept is suitable for new or existing above or below ground tanks and lagoons.



CNH INVESTS IN MONARCH

CNH Industrial has completed its minority investment in North American startup Monarch Tractor, which launched its first fully electric compact tractor at the end of last year.

Capable of operating autonomously, the 40hp (30kW) of continuous power (up to 10 hours) and short peak output of 70hp (55kW) provided by the 9fx3r electric transmission will not excite power hungry farms, but it does show one direction the industry could take at the lower end of the power scale. The 220v charging system takes 4-5 hours. Alternatively, it is said to be a 10-minute job for one person to swap an empty battery for a full one (extra battery costs around

US\$15,000).

Safety features include roll and collision prevention, vision-based PTO safety and 360-degree cameras and guard rails. Sensors and imaging provides data that can be used for real-time implement adjustments as well as long term yield estimates, current growth stages and other plant/crop health issues.

Lift capacity of the Cat I/II rear linkage is 1.0t and the 3.5m long tractor comes with a 60l/min hydraulic system and 540rpm (40hp/30kW) PTO. 4wd is optional. North American prices of the electric tractor start from \$50,000 (includes driverless mode). The first deliveries are expected this autumn.

ONLINE TRAMLINE CONFIGURATOR

Developed for use with Lemken's Azurit 9 precision drill and Solitair 25 series, the online configurator assists operators in calculating tramlines, as it determines how many rows need to be switched off.

The Azurit uses the DeltaRow method, in which each seed row consists of two staggered sub-rows spaced at 12.5cm. If one of the twin rows is deactivated, the distance between rows increases from 62.5 to 75cm.

At the same time, double the amount of seeds is placed in the other twin row, so that the number of grains/m² remains the

same. If the operator deactivates another twin row in the tramline on the other side of the track, the tramline width is increased to 87.5cm, which allows for the use of wider tyres.

Lemken reckons all this is easily planned with the free-of-charge tramline configurator. Suitable for use with all terminals, all the operator needs to do is enter the implement working width, the track width and the distance of plants to the tyre edge. Claimed benefits of the concept include reduced risk of driving into tramlines incorrectly during following operations.



**YOUR
KL55.8T**

**YOUR
TASK**

**YOUR
TIME**

Unique with all-wheel steering



KRAMER
on the safe side

Impressive performance:

- Bucket tipping load: 5,500 kg
- Max. stacking height: 5,225 mm
- Engine output: 155 kW / 156 hp

Find more information and contact your local dealer: www.kramer.de/KL55.8T



RIGID 4.0M HYBRIDS

Claydon has added two new rigid 4.0m Hybrid models to its mounted drill range; the M4RF and M4R. The M4RF has a dual 2100-litre hopper with 50:50 seed/fertiliser split. The capacity of the hopper on the M4R seed only drill is 1,750 litres. Both models come with the company's leading tine and 7" A-share as standard, together with shear bolt stone protection, rear double toolbar with metal boards and following tines for seedbed levelling and consolidation. The two drills come with GPS

speed sensing and electronically driven metering systems. The four-channel computer allows the addition of up to two extra applicators for micro granules and slug pellets. The options list includes seed/fertiliser blockages sensors, pre-emergence and bout markers and a range of seeding shares, tines and discs. The M4R and M4RF Hybrids have a recommended minimum power requirement of 200hp. Prices start from £43,255 and £54,995 respectively.

BIG DEERES GET AN UPDATE

John Deere's new generation of 9R tractors not only get some extra power but also benefit from the new cab introduced on the 7R and 8R last autumn. The Stage V 9R and 9RX 640 now maxes out at 691hp versus 670hp in the Stage IV 9620RX. This extra grunt is still supplied by a 15.0-litre Cummins block in the flagship model while the rest of the range has a 13.6-litre DPS motor.

But it is in the cab where the biggest changes can be found. The StarFire 6000 receiver has been integrated into the cab roof as on the 8R 410 and 7R 350 in our February and April *profi* Tractor Tests.

The articulated wheeled 9R, twin track 9RT and four track 9RX models come with the larger 4600 CommandCenter display as standard. For £1,425 you can add the activation package which includes Turn Automation, section and variable rate control, passive implement guidance, in-field data sharing, Machine Sync and new AutoPath row guidance.

Back to the metal, and the new fan and torsional damper need servicing at 5,000 hours while the E18 gearbox, axles, drive to the tracks and chassis get extra beef. This should improve reliability, so the standard warranty is two years or 2,000 hours with the option of extending to eight years/8,000 hours.



GRASSLAND WEED SPOT SPRAYER

Scottish entrepreneur Colin Taylor has developed an automated spot sprayer which uses see and spray technology to identify and target grassland weeds such as docks, nettles and thistles. Combining cameras, computers and AI software fitted to a standard crop sprayer, the Rumex system spots weeds as the sprayer moves across the field. On-board computers analyse the camera feeds and the sprayer applies a measured, targeted dose of chemicals to every weed spotted. Developed by Lanark-based company Taylor Technologies, the GPS position of each treated weed is recorded and mapped, enabling detailed data to be retained for analysis. All this takes place in real-time, with no input required from an operator.

The company continues to test and refine the system in collaboration with software developers and hopes to find a commercial party with whom to work. "We see real demand for the system," comments Mr Taylor. "It saves money and benefits the farmers who use it. What we are doing for grassland weeds can be replicated for other crops and weeds. Within agriculture, there are many opportunities for vision-based automation of machinery."



SMARTS TAKES ON KRAMER

Hunt Forest Group has announced that Smarts Ag Services is now a Kramer dealer for its existing John Deere area of responsibility. The move follows JCB's decision to terminate the dealer agreement held by Smarts, following the purchase of the company by HFG. Business development director Paul Burnett of Hunt Forest says the company looks forward to inviting new and existing customers to experience the Kramer product. "The company has a large level of stock with demonstrators available,

and all HFG machines are also supplied in special colours to signify that we can offer something a little different," he adds. "To prove that, we will support all new sales with a four-year or 4,000-hour warranty funded by Hunt Forest as an introductory offer until July." Although the agreement to supply JCB machines ended on March 12, JCB has requested Smarts continue to supply parts and service support and warranty coverage through its network of technicians for the next six months.

INCREASED VERSATILITY

New options for Dewulf's MH24x receiving hoppers include a central outlet, a presentation conveyor for the variant with two units and larger separation of the PU spiral rollers. Available as an alternative to the traditional side outlet, the central outlet feeds out the crop in the middle, behind the machine. The company says this results in increased capacity and provides more flexibility in the placement of the receiving hopper at the beginning of the storage line. Located upstream of the first roller unit, the presentation conveyor provides more even distribution of the tubers for more efficient cleaning and dosing when the MH24x with two units is used in heavy soils or with long tubers.

The separation of the electrically driven PU spiral rollers of the second unit has increased by 20% and is now from 5mm to 70mm. Available on all models that have the second unit fitted with Clean-Boost (six or seven rollers), the Belgian manufacturer says it is easier to perform pre-sorting with this roller unit. With Clean-Boost, the speed of the PU spiral rollers can be briefly increased to clear them of clinging soil.



SILAGE CLAMP COVER

Initially launched for maize silage last autumn, Kelvin Cave's Silage Safe is now also available for covering grass silage clamps. The system does away with one of the most unpopular jobs at silage time; covering the clamp with tyres, gravel bags or other weights. Instead, the silage is sealed by a series of straps (potentially two-person operation) which are tightly ratcheted into place. The straps can also be tightened as the clamp is emptied, which says the company, helps prevent air pockets from forming as the silage settles. A further benefit of the system is its application and removal in 2.0m sections, which can be stored for use the following year. The company reckons this is just as useful at the time of feed-out as it is at covering, speeding up the process and avoiding the need to move weights.

MACHINERY SALES TOP £7.5M

Cheffins sold over £7.5 million worth of second-hand tractors and agricultural machinery during the first three months of this year at the firm's dedicated sale ground at Sutton in Cambridgeshire.



With over 20% of stock sold overseas, the most active countries buying at the monthly sales from January to March include Ireland, Poland, Sudan, Romania and France, following UK-based dealers and private purchasers. The highest grossing lot for Q1 2021 was a Fendt 936 Profi Plus Vario 4wd tractor which sold for £60,000, followed by a 2015 John Deere 6195R tractor which sold for £54,000. Other highlights include a 36m Amazone Pantera which sold for £52,000, a John Deere 8530 which made £52,000, and a 2017

JCB 541-70 Agri Pro telehandler fetched £51,000. Each of the monthly auctions in the quarter achieved strong results; the January, February and March sales grossing £2.0 million, £2.7 million and £3.0 million respectively. "A lack of stock has been what has characterised results for the first quarter of this year," comments Joe Page of Cheffins. "With the number of items on offer around 25% lower than Q1 2020, this lack of availability has ensured that prices have remained high for tractors and other second-hand machinery."



He adds that the appetite for second-hand kit has continued unabated despite both Brexit and the coronavirus and export sales have remained healthy to countries both within the EU and further afield.



**NEW Wox Walrus
PTO-driven pump unit.**

**Built for
the job.**

Don't settle for anything less.

WOX
AGRI SERVICES

To find out more call **01670 789 020** or visit **www.woxagriservices.co.uk**



woxagriservices



woxagri



woxagri

Claas, John Deere, Massey Ferguson, McCormick, New Holland, Valtra and Zetor – Part 1:

7 x 120hp compared

When it comes to engineering and fuel use, New Holland and McCormick shine in this group test organised by four magazines from Scandinavia and the Netherlands. As for operation and handling, Claas and Valtra lead the pack in these categories

The 'jack of all trades' on many farms, we compare seven 120hp tractors.



While the average horsepower in the UK has risen to over 170hp, there is still a healthy demand for the versatile 120hp tractor, a jack of all trades on many farms.

To see which is best, four magazines from Scandinavia and the Netherlands mustered seven different marques (see the table for 'Technical data and prices' on page 15 for who and what) and evaluated their performance in 15 different categories, as outlined in the graph on the opposite page.

Spoiler alert

Looking at the results, you'll see Claas ranks in the top position, marginally ahead of New Holland, Valtra and John Deere. Although the headline figures suggest there's not too much between them, drilling down through the various test categories reveals some bigger differences. For example, New Holland and McCormick pick up lots of points for their economical FPT motor, which is also used by Claas, even though it had clocked just 120 hours so was still bedding in.

On the other hand, McCormick's X6.420 three-speed, semi-powershift transmission can't compete with the likes of Massey's six steps, though MF's higher fuel consumption drags

the 5712S down the leader board. Last but by no means least is the Zetor Forterra HSX 120, which has an economical engine. The Zetor downside is that its basic transmission, counted against it during the handling tests. Still, the tested model lists at €50,000 less than the supplied John Deere 6120M.

A quick side note: those with a keen eye will notice the decal on the Massey says 5713S while the Valtra is a G135, as this is what was available for the test. Both tractors had an engine software update to 5712S and G115 spec, so, in reality, they were in line with the other tractors on trial.

How much power is delivered...

Tractor performance was evaluated on how much of the promised engine power in the brochure arrived at the pto and at the wheels (refer to 'How the seven test candidates perform' on page 14). Using the familiar DLG standards, the engines in the Valtra G115 and New Holland T5.120 DC over-reached, with 95% and 93% of the claimed output arriving at the pto stub. Meanwhile, the Zetor Forterra delivered 79%.

The drawbar power results are similar. Valtra is in the lead, delivering 82% of the claimed figure, while New Holland with 77% is behind

KEY POINTS

- ▶ The results for the top four in this test (Claas, New Holland, Valtra and John Deere) are all very close.
- ▶ Massey and McCormick sit in the middle ground, while Zetor is at the back of the pack.
- ▶ If you include the recommended list prices in the rankings, the order changes significantly.

Claas and McCormick (both 78%). Zetor, again brings up the rear with 67%, while Deere and Massey Ferguson occupy the mid-position with 73% and 74% respectively.

...and what about fuel consumption?

The FPT engines do well in this part of the test, with the T5.120 DC (229g/kWh) and X6.420 (231g/kWh) proving to be the most economical during the pto test. The fact that the FPT motor in the Arion used 244g/kWh is presumably down to it being relatively fresh out of the box and still bedding in. With 236g/kWh, the Zetor is better on fuel.

WHO, WHAT AND WHY

For the test, manufacturers were asked to supply tractors with an engine output of around 120hp, powershift transmission, front loader and their usual level of spec. For most this included front axle and cab suspension, LED work lights and air brakes. Continuously variable transmissions were excluded from the test, which explains

Fendt's absence. Deutz-Fahr, Case IH and Steyr were also missing, either because they felt a CVT would have fitted better in this group or because the firm will soon debut new models in this sector. The Finnish test institute Eurofins Expert Services in Vihti carried out all measurements. And colleagues from the four magazines Koneviesti in Finland

(Tapio Vesterinen and Uolevi Oristo), TraktorTech in Denmark (John Christensen), Bedre Gardsdrift in Norway (Magnus Sorlie) and Trekker from the Netherlands (Bas van Hattum and Bob Karsten) carried out the field tests and gave their assessments. Behind the cameras were Mark Pasveer, Tapio Vesterinen and Uolevi Oristo.

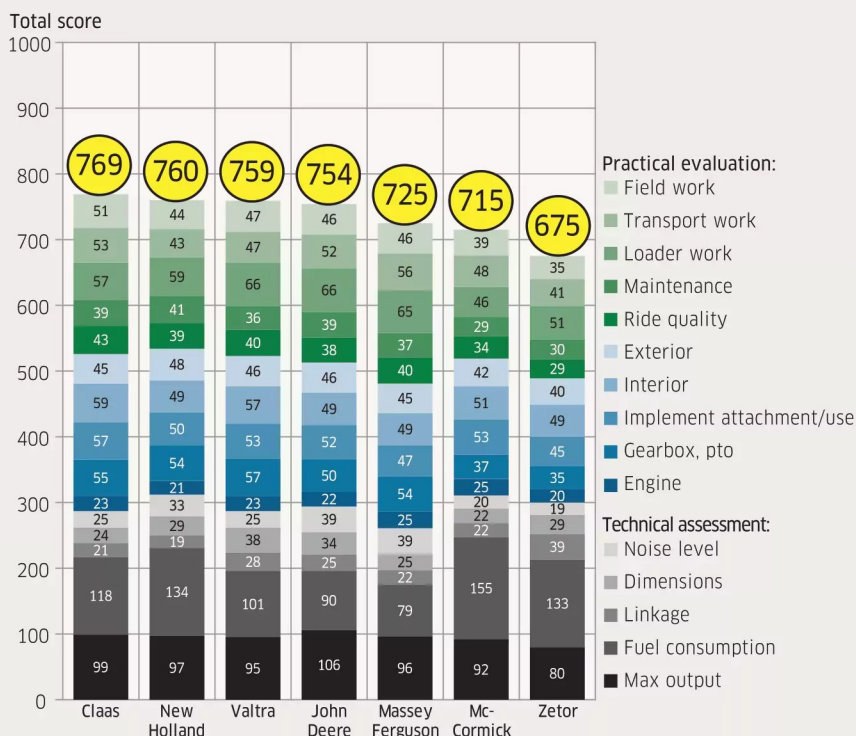


ASSESSMENTS AT A GLANCE

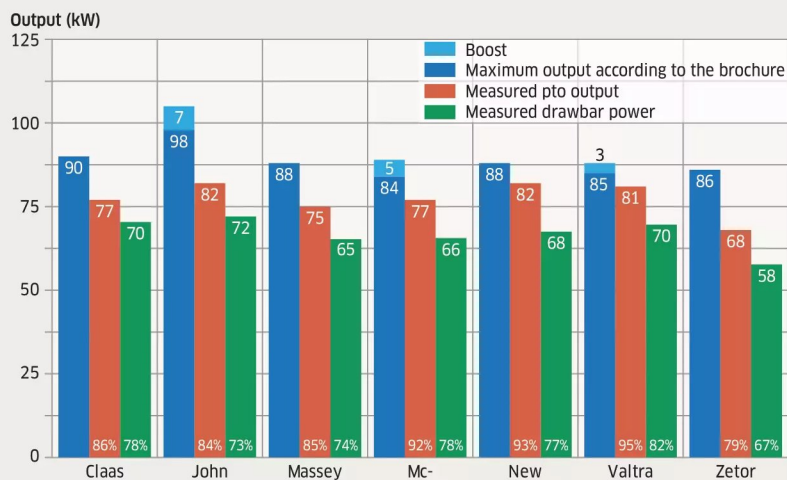
Claas wins this group test with a total of 769 points, followed by New Holland (760), Valtra (759) and John Deere (754). A maximum score of 1,000 points is possible. The columns show the results per test segment for the individual tractors.

A maximum of 400 points was awarded for the results of the technical measurements (power output, lift force, etc.). Here New Holland and McCormick are the winners with 312 and 311 points respectively, while Massey Ferguson, for example, only achieves 261 points.

A maximum of 600 points was assigned to the practical part of the test. Here Claas (482 points) shines ahead of Valtra (472 points), followed by Massey (464 points), John Deere (460 points) and New Holland (448 points). Well behind are McCormick with 404 points and Zetor with 375 points.

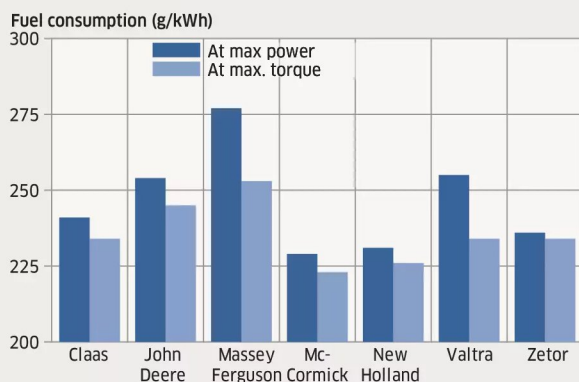


HOW THE SEVEN TEST CANDIDATES PERFORM



If you look at the percentage of the stated engine power that actually arrives at the pto or the wheels, Valtra, New Holland and McCormick lead the group. The only manufacturer to come in below average is Zetor.

FUEL ECONOMY



The most fuel efficient are the tractors using an FPT engine – McCormick and New Holland. But the Zetor also does well here. Fuel consumption is above average on the Fergie and Valtra with the AGCO Power engine.

At the thirstier end of the scale for this group are Deere (254g/kWh) and the two makes with the AGCO Power motor. The different results of 255g/kWh for the Valtra and 277g/kWh for the Massey are difficult to explain, as both tractors share the same transmission (as does Claas for that matter). Unfortunately, unlike our usual profi tractor tests, the DEF/AdBlue was not measured for this comparison. Of the seven, the T5.120 DC and G115 were the only ones to be Stage V compliant; the rest of the supplied models were all Stage IV.

Between three and eight powershifts

In terms of transmissions, there was a fairly wide selection on offer. While the Zetor's has five main ranges with three powershifts, New

Holland sent along a T5.120 with the three-range, eight-powershift Dynamic Command box. The NH unit shifted smoothly in work, but range changes took comparatively long, while setting up the auto-shifting could be easier. That isn't something you have to fret about when using the simpler gearboxes in the McCormick and Zetor.

Best marks go to the identical transmissions used in the Arion, 5712S and G115. The GIMA transmission has four ranges, six powershifts and good auto functions. However, differences can still be discovered in the various tractors' software and operation, which are both less intuitive in the Massey.

We were happy with Deere's CommandQuad box. But there are still only four powershifts, and the auto function could be even better matched to the engine. The brake-to-clutch function is great, and responsiveness can be adjusted in three steps.

Arion wins on the road and in the field

On the road, the front axle and cab suspension on the Arion gave the best interaction. Fuel economy was pretty good here, but straight-ahead travel (how the steering stays straight rather than constantly correcting) could be better.

Another excellent tractor for roadwork is the Massey Ferguson: comfy suspension, good auto functions and polite road manners. It's just frustrating that you have to reactivate the brake-to-clutch function every time you fire up the engine. Third place in the road test goes to McCormick's X6, thanks to the good suspension, although its straight-ahead travel could be improved.

Overall, not one of these seven disappointed on the road, although there is still room for



All of the tractors were used in the field for several months on a mixed farm in Finland.



To test on-highway performance, the tractors pulled a 17t trailer and covered 25km on Finnish roads. Many of the surfaces were bumpy, and there was no shortage of steep hills to climb.

improvement. On the Deere, for example, the cab suspension is too spongy and didn't damp the hard shocks that well, but the brakes are phenomenal.

On the Zetor, the components are all good, just let down by driver interaction. In the field, the Arion again picks up the most marks. It's comfortable (although not the

quietest), and, with the good multi-function joystick, you have the main functions to hand. Speaking of noise, in this category, the 6120M and 5712S win with just 69.5dB(A), closely followed by the T5.120 with 70.5dB(A).

The Valtra G impressed with its convenient operation, and it has the smallest turning circle. The Finn also has good auto functions. McCormick and Zetor could do with more speed ratios in the key field range – both have just three powershifts. The Forterra is also the noisiest of the seven tractors, but it does have the biggest lift capacity.

John Deere is best for loader work

On the 6120M, the loader lifts quickly, and the joystick (with buttons for the shuttle) is extremely precise. Manoeuvrability is equally

TECHNICAL DATA AND PRICES IN COMPARISON

Model	Claas Arion 440 CIS	John Deere 6120M	Massey Ferguson 5712S	McCormick X6.420 PowerPlus	New Holland T5.120 DC	Valtra G115 Active	Zetor Forterra HSX 120
Engine	FPT	DPS	AGCO Power	FPT	FPT	AGCO Power	Zetor
Capacity/emissions	4.5l/Stage IV	4.5l/Stage IV	4.4l/Stage IV	4.5l/Stage IV	4.5l/Stage V	4.4l/Stage V	4.2l/Stage IV
Fuel/AdBlue tanks	190/22l	175/19l	180/25l	180/25l	180/19l	200/21l	270/30l
Rated output	85kW/115hp	88kW/120hp	85kW/115hp	–	81kW/110hp	–	86kW/117hp
Max output (no boost)	88kW/120hp	98kW/133hp	88kW/120hp	84kW/114hp	88kW/120hp	85kW/115hp	–
Max output (boosted)	–	107kW/145hp	–	89kW/121hp	–	88kW/120hp	–
Max torque	452Nm	477Nm	450Nm	430Nm	518Nm	465Nm	424Nm
Noise level ¹⁾	72.8dB(A)	69.5dB(A)	69.5dB(A)	74.8dB(A)	70.5dB(A)	72.7dB(A)	75.5dB(A)
Transmission	Hexashift	CommandQuad	Dyna-6	Argo	Dynamic Command	HiTech-6	Zetor
Ranges/powershift steps	Four/six	Six/four	Four/six	Four/three	Three/eight	Four/six	Five/three
Pto speeds	Three	Three	Three	Four	Four	Three	Four
Max speed	40km/hr	40km/hr	40km/hr	50km/hr	40km/hr	40km/hr	40km/hr
Linkage/hydraulics							
No. of spools (max)	Four	Four	Four	Five	Four	Eight	Six
Oil flow	110l/min	114l/min	110l/min	66l/min	110l/min	110l/min	70l/min
Lift capacity ¹⁾	4,700daN	5,400daN	4,700daN	4,600daN	4,600daN	5,700daN	7,600daN
Dimensions and weights							
Turning circle ¹⁾	10.43m	10.00m	10.55m	11.55m	10.13m	9.50m	10.28m
Max front tyres	480/65 R28	540/65 R24	540/65 R28	480/65 R24	480/65 R28	480/65 R28	480/65 R24
Max rear tyres	600/65 R38	600/65 R38	650/60 R38	600/65 R38	600/65 R38	600/65 R38	600/65 R38
Wheelbase	252cm	240cm	255cm	254cm	249cm	255cm	259cm
GVWR	8,500kg	10,450kg	8,500kg	8,500kg	8,800kg	9,500kg	9,000kg
Kerb weight ¹⁾	6,960kg	7,330kg	6,580kg	6,420kg	6,550kg	6,510kg	6,530kg
Payload	1,540kg	3,120kg	1,920kg	2,080kg	2,250kg	2,990kg	2,470kg
List price							
Price in base spec	£91,890	£84,757	£77,900 ²⁾	£78,869	£86,632	£77,579	£71,009
Price in test spec	£127,280	£138,008	£85,260 ²⁾	£89,514	£90,550	£102,442	£79,558

Prices exclude the loader boom. ¹⁾ measured results; all other figures are manufacturer information. ²⁾ The Massey 5712S has been superseded by the 55.125, which has a base price of £80,570 with the Dyna-6 transmission and £88,200 in test spec.



As a big percentage of these tractors will be operated with a front loader, their handling performance in this role was also scrutinised.

good, and visibility is only restricted when attaching a bucket. The agile 5712S turned out to be a fine loader tractor, too. The only thing our test tractor was missing was the optional roof panel for when the loader is fully raised. The Valtra G115 was even more manoeuvrable, with a good powershuttle that is precise and quick.

The responsiveness of the Electropilot on the Arion was a little delayed. But Claas says this will be adjustable on the new range, which has just been launched ... though still won't be available until later in the summer. There's an option of spec'ing a hydraulic quick-attach on the rebadged MX loader.

The Zetor/Alö combination proved to have a good mix of power, hydraulics and centre of gravity. McCormick's X6 is the only machine in the group with mechanical self-levelling. Cycle times are relatively slow due to the 66l/min hydraulic pump.

Zetor is the noisiest

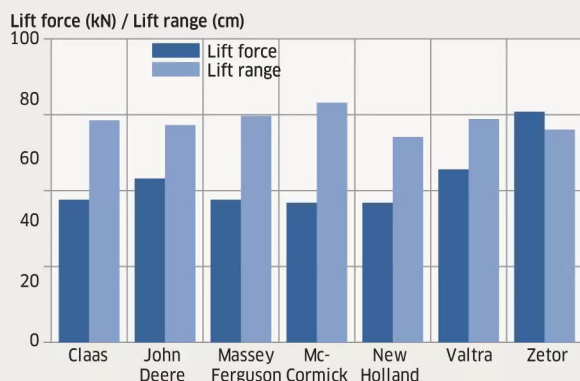
In terms of accommodation, Claas has the edge, followed by the fresh-out-of-the-box Valtra. This is mainly thanks to the well laid out controls, the amount of space as well as the fit and finish of the furniture. The others are on a par, but for different reasons don't score as well. For instance, cab access is very good on the 5712S, but the door is heavy. The Valtra has decent access, thanks to the wide steps and high doorway.

Although some British and Irish buyers may not be willing to spend the additional £3,800, Valtra's SmartTouch armrest is a delight to use with lots of intuitive functionality. Claas comes in second place, while the Zetor cab offers loads of storage space but doesn't have the premium materials of its assembled rivals. The Zetor is also the noisiest model here. John Deere and Massey Ferguson are the

two quietest – both at 69.5dB(A). However, their cabs are smaller, just as with the New Holland. The 5712S model has electrically adjustable and heated double mirrors, while the Valtra and Zetor items are on the small side. And this also applies to most of the toolboxes. Now there's a surprise!

In terms of the electronics on display, there are some good examples of how information can be presented in an easy-to-fathom way – for example, the panels on the right-hand A-pillar of the Claas and Deere. The panel on the armrest of the New Holland is not the most ergonomic solution.

LIFT CAPACITIES



While the Zetor has by far the greatest lift power at 76kN, the Claas, Massey, McCormick and New Holland linkages lift just 46kN or 47kN. Valtra (57kN) and John Deere (54kN) are slightly better. In terms of lift range, McCormick is ahead, with New Holland bringing up the rear.



Hydraulics and linkage

Five of the group had load-sensing hydraulics, while the Forterra and X6.420 made do with a gear pump. John Deere opted to kit out its test 6120M with electric spools for the back. The rest of the test group came with manual levers, most of which proved ideal to use. Zetor's designers mount the spool levers at 90° to the seat, which is not as ergonomic as the others. But with a back-end lift capacity of 7,600daN, the Forterra was able to strong-arm its rivals. Claas, Massey, New Holland and McCormick only achieved 4,600 and 4,700daN respectively (details on the 'Lift capacities' graph). John Deere (5,400daN) and Valtra (5,700daN) returned good results.

Linkage settings are entered on the display on the 6120M; all the others use dials. The linkage activation takes some getting used to on the Fergie – and the intriguing fact that its depth control works in reverse.

Valtra is the most manoeuvrable

Although the wheelbase and tyre sizes were much the same, there is a 2.0m difference in the turning circles. While the G115 managed a slim turning circle of 9.50m, the McCormick X6.420's measured 11.55m. Everyone else is in the 10.00m to 10.50m zone.

There is also quite a difference in weights, the McCormick X6.420 tiptoeing on to the scales at 6,420kg; at the other end is the 7,330kg John Deere. The Claas Arion also weighs in at almost 7.0t; the others are around 6.5t.

Accordingly, the payload throws up some interesting stats. The 3.0t for the Deere and Valtra is OK, but then the 2.0t figure for the Massey and New Holland is just unacceptable ... even more so the paltry 1.5t on the Claas (something which is being addressed on the new Arion).

Value for money

As mentioned at the start, the Claas wins this tractor comparison on points, closely followed by New Holland, Valtra and John Deere. In terms of overall scores, Massey Ferguson, McCormick and Zetor follow closely. However, factor in the price of the test tractors, and the rankings change. The 5712S is the best value for money, followed by Zetor and McCormick. Valtra and John Deere would then fall to the lower end, as they were supplied in top spec.

Hubert Wilmer

Next month, in the second part of this test, the individual tractor models are examined in greater detail.



CLAAS ARION 440

Winner of the test. Economical engine and a cab that offers everything, along with the most comfortable ride. However, the tractor has a low payload. Including all options, the test spec model costs just over £127,000, which is £37k above the group average.

JOHN DEERE 6120M

Best loader tractor, smart cab, controllable brakes and ride; higher fuel consumption, especially during drawbar work. At £138,000, it is the most expensive tractor in this test group (although it's very highly kitted out). As an alternative to the Premium equipment level, the Select version would be cheaper.

MASSEY FERGUSON 5712S

Best gearbox, good cab, but higher fuel consumption and moderate user friendliness. At £85,260, the MF is about £4,000 below the average for the test group. Since the test was carried out, the 5S range has been introduced; an equivalent 5S125 is in the region of £88,200.

MCCORMICK X6.420

From a purely technical point of view, the McCormick X6.420 is a test winner. But the basic manual gearbox and the small cab count against it. The X6.420 is more or less bang on the average money in test spec.

NEW HOLLAND T5.120

With the best engine and transmission, the T5.120 achieves a high score. The auto system could be better, though, and on-road stability leaves a lot to be desired. At about £90,500, the T5.120 is around £1,000 over the test average. average.

VALTRA G115

The G-series is brand new and has a very good transmission; too bad that the AGCO motor isn't the most economical. Because of the full specification, (including auto guidance ready, four couplers at the front, full work light pack etc.) the G115 is almost £13,000 dearer than the average price for the group.

ZETOR FORTERRA HSX 120

Although the Zetor scores the fewest points, it is a simple tractor that gets the job done. The engine is frugal, but the cab is noisy. At only £79,558, the Zetor comes in at nearly £60,000 less than the featured John Deere!

Claas Lexion 5500 TT combine harvester:

Drum roll

When Claas introduced the revamped 7000 and 8000 hybrid Lexions, it also unveiled some new walker models, which are now available in the UK and Ireland.

We tested the biggest of the five-walker models, the Terra Trac 5500

It might still carry the Lexion name, but the changes in the new 5000s and 6000s are as big a leap as when the Mega gave way to the first Lexions over 20 years ago. Most significantly the drum and concave are 26% bigger in diameter and, for the first time, Claas's engineers have added a rotary separator to the firm's walker machines. Given such big changes, we were keen to see how the revamped combine would perform. Our test 5500 Terra Trac had nearly every option ticked including CEMOS Automatic, an extra that costs more than my neighbour's

KEY POINTS

- ▶ The 300kW/408hp Claas Lexion 5500 has a tangential threshing system, rotary separator and five straw walkers.
- ▶ In wheat we achieved throughputs of up to 35t/hr with losses of less than 1.0%.
- ▶ Straw quality is better than from a rotary machine, as long as it's not too brittle. When it gets wet, the performance drops significantly.

The new Lexion 5500 Terra Trac impressed with its performance and comfort in our season-long test, with our criticisms confined to relatively small points of detail.

actual combine. We'll take a more in-depth look at CEMOS on combines in the June issue, along with the two types of header that were supplied, the Vario 770 and Convio 770 Flex.

Knock it up a gear

Even if you don't have lots of roadwork, the £935 option of increasing the top speed from 30km/hr to 40km/hr makes sense, especially if you've got resale values in the back of your mind. And, to boost its on-tarmac credentials even more, the 5500 sits at a relatively slim 3.30m when fitted with 635mm wide tracks (complete with integrated suspension).

The two-range transmission also deserves praise. It provides plenty of oomph and, with a top speed of 12km/hr, is fast enough in the field. Move out of the gate, and the Lexion will sit at 40km/hr at a fuel sipping, easy-on-the-ears 1,600rpm. The trademark multifunction control stick on our pre-series machine was not the easiest to modulate, although Claas says it has already improved the design on full-run production machines.

We liked the automatic parking brake, which is activated when the drive stick is in the middle, neutral position. When you pull away, it auto releases – great. It's a shame that regulations still stipulate the

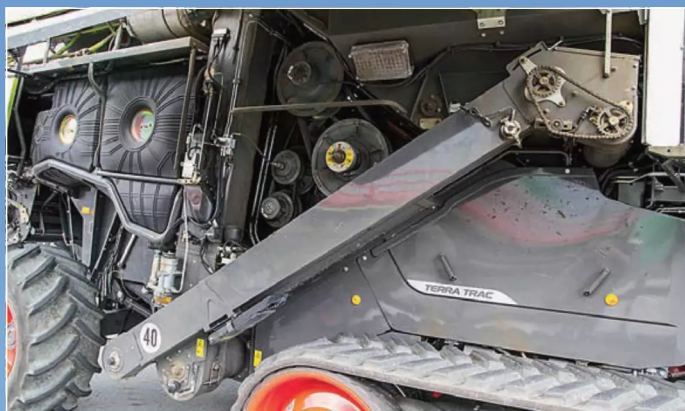


We used both the Convio Flex and Vario headers. More on these in the next issue.





Peeking under the left-hand panel, there are no daily grease points, and the toolbox area has been reworked for production machines.



Living on the right is the 950-litre fuel tank. The moisture meter is located on the clean grain elevator, while the optical sensors for yield measurement are sited at the top of the returns elevator.

need for a mechanical parking brake, which means the familiar left-footed pedal is back. Occasionally there was a delay when changing travel ranges. Although you don't even have to press the brake pedal (which is far too steep for our liking) thanks to the automatic parking brake, it does take some time to change the gears.

Quick hitch and go

Claas sets the industry standard when it comes to picking up and placing the header on the trailer. Transport lock, divider folding, visibility, lift height – it's all good. However, with its stiff hydraulic hoses and stubborn screw caps, the multi-coupler lets the side down, while the driveshaft coupling (which lacks an over-run slip clutch) could be easier to handle.

When it comes to hitching up the header trailer, we were none too impressed with the poorly accessible clevis hitch tucked under the chaff spreader. Thankfully, there will be an optional camera over the hitch for production models – definitely tick that option box. The

only thing Claas then needs to add is some proper lighting around this area.

A new addition for the Lexion is an auto-detect system for the header. The type and width of table, along with the operating hours and maintenance intervals, are all stored on the header, and this information is then available on the combine when it's attached. Tried and tested features such as the header brake and high-torque reverser (which also reverses the reel) are all retained from the previous model.

TEST ASSESSMENT

Claas Lexion 5500 Terra Trac

Header

Cutterbar	++
Crop feed	++
Reel	++
Attachment/removal	+

Threshing system

Separation efficiency	+
Accessibility	+
Straw quality	+

Cleaning system

Cleaning quality	+
Sieve and fan setting	++
Tailings inspection	++

Grain tank

Capacity	+
View	++
Unloading height	+
Unloading rates	+

Straw processing

Straw chopper quality of work	++
Ease of changing modes	++
Swathing	○

Engine

Output	++
Accessibility	++

Transmission/running gear

Drive power	++
Controllability ¹⁾	○
Speed ratios	++
Transport width	+

Cab

Visibility	○
Noise level	++
Operation	+/○
Space	+

¹⁾already improved. Grading: ++ = very good; + = good; ○ = average; - = below average; -- = poor



Elevator with dust extractor

The new intake elevator no longer has central support rollers for the throat chains – a detail change that is reckoned to make them less vulnerable to damage from stones. Buyers can also opt for full-width rubber belts rather than chains and slats. This is said to reduce maintenance, is more durable and is quieter running. Our test machine had chains so we can't comment on this option.

Also part of the new Lexion package is the dust extraction system fitted on the top of the intake elevator. An extra fan keeps the intake somewhat cleaner. According to Claas, the design has since changed on production machines so foreign objects do not damage anything and the intake surface remains clean. The enclosed threshing drum seems to suck less dust into the machine, which was evident when the extractor system broke down during our trial. As a result we had to clean the roof-mounted FieldScanner steering sensor several times during the day.

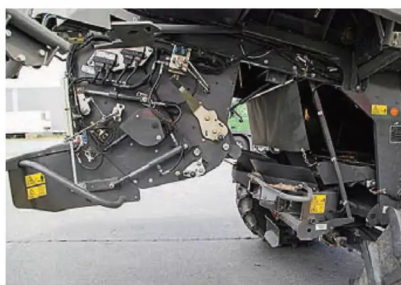
Steer by laser or satellite

On that subject, we found the FieldScanner auto-steering set-up preferable to the long-serving Laser Pilot (which is still available on the options list). There is no need for sensors to be mounted on the header, and you can now use it to track down the middle of a field tramline. It's also £200 cheaper than having Laser Pilot on both sides of the header. Given that the latest automotive industry tech is able to recognise pedestrians at 100km/hr, we're keen to see what Claas can do with this technology in the future.

Another option is GPS-controlled autosteer, which unfortunately necessitates another screen in the cab. This also bumps up the price by £11,640 even when you opt for the smaller S7 terminal (including RTK and licences). A GPS signal is essential if you want to create yield maps or even split the field into lands or blocks.



The Jet Stream cleaning shoe, with the double ventilated step, is now on the walker combines.



The chaff spreader and chopper did a good job on test. However, the swath formers can't be completely folded away.

New threshing system

The threshing system still uses the familiar accelerator APS drum; the main threshing drum has increased in size to 755mm; and an additional 600mm separator drum has been positioned upstream of the impeller. We cut wheat, barley, oilseed rape and triticale and were impressed by the overall throughput. On average, the hourly output, including headland turns, was up to 30t/hr in barley and 35t/hr in wheat. Excellent results from a five-walker combine, especially with losses consistently measuring below 1.0%.

Saying that, compared to the hybrid Lexion 750 TT we were working alongside, in wet straw or when the dew started to come in,



The dust extractor (left) has been modified for the production machines. The manually operated header cutting angle (below) can be swapped for a hydraulic version.



MEASURED VALUES

Claas Lexion 5500 TT

Cutting width ¹⁾	7.68m
L/W/H (transport)	9.35/3.49/3.47m
Grain tank capacity	8.62t triticale
Unloading rate	103s/118/s
Unloading height/width	4.34/5.70m
Noise level under full load	72dB(A)
Front track width	635mm
Test tyres	600/65 R28
Forward speed	Range 1: 12km/hr, Range 2: 41km/hr
Axle loads ¹⁾	
without header	12,840/7,420kg
with 2.66t header	17,660/5,260kg
¹⁾ Vario 770, ²⁾ grain tank empty	

the 5500 walker machine reached its limit sooner – a disadvantage that it counters with better straw quality in normal conditions. However, the four-drum threshing system is anything but gentle in over-ripe straw. Much the same applies to grain. You have to pay attention to the speed settings, concave gaps and the positions of the concave and rasp bars to avoid split grains. There is the option of being able to adjust the concave flap and stripper bar from the cab, which will help to avoid cracking.

Automatic set-up

If you go down the bells-and-whistles route, CEMOS Automatic can look after those critical settings for you. The Grain Quality Camera at the top of the clean grain elevator keeps an eye on what's headed for the tank (we'll give our full opinion on this system in the next issue). Together with the CruisePilot automatic headland management, CEMOS Automatic allows operators to stay relatively at ease during a long harvest day and yet operate the machine to its performance limit.

Yet there are still points that are certain to niggle skilled drivers. Sometimes the system retains illogical settings for a relatively long time, such as not opening the bottom sieve despite the returns system being packed with tailings. It also struggled in rapidly varying conditions. This said, in large, consistent fields and crops, it does work well. However, since the correct calibration for the loss sensors is crucial for the system to work, we would like to see Claas include trays to measure the losses as a factory-installed feature. Also, the straw moisture meter should work all the time rather than being confined to Auto Chopping.



The cab is comfortable, but the view to the right is impeded by the myriad of terminals/screens.

The chaff spreader worked well, although the drive shaft did shear off once for no apparent reason. The two vanes can be quickly folded away, clearing a path to the sieves.

Take the jet stream

The 5000 and 6000 series walker models now have the Jet Stream cleaning shoe. The fan sports six vanes, and the double straw walker step is cleaned with compressed air. That takes care of clean grain arriving in the tank. We liked the fact that not only the amount of tailings in the elevator is measured by optical sensors but also the grain on the bottom sieve.



Touch screen and Cmotion lever are good, but the symbols on the display could be better.



The Mercedes 10.7-litre motor generates 408hp and is Stage V. The rad requires minimal maintenance.



Chop on the button

Switching between chopping and dropping the straw in a swath is all done from the cab. That's an excellent feature, but the angle of the swath formers was too shallow – in wet straw we experienced a few build-ups. Good news is Claas has altered this on production machines, but they still can't be completely folded away when chopping straw.

As far as chop quality and spread across the 7.7m working width is concerned, we had no complaints. No gripes either with the auto left/right biasing for slopes and/or crosswinds, the tell-tale being sensor plates sited on the tail lamps. The Special Cut chopper with its 88 knives has a swivelling bottom element as well as a counter blade that adjusts to one of three positions – a task that can be done hydraulically if you tick that option.

The 3D cleaning shoe is well known and well proven. Working in tandem with the automatic AutoSlope fan speed control, this set-up is an economical alternative to a levelling chassis, provided your hills aren't too steep. Montana full body levelling is not yet available on this new generation of Lexion, although we're told that it's in the pipeline. If that's a critical feature, then there are equivalent capacity Tucano models to choose from.

8.6t in the tank

The 11m³ grain tank (10m³ as standard) has a hopper extension at the front and rear and held 8,620kg of triticale; this actually equates to 12,140 litres. For unloading, Claas promises a performance rate of 110l/sec on standard models, although our test machine had the optional 130l/sec, 330mm auger. Unloading

dry triticale took exactly 103 seconds. That is 118l/sec – a tad shy of the manufacturer's claimed 130l/sec.

Yield and moisture measurement is all good. The new Quantimeter uses a baffle plate and is located at the top end of the clean grain elevator. Even with the default calibration settings, we achieved a phenomenal accuracy of 99.5% in rape. That's impressive. In barley, however, the deviation of up to 9.5% in the standard calibration set-up was significant at times.

408hp Merc motor

All of the new generation Lexion have the horizontally mounted 'helipad' cooling pack. The rads are easy to access, but they rarely needed cleaning with an air line during the season, despite us harvesting some very dry and dusty crops.

The largest five-walker thresher is powered by a Mercedes-Benz OM470LA – a six-pot,

DATA SHEET

Claas Lexion 5500 Terra Trac

Header

Vario 770 with 7.70m cutting width

Threshing system

1.42m wide accelerator threshing unit, 75.5cm drum diameter, 60cm rotary separator diameter, 1.30m² main concave area

Cleaning system

5.1m² cleaning area, Jet Stream cleaning shoe with 3D system

Grain tank

11m³ grain tank, 130l/s unloading rates

Chopper

Six rows of knives with 88 blades, hydraulically powered chaff spreader

Engine

Mercedes-Benz OM470LA, 10.7-litre displacement, 300kW/408hp max output. Emission stage V, 950 litres of diesel, 110 litres of AdBlue

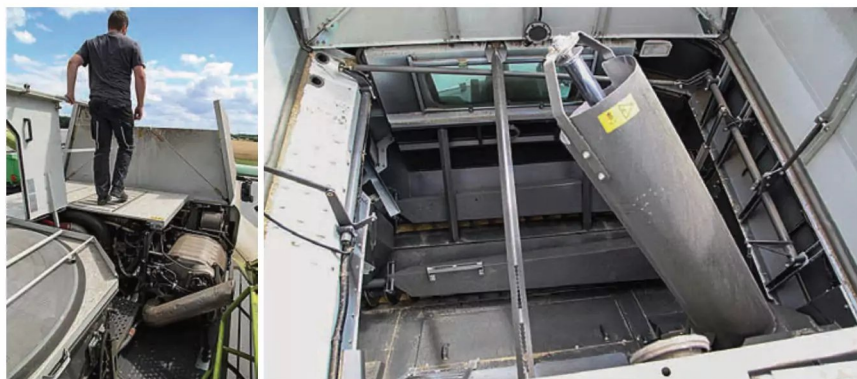
Running gear

Terra Trac tracks with 63.5cm wide tracks, 600/65 R28 rear tyres

List price (excl. VAT)

£279,790 (basic equipment), £48,205 (test equipment), £49,290 for the Vario 770 header with trailer

Manufacturer information



Access to the Lexion's grain tank is now from the rear. Test measurements show it can swallow 8.6t of crop and then spit it out at a rate of 118 litres/sec. No problems or hold-ups in this department.

10.7-litre motor. According to Claas, it has a max output of 300kW/408hp and complies with Stage V emissions using EGR and SCR. The 950-litre diesel and 110-litre DEF tanks proved to be big enough even for long harvest days. Fuel consumption in wheat ranged from just under 12l/ha (not chopping) to a good 15l/ha (chopping). In OSR, diesel use peaked at 18.3l/ha.

Almost 23t fighting weight

The engine never proved to be the limiting factor on our test – even when unloading

while clambering up a hill, the power plant held its own.

Trundling onto the scales without a header, the Lexion 5500 Terra Trac model weighs in at 20,260kg. Add the 2.7t Vario 770 head and almost 9.0t of grain in the tank, the load on the front axle is not far off 25t.

When dealing with this amount of weight, tracks become pretty much essential. You get a significantly bigger contact area, and the overall width is a relatively narrow 3.30m if the tail end is fitted with 500/85 R24 rubber. Our machine was booted with 600/65 R28s,

pushing the width out to 3.49m and producing a turning circle of 18.50m.

The CEBIS Touch

Along with the narrow steering column and armrest with buttons for direct adjustment, the main, new feature in the cab is the latest CEBIS terminal, which allows operators to customise the interfaces to individual needs. Operators can assign up to seven favourite functions to the buttons on the Cmotion stick. If you don't want this level of interaction, the old joystick is still available, though this lacks the customisable buttons.

It would be very useful to be able to save the changes to the combine settings and store them with a password-protected username to allow different drivers to store individual profiles and preferences. It is good that you can choose between 'beginner', 'normal' or 'expert' to access different levels of menu navigation, but you should be able to lock specific settings with a pin code.

Too many terminals

We thought that the symbols on the CEBIS terminal could be a bit clearer, as the colours only change to a different shade rather than having a green tick or red cross to confirm a



The Terra Trac Lexion tips along nicely at 40km/hr. As long as the 635mm wide tracks are paired with 500 tyres on the back axle, the overall width is a relatively narrow 3.30m.

setting has changed. The display also suffered from glare, but more annoying is that you need an extra screen for autosteer, rather than the CEBIS screen doing everything. In fact, our test machine had a second CEBIS terminal for the CEMOS dialogue function as well as an S7 screen for GPS steering, plus a display unit for the camera on the unloading auger. Together with the thick-ish cab pillar this collection of screens blots the view to the right side of the header.

There's plenty of praise for the powerful auto climate control system as well as the coolbox, passenger seat and cubbyholes. The mirrors and the comprehensive LED lighting pack are also second to none, but the road lights are frankly pants. The optional wipers on the side windows are a nice, operator-friendly feature, but you still need to clamber up to wipe dust off the mirrors.

Further details

- The stone trap is easy to open from the side. The only thing missing is an audible alarm if you forget to close it.
- CruisePilot freezes the current forward speed when unloading.

- The number of hectare counters is limited and they can't be given names. In addition, some information such as the date, times as well as AdBlue consumption and the area chopped, are missing.
- There is now a menu for calibrating all of the sensors.
- The three-position hand throttle control is too prominently positioned on the armrest.
- Sun blinds on the side windows are optional.
- Backlighting on the joystick is insufficient.
- None of the grease points require daily attention; only 14 nipples need a shot of grease every 50 hours.

How much?

The Lexion 5500 is only offered with Terra Trac running gear, and a base spec machine without a header lists at around £279,790. The 7.70m wide Vario header with a pair of side knives and trailer costs another £49,290. On top of that, and as you'd expect, there is a fairly extensive options list, from which our test machine had FieldScanner (£4,120), GPS steering (£11,640), yield metering (£3,845), 40km/hr speed transmission (£935) and the complete CEMOS system for £27,665.

Summary: With the larger threshing drum and additional separator drum, the new Lexion walker machines are worthy of a fresh look. For starters, the combine manufacturer promises up to 20% more output over the previous model, and, even though we didn't have a direct comparison in our field test, we achieved an average of up to 35t/hr including headland turns from the five-walker combine. That's pretty impressive when you compare the figure with the 33t/hr achieved by the Lexion 460 six-walker machine in our 3/1997 *profi* practical test.

Only in green, wet straw do the walkers reach their limits quicker than a rotary harvester. But the straw quality is better, although you shouldn't underestimate the damage that the extra separator drum can do when cutting fields with dry, brittle straw.

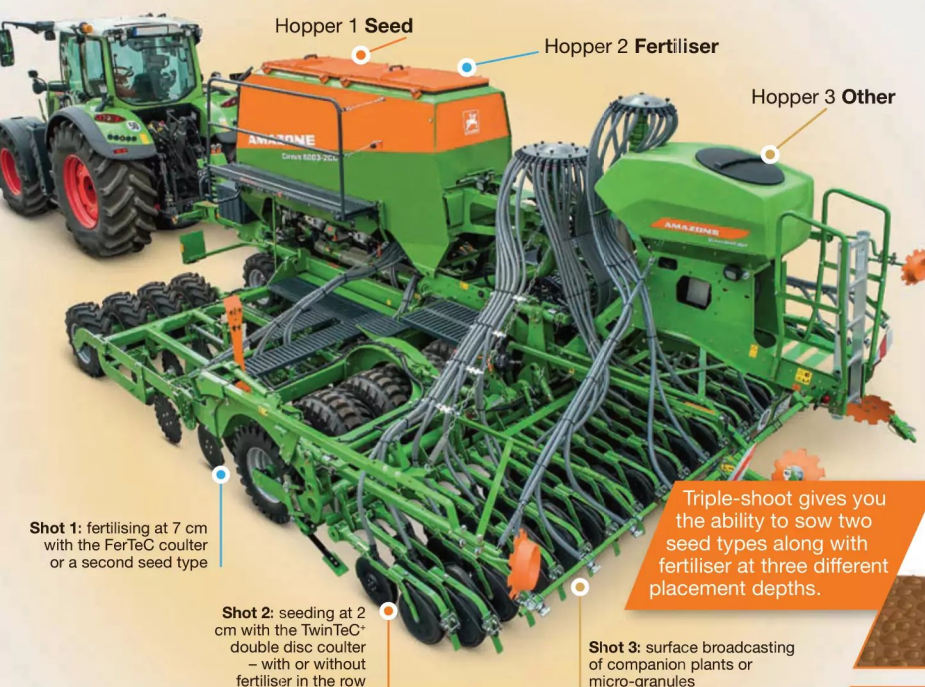
There are relatively few details to criticise on the new Lexion, and these are mainly directed at the cab and controls.

And then there's the tag. The test-spec 5500 TT weighed in with a whopping £329,080 list price, including the 7.70m wide Vario header.

Hubert Wilmer

Feed your seed

Introducing the Triple-shoot system



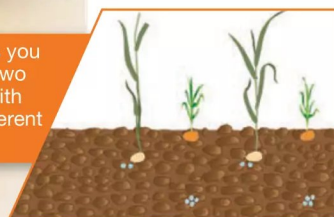
Providing targeted nutrition when drilling is key to giving your crops the best possible start in life.

Take the NEW Amazone Triple-shoot system - it gives you the flexibility to sow your cash crop along with a companion plant and fertiliser - all at three different placement depths and all in a single pass.

The beauty of the Cirrus Triple-shoot, multi-hopper concept, is that it can place fertiliser in the row and/or between the rows when sowing, can drill three different seed varieties - either in one row or up to three different rows - and even broadcast on the surface.

Get the full story, visit: triple-shoot.com/en

or call Amazone Sales on:
01302 755 725
or contact your local dealer.



www.triple-shoot.com/en



AMAZONE

Rozmital SP-852H twin-rotor rake:

A steady but clean sweep

With a working width stretching out to 8.5m, the twin-rotor, centre-delivery Rozmital SP-852H should make the ideal crop-gathering companion ahead of a baler or silage wagon. So, is it?

With only 10 tine arms on each rotor, the distance in between is larger than on other makes.



After testing the Rozmital SD disc mower in *profi* 12/2019, the Czech company provided us with another machine for last season. The SP-852H is the firm's largest twin-rotor rake to date, although there are already plans afoot to extend the range. We used our test model for raking up haylage, hay and straw.

Simple design

Overall, the SP-852H is a simple rake: for example, the two arms and the solid headstock are built out of simple box steel. Nevertheless, it made a quality impression. An example of

this is the rotor arms are reinforced with gusset plates for improved strength. The driveline is equally straightforward, with power running to a T gearbox under the main frame and then splitting to the two rotors.

Less appealing was the rust on the headstock caused by blast cleaning material, which had not been removed from inside the frame and, after combining with rainwater, this was now leaking and corroding the paintwork.

While removing one of the rake's tine arms we noticed the flange plate had been bolted before being painted, and the bare metal was already showing some signs of rust. Though

KEY POINTS

- ▶ The Rozmital is a simple and well-built machine.
- ▶ Ground following is good; working speed is somewhat limited by the number of tine arms.
- ▶ We think the SP-852H is ideal for farmers doing their own work.
- ▶ Irish importer GF Coyle lists the SP-852H at €19,000.



To fold and unfold the hoop guard, you have to hop in between the tine arms. Not ideal.



The headstock is well built. Blast-cleaning material has leaked from the main frame, leading to the orange mess on the grey frame.



The arms are simple but sturdy. The rotors can be pushed out by 45cm on each side.



The combination of a tandem bogey and leading jockey wheel allows the Rozmital to do an effective job of following the ground.

relatively minor, these are still details that need improving.

Easy drive

Two double-acting spools are required to operate the rake – one for folding, the other for extending out the rotors. For transport, both arms are secured by locking hooks that are released by the tug of a rope. When folding, the spool automatically retracts the arms – a useful touch.

For the test we operated the 852H behind a 59kW/80hp plus tractor and had no issues. As a result we can't see any problem with the

minimum 44kW/60hp rating that Rozmital advises. Pto input is 540rpm.

The rake is carried on the lower links with Cat II hook ends. When turning, the steering angle is limited by stops. Because the headstock is connected by a pivot to the main frame, you need to make sure that the lift arm height is set correctly and the rake is running level. Otherwise, the pto shaft risks hitting the frame. The drive shaft comes from Weasler.

Directly steered

While on the subject of steering, we have no major issues with the Ackerman set-up, which

tracked perfectly behind the tractor when turning on the headland or following curves in work. However, a word of caution when driving on the road, because its quick steering response can make it a bit twitchy.

The steering linkage along the frame to the back axle could be better. While the track rods on the axle and the knuckles can be greased, the four pivot points up to the front can't. We think there is potential for wear after a few seasons' work, although Rozmital claims this hasn't been a problem so far.

Standard road tyres are 10.0/80-12, which is on the small side compared with other makes and not ideal when travelling across rutted



The non-adjustable cam track is protected from whatever might be tempted to enter and wrap.

TEST ASSESSMENT

Rozmital SP-852H

Engineering and handling

Attaching/unhitching	+
Putting into transport	-
Driveline	+
Control box	✓
Road transport	⊗

In-field work

Working/rotor quality	+
Swath formation	+
Output (ha/hr)	⊗
Ground following	+
Crop gathering	+
Power requirement	++
Manoeuvrability	+++

Settings

Cam track adjustment	✓
Rotor work height	⊗
Rotor tilt	⊗

General

Build quality	+
Hose/cable routing	+
Paint finish	-
Operator's manual	+
Service and maintenance	⊗

Grading: +++ = very good; ++ = good; + = average; ⊗ = below average; - = poor; ✓ = not available

tramlines when rowing up straw. The tyres on our test machine were also perished in places. Rozmital says that this wear and the rust marks were caused by storing the rake outside since it was first operated as a demo model in 2019.

Good ground-hugging

With a diameter of 3.84m, the rotors are large but only have 10 tine arms – for comparison, the equivalent Claas Liner 2700 has 12 and SIP's Star 850-26T sports 13. Depending on the conditions and crop we had no issues with

MEASUREMENTS

Rozmital SP-852H

External dimensions

Working width (min/max) **7.78m/8.56m**

Transport length **6.12m**

Transport height (without arms) **3.92m**

Transport width **2.91m**

Weights

Weight **2,240kg**

Axle load rake **1,300kg**

Tongue load **960kg**

Rotor ground pressure **630kg**

Rotors

No. of rotors **Two**

No. of tine arms per rotor **10**

Number of double tines **Four**

Rotor diameter **3.84m**

Tine arm length **1.37m**

Tines

Tine length **58cm**

Tine thickness **9mm**

Coil diameter **65cm**

Number of coils **Four**

Rake width/set of tines **54.5cm**

Work

Max lift height (min/max working width)
28cm/43cm

Swath width min/max **1.19m/2.12m**

Underbeam clearance **1.06m**

Tyre sizes **16 x 6.50 - 8 (chassis);
18.5 x 8.5 - 8 (jockey wheel);
10.0/80 - 12 (transport)**

Requirements

Tractor power¹⁾ **44kW/60hp**

Linkage **Cat II**

No. of spools **Two double-acting**

Pto speed **540rpm**

Price **€19,000**

1) Manufacturer information



Three tine arms need to be removed to prevent them from hitting low tree branches when on the road.

Warning panels and lights are clearly visible and securely attached. The tyres are the widest part of the rake in transport.



Locking latches hold the rotors in their raised position; a pull of the rope releases them.



The rear tyres are comparatively small. All 20 tine arms can be stored on the rack.

romping along at up to 10km/hr and varying pto speed from 400-450rpm.

The leading jockey wheels that run in front and the tandem axle bogey wheels under the rotors did an effective job of looking after the height. If we did push on a little faster, our rake tended to lump the row or pull the swath apart again; likewise if the pto speed was set too high. Unfortunately, there is no central curtain.

The front gauge wheels can be precisely adjusted via a hole pattern and locking screw.

The rake height is adjusted by a crank at the front, which works fine, but a scale would be helpful. You do need to be careful in rutted fields to avoid damaging the gauge wheels, which are attached to a box section beam.

Time-consuming changeover

With all of the tine arms in place, the overall machine height measures 4.50m. This isn't ideal on many country roads, so three arms need to come off each time when heading out of the gate.

This arms-off job takes at least three minutes. There are slots along the rear of the machine for the removed tines. In fact there are enough slots for all of the tines when the machine is put away for winter. Maybe at some point in the future the engineering team at Rozmital could look into developing a way of lowering the rotors even farther, rather than having to remove tines; after all, there are 106cm of underbeam clearance to play with. This larger clearance, combined with the 58cm long tines, is a big plus point in bulky straw/hay rows.

The hoop guards are manually folded, but first you need to crawl between the tine arms to release the safety catch. If the catch was at the front you wouldn't need to grovel. So, in short, a location change would be welcome.

Who are the customers?

The Rozmital SP-852H is a simple, but overall a well-built machine. The lower number of tine arms will limit its appeal to contractors wanting to get over many acres as quickly as possible. With a working width of 8.56m, it is

still possible to comfortably row up around 6ha/hr. It just takes a bit of time to change over from road to field mode (and vice versa). There are also a few minor design niggles that should be easily addressed.

The Czech machinery maker has just launched a 9.60m variant, proving it's not shying away from moving to wider working widths. Price tag for the featured SP852-H is €19,000 if you're living in Ireland.

Alexander Bertling



The Ackermann steering system is very responsive and gives good tracking. The lift-out height on the headland is sufficient ... but only just..

Engineered to carry heavier loads, while ensuring lesser soil and crop damage, the new CEAT SPRAYMAX with VF technology is designed to maximise your sprayer's efficiency.

Spraymax ensures:

- 40% more load carrying capacity
- Better grip and traction
- Less soil and crop damage

To know more, visit www.ceatspecialty.com Distributed in the UK by NORDICTYRES
For further inquiries, call 01387 951114 or email us at cstbv@ceat.com / sales@nordictyres.com

CEAT
SPECIALTY

Vogelsang BlackBird slurry applicator:

Twice the distance

Vogelsang now offers a 24m version of its BlackBird trailing shoe applicator, which can be folded back to 18m to match in with narrower tramlines. We caught up with a pre-production unit

Back in 2018, Vogelsang introduced the 12m and 15m wide BlackBird, a heavier-duty trailing shoe applicator than the lighter and wider working Swingmax Slide that stretches all the way out to 32m.

Now the slurry kit maker has developed a 24m version of the BlackBird by hanging two 12m units from a new boom. Sounds simple, but watch the machine unfold and you realise how much engineering is involved. Indeed, this bigger bird shares no resemblance to the Swingmax Slide, which for all intents

KEY POINTS

- ▶ A pair of 12m booms are used to create the 24m working width, with the option to fold back the end sections for 18m and 21m.
- ▶ Good ground contour following. The contact pressure of the shoes can be adjusted by altering the boom.
- ▶ The design allows larger working widths to be achieved.

and purposes is a dribble bar with trailing shoe attachments, so it only applies around 1.5kg of pressure to each shoe. Compare that stat to the 12kg per shoe on the BlackBird, and you can clearly see the difference. Each of the two equal-width booms hangs from a central pivot, allowing it to swing up to 4° for improved ground following. Sizeable rams support and cushion the left and right boom sections, and this means they can also be independently raised out of work.

12m + 12m = 24m ... the new wider working BlackBird trailing shoe applicator from Vogelsang.





The booms are raised laterally for headland turns.

The shoes, including the runner, boot and leaf spring, are exactly the same as on the smaller BlackBird models.

When it comes to attaching the applicator to the tanker, there are two options: directly coupled; or carried on the four-point linkage. If bolted to the tank, the BlackBird 24 model can cope with mudguards up to 2.05m, whereas the

The red arms carry the two 12m wide booms, which are supported by some substantial hydraulic rams.



The distributor and macerator are mounted under the pivot point. A ram damps the boom when in transport position and when working at a reduced width of 18m or 21m.



DATA SHEET

Vogelsang BlackBird 24

Work width	24m
Transport width	2.99m
Number of shoes	96
Shoe spacing	25cm
Contact pressure	Up to 12kg
No. of distributors	Two Vogelsang
ExaCut	
Hose diameter	40mm
Weight	3,800kg
Gauge wheels	4.80/4.00-8, rigid
Price	£89,000
Manufacturer's information for base spec machine	



When folded, the rig is 3.0m wide. The shoes swing inward (if the tank shape allows).

It'll soon work faster...

All of the 96 shoes swivel inwards when folded, so that the hoses don't get caught in branches. At the rear of the tank, the outer ends fold in on smaller rams, reducing the tail swing.

Regarding the folding process, Vogelsang will fit a different hydraulic valve chest to the unit on this pre-production machine, making all functions smoother and faster. The folding rams are already cushioned at the end of their stroke. Unfolding takes a good minute and a half, which is not bad for a 24m boom.

The ExaCut ECQ distributor/macerator is also mounted below the centre pivot of the 5mm thick steel boom, helping balance the forces. The outer 3.0m wings can be folded in 1.5m sections to produce a 21m or 18m working width. Of course, this scenario will affect the overall balance at the pivot, so the booms are supported by an additional ram.

... and fly over obstacles

There are two gauge wheels on each section of boom and a total of 96 shoes. Obstacles such as a fence line can be managed by raising one side of the boom out of work. This can be done in two ways – either by raising only the shoes 45cm while continuing to apply slurry, or switching off the relevant side and raising it on the two rams used for folding. Should you clip a telephone pole or fence post, the two 1.50m boom ends have shear pin protection.



For an 18m working width, the 3.0m wide end sections swing to the rear.

Further details

- The 24m wide model that we looked at had already spread several thousand cubes since arriving with the contractor.
- Vogelsang has updated the CFC individual hose shut-off. The hoses are reinforced with plastic ribs on the shut-off section and are less likely to kink.
- As the 48 shoes, including their linkage on each boom, are attached at just one pivot point, we noticed a bit of wobbling in their folded position. Vogelsang says this will be sorted on production machines.
- The 6-inch supply hoses to the two ECQ distributors are neatly routed through the frames. Section control is standard.
- An ISObus control system is reckoned to

make it much easier for tanker makers to integrate the applicator.

- Vogelsang offers the solo BlackBird in 18m format, so a 36m version might be possible.
- The dimensions and weight of the BlackBird suggest it's best suited to tri-axle tankers.

Summary: Vogelsang has extended the BlackBird trailing shoe applicator range to 24m. The new design uses a pair of 12m wide booms that operate independently of one another to ensure consistent ground pressure and contour following. The new addition will be available in the UK from May with a list price of £89,000.

Tobias Bensing



The BlackBird flies over an obstacle in the field. The shoes can flick up by 45cm on encountering smaller objects or swing up to their raised headland position, as shown.

More than a tractor



“What really impresses me about CLAAS is how the family ethos extends down from the top of CLAAS, through to the dealer, to the customer. It’s very special and I never feel we are alone.”

Josh Collins, AXION 920, 2x AXION 830, ARION 640, 3x ARION 630

Turn desire into reality.
Contact your local CLAAS dealer to discuss your next tractor decision.
claas.co.uk



CLAAS



High yielding crops, such as rye grown for anaerobic digesters, are suited to going under the Honey Bee knife.



Honey Bee ST21 swather:

A draper for tractors

Tractor-mounted swathers are a potential solution for gently harvesting wholecrop destined for livestock and AD plants. Read on to find out how the Honey Bee ST21 may just make the ideal crop-dropping tool

Self-propelled swathers have almost disappeared from the UK market, as the much reduced area of oilseed rape is now direct cut. Yet there is a bit of returning interest to using swathers for

harvesting fields of wholecrop, lucerne and rye destined for AD plants. The Canadian-built Honey Bee ST swather is tractor-mounted, either on the front or back (if you have reverse-drive), so you don't have

KEY POINTS

- ▶ The Honey Bee swather is a draper header design.
- ▶ Crop can be placed to the left, centre or right.
- ▶ Working widths for the ST range span 4.6m to 10.9m.



The ST21 is transported on a trailer with overrun brakes and steered axles, front and rear.

to invest in another power unit. Here we look at the 6.4m wide ST21, the latter part of the model name denoting its 21ft working width and North American origins.

Familiar knife

The ST21 is just like a draper header offered on a growing number of combines and favoured for its ability to cope with tricky crops. At the business end is a Schumacher Easy-Cut knife working at a rate of 1,400 strokes per minute. The double knife has an 84mm stroke and is powered by on-board hydraulics, which are also used for the optional side knives and draper belts.



The pump is integrated into the headstock and driven by the tractor's pto, while the top of the headstock frame acts as an oil tank. A combination of the two gauge wheels and leaf springs controls the ground pressure. These gauge wheels on the outer part of the header also help determine cutting height.

Left, centre or right

Belt speed for the two draper sections is set on the control box; however, the mechanical display on the front of the frame is hard to see from the seat. The control box is also used for determining where the swath is placed – left, middle or right. The belt sections are moved into position by hydraulic rams and endless chains by the press of a button. This also gives you the option of forming double swaths, by placing two rows side by side.



This simple control box looks after the belt speed and where the row is placed.

DATA SHEET

Honey Bee ST21

Work width	6.40m
Weight	1.95t
Transport width	3.00m
Transport length	5.50m
Knife drive	On-board hydraulics
Belt drive	On-board hydraulics
Oil supply	120 litres
Price	£62,500

Manufacturer information

see on a loader or on newer combines), for connecting up to five hoses in one go, is fitted as standard. The cam track for the reel can be adjusted in nine steps using a pin-and-hole set-up to adapt to different conditions, from laid to standing crops.

Loaded up for the road

With a working width of 6.40m, the ST21 needs to be transported on a trailer. On the featured machine, the trailer was supplied by Polish maker Tucholsky and is approved for 40km/hr travel. The overrun braked trolley has steered axles front and rear, but ground clearance is limited so things might get a little



The swath can be placed to the right, middle or left. The change is made by repositioning the two hydraulic belts.



Leaf springs and gauge wheels on the side limit the pressure on the ground.

It goes without saying that you need a tractor with sufficient ground clearance to straddle a middle row. Which is why the owner of the featured machine has added two wheels that act as a crop press roller.

The reel is powered by the tractor's hydraulics, and changing the flow rate alters its speed. Two other spools are needed to adjust the fore/aft and height of the reel. A multi-coupler (as you would

tight in some gateways. The header is secured on the trailer by four pins, with two chains limiting any movement when on the road. The hoops, which act as dividers, need to be removed during transport. The owner of our test machine has also extended the lower link catches to increase the lift height to help clear big swaths.

Further details

- The header can also be used on reverse-drive tractors.
- Side knives (from Ziegler) are an option.

Lucas Colsman



Amazone Avant 6002-2 power harrow drill:

Advance the Avant

Amazone is well versed in the front hopper/rear folding power harrow drill set-up with its long-serving Avant. The new 6.0m machine gains a pressurised front hopper and several more updates, bringing it in line with the firm's other drill options

Avant is the name tag that Amazone has always assigned to its power harrow drills that work with a front hopper. Set to eventually replace the 6001-2 is the logically labelled 6002-2, which comprises three key components:

- FTender front hopper (previously the FRS or FPS)
- KG 6002-2 power harrow (this replaces the KG 6001-2)
- TSE 6000-2 TwinTec double disc coulters (these supersede the Amazone PS603-2 RoTec single disc unit).

Pressure for high rates

The FTender comes in two sizes, 1,600 and 2,200 litres (the price difference is £1,915). Both hopper sizes can also be used with 3.0m and 4.0 wide combis, but are not pressurised for these smaller drill working widths. The



One of two side cameras is sited under the calibration button on the left of the machine.

pressurised set-up is reserved for the higher seed volumes involved with feeding the two hoses and twin seed distributors on the 6.0m version. And looking beyond the featured cereal drilling combi, the FTender can also be employed for supplying fertiliser to a rear-mounted maize drill or other tillage tool. The electric-powered metering system has



Less than ideal, the calibration kit is left out in the open in this bracket under the bin.

already proven itself in our practical tests on the Cirrus trailed cultivator drill (*profi* 4/2020, 5/2020) and Centaya (*profi* 11/2019). Despite being a pressurised system, operators can still isolate the hopper from the metering unit with a slide door when they need to change the cell wheels but have a loaded hopper – very convenient.

Amazone has revamped its folding power harrow drill combination. There are TwinTec disc coulters out the back of the Avant 6002-2 and a new pressurised front hopper.



KEY POINTS

- ▶ Avant 6002-2 is Amazone's new 6.0m power harrow drill combi.
- ▶ The FTender is a pressurised front hopper with capacities of 1,600 or 2,200 litres.
- ▶ Updated KG 6002-2 power harrow now has a new levelling board and tighter fitting side plates.
- ▶ Weighing in at a minimum 5.5t, the rear unit requires the optional transport running gear to avoid overloading the tractor's back axle.

We have no issues with calibration, which can also be carried out using the 'My Seeder App' on a smartphone and a Bluetooth connection to the drill. As you would expect on a machine costing north of £90,000, the calibration kit is part of the standard spec.

Flexible tyre packer

If you want to reduce the amount of weight on the tractor's front axle, there's an optional

steered tyre press unit (£6,775), which can be retrofitted and also operated on its own without the hopper. This option does shift the front tank forward by 30cm, so you need to monitor your front axle load rating.

With a loaded hopper, it weighs around 3.5t, but if you need a bit more counterbalance, then you can add up to twenty 25kg weights. However, this 500kg of ballast will cost you another £1,675.

For improved on-road visibility over the top of the hopper, the tyre

packer can be locked in its raised position enabling you to lower the front linkage by 25cm. Another useful extra is the camera system (one on each side of the hopper) and in-cab display. The £1,390 option has obvious benefits, and in Germany all manufacturers need to have these camera systems certified to prove they are up to meeting their safety responsibilities – this certification is currently pending for the Avant.



The metering system and pressurised hopper of the FTender 2200 are easy to access.

OUTCAST V2 - Wider Slug Protection



- 36m application
- Fits to all sprayers
- Hydraulic fan
- In cab control
- Front rear or side mounting
- Headland control

T: 01353 862044 E: info@techneat.co.uk W: www.techneat.co.uk

Techneat
engineering ltd



The tyre packer is bolted to the front tank, and it can also be removed to use as a front press.



For transport, the packer can be raised off the deck and locked in position.

DATA SHEET

Amazone Avant 6002-2

Front tank FTender

Tank capacity	1,600 litres (2,200 litres)
Fan drive	Hydraulic, 28l/min
Tyre packer	Four 10.0/75-15.3 wheels
Unladen weight	691kg (max 1,862kg)

Power harrow KG 6002-2

Number of rotors	20
Pto speed	1,000rpm
Rotor speed	299-389rpm
Toothed roller diameter	60cm
Weight	4,260kg

Coulter bar TSE 6000-2

Number of rows/row width	40/15cm
Inter-row spacing/coulter pressure	20cm/ max 60kg
Weight	1,300kg

Drill combination

Work width	6.00m
Tractor power	265kW/360hp max
Transport width	3.00m
Weight	From 6,194kg
Price	£96,960

*Manufacturer information for basic equipment; values in brackets = option; * for shallow work and in light soils also 540rpm and 750rpm pto are approved for delivering rotor speeds of between 161rpm and 292rpm.*

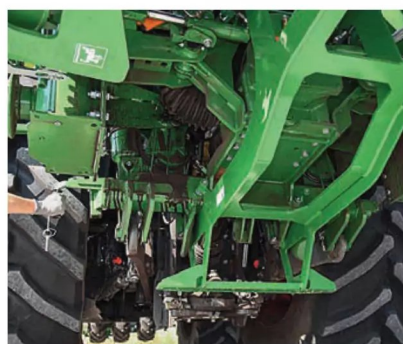
Familiar harrow

The KG 6002-2 itself is not really that new. The driveline, two-speed gearbox, trough and rotors are all the same as on the KG 6001-2, which remains in the price list. For now, the 'new' harrow will only be sold with the Avant 6002-2 package.

So, what has changed to warrant the new model designation? Well, the 6.0m harrow has the tighter fitting side deflector plates as used on the 3.0m KG (see *profi* 5/2018 and *profi* 11/2019). It also shares the central adjustment system for the levelling board with the smaller



With a min rear weight of 5.5t, the optional running gear is recommended for transport.



The transport kit can be removed in double-quick time, and, with a bit of skilled shunting, it can be attached almost as quickly.

models, and this is now mounted on the same parallelogram linkage as the packer, making it possible to have hydraulic depth control, as everything moves in unison. This £3,760 option was fitted to our test machine. The new linkage system also means Amazone has been able to include its QuickLink demount system for taking the drill off quickly.

Ready for the road

Because the rear combination weighs more than 5.5t, there's the option of a transport kit for £6,315. When you arrive at the field the pair of 10.0/75-15.3 castor steer wheels are dropped off by removing a central pin system. Attachment is a bit trickier because you have to keep an eye on the upper coupling points and refit them exactly. This and the manual pin locking system work well as long as you are on a level surface. To allow the running gear to follow the ground the transport kit includes a hydraulic top link. Its valve is deactivated from the cab. At £2,000 it's far from a bargain as far as hydraulic top links go, but it can be used with other implements.

One coulter for all

The new Avant is only offered with Amazone's double-disc TwinTec coulters. With the press wheels and covering tines, the double-disc coulters are heavier than the RoTec single-disc set-up, which is still available on the older Avant 6001-2 (on sale for now).

We were impressed by the parallelogram-mounted TwinTecs when we tested the Centaya. However, Amazone doesn't offer the excellent Exact harrow for the Avant – presumably due to the extra weight. You can add the single-tine harrow for just £925. This can be folded up out of the way in loose soil.

Coulter lift

The supplied tool used for setting the levelling board is also employed to adjust the coulter depth. The robust scale helps to keep both sides equally set. Amazone says the maximum coulter pressure is 60kg. Hydraulic adjustment is standard on the 6.0m combi, so it's possible to raise the coulters about 15cm when you just want to do a tillage pass on the headland. The coulter lift-out function is automatically retrieved when the combination is folded up, so the coulters tuck within the 3.0m transport width. Having to tug on a cable to release the unfolding locks is a bit dated on an otherwise modern machine. With this in mind, Amazone is working on a slicker solution.

Further details

- Apart from the 6.0m folding unit, the new Avant 02 is only available as a rigid 3.0m and 4.0m.
- The supplying dealership is responsible for routing the seed delivery tube and electric wires between the front hopper and harrow.
- To operate the power harrow on its own, Amazone supplies parking stands for the sowing unit, including the distributor heads, which takes around 30 minutes to take off.

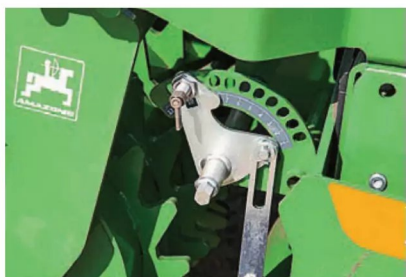
- The front hopper and coulters on the Avant 6002-2 are ISObus-controlled. The £2,385 Amatron 4 terminal is optional.
- According to Amazone, the list price for the base spec machine is £96,960. The featured machine had the larger 2,200-litre hopper, tyre press, bout markers, pre-emergence markers, the company's Amatron 4 in-cab terminal and transport kit ... and this bumps the final price to over £130,000.

Summary: With the launch of the FTender front hopper and KG 6002-2 power harrow, Amazone can now offer a 6.0m wide power harrow drill combination with double-disc coulters. The front hopper has capacities of 1,600 and 2,200 litres with the optional central tyre press, which can be used on its own.

In the cultivator department, there isn't too much difference between the KG 6002-2 and the long-serving KG 6001-2 as far as the actual harrow goes. Main change is that the levelling board is attached to the packer, so, when you alter the working depth of the tines, you don't change the position of the clod board at the same time. If you do need to adjust its height, then this is done from a central position as on the smaller models along with the new side deflector plates.

Like any of these big output power harrow drill combinations, the Amazone Avant 6002-2 is a hefty piece of equipment ... which is why the German machinery manufacturer is offering a transport kit for the 6.2t rig.

Gottfried Eikel



The self-locking pin is used for setting the height of the levelling board.



Also new is the seed depth control with the universal tool.



With the hydraulic coulters pressure adjustment, it's also possible to lift the seed coulters by 15cm.

As a profi subscriber, your many benefits include...

- Independent farm machinery tests
- Workshop hints & tips
- Expert servicing guides
- Buying used kit wisely
- Livestock equipment
- Free online access to 25 year test archive



"profi's hints and tips for the workshop are fantastic. In fact everything you read teaches you something new."

Pete & Rich Burbage;
P & R Burbage contractors;
Northampton



"I've been subscribing to profi for the last 15 years because it keeps me up to date with modern technology and we refer to it when we are buying machinery."

Mark Riddle, John Rowsell Ltd
Winchester, Hampshire



"We've used hundreds of profi's tips and ideas on the farm in the 18 years I've been subscribing. For me, profi is fantastic value for money."

Richard Guilder;
Operator; Grays



"profi's independent information helped us decide which tractor was best for our farm."

David Fuller-Shapcott;
Arable farmer; Kelso, Scottish Borders

Subscribe today and save 40%

DRIVEN TESTED RATED

Subscribe online at subscription.kelsey.co.uk/profi or tel +44 (0) 1959 543 747



SIP Air 300F and 500T mergers:

Belts, front and back

With the likes of the Kuhn and Roc mergers, the tractor drives over the crop before it is rowed up. In contrast, the featured SIP outfit sees a front and rear unit working in tandem. On top of that, the rear Air 500T uses some clever engineering to swap from road to field mode

Mergers are becoming the latest trend in silage making as they tend to sweep fewer stones into the row and reduce the amount of ash contamination. Slovenian grass kit maker SIP is one of those vying for a place in this still niche market, with three mounted models and, since 2019, the trailed Air 500. If the pick-up looks familiar, it's because it is sourced from Thomas Reiter, whose Respiro was featured in our 3/2017 magazine. The Austrian manufacturer also supplies Ploeger with parts for its merger as per our 3/2021 driving impression.

SIP takes these bought-in elements (the small diameter pick-up and additional crop press feed rotor) and adds them to its chassis and drawbar design. The importance of the crop press rotor that pulls forage onto the merging belts was really highlighted in the first-cut crop. The crop flow occasionally stalled on the front-mounted machine, as some of the tines had broken off. Meanwhile the rear unit, with all of its tines intact, had no issue.



Both mergers are hydraulically powered by a pto-driven pump. Oil resides in the frame of the rear merger. Hoses are routed under the tractor to the front unit.

Separate oil

On our test machine, both the front and rear units were powered by the Air 500T's on-board hydraulic pump, with the pipes routed under the tractor to the front Air 300F. The pto-powered pump needs 540rpm to deliver up to 120l/min. Combined with the pick-up's

hydro-pneumatic skids, which are pushed (front unit) or pulled (rear merger), this meant the Fendt 516 was working hard to stay at 15-20km/hr, using around 25l/hr. The machine is operated from SIP's control box. With the push of a button, the trailed merger unfolds into its working position. The



The front-mounted, rear-trailed merger combination is able to gather 8.0m of grass without the tractor running on mown or teded grass.

KEY POINTS

- ▶ SIP introduced the trailed Air 500 to increase output.
- ▶ The front and rear combination gives you great flexibility to alter the amount of grass in each row.
- ▶ We would recommend a minimum of 150hp for the front/rear outfit.



Goat muck was spread on the test field in the spring. The merger pick-up makes sure minimal muck is gathered in, reducing the risk of forage contamination. The long drawbar is telescopic, allowing the rear unit to run left or right, just like a centre-pull trailed mower.



On the terminal, a dial would be really useful for altering the belt speed. This job is currently done using the menu buttons.

Further details

- The rear machine can't be steered manually, which would be useful when squeezing in through a narrow gateway.
- While ground clearance on the rear machine is good, the front machine depends on the tractor's front linkage design.
- Visibility of the rear offset machine is great.
- Both machines can be used solo.

Summary: SIP's front and rear combination clearly differs from the Reiter version, despite sharing the same crop gathering components.

The rear machine, in particular, boasts some sophisticated engineering to allow it to change from its end-tow to offset working position. Note that it does take a switched-on operator to ensure an even, fluffy swath. The tested outfit carries a price tag of £93,000. Putting that into perspective, the firm's 10.0m two-rotor Star 1250-50T rake is £65,010.

Jacco van Erkelens,
Trekker magazine

trailer brakes need to be released and the tractor stationary. As a first step in the unfold sequence, several hydraulic rams and sensors rotate the 5.0m wide unit from its end-on road position to its working mode. The long drawbar then extends to allow the machine to work either side of the tractor, just like a trailed mower.

Lots of storage

The combination of a front and rear merger gives operators lots of rowing up options: place the swath in the middle; to the side; or in two separate rows. In low yielding crops it is possible to swath forage from 16m into a single row.

The operator controls everything by altering belt direction and the position of the rear machine. The combination currently lacks a proper headland management system for quick lift-outs and swapping sides, and some headland functions are hidden on various menus. ISObus with the option to program functions to the joystick would make headland turns a bit easier. SIP should also add a dial for the belt speed to the control box, because this is one item that needs to be precisely altered in relation to the forward speed to avoid a tangled swath.

DATA SHEET

SIP Air 300F and Air 500T

Working width including swath	9.10m
Pick-up width	2.95m (front), 4.95m (rear)
Pick-up diameter	33cm
Rotor diameter	42cm
Belt width/depth	100cm
Weight	1,080kg (front), 4,760kg (rear)
Power requirement	From 88kW/120hp
L/W/H front	1.90/3.00/1.20m
L/W/H rear	6.35/2.50/2.45m
Price without VAT	£24,000 (front), £69,000 (rear)

Manufacturer information



Pöttinger Terria 6030 cultivator:

Three rows or four?

How much trash do you have to deal with? This question will be one for potential Terria owners to mull over, as Pöttinger is offering its new tine cultivator in both three- and four-row configurations

It is hard to miss the larger, integrated running gear on Pöttinger's new cultivator, the Terria. Available in working widths from 4.0m to 6.0m, there is a choice of three or four rows for the tines. No matter which option you go with, the overall number of tines is pretty much the same (refer to the table below).

The tines are arranged symmetrically for uniform penetration, reduced lateral drag and even wear on the ground-engaging metal. The designers certainly succeeded on the wings but had to make compromises on the five leading tines in the central section due to the available space.

Terria models

Three rows	4030	5030	6030
Four rows	4040	5040	6040
Working width	4.0m	5.0m	6.0m
No. of tines	13	17	21
Spacing of cuts	31cm	29cm	29cm

Just three spools

Our Terria 6030 model was coupled to the Cat III lower links of a Fendt 942. Your other attachment options are Cat IV N or pulled from a drawbar pin. Interestingly, there's no K80 spoon option from the factory.

Thanks to a trio of three-way valves on the excellent hose holder, you only need three double-acting spools to control the depth, folding and running gear as well as selecting the pressure for the folding elements and tine overload protection. Good stuff, and equally handy are the markings for the individual valve positions and the couplers.

Standard rubber on the running gear are two 15.5/80-24 AS tyres. Wheel diameter is nice and big, which helps make up for the relatively narrow width due to the space within the machine. That said, we still think it is worth adding the £3,307 four-wheel running gear, which is only an option on the 6.0m model. After all, the 6030 model tips the scales at a porky 8,000kg.

KEY POINTS

- ▶ Pöttinger's Terria comes in three- and four-row versions. Working widths are 4.0 to 6.0m.
- ▶ The 6.0m machine has 21 tines arranged symmetrically.
- ▶ Both the spring and hydraulic ram tine protection systems are maintenance-free.
- ▶ Integrated running gear on the 6.0m machine can be booted with up to four large tyres.

Winged tines

For the primary pass, our machine was kitted out with 35cm wide wings, which space their cuts at 28.6cm, overlapping enough for a full width covering. The legs and wings can also be fixed at two angles for more or less pitch (tines) and a shallow or deeper mix (wings).



We were impressed by the performance of our semi-mounted Terria 6030 model in pea stubble.



Aerial view shows the symmetrical layout of the 21 tines.

DATA SHEET

Pöttinger Terria 6030

Working width	6.00m
Number of tines/spacing of cuts	21/29cm
Overload protection	Coil springs
Trip/break-back height	600daN/35cm
Underbeam clearance	82cm
Number of bars/bar spacing	Three/80cm
Number of discs	12
Tandem Conoroll roller diameter	56cm
Tyres on gauge wheels	11.5/80-15
Tyres on running gear	15.5/80-24
Tractor power	270-420hp
Transport width/length	3.00/8.40m
Weight	8,040kg
Price	£59,250
Manufacturer's information for base spec machine	

We went with the more vertical set-up for our dry to medium soil and bolted the wings on at their shallow angle so that volunteers and weeds were not buried too deep; working depth was set at 8cm. The test cultivator was

www.afmachinery.co.uk

hwhite@afmachinery.co.uk

+44 (0)1327 530006

AFM

Attlefield Farm Machinery

10% off parts orders over £100!



SPEARHEAD Multicut 300 for sale
£6,750.00



SPEARHEAD Stubble Master 730 - Ex Demo
£POA



SPEARHEAD Sniper 600 SHD
£18,250.00



2006 SPEARHEAD MULTICUT 620 This Spearhead has been fully serviced.
£7,550



SPEARHEAD Multi Cut 460 - Special edition
£15,250.00



2020 SPEARHEAD SNIPER 270 LH - 540 RPM, Left hand.
£4,750



2020 SPEARHEAD SNIPER 280 HD LH fail mower for sale, Heavy duty push pull flail
£6,250



SPEARHEAD SNIPER offset 225 flail mower
£6,395



Coil springs are the standard method of obstacle protection on the Terria, while hydraulic auto-reset is an extra-cost option. The 40mm narrow point for deeper working is a new option for Pöttinger.



Drawbar options are lower links (as shown) or a hitch pin.



The Austrian firm has offered the Conoroll ring design on its tine and disc cultivators for several years, but not in this interlocking tandem arrangement. Their design is said to stay clean and is reckoned to reduce surface ridging.



The concave levelling discs rarely need adjusting, thanks to their parallelogram linkage set-up.

sporting the conical points, which taper out from 40mm at the point tip to 80mm. With a forward speed of 10-12km/hr, we were happy with the job being done. As an aside, flip-over shims on the drawbar ram allow you to put more weight on the tractor to aid traction. Switching to a field of barley stubble, the mat of chopped straw passed through the machine without blocking up. Even on the three-row machine, bar spacing is a decent 80cm while underbeam clearance is 82cm. The running gear is also raised up out of the way.

Sticking to depth

The Terria's two pairs of leading depth wheels (11.5/80-15 AS rubber) work with the rear press to control tine depth. This may vary in extreme troughs and ridges due to the length of the cultivator and the distance between the leading gauge wheels and rear roller.

Working depth ranges from a shallow 5cm to 35cm, according to Pöttinger, and is changed hydraulically, with the current depth clearly shown on a durable scale. To ensure the depth is changed in sync on both Terria wings, a flow divider valve sends an equal amount of oil to both sides. The rams on the press and the double wheels are connected by a master/slave set-up.

Replacement iron

Pöttinger offers a choice of points and wings to suit abrasiveness of the soil and different budgets – from the simple Classic version to hard-faced wings and tensile-steel-coated points. What's new is the 4cm narrow share that can bust its way down to 35cm for those looking to work their ground deeper.

Spring back

For those lucky enough to be on some 'boy's ground', there is no shear bolt version of the Terria; instead the base spec machine has coil spring leg protection. The tripping set-up has undergone a bit of a transformation when compared with the Synkro's design, with a sturdier mounting system attaching it to the 100mm 'box' frame. It's also maintenance-free. Pöttinger says the static trip force has increased from 550daN to 600daN and the leg can now lift by up to 35cm.

The hydraulic overload protection system is a £1,275 option on the 21-tine, 6.0m machine. This uses the same basic hardware but the coil spring is swapped for a single-acting ram. The key advantage is that the trip pressure is variable all the way up to 650daN.

Secondary protection on both systems comes from a shear bolt, which is also used to alter the leg's vertical position.

Around the back

Six scalloped, concave discs look after the levelling. Depth control for these is carried out manually by four spindles, which have an embossed scale. The disc gang is bolted to the frame for the roller, so their depth is rarely affected by a change to the tine depth.

The tandem Conoroll press is what Pöttinger proposes for light and medium ground. We were impressed by the parallelogram frame that distributes the load evenly between the two interlocking rows of rings. Four segments are bolted together to form each ring.

The rings alternate between a left and right pitch to help them stay running clean without scrapers and avoid ridges.

Further details

- A 1.0m longer drawbar is an option for those customers running tractors on wide tyres or dual wheels.
- There is no mounted version of the Terria. This market is catered for by the Synkro – in effect, the new cultivator replaces the semi-mounted Synkro.
- For now, there is no quick-fit point option, so it might well be worth investing in the battery-powered impact gun for whipping off the four (point, shin and wing) or two bolts (narrow point).
- Pöttinger is working on a solution that will allow the Terria to be operated without the rear press.
- For transport, you lower the Terria's ground clearance from 30cm to a little over 20cm, to make full use of the accumulators.
- Base spec list price for the semi-mounted

FOUR ROWS, MORE CLEARANCE

The Terria 6040 has five key differences to the 6030. Tines are spread across four rather than three rows, and there are one fewer pairs of levelling discs. Both of these two

differences make it 80cm longer and 200kg heavier, while the price increases by around 6-7%.

The fourth row extends the frame and, in doing so, its tines are more spread out.

This should appeal to farmers dealing with large amounts of trash, such as straw on ex-carrot ground, and, to a lesser extent, any straw left after grain maize.



The Terria 6040 hosts the same number of tines as the 6030, but they are dispersed across four rows, boosting the machine's trash flow credentials. In other words, there's more clearance.

Terria 6030 with tandem Conoroll press is £59,250. This figure increases to £62,557 if you add the four-wheel running gear, Durastar longer lasting metal etc. The four-row 6040 is £63,507.

Summary: The new Terria is a formidable development. The choice and design of tools, the overall design, the running gear, quality of work, depth control and machine set-up all

get a thumbs-up. A quick-change point system would be the icing on the cultivator cake and well worth having.

With a list price of £59,250, the 6030 occupies the middle ground compared with its other competitors. It will be interesting to see if end users are willing to shell out the extra cash for the overload protection system.

Gottfried Eikel

NEW!

SUFFOLK RANGE



Now available in widths from 6 metres to 24 metres.

- Single or twin macerators
- Left- and right-hand geometric control
- Compatible with flow meters and slurry monitors
- Automatic transport latches with safety lock

Contact us today: Call: +44 (0)1449 766133

Email: info@tramspread.co.uk Visit: www.tramspread.co.uk



TRAMSPREAD
DIGESTATE AND SLURRY MANAGEMENT



The Golem LV540 comprises three flat rollers, each measuring 2.0m wide.

SMS Golem LV540 grass harrow and roller:

Smooth and heavy

For those looking to give grassland a tickle and then firmly push seed – along with any stones – into the ground, Czech firm SMS sells the Golem LV540

Czech implement manufacturer SMS sells a range of grassland rejuvenation tools. Among them is the substantial Golem, a three-gang flat roller kitted out with a levelling board and two rows of grass tines. The odd name relates to a figure from Czech mythology that is made from loam – every day is a school day.

Three rolls

A trio of flat rolls, each measuring 1.02m in diameter and 2.00m wide, can be ballasted with 4,700 litres of water, pushing the weight of the combination up to around 11t. This weight should appeal to any farmer wanting to pound stones back into the ground and out of the reaches of mowers, tedders and rakes. Customers can opt for 10, 14 or 20mm thick roller walls, and there is also an aeration version with spikes welded to the drum.

Towed from the tractor's rear lift arms, the sizeable crossbar is a good indicator of the weight of the LV540. We found the drawbar a tad short for the size of tractor it's going to take to pull the ballasted roll on a hill, with the risk that the back wheels foul the leading tine when turning on the headland.

You will need three double-acting spools to independently look after the folding, running gear and tines. It also needs an air brake connection and a three-pin, 12V power point for the APV seeder's metering unit and fan. The test machine had a 500-litre hopper, and a hydraulically powered fan is an option.

Tug for the test day was a 199kW/270hp, Claas Axion 870, which coped well in our late summer conditions. SMS recommends at least 100kW/136hp for this combination: all of that and more are needed if you're going to be pulling a ballasted LV540 uphill. And if you

KEY POINTS

- ▶ The SMS Golem is an 11t combination of grass harrow tines and a flat roller.
- ▶ SMS attaches the tine bar with U-bolts to the main frame. Tine spacing is large.
- ▶ Dales Agri Sales Agency is the SMS importer for Great Britain.

don't fancy your chances when travelling back downhill, it's worth specifying the optional air brake system for the central roll. Despite its bulk, the massive Golem folds to a compact 2.57m transport package that also provides reasonable ground clearance when raised for the road. Four rams fold the rollers in the field.



The rolls fold into a compact transport package, measuring 2.57m wide, so navigating narrow rural lanes shouldn't be a problem. Filled with water, this rig tips the scales at just over 11t.



Given the weight, it is worth specifying the air brake system for the centre gang.



Seed is blown into the second row of tines, where it's immediately rolled into the sward.



Clips adjust the tine height, but, when raised, tine clearance is limited, which can be an issue. There are 45cm between the two rows of tines.



Our test farm says that complete reseeds with the SMS combination have been successful, too.

The tine bar is attached with beefy U-bolts to the Golem's frame. The toolbar comprises a levelling bar with a spring-loaded, L-shaped bar for knocking molehills and clods. This is followed by two rows, 45cm apart, of 12mm tines that touch the ground every 7.5cm. This might be on the narrow side for harrowing out dead grass.

The Golem harrow frame is suspended on a parallelogram linkage that allows the rear row

of tines to be raised hydraulically. Shim clips on the rams limit their stroke and in doing so the depth of the tines – a simple solution. The levelling board at the front is adjusted from a spindle.

Reseeding and stitching

Irrespective of whether stitching in or doing a full reseed, the seed is blown between the two rows of tines via seven angle-adjustable

DATA SHEET

SMS Golem LV540

Work width	5.40m
Transport width	2.57m
Transport length/height	5.76/3.50m
Total weight	6,310kg empty, 11,000kg (filled with water)

Spacing of cuts	7.5cm
Number of tine bars	Two
Number of tines	68
Tine diameter	12mm
Roller diameter	102cm

APV Seeder

Number of outlets	Seven
Hopper capacity	500 litres
Running gear tyres	550/45 R22-5
Tractor attachment	Cat III
Hydraulic connectors	One single-, two double-acting
Input power	100kW/136hp
Price	£35,080 for test spec
Manufacturer information	

splash plate distributors, the roller ensuring decent seed-to-soil contact.

The seeder is sourced from APV. There are no gripes here. The platform, calibration and the control box are all straightforward enough and well integrated into the machine.

We were harrowing and rolling grass that was a bit too long, but the tines were still able to break up crusted swards and allow the seeds to reach the soil. Even when not ballasted with water, the roller was heavy enough to do its job.

A compromise is made when it comes to work rates: 8km/hr is the ideal speed for the roller, whereas the tines could do with travelling a bit faster. The owner of the featured machine says he has also been able to use it for sowing catch crops and complete grass reseeds with good establishment results.

Further details

- In addition to the L-shaped levelling bar, SMS also sells a more aggressive crossboard with tines or scarifying knives.
- Cornering in work is not a problem.
- Overall ground clearance is limited from the raised elements.
- The scraper on the drums is mechanically adjusted in a slotted hole.
- The Golem is also sold in a 3.0m working width, which costs £12,800 for the 14mm drum version and without the seeder.

Tobias Bensing



The CMA umbilical system from Canadian manufacturer Cadman.



Cadman CMA umbilical system:

Roll out, roll in

Irrigation equipment maker Cadman has turned its hand to umbilical slurry with the Continuous Manure Application rig, which allows slurry and digestate to be applied to row crops such as maize. We speak to the German farm operating the first unit in Europe

Umbilical systems have become the tool of choice for getting slurry on to wet ground. But, weighing in at 35t, the Cadman CMA is clearly off the list for a gentle tread. Moreover, its weight is not the only big stat for this €500,000 bit of kit, it measuring 14m long and 3.40m wide. Undeterred, one German farming business has been tempted to stump up the cash for the Canadian-built umbilical system. Why?

Between the rows

So, what makes the CMA different? Well, the outfit has more in common with an irrigation system, coming complete with its own engine and drive system. This allows the unit to move along the headland autonomously or by remote

control. The spreading tractor travels up and down the field at a right angle to the reel. While driving to the far headland, the tractor pulls the hose behind it ... until it reaches the end of the field. A hose rack then folds out to the side, allowing the tractor to make its turn while the pipe remains in situ. As the tractor travels back along the next bout, the reel winds the hose back in. Once the tractor has returned, the CMA shuffles along the headland two bout widths (which is done automatically via GPS) and lines itself up for the next run. And the cycle starts again.

Stumping up the cash

The Gut Velgast estate is suited to an umbilical system, as the slurry lagoon is central to the

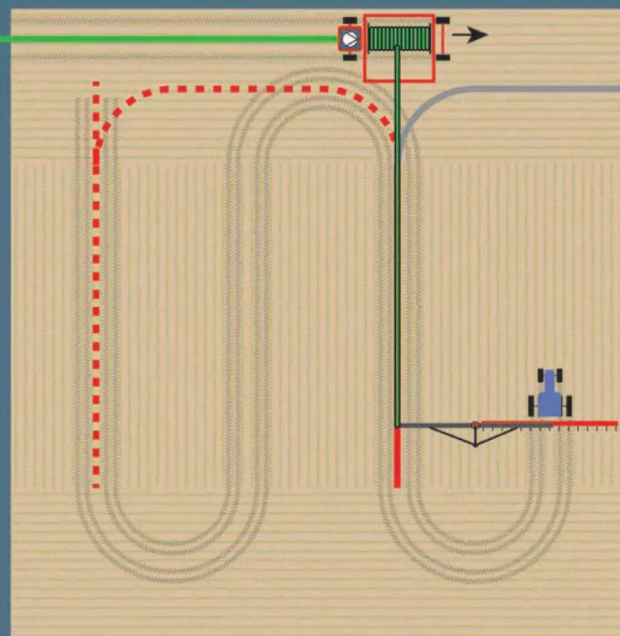
750ha farm. Previously, slurry was spread with a tri-axle tanker complete with a 24m boom, but the CMA umbilical system means

KEY POINTS

- ▶ The Continuous Manure Applicator (CMA) is designed for applying slurry in row crops.
- ▶ It is based around a self-propelled reeler with a 375hp motor.
- ▶ Though it appears complex, the system is efficient, applying up to 270m³/hr in the hands of a skilled operator.



The Cadman reel unit, with its integrated pump and engine, moves autonomously along the headland.



Once the spreading tractor reaches the headland, an arm folds out to carry the hose from its original line as the tractor heads back up the field.



A tongue guides the hose to the reel. The drum has an inner diameter of 2.80m and can hold 823m of pipe.

the farm no longer has to run on public roads, while the 2km long fields in this part of North East Germany are able to maximise output. Farm manager Hero Kromminga has been working with 36m tramlines since last year. "When a loaded slurry tanker travels along the same tramline four times in the spring, it leads to deep ruts. These ruts have already cost us one cutterbar for the combine," says Mr Kromminga. "We want to apply a lot of slurry in a short time – but in a way that is gentle to our soil. This system works well in cereals, although we had to modify the boom ourselves. The umbilical system can also be used in row crops such as maize, although the Canadians use different application rates than what we usually do in Germany."

Big kit, big farms

Anyone who has operated or even seen a conventional umbilical system will be aware of the effort required to set it up. With the CMA, there is the additional task of moving this sizeable chunk of machinery on public roads, which in Germany means obtaining a special permit for the 3.40m wide, 35t CMA. Hence the system at Gut Velgast will probably remain very niche.

Once the reel is in the field, a supply pipe has to be routed from the lagoon to the CMA, and finally the boom has to be coupled up.

More than 10m³ of slurry is swallowed up by the 823m long PE pipe on the 2.80m drum, and, reassuringly, the 6-inch hard plastic hose does a good job of maintaining its shape.

Deere powered

A 281kW/375hp John Deere engine powers the self-propelled reel as well as the Cornell centrifugal pump via a transfer box. The slurry flow rate and pressure are controlled by the engine speed. Hydraulic functions are catered for by two pumps, and these also power the four Poclain wheel motors and the massive screw compressor that's used to

DATA SHEET

Cadman CMA umbilical system

Length/width/height	14.00m/3.40m/4.10m
Dead weight	35,000kg
Wheelbase	10.40m
Engine	John Deere 6.8-litre, 281kW/375hp
Drive	Four wheel motors, max speed 7km/hr
Hose reel inner diameter	2.80m
Winding speed	7km/hr max
Hose length	823m (PE 6 inches)
Pump	Cornell 4NHTB
Output	270m³/hr max
Operation	By radio
Price ¹⁾	About €450,000

¹⁾ Manufacturer information; ²⁾ price is complete with feeding pump, reel and distributor

The tractor unwinds the hose as it travels up to the other end of the field ...



... and, on the return trip, the reeler wraps the hose back onto the drum under its own steam while the tractor continues to spread slurry.



The remote control on the tractor is reckoned to make this a one-man operation.

flush the hose with sponge balls. All of the key reel functions are operated by a durable-looking radio remote control, which has a range of over 1km. At the time of our visit, the farm was applying slurry to standing maize, with two people on hand, communicating by radio. Ideally all of the tasks are carried out by the operator, although this is easier said than done.



Hero Kromminga manages the Velgast Estate. The 750ha farm is all in one block.

Unwinding the hose isn't an issue. A hydraulic braking effect stops the pipe from spinning off, while the tractor pulls the hose off the reel at about 5km/hr.

On the pull

Velgast was using its Massey Ferguson 7624 to pull a 12m wide Cadman injector. After a heavy rain shower, the row crop duals were starting to spin after 400m. On grassland and cereals, the experience is much better, says Mr Kromminga.

While the tractor is turning, a 6.0m long side arm swings out (half the working width). This allows the hose to remain in situ between the rows of maize and not be pulled around corners or bends, where the hose could damage the growing crop.

In close communication with the reel operator, the hose is wound back onto the reel at the same speed. If reel and tractor speed are not the same, there is an enormous amount of leverage applied to the tractor's rear lift arms from the hard hose, which is 12m away.



The intention was to run the 18m applicator in cereals, but the outfit has proved to be far too heavy.

The hose is fitted with shug couplers that have proved easy to use.

be reduced when pulling out the hose, as you can't go faster than 5km/hr.

For cereals and grassland, Mr Kromminga switches to an older 24m dribble bar boom, which has been converted for use with the CMA, as the supplied 18m Canadian version doesn't match the lift capacity of the farm's current tractor fleet.

Further details

- The reeler has a 'tongue' that folds down in the front of the drum to help guide the hose. A mechanical guide, which moves up and down on the side, ensures the pipe is correctly wound in.
- An NIRS sensor is going to be added to the featured machine.
- For cereals, Mr Kromminga pulls out the hose and operates the Cadman like a normal umbilical system.
- In addition to the CMA, Cadman also makes conventional umbilical systems, including lay-flat hoses. The company sells a simpler, entry-level version, on which the reeler is pulled by a tractor.
- The CMA has a 950-litre diesel tank and circulates 500 litres of hydraulic oil.

Summary: Cadman's CMA is not your usual umbilical system and is designed to work in large fields. The amount of power required to lug the 6in pipe shouldn't be underestimated, while the PE material used by Cadman seems to be more resistant to damage from stones than lay-flat pipe. With a price tag of around €500,000, don't expect to see one of these outfits in every contractor's yard.

Tobias Bensing

270 cube in an hour

Once the system is set up, it can achieve rates of 250m³/hr or more. The 12m wide injector

has a total of 15 x 50mm outlets, with the slurry partly incorporated by rolling stars. In this situation, the application rate needs to

ARABLE AND MEADOW INJECTORS: 35 YEARS OF EXPERIENCE



Multi-ACTION



from 3 to 7.74 m
Row spacing: 21.50 cm

Solodisc



from 3 to 7.74 m
Row spacing: 21.50 cm

Solodisc XXL



from 6.37 to 7.87 m
Row spacing: 18.75 cm

Terrasoc



from 2.80 to 5.20 m
Row spacing: 40 cm

Terraflex/2 - 2XXL



Terraflex/2:
from 2.70 to 5.20 m
Row spacing: 30 - 40 cm
Terraflex/2XXL:
from 5.70 to 8.62 m
Row spacing: 37.5 cm

Terradisc2



from 4 to 6 m
Row spacing: 25 cm

JOSKIN

ARABLE AND MEADOW INJECTORS

- Mastered industrial production = guarantee of reliability
- A complete personalised spare parts book to download at any time - for a quick and precise after-sales service
- Manufactured in accordance with European standards
- 3 year warranty

SAVE MONEY



Vertical Scalper:
24, 32 to 36 outlets



Horizontal Scalper:
from 12 to 40 outlets

JOSKIN

13A

joskin.com



ENVIRONMENTALLY FRIENDLY, COST-EFFECTIVE AND EASY TO IMPLEMENT

CLAAS

XERION 3800



Year	2009
Condition	Good
Hours	6,500
Comment: Front linkage. 650/65 R42 tyres. Standard UK spec with cab and front axle suspension, compressed air system and hydraulic brakes. Sought after used buy.	
Price	£58,950

CLAAS

XERION 3800



Condition	very Good
Hours	3,500
Comment: Front linkage. 800/70 R38 tyres. Standard UK spec with cab and front axle suspension, compressed air system and hydraulic brakes. Very tidy arable only tractor, great condition but tyres getting down	
Price	£76000

Claas Xerion tractors:

Power and versatility at ordinary tractor money

Back in 1996, we published our first driving impression of a pre-production Claas Xerion. Exotic back then, a pre-owned Xerion can now make a compelling case for those who know exactly what these tractors are about. But what if you think power first and application second?

Although the Xerion story begins in the late 90s, sales in the UK only really started to gather momentum in around 2004 when Claas introduced the nominal 335hp Xerion 3300, with the 379hp Xerion 3800 that arrived in 2007 going on to be a decent seller that is now in strong demand as a pre-owned buy. A key line-up change came in 2009 with the introduction of the 483hp Xerion 4500 and 524hp Xerion 5000, the latter pushing the boundaries for a stepless transmission to this power and size of tractor for the first time. For the 2014 season, the 435hp Xerion 4000 arrived to oust both the 3300 and 3800 from the range. In 2020 the Xerion 4000 was itself replaced by the 462hp Xerion 4200.

As a potential used buyer will know, Claas offered the Xerion as a 'standard Trac model' with a fixed position, mid-mounted Vista cab or the Trac VC with a cab that pivots through 180° to enable the tractor to be used in forward or reverse drive. For specialist mounted kit, the third choice was the Saddle Trac with a fixed position cab, located over the bonnet to create a larger load area for the likes of a slurry tank.

As an outline, this simplifies what has been the steadily evolving tractor range. As the Xerion has developed, so too have the specification choices. With a Xerion 3800 most will have much the same outline spec with either a fixed or reversible cab. That is not the case with the 4000 and 5000 series.

What follows is a bit more development detail, skipping the very early, thin on the ground models, and moving straight to the '3000' series.

Claas Xerion 3300

All Xerion 3300 models are powered by a six-cylinder Caterpillar C9, 8.8 litre engine. Rated power is in the order of 335hp, with a maximum torque of 1,450Nm. Drive to the four equal sized wheels is transmitted from a ZF CVT Ecom 3.5 transmission, this delivering a maximum forward and reverse speed of 50 km/hr at 1,800rpm. Traction, incidentally, should not be an issue with a correctly set up and ballasted Xerion, regardless of generation. The Xerion 3300

CLAAS

XERION 3800 VC



Year	2013
Condition	Excellent
Hours	11,000
Comment: Front linkage. 800/70 R38 tyres. Standard UK spec with cab and front axle suspension, compressed air system and hydraulic brakes. 40pm/hr transport speed	
Price	£67,950

CLAAS

XERION 5000



Year	2015
Condition	Excellent
Hours	4,600
Comment: Front weight pack. 900/670 R42 tyres. Comprehensive spec with guidance. Cab and front axle suspension, compressed air system and hydraulic brakes. 40km/hr transport speed. No pto	
Price	£128,000

was shod with 710/70 R42 tyres as standard, although 650/65 R42 were a popular alternative, and all four wheels are permanently driven. Both the front and rear axles have lockable differentials with the central diff also locking if required. Get the ballast and tyre pressures right and these tractors will deliver excellent draft performance. The transmission is obviously an integral part of the tractor and one that users suggest is a

key Xerion plus once you master how to get the best from it. The key operating modes on the 3000 series include:

- **Manual.** In this mode, the tractor can be driven in a similar fashion to a hydrostatic drive, with seamless CVT speed control. It can be argued this is a largely redundant mode as it does away with the managed link between the engine and transmission, possibly compromising fuel economy.
- **Cruise Control.** This allows the tractor to

operate at a constant speed and is recommended for non-ptd applications for optimised fuel economy.

- **'E-Gas'.** This retains a constant engine speed, typically where pto driven attachments are being used. Essentially hand throttle mode (with three presets)

Familiar controls

All key operating controls are accessed via the multi-function joystick controls shared with the Lexion combine and Jaguar forager of the day. Positioned to the right of the driver, the lever can be used to alter forward speed, operate Autopilot functions, select forward or reverse, operate the cruise control mode as well as operate the front and rear linkage. Four operator programmable function buttons add further levels of control. Operators of contemporary Claas Lexion combines will spot some cab cross over details including the CEBIS display. In outline it will provide key road and field operating info and can be set up to link to various operating systems. It will also provide maintenance and performance information, all of which can be useful to explore when looking at the past use of the tractor. Although the Vista cab on this generation of Xerion features automatic climate control, an air-suspended seat, electric mirrors and 10 work lights, it is not overly roomy and was one negative we picked up in our driving



Original Xerion 3300 main control panel would have been familiar in its layout to Lexion combine operators, with a CEBIS II multi-function controller. The simple, uncluttered design will not take long to work out. When looking over a pre-owned tractor, time spent running through the various controls as the tractor warms is never wasted. Do not forget to check the cab ventilation and air conditioning.



For the 2011 model year, an updated Cmotion controller was fitted. Claas pretty much left the cab design alone following its developments in 2006 but subtle tweaks in the interim have helped keep it up to date.

Along with the revised controller, the panel layout was changed in 2011 and this is still in use on current models.

impression of the 'first gen' Xerion 3300 (profi 1/2006). A bit more later.

As you would expect, the load sensing hydraulics of the Xerion 3300 are of a pretty decent spec, boasting a 150 litre/minute pump and four electric spools as standard front and rear. CEBIS is used to set up the hydraulics up to suit the application, with adjustable flow, time and proportional engagement.

There are six-steering modes, including offset crab that allows the tractor to be driven in a straight line with the front and rear wheels running in a different track. Again all of the steering modes are controlled via the CEBIS system.

As to the pto, a 20- spline shaft was the standard fit. A front pto was never fitted but it could vary on a pre-owned buy. As to control, the pto could be operated in either manual, automatic or in a pto drive mode dependent upon the model.

Just to bring a bit of pricing into the equation, a fixed central cab Xerion 3300 had a retail price starting at £129,600 in 2004, fixed forward or pivoting cab models selling for £134,250. These early 3300 models will now be a rare used find in the UK as there was a healthy demand for them back in Germany.

New cab for 2006...

Hot on the heels of our January 2006 Tractor Test, we carried an update the following month of the revised Xerion 3300 and its new larger cab. This features a larger glass area, a new adjustable steering wheel and driver's seat, and the addition of extra work lights. Outlined thus it will seem something of a 'big



A 2009 factory shot of the Xerion cab will look pretty much the same as more recent models, but take a look at the base of the steering column...

...and note how the pedal arrangement changed along with the view over the bonnet. Mercedes powered 4000 and 5000 Xerion tractors no longer have the big chrome exhaust stack on the offside front.



deal' but in practice the new cab made a real difference to the driving experience. Key cab improvements include 170mm of extra width and 100mm greater length, the latter meaning there is some space behind

the seat. The foot pedals were realigned, and the seat is just better all-round. There were a few other detail changes made for the 2006 model year such as the standard fit an air compressor with air-line connection.

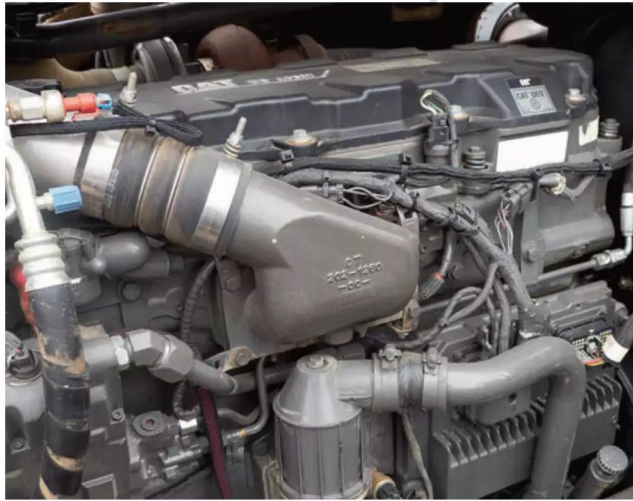
...and the top selling 3800 in 2007

The Xerion 3800 arrived in 2007 and it is this model that perhaps triggered the biggest uptake of the Xerion in the UK, helped by it being competitively priced. Again, power comes from a Caterpillar six, but this variant had revised injectors, a different turbocharger and charge air cooling to boost output to 379hp and torque to 1,620Nm at a

considerably lower 1,400rpm.

The increase in engine output saw Claas adopt strengthened axles and a revised transmission for the 3800, the latter enabling a maximum speed of 50km/hr at a reduced 1,700rpm. Claas claimed the 12% increase in power offered by the Xerion 3800 resulted in a similar increase in productivity over the 3300 whilst still using

Cat C9 engines are typically solid, dependable and relatively fuel frugal power units but they do need fresh oil and filters at 250 hour intervals and the valve clearances benefit from a check and adjustment at least every 2,000 hours. If a used buy proves a hesitant starter, ask questions.



pretty much the same amount of fuel. The 3800 outsold the 3300 pretty much from its introduction.

Of note is that cab options aside, most 3800 models sold in the UK had pretty much the same spec; 50km/hr in forward and reverse, a 1,000rpm pto and around 7.0t front and 9.0t rear linkage capacity.

CSM in 2008

The Xerion 3300 and 3800 range started to have the Claas Sequence Management, CSM, installed as standard from 2008, this enabling the set-up and recording of up to four headland or other operational sequences. Once set up, a sequence could then be activated using buttons on the CEBIS joystick. An automatic pto control, just for the rear-linkage, was also added to switch drive on or off according to the linkage position.

On the engine front, a factory fitted reversible fan was made available with Claas GPS Pilot guidance system appearing on the options list. As to standard specs, these were upped on UK bound Xerion 3800 models to include heavier duty Category IV linkages and five rear spool valves.



Precision in a new dimension.

Better distribution accuracy, an unbeatable slurry disposal, long service life, simplest Assembly and retrofitting – the innovative new trailing shoe linkage BlackBird from Vogelsang is unique in the market. Because everything depends on placing the manure right there where it can optimally unfold its effect: at the foot of the plants. For better Plant growth, less nutrient loss and lower environmental impact. Characteristic for Vogelsang. Leading in Technology.

vogelsang.info – Sion Williams 07817 986561

1929-2019 **90** YEARS

VOGELSANG

Expanded range

The existing Xerion 3300 and 3800 were set to be joined by the Xerion 4500 and the Xerion 5000 in 2009 although in practice the models were not fully production ready until early 2011. Both of these are powered by Stage IIIA (Tier 3) Caterpillar 12.5 litre engines with charge-air cooling controlled by Claas designed engine management.

The air intake system incorporates a coarse dirt separator from a grille in the top of the bonnet, with the dirt particles constantly discharged via the cooling fan. On the fan itself, the rotation speed and vane angle are both adjusted automatically to match cooling to demand and can be reversed for cleaning. With respective maximum power outputs of 483hp and 524hp respectively, Claas claimed the two new models offered a number of distinct benefits over similar powered

articulated or tracked tractors. First up was the fact these were the first tractors in the upper power segment to feature a CVT. Second the 500hp Xerion 5000 was the first tractor of its size and power to have a maximum travel speed of 50km/hr.

The Xerion 4500 and 5000 have design details variations when compared to the smaller models and feature a full frame chassis from which the major components are suspended. Where additional ballast weight is required there is the option to add weight to the front or rear plus to the wheels as required. The choice of weighting options span 13,400kg to 24,000kg.

A fork in the road

Although they are of the same family, these two large Xerion models are physically larger as is reflected in the sizes of tyres available.

The 'smallest' offering is a hefty 2,050mm diameter 800/70 R38 on all four corners, with the option to go for a 2,160mm diameter 710/75 R42 tyre. These would keep the tractors to within a 3.0m transport width. Wide 900/60 R42 tyres were offered, although these would lead to an overall vehicle width of 3.30 m. As with the smaller Xerion models, drive to the two steered axles is through a ZF Ecom constantly variable transmission, the 4.5 variant used having a higher duty strength.

The two 'big' Xerions boast a significant hike in hydraulic performance, the 205l/min hydraulic circuit operating at up to 200 bar with flow rates of up to 105l/min available for each spool valve. Up to six rear spools can be fitted. As a further option a Power Hydraulic system, with a maximum flow rate of 235l/min, was offered reflecting the

KEY USED BUYER QUESTIONS

Engine

On start-up from cold Caterpillar engines typically go through several crank revolutions to build up pressure in the fuel injection system. It is normal for one to turn over for longer than you might expect. Early emission controlled engines can emit quite a bit of black smoke under revving. Again, this is completely normal.

If a Cat engine is a reluctant starter and has a rough idle, the fuel pump and injectors may need attention. Engine oil and fuel filter service intervals on the C9 engine is every 250 hours. Cat or OEM Claas filters are a must. If the tappets are noisy, the top end may need attention, with valve clearances typically needing a check every 2,000 hours. Cat power units will exceed 10,000 hours without major problems if cared for, a few needing attention to leaks, such as from the timing chest gasket, but most just do the job if serviced to schedule.

Later Mercedes engines should run with completely clean exhausts with the exception that any engine running AdBlue engines can produce steam when cold. This is normal.

Users suggest fuel use from all models is dependant upon how the transmission is set up, and ensuring the tyre pressures and ballast have been adjusted to suit the task. If a used buy proves thirsty, seek set-up advice before assuming there is a problem with the engine or transmission.

In work, a Xerion 3300 or 3800 can feel and

sound as if it is labouring. This is something you will get used to, the engine and transmission set-up working to exploit the torque on offer at lower engine speeds.

Transmission

If calibrated and serviced properly, all variants of the ZF Ecom transmission should be utterly dependable. Calibration, which is carried out via the CEBIS controller, does not take very long but it has to be carried out correctly and is well worth having it done by a dealer at least once a year. This is not to suggest there will never be a problem. Some have had clutch packs need replacing and other small problems that, when ignored, lead to a bigger repair bill than expected. Some Claas dealers are reluctant to split the transmission simply because they may not have the facilities to do the job but there is good specialist support available through both Claas and ZF. That said, ZF transmission problems are rare on tractors that have had correct servicing. Give any greaseable bearings within the driveline a check. There are a few that need to be greased as part of routine maintenance. Take a look also for any oil weeping from any axle and hub seal.

Frame

Claas redesigned the frame for the 4000 and 5000 series, and problems with these are typically not something to worry about. The 3000 'Saddle Trac' models used for duties

such as with a mounted slurry tanker may need a frame check as they can twist if used for fast road work with a full load. The chassis cross member ahead of the transmission can crack where it is welded to the chassis and the cross member near the rear axle can also need attention. A lot will depend upon how the tractor has been worked. Claas dealer advice is that 'arable' tractors are fine.

Other items

- Brakes and axles are not known for problems, but they do need checking as wear can go unnoticed that in turn leads to more expensive repairs being required. The front axle pivot on the 3000 series can also wear.
- Cooling packs on older 3000 machines can fail, so look carefully for leaks and broken mounts.
- The linkages on all Xerions can be prone to seize through lack of use
- Early 3000 series auto-steer systems are now getting long in the tooth feature wise and accuracy in work will not match more modern systems. Be realistic in your expectations!
- Although there are no 'typical' problem areas to be wary of, you have to be mindful that early Xerion models are now getting quite old. You have to be prepared to spend a few pounds to keep on top of maintenance if you are after full dependability.

potential demand to operate equipment such as swan neck slurry tankers.

As with all the main operating systems on the Xerion, the electronic linkage on the Xerion 4500 and Xerion 5000 is set-up using CEBIS and operated via the Cmotion control. Linkage lift capacity is around 8.1t up front and 10.0t on the rear.

In the cab, the multi-function control lever saw a design change to enable it to be operated using just three 'fingers', an integral hand rest making it more comfortable to work. The design should require just your thumb to control functions such as the hydraulics, changes in direction, CSM headland management and GPS steering. The index finger can work cruise control and two programmable buttons, the middle finger panel incorporating a programmable rocker switch for functions such as engine speed. Another change was that the lever could now be moved forwards, back and sideways to change travel speeds and adjust the wheel angle when crab steering.

Farewell to Cat and the 3000 series

Adopting the same design template as the high horsepower Xerion 5000 and 4500, the new for 2014 435hp Xerion 4000 replaced the 3300 and 3800. Claas changed its nomenclature too, the fixed centre cab



When looking over a used buy, try out the various steering modes. The ability to drive the tractor with the front and rear wheels following a different track is useful for tasks such as slurry injection, but also works well when working a big buck rake on a clamp.

models becoming Trac, Trac VC for the rotating cab and Saddle Trac with the forward cab. The load bearing chassis, from which the main components are suspended, adopted a revised cross braced and bolted construction

in place of the welded frame used previously. Claimed to offer added strength, the frames address a problem of frame fatigue leading to cracks that could happen with previous generation Xerion tractors. On the Xerion 4000, up to 6.8 and 5.0 tonnes can be carried on the front and rear linkage respectively, whilst a further 3.4 tonnes can be carried on a base plate behind the cab.

The other key change was a switch to Mercedes OM470 series power, with a slight power output change for the 4500 and 5000 to 490hp and 530hp. Compliant with Stage IV (Tier 4 Final for our North American friends), the Mercedes power units have SCR selective catalytic reduction technology, bringing AdBlue to the Xerion for the first time.

Maximum torque, a massive 1,900Nm on the 'baby' Xerion 4000, is developed at between 1,450-1,500 rpm, with the claim of stable output over a wide engine speed range. Cooling is enhanced by the standard fit of a hydraulic reversible fan with automatic speed adjustment that again monitors coolant temperature as well as hydraulic and transmission oil temperatures. The engine also features charge-air cooling using air drawn in from the top of the bonnet, the exhaust moving to the right-hand side under the cab.

As standard, all three models were initially fitted with a ZF Ecom 4.5 transmission with a 'heavy draft' friendly Ecom 5.0 as an



The 4000 and 5000 series saw a move to Mercedes power, and with it a need for AdBlue to meet tougher emission regulations. Xerion users suggest these motors are quieter than the Cat power plants but typically deliver decent fuel economy with the usual caveat that a great deal will depend upon how the tractor is set up and used. Engine service intervals were increased to 500 hours, climbing to 1,000 hours for the 2021 model year.

option. Although the latter is around 500kg lighter, reverse speed is restricted to 30km/hr and has the option of no pto coupling.

The transmission choice then flipped, with Eccom 5.0 becoming standard for 2015, Eccom 4.5 listing as an option. This transmission offering can be a bit confusing, different models following their own option routes. Eccom 5.0 was introduced as a slightly cheaper option, so ask questions and find out exactly what is fitted to the tractor you are looking at and make sure it will do what you want.

The front-linkage could be replaced with a weight block using the same 400kg wafer weights already offered to fit to the rear of the tractor. It is possible to add up to 7.0 tonnes of extra weight to these tractors.

Bringing matters up to date

During 2020, the Mercedes engines powering all three models in the Xerion moved to Stage V (Tier 5) emissions standards, the Xerion 4000 morphing into the 462hp Xerion 4200, up 30hp from the 4000 and seeing torque climb to 2,200Nm. The Xerion 4500 and Xerion 5000 are listed as producing the same 490hp and 530hp as before but peak torque increased, the Xerion 4500 gaining 100Nm to deliver 2,400Nm and the Xerion 5000 climbing to 2,600Nm, a gain of up 150Nm. Engine idling speeds was also reduced to 730rpm from 800rpm, which will reduce both noise and fuel consumption when idling. The service interval was also increased from 500 hours up to 1,000 hours.



Front mounted cab or 'Saddle Trac' Xerion tractors will typically have been specified from new to match a specific application. If you are buying a complete 'package', it follows that the kit that comes with the tractor will also need to be inspected. Values for these models can vary hugely, with the once strong demand for pre-owned kit in continental markets having been dented.

A new emission system, that combines an SCR with a DOC and DPF) is needed to clean the engine emissions to meet the latest standards. As before the after-treatment system is all located under the right-hand side of the cab, avoiding the need for an extra lump of emission kit alongside the cab.

In the cab, a heated and ventilated premium leather seat was a new option, with a new armrest alongside the still current CEBIS touch screen terminal.

The spec minefield

The details outlined provide a brief snapshot of how the Xerion has developed but no more. As is increasingly the case, you need to know what you want from the tractor before looking at a pre-owned buy

so you can ask the right questions with regards to specifications.

With the Xerion 3300 and more particularly the Xerion 3800, specs are not going to be a minefield. Claas UK pretty much settled upon a key spec package for these models. That makes life a lot easier as most used models will of a more easily compared spec.

The Xerion 4000 and on up, however, have a broader spec choice. It can make your head spin. If you know what you need, fine. Call a Claas dealer, tell them what you want and wait to see what they can find for you. Have less of an idea spec wise but know what you want to do with the tractor? Be prepared to answer a few questions. If you are 'just' after Xerion muscle, you need to work out if a Xerion should be in your pre-owned buying sights as you need to work with these tractors to extract the best from them.

With regard to dependability, from the 3000 series onwards a Xerion is a well-engineered tractor that can deliver hours of reliable service. Blown Cat engines and trashed transmissions are not unheard of but they are the exception and not the rule. Minor niggles are rare too, even on older models that have done a lot of work.

What should you look out for then? A big cop out. Talk to a Claas dealer or better yet a dealer with an established Claas Xerion specialists. You can of course do an inspection of a used buy, burying yourself in the CEBIS menus to check past maintenance and operational data. The trouble is that only gives you an historical snapshot. Only a workshop inspected used buy



Claas got its pricing right for the Xerion 3800, the tractor attracting those seeking a powerful tractor with a bit more versatility than a tracklayer or articulated model. The key is getting the ballast and tyre pressures right for the task in hand. Although most 3800 models will have a 50km/hr transport speed, haulage is not the tractor's forte.

will reveal any potential areas that may need attention prior to buying.

Of course, you will need to look over any used buy carefully. You may be able to call the previous owner and talk the tractor through with them but do check with the dealer first. If a potential used buy is due in at the dealer in a month or so, you may get a chance to see it working. Xerion operators tend to be enthusiastic about these tractors and are more likely to want to help than the other way around. Just don't waste their time.

Summary: As with most things, a low owner model with a known history will be the one to seek out. Tractors showing high hours but with a good service record can make a really sound investment. A cheaper buy but with a chequered past may prove the opposite. A low hour 3000 series is now becoming harder to find due to their age, but there are a few that have been owned by arable estates that have been rolled out post-harvest for some cultivation before being tucked away again. These do come onto the market now and then. Let a dealer know you will snap up

such a tractor and they will put you in the queue to buy it!

Later 4000 and 5000 series models are harder to find as fewer have been sold. The the Axion 900 series was adopted by 3800 owners looking for a 410hp conventional tractor as a replacement.

In addition, VC reversible cab 4000 and 5000

variants will be an extremely rare find in the UK and even the 3000 series were more commonly sold with the fixed cab. Those VC models that are on offer can command a decent premium as a result. Some dealers will do a VC cab conversion from standard, but this could cost £15,000 plus.

James de Havilland

Further profi reading

What follows is a brief extract from our January 2006 Tractor Test of the Xerion 3300. *'She's a real big 'un. Almost without exception, that's the first driver reaction to Claas's Xerion. This green and white beast stands 3.7m tall, stretches to 6.0m in length, and measures 3.0m wide, depending on set-up. About 13t rests on four 43in tyres. Quite an animal.'*

For further profi reading:

Claas Xerion 2500	Driving Impression	7/1996
Claas Xerion 3300	Tractor Test	1/2006
Claas Xerion cab update	Driving Impression	2/2006
Claas Xerion 5000	Driving Impression	10/2010
Claas Xerion 4000	Driving Impression	11/2016

There is simply not enough room to outline all the features of these tractors in one go, a read of our previous articles offering a better insight into what they have to offer.

**Tough times
call for
affordable
reliability.**

M5002: The smart go-getter.

Work smarter this season by taking advantage of the M5002's package of class leading features, including 0% finance available until 30th June 2021.



Kubota

WORK SMARTER OFFER

0% Finance*
3+33 PAYMENTS or
1+2 ANNUAL PAYMENTS

Business users only. Terms and conditions apply.*

*Terms and conditions: Finance for business purposes only. Subject to acceptance and affordability checks. Applicant must be 18 or over. Promotion valid until 30 June 2021. Available on new equipment only with RRP 60%. The finance product offered under this promotion is a Finance Lease. VAT is due with each rental payment and you will not own the equipment at the end of the agreement. Return conditions apply. A documentation fee of £50 plus VAT will be collected with the first rental. Alternative finance options are available. Terms and Conditions apply. Images are for illustrative purposes only. Kubota Finance is a trading style of BNP Paribas Leasing Solutions Limited. Finance provided by BNP Paribas Leasing Solutions Limited. Registered in England No. 901225.

Contact your local dealer or visit
the website for more details.



www.kubota.co.uk



Scan the QR code
to find out more
on the M5002.

For Earth, For Life
Kubota



The ram's first stage lifts 35t max, the second stage 19t max.

Heynck Q-Jack 3519 trolley jack:

Big Foot

Spread a load to lift it: this broad-beamed hydraulic jack aims to get you out of a sticky situation

Punctures have no sense of reasonableness. When a tyre goes down it prefers to do it on a busy (and ideally, narrow) road, or – better yet – in the softest bit of the field. Either way the injured leg has to be lifted, preferably securely and fast. Trouble is, the kit most farms have for the job is often short on lift height and limited in where it can be used safely. The haulage business has plenty of jacks designed to lift heavy and high-axle kit on solid ground, and some farms and contractors have devised their own salvation. But you can buy a purpose-built unit, developed by an agricultural engineer and made by Heynck, a German hydraulics company whose main operations are in mining – an industry with heavy machinery everywhere.

Double punch

The Q-Jack is a low-profile trolley carrying a removable d/a hydraulic jack. For transport the unit packs into a box; assembled and with the ram closed, the jack saddle is 350mm from the ground. Oil from a spool valve at up to 30l/min and 200bar acts first on a 150mm-diameter piston to generate 35t lift capacity. Once this has extended, the second stage's 110mm piston takes over. Lift height goes up but lift capacity drops to 19t – although given that one corner of a machine only carries a proportion of the whole weight, that's no big hardship. Total ram stroke is 315mm, giving a max lift height of 665mm. Not much, surely? To add more, the basic saddle (a rubber-faced 120mm-diameter plate screwed into the second stage) can be swapped for one of four

extensions: these increase max lift height by 87mm, 155mm, 230mm and 350mm. Each machined billet extension has a thread at one end and a ball head at the other. A matching socket head slips over the ball, so the saddle it carries can tilt up to 80 degrees to accommodate ground slope. The longest extension takes max lift height to 1,050mm.

Trolley

Mobility comes from a three-wheeled galvanized trolley, built around a 500 x 400mm plate base and rolling on 260 x 85 pneumatic tyres. Step one in assembly is to slot the 45kg jack's four feet into brackets welded to the baseplate, then secure each with a neat quick-release pin. Choose and fit an extension if needed, drop the trolley

What does €3,500 bring home? A steerable trolley with handle, a dedicated jack, four extensions, two saddles and a pair of 6m hydraulic hoses. And a box to put it all in.



The jack – which can be used as a stand-alone unit – has its own hydraulic block carrying connectors and valves.

handle into the castor wheel and steer the unit under the machine you need to lift. The trolley's ground clearance depends on its tyre pressures but at best is only 30mm, so the effort needed to position it depends entirely on the terrain.

Self-containment

Spool valves are never far away in farming so the Q-Jack doesn't need an oil supply and pump. Spiral wrapped 6m hoses connect to a donor machine's spools, each line tipped with ball valve tap. Longer hoses are an option. If a hose bursts, a valve built into the jack's connector block senses line pressure imbalance and locks the ram so it

can't retract; the same block also hosts a pressure relief valve and quick couplers. Lift/lower rate is best set using the tractor's flow controllers, but can be done from the hose taps. Either way, the mate you'll probably need to help heave the carrying box must stick around to monitor the jacking operation.

As the jack takes load the trolley is forced down. Its tyres deflect and the baseplate meets the ground. Now the plate's generous surface area spreads load and provides a solid support for the jack – it's much more secure than a bottle jack perched on a length of timber. Fine height changes can be made fairly easily by adjusting oil flow rate. Once



Natty self-locking pins anchor the jack to the trolley.



Fitted up and ready to use, the Q-Jack weighs around 80kg. It rolls and steers easily where the going isn't too uneven, but otherwise takes muscle to move.

the punctured wheel has been changed, retract the ram and the trolley can be pulled clear. Like to see all this in action? There's a profi video at bit.ly/31bd0sE.

KEY POINTS

- ▶ The Q-Jack has two main parts – a hydraulic jack and a low-profile trolley
- ▶ Oil for jack operation comes from a tractor's spool outlets
- ▶ The trolley's generous baseplate spreads load and helps soft-ground stability
- ▶ A castor wheel allows relatively easy positioning
- ▶ The jack can be used without the trolley
- ▶ Max lift height is 1.05m, max lift capacity 35t.



The longest extension takes lift height to over 1.00m. A ball joint lets the saddle self-align (inset).

Bottom line

A Q-Jack lists at €3,500 before VAT. That brings the jack and trolley, two saddles, an extension set, the positioning handle and a wooded transport box. It's a sizeable investment in a sizeable kit, whose 35t max lift capacity is enough to hoist very serious machinery. If you can justify that sort of outlay, then the next time the puncture gremlin decides to give you grief, you should be back in business safely and relatively quickly.

Alexander Bertling

**Safeshaft Systems
hydraulic drive:**

A safer option

An intact and functioning pto guard is important on every machine. That's especially the case with a slurry tanker, where in many instances you're operating the changeover lever with the shaft spinning away just beside you. For those wanting a safer solution, Safeshaft Systems offers a retrofit hydraulic-drive option

Safeshaft Systems has been making a retrofit hydraulic-drive system for vacuum pumps since 2016. The idea is simple – to take the pto out of the danger equation when it comes to manually operating the changeover valve on a slurry tanker vacuum pump. But there are a number of other benefits: for instance, you can now turn tighter against the slurry tanker drawbar without the worry of the lift arms fouling on the pto shaft; and you can also keep the pump running when turning on the headland.

How much oil?

Noel Hickey, one of the brothers who came up with the Safeshaft Systems drive, points out that, because it uses the vacuum pump's original input shaft, it can still access the unit's gearing, meaning the hydraulic motor does not have to work as hard as some factory-fit hydraulic drives, which may not utilise the 2:1 drive. In other words, the Safeshaft motor only has to operate at a maximum of 500rpm versus a 1,000rpm on other hydraulic drive

systems, which clearly has a knock-on effect on oil flow requirements.

The Safeshaft motor requires a flow rate of around 35l/min when filling the tank, with this stat dropping to 20l/min when spreading in the field. This also applies even if you have a macerator/distributor: taking the likes of a Vogelsang ECL, this needs 35l/min, dropping back to 25l/min on the EQC. So, you're talking a total of 55l/min, which should be within the capabilities of any tractor expected to operate a slurry tanker equipped with some form of an applicator.

We even had a quick nose at the data in some of our older tractor tests; a Case IH MX135 boasts a 109l/min pump, John Deere 6910 produces 60l/min, New Holland's TM150 is 106l/min and a Valtra 6550 HiTech 73l/min.

What's in the Safeshaft kit?

The base kit includes a galvanised base plate that allows the vacuum pump to remain in its original inline position, or it can be positioned across the drawbar, freeing additional space.

The latter plus is beneficial on makes such as Abbey, which has a slightly shorter drawbar than the likes of the featured HiSpec. In total, Safeshaft has a dozen different mounting plates and continues to add to this offering. The hydraulic motor is an off-the-shelf item, and there's also a plastic coupler that allows for any minor misalignment when installing. A non-return valve is fitted to prevent the hydraulic motor and vac pump from becoming damaged by running in reverse if plugged into the wrong spool. An anti-cavitation block prevents a sudden shock on start-up.

KEY POINTS

- ▶ Makes the operating area around the vacuum pump safer.
- ▶ Allows the tractor to turn in tighter against the drawbar.
- ▶ Can be used in conjunction with a macerator.



INSTALLING THE SAFESHAFT SYSTEMS HYDRAULIC DRIVE

1 SHAFT AND GUARD OFF

We tagged along with Noel Hickey as he fitted the Safeshift Systems to a week-old HiSpec 3500 complete with load-sensing hydraulics for the tanker functions such as the self-fill arm and the 7.5m Mastek dribble bar. The owner had already removed the pto shaft, which can be put away and refitted when the tanker is sold.



Take out the three studs holding on the pto cover fitted to the vacuum pump; this can be stored with the pto shaft and refitted at a later date. Hang on to the three studs, as you will need them to hold a bracket in place.

2 PUMP OFF

Remove the four bolts that hold the pump to the drawbar bracket. Again, hang on to the bolts, as these will be needed again shortly. The park brake also needs to come off to allow the new base plate to be fitted. A ring bracket had been welded to the mounting plate for the vent hose belonging to the self-fill arm; this also needs to be removed.



On the ground

Since hitting the midguard pto button is no longer going to switch off the pump, there is the option of adding a manually operated valve block. For Irish readers this is needed if using the TAMS grant (Targeted Agricultural Modernisation Scheme) to partly pay for the hydraulic kit.

The valve block is bolted on a stalk to the side of the base plate. Nudging the lever knocks off the pump by diverting the oil flow back to the tractor. The lever automatically returns back to its active position detent when the tractor hydraulics are re-engaged.

Now down to the nitty gritty, the price. The standard kit includes the galvanised base plate, motor, coupler and hoses for €1,150. Adding the lever for disengaging drive at the pump brings the price tag to €1,450. All prices exclude carriage and, as the following pictures show, it's relatively straightforward to fit the assorted items.

Mervyn Bailey

The Jurop 106 pump is a heavy bit of kit, so leave any manhandling to a loader or similar. Attach a load strap and raise the pump just enough for the galvanised base plate to slide into place. All of the vacuum pump's hoses can remain attached. The new base plate can then be bolted down to the vacuum pump's original mounting plate. There are two sets of holes so you can move the plate even closer to the tanker or mount it across the drawbar. The bolts can be fully tightened unlike the four bolts holding the Jurop pump. Leave these slightly loose so the pump can be lined up for the next stage. It is worth noting that the base plate will need to be fully removed in order to reattach the pto driveline.



3 FRONT BRACKET

Attach the supplied plate to the front of the vacuum pump. Although the original studs that hold on the plastic cover studs would work, Noel opted to fit slightly longer M8 bolts.

4 THE HYDRAULIC MOTOR

The purple plastic part of the coupler is one of the key components. It allows for a small amount of misalignment when you are fitting the motor on the farm. Wear should be minimal to the point that Safeshaft Systems has yet to supply a replacement unit. The square anti-cavitation valve can also be seen on the side.

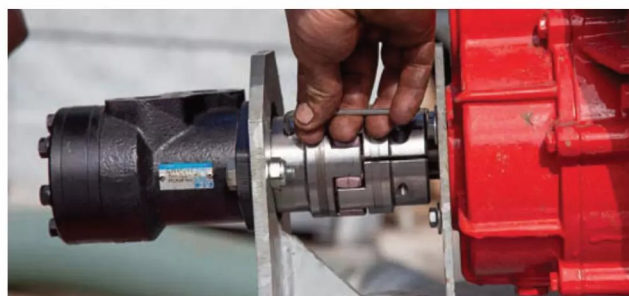


Slide the coupler through the front hole and fasten the motor to the front plate with the supplied bolts.



5 SQUARE UP

Measure the distance between the two vertical plates to get the unit as square as possible. Once you are satisfied, tighten down the bolts that hold the vacuum pump to the galvanised plate, checking the unit remains straight as you tighten everything into position.



With all of the other fasteners tightened, use an 8mm allen key to tighten the front and rear parts of the coupler to the driveshaft on the Jurup pump. The park/hand brake can be refitted at this point. Safeshaft does not pre-drill the base plate, as there are several permutations of bracket even from the same manufacturer, so you will need to drill two holes.

profi

NEXT ISSUE

HORIZONTAL BEATER MUCK SPREADERS

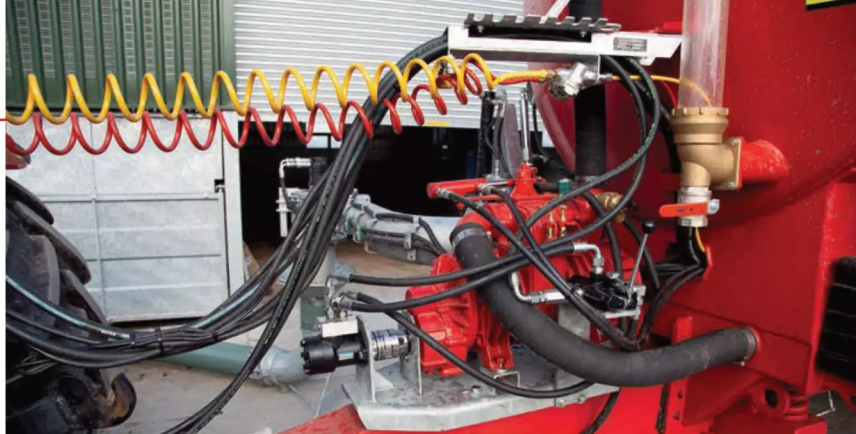


BUYERS'
MARKET
ROUND-UP
GUIDE

Don't miss the June issue

To subscribe please contact us:
www.profi.co.uk • Phone: +44 (0)1959 543 747

OUT 7TH MAY



The supply line runs to the black valve block with the lever. The silver one-way valve prevents damage should the pipes be plugged into the wrong spool of the tractor (ideally, we would like to see better +/- markings on the couplers than the current cable tie identifier). A short pipe then runs out of the black valve block to the anti-cavitation valve on top of the motor, supplying the oil.

6 PLUMBING

Next up is the pipe work. There is a flow and return line going to the tractor, and on the HiSpec tanker these could be routed through the hose arm and then fastened to the other pipes to keep them out of the way of the lift arms and tractor tyres.



Pulling the manual stop lever, stops the oil flowing to the motor, instead directing it to the return line. The lever will return to its working detent once the spool is re-engaged on the tractor. While the lever is not employed when using the self-fill arm, it is a neat addition when manually fitting the slurry pipe. As previously mentioned, the tractor's mudguard pto button has no effect and an externally operated remote is not a widespread fitment.



7 FIELD TEST

With the unit fitted, it is now ready to use. On the test machine the load-sensing hydraulics were taking a constant flow of oil, rather than when needed, which caused a bit of head scratching when filling. Yet there was still enough oil flow from the Case IH Puma to drive the Safeshaft motor.

While the fitted system is priced at €1,450, you need to bear in mind that a standard pto shaft costs in the region of €250 and a wide-angle Walterscheid unit closer to €600, and these items will probably need replacing at least once in the tanker's lifetime. So, the price difference soon starts to narrow, and the added safety aspect should not be underestimated, too.

UMBILICAL PUMPING EQUIPMENT





Bale handlers and trailers:

On and gone

Here are some tips and modifications to make bale clearing easier this harvest

Though most balers, round and square, are still safely in hibernation, it won't be long before the first silage packs are being made. To help with loading and moving bales we have asked our readers for some on-farm solutions. If you have some others, then why not share them with us by emailing profi.ed@kelsey.co.uk

Text: Christian Brüse

Pictures: Stefan Tovornik and end users



NEW LIFE FOR AN OLD TRAILER

Bought as a scrapped flatbed from a local council, the owner removed the rear ramps and levelled up the sloping beaver tail. He also extended the floor by 50cm so that it measured an overall length of 6.50m, which can be extended again by another 1.0m by pulling out a home-made extension. A box underneath stores the all-important ratchet straps. Final jobs were a full clean down and fresh paint.



OLD FORK, NEW USE

This bale spike was given a reprieve from the scrap heap. Its rescuer welded on two bits of channel, complete with clamping screws, that allow it to be attached to the forklift's pallet tines. While not robust enough for silage bales, it is perfectly adequate for dealing with hay and straw.



DOUBLE UP

This bale handler was supplied with Euro couplers so it could be used with the farm's front loader. Since there was enough space, the owner added a second set of couplers so it can also be picked up with a Weidemann loader.



FLEXI LOADING

To easily switch between square and round bales, this reader made up some quick-fit gates for the front and rear of his trailer. They can be removed with the help of the front loader, and two solid lugs hold the gates in place. While it was in the workshop, an illuminated box was also added for storing the straps and ratchets.

NO BACKACHE

To make it easier to tuck this 50kg bale spike out of the way, the owner drilled a hole on each end of the A-frame and tapped them with an M10 thread. Simple plastic rollers (the sort often used on roller doors) were then bolted to the frame using the new holes. Threadlock keeps the bolts in place and means they don't need a locking bolt, which would stop the spike being mounted on the tractor's A-frame.



STRAPS SAFELY STORED

This simple, dust-tight box, designed for commercial vehicles, was fitted under the load bed. Steels straps hold the container in place.



BALE TRAILERS HYDRAULIC CLAMPS FOR TWO OR THREE ROWS



STEWART

+44 (0) 1467 681418
SALES@STEWART-TRAILERS.CO.UK
WWW.STEWART-TRAILERS.CO.UK

**BIGGER
STRONGER
TOUGHER**



TRIED AND TESTED

This farmer has put his old bale trailer back into service. It had been used with a square bale chucker, the bales landing on the gated bed. Now the farm has moved to round bales, so he cut one of the side gates and added hinges. Closing the gates secures the load in double-quick time.



ROLLED AND STOWED

We have shown you several tools made for quickly rolling up a load strap. And here's another one. The tool is attached to the trailer by an old piece of pto tube, while the larger, outer tube is welded to the trailer.

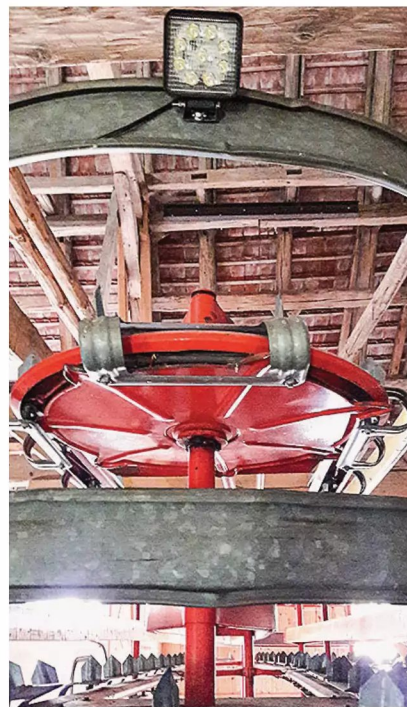
FIXED AND SECURED



To hold bales in place, the owner of this trailer welded 40mm pipe, 20mm above the floor of the trailer. The tight fit stops the bales from going anywhere.

LIGHT HELPS

This Kemper BE125 self-loading trailer is regularly used in the evening. To aid unloading, an LED light was added to the exit.

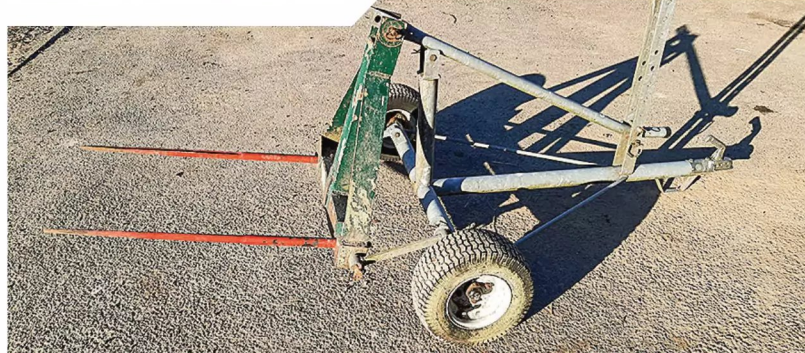


HOOK SAVES TIME

We've all been there. You attach the hook end of the load strap and then go around to the other side to tighten it up and find it has swung loose. These snap hooks stop that from happening, saving time when securing the load.

HANDY SPIKE FOR QUAD USE

This reader has come up with an idea that allows the farm's quad to use the bale fork. A lever on the trailed frame enables the bale to be raised off the ground. This lever is then locked in place by a pin on the vertical bar at the front.



ARCHIVE

**FOR MORE THAN
25 YEARS
PROFI HAS DELIVERED
A WEALTH OF
INDEPENDENT INFORMATION**

[illegible]

Report		Issue	Page
ARROS FACTORY TOUR		3	78
ARROS TRACTORS FACTORY TOUR		4	78
CIRCON AGRICULTURE 2010 FUTURE DESIGN		12	86
COMBINING ACROSS EUROPE		2	74
COVER CROP ESTABLISHMENT TRIALS		10	76
DEUTZ FAHR INTRAC 6.05 VS AGROSTAR 6.81		10	76
DEUTZ FAHR INTRAC 6.40 OWNER	HS	64	
ELHO COBBIA 721ST FORCER	HS	64	
FARMWELL TO OUR EDITOR-IN-CHIEF	1	62	
FARMING IN RUSSIA DVD	11	76	
FIAT 160-90 TURBO DT OWNER	10	72	
POTATO TOPPERS COMPARED	HS	58	
FUTURE COMBINE DESIGN	3	80	
HARVESTING STONES IN AUSTRIA	HS	50	
HARVESTING PUMPKINS IN FRANCE	12	90	
HIGH SPEED HANDMAW	HS	68	
HOW LAKE STEAMERS WORK	12	80	
JOHN DEERE X9 1000 OUTPUT TEST	12	80	
JOHN DEERE X760 OUTPUT TEST	12	84	
LATEST IN SOLAR PANEL TECHNOLOGY	3	72	
MASSEY FERGUSON MODEL COLLECTION	3	76	
MECHANICAL WEEDING SYSTEMS	6	66	
ONE PASS MAIZE BALING	2	56	
PASTURE RE-VEGETATION - BROADCAST OR COULTER?	6	74	
PEANUT HARVESTING IN GEORGIA	HS	42	
PLOGGER - BEHIND THE SCENES	5	82	
MOULTY MAIZE IN FRANCE	HS	44	
RABOTI AUTONOMOUS TOOL CARRIER	2	52	

Machine management		Issue	Page
CONTRACTIN IN THE HERBIDES ISLANDS		9	60
FARMING IN INDIANA		7	68

Technology		Issue	Page
AGRICAP AELIPLUS SPOT SPRAYING		1	5
AGRIROUTER DATA TRANSFER		11	6
AXTEND ISOMAX		11	6
AMAZON A40N 4 CONTROL SYSTEM		10	6
AMAZON AMATRON TWIN APP		7	5
B-I-SOLUS I0 GATEWAY		11	7
DANFOSS SPRAYING SYSTEM		12	7
GREENSTAR WEEDING SYSTEMS		9	9
HARVEST WEED CONTROL		3	5
FENDT VARIO GUIDE	HS		
FRITZMEIER SMARTAGRESS		4	3
MICHELIN EVOBIB VS MACHXIBIB		10	8
SLUG HUNTING ROBOT		10	8
VARIPLOUGH CONTROL SYSTEM		10	8

Whatever happened to		Issue	Page
CASE IH MAMMUT 8750 FORCER		HS	54
HORSCH TERRA-TRAC		5	56
KRONE TILLAGE-TRAC		4	68
MALLI L-TRAC		9	82
TERRAGATOR		7	72

Special		Issue	Page
BUTTERFLY MOWER MARKET ROUND UP		4	84
COMBINE 2021 MARKET ROUND UP		HS	72
LAMMA SHOW PREVIEW		1	74
NEW GRASS AND MUCK KIT FOR 2020		6	78
SIX CYLINDER TRACTOR MARKET ROUND UP		2	72
STRAW SPREADER MARKET ROUND UP		9	48
TELEHANDLER MARKET ROUND UP		12	62
THREE/FOUR CYLINDER TRACTOR MARKET ROUND UP		8	76
TRAILED SPRAYER MARKET ROUND UP		7	72

Vehicles		Issue	Page
FORD RAPTOR		2	62
LAND ROVER DISCOVERY SPORT		7	82
SUZUKI AGRIC TRUCK		7	82
VOLVO XC60		7	82

ROY WARD FARMS		Issue	Page
TON DIRON AGRICULTURAL CONTRACTORS		4	68

profi		Issue	Page
profi		3	78
profi		4	78
profi		12	86
profi		2	74
profi		10	76
profi		HS	64
profi		5	94
profi		1	62
profi		11	76
profi		10	72
profi		HS	58
profi		12	90
profi		HS	68
profi		12	80
profi		12	84
profi		3	72
profi		3	76
profi		6	66
profi		2	56
profi		6	74
profi		HS	42
profi		5	82
profi		HS	44
profi		2	52

profi		Issue	Page
profi		3	78
profi		4	78
profi		12	86
profi		2	74
profi		10	76
profi		HS	64
profi		5	94
profi		1	62
profi		11	76
profi		10	72
profi		HS	58

EXPERT SERVICING GUIDES

FIRST LOOK DRIVING IMPRESSIONS

WORKSHOP SKILLS & TOOLS

As a subscriber, you get **FREE ACCESS** to this entire archive at www.profi.co.uk

DRIVEN TESTED RATED

Subscribe online at www.profi.co.uk or tel: +44 (0) 1959 543 747

SPECIAL ANNIVERSARY OFFERS ON NOW



Handy: an over-centre latch lets the FieldBee steering motor demount with the wheel still in place.

FieldBee Autosteer:

What, more autosteer?

Yep: this time from EFarmer, a fairly new concern based in the Ukraine and the Netherlands. It offers three packages under the FieldBee banner: manual steer, manual steer with an RTK base station and the one featured here, RTK-corrected full autosteer using an electric motor

A reasonable place to start with steering kits is to see what comes in the box, how easy it all is to fit and what it costs. Actually that's three places, but still. There are several bits of hardware to the FieldBee Autosteer System: a DC electric motor for the steering column, a controller/gyroscope unit to sense tilt, pitch and yaw, process data and direct the steering motor; a L2 GNSS receiver for signals from GPS, GLONASS, Galileo and BaiDou satellite

KEY POINTS

- ▶ Given a reliable RTK correction signal, FieldBee's autosteering is very accurate at 2-6km/hr, a little less so at 12km/hr
- ▶ The control app is Android-only
- ▶ An annual app licence is €119.
- ▶ Currently there is no UK dealer
- ▶ The maker says fitting kits cover 700+ tractor models, with a generic kit for others
- ▶ A standalone RTK/GNSS base station is an option.

networks plus RTK correction, and finally a WiFi/mobile network router able to take in a correction signal and send data out to the wider world.

FieldBee uses a MDU-G4 steering motor, as do Ag Leader, Müller-Elektronik, Reichardt and Teejet. Cost of this plus the controller/gyroscope unit is around €5,000, though steering-ready tractors can use FieldBee's hydraulic unit instead. The dual-frequency L2 receiver is EFarmer's own development, coming home at €1,300 before VAT. A single-frequency L1 alternative is €700, though it won't be the best where trees and such interfere with satellite signals. For field testing, RTK correction was supplied over the mobile phone network.

Control by tablet

No standalone or integrated display is offered. Instead, everything centres on the FieldBee app, which is only for Android OS and built to perform best on a 7in tablet with at least 3GB RAM. The basic version downloaded from Google Play brings parallel guidance from a straight A-B line and a field diary. For autosteer and other options you'll need to cough up €120 for an annual licence; this unlocks the ability to save tracks, adds guidance on curved lines and headlands and numbers bouts automatically.

First fit the controller/gyro...

There's nothing complex about installation, though as with other kits some things must be done right. The controller/gyro unit has to sit exactly horizontal (or vertical) and in line with the direction of travel (ie at 90 degrees, so needs superscript final zero to the back axle), so start by finding a completely level bit of tarmac to stand the tractor.

The controller has to bolt solidly to a part of the cab that doesn't vibrate much; a flat area alongside the seat is good if there is one. Wherever, you can't leave the controller/gyro to scull around on the floor or cable-tie it to something handy. Having said that, in cabs where horizontal or vertical mounting isn't possible, the unit can be pre-programmed with a custom installation angle. And while a tractor-specific mounting plate is part of the deal, the one supplied for our Case IH Maxxum 130 didn't fit properly.

Next the steering motor and receiver...

A real plus point is that you don't have to take off the steering wheel to fit the motor, which saves time and makes for easier swaps between machines. A ring gear bolts to the wheel; an anti-rotation bracket goes on the column and the motor unit clamps round the

gear via an over-centre latch. There's a video at bit.ly/30ib0y9.

Electrical connection from the controller is by a single plug so no confusion there. The GPS receiver is centred on the roof and in our case, held to a baseplate by magnets; the receiver too connects readily to the controller. Power can come from whatever outlets the cab offers, though it's best to steer (!) clear of the so-so connection normally provided by a cigarette lighter socket - you don't want power interruptions during work.

Looks awkward. Could change it to 'Add router and calibrate'.

A standard network cable links the WiFi router to the controller/gyro unit, then the app can talk to the controller via WiFi. If you want to use the router's modem to pull in a correction signal over a mobile network you'll need to supply a SIM card, which adds a bit more expense but not much complication. With this sorted out you move to calibration, which means measuring receiver position accurately, inputting that info and calibrating the tilt sensor and compass. Expect to put aside the best part of a day for the initial installation and calibration of an electric-drive FieldBee kit; subsequent swaps between machines will be far faster.

In the field

We mowed, swathed, sprayed and cultivated using FieldBee and a mobile network RTK correction signal. Everything was fine while the mobile signal was good, but

(unsurprisingly) accuracy went downhill if the signal faltered. Things weren't helped by the way the FieldBee handled this. It shows GNSS signal quality by colour: green for an RTK-corrected signal, yellow for a good but uncorrected GPS signal, red for a poor satellite signal.

An alert is supposed to sound as quality drops

A rocker switch turns autosteer on and off. Cable ties provided temporary lashings (AKA a lash up).

Navigation is through an Android tablet or at a pinch, a smartphone. IOS isn't catered for.

SCORES

FieldBee Autosteer

Fitting

Component number	+
Space taken by the steering motor	+
Space needed for the display	+
Work involved	⊖

Operation

Instructions	+
Menu layout	⊖

In work

Noise	+
Vibration	⊖
Autosteer on/off switch	+
Manual steering effort	-
Setting A-B line(s)	+
Finding next line	+
Audible warnings	-
Visual warnings	⊖
Behaviour if RTK lost ¹⁾	-
Behaviour if satellite signal lost	-

¹⁾ Now fixed, says maker.

Ratings: +++ = very good; ++ = good; + = average; - = below average; -- = poor

but it didn't, and autosteer stopped a couple of minutes after RTK correction was lost. In theory the L2 receiver should have bridged a temporary signal loss, maintaining RTK-level accuracy for four minutes before dropping to +/-100mm pass-to-pass accuracy for another 10 minutes. Makers EFarmer says it has since upgraded the receiver to bridge



For test purposes we put the control/gyro unit in the tractor's left-side console...



...and levelled it using a smartphone app. Floor mounting is good; if not, vertical orientation is OK. Either way the unit has to be bolted down to perform properly.



A GSM modem allows RTK correction via the mobile phone network.



EFarmer's own dual-frequency receiver accepts satellite signals from all major networks, plus RTK correction.



The motor's ring gear forms one half of a neat wheel spoke clamp.



Accuracy was very good at 2km/hr, falling away slightly at 6km/hr and acceptable at 12km/hr. 50% of measurements fall in each blue section. (0 = exact bout match. Bars show max deviations)

up to 20 minutes of RTK dropout, bringing it into line with the performance of kit from other makers.

Accuracy

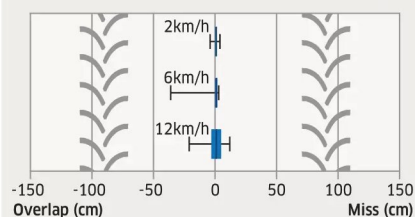
To check test accuracy, we drove straight and curved A-B lines. Once FieldBee had steered the tractor with solid RTK correction we measured track spacings, so could work out errors around the ideal. The diagrams

below show how accuracy varied with forward speed.

Straight-line guidance was very accurate at 2km/hr, with 50% of measured points no more than 10mm from the ideal line. This grew to 20mm at 6km/hr, with only a few wanders beyond 30mm. Acceptable accuracy as maintained at 12km/hr.

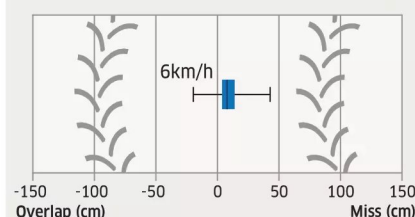
Curved-track performance was checked at 6km/hr. Even though accuracy is a little less

STRAIGHT-LINE ACCURACY (RTK CORRECTION)



Accuracy was very good at 2km/hr, falling away slightly at 6km/hr and acceptable at 12km/hr. 50% of measurements fall in each blue section. (0 = exact bout match. Bars show max deviations)

CURVED TRACK ACCURACY (RTK CORRECTION)



Curved guidance at 6km/hr was good, albeit with large maximum overlaps/misses than straight-line work. (0 = exact bout match. Bars show max deviations)



All connections were easily made and secure. A bracket under the switchgear anchors the motor.'

than the equivalent straight-line test, it's still a good result. Half the measured deviations were 40-140mm off-line, and only 25% went beyond 150mm. The conclusion? Using FieldBee with the company's own L2 receiver and a consistently strong RTK correction signal, accuracy is good.

Boundary and data recording

Beyond guidance, the FieldBee app lets the user map field boundaries and document field coverage; it also stores/transmits field data, job information and equipment details. Cloud storage lets records be pulled into a PC for further work. Field boundaries are recorded as you drive a perimeter, but care is needed when closing a boundary line; if the approach angle is wrong this won't happen automatically. The alternatives are to trace the boundary on-screen manually (difficult) or to import it as a SHAPE file (not tried). Better is the time-saving promised by the ability to define, save and re-use one or more A-B lines when driving the boundary - though saving didn't work for us thanks to a software glitch. Other app software shortcomings meant we could see total field coverage but couldn't see individual tracks, which meant the potential to mark and return to a point wasn't available. EFarmer says that these problems, along with others like the inability to store full outfit data for a tractor-implement combo, have been sorted out by software updates.

Further details

- Autosteer is available when reversing
- Steering correction aggressiveness can be set separately for forward and reverse travel
- The steering motor's resistance to manual correction is adjustable
- Autosteer helpfully stays engaged during short pauses in work
- While A-B line nudging should be possible

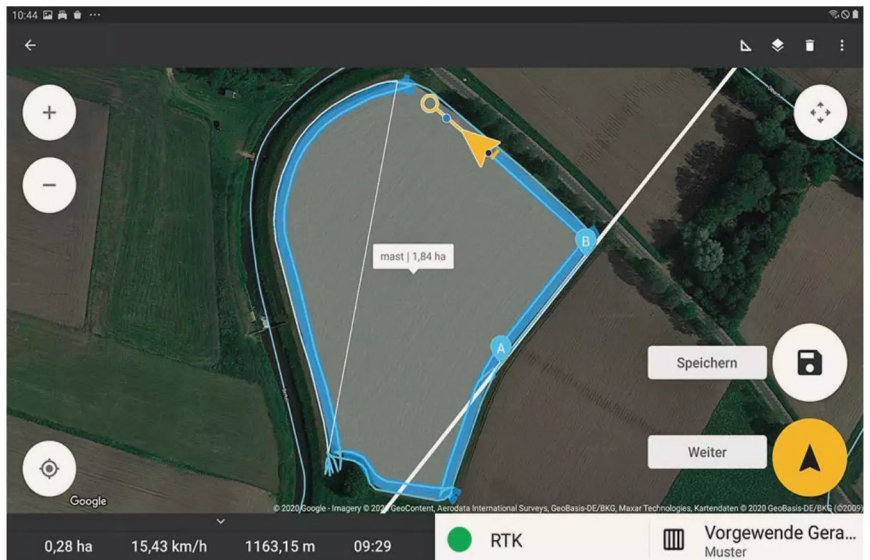
to correct time-related position drift, we couldn't do it

- Hydraulic control is offered for autosteer-ready tractors

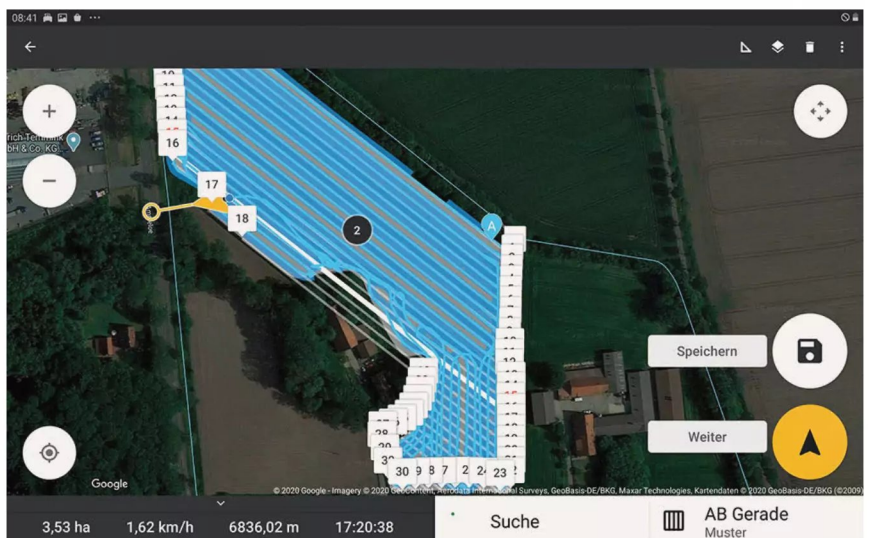
- A FieldBee RTK/GNSS base station (20+km signal radius) adds from €999 +VAT.

Summary: The top FieldBee package brings electric autosteer, a dual-frequency receiver and app-based software for a baseline price of around €6,300. Good value, even if you need to find more for an Android tablet, a licence to unleash more than basic guidance modes and a SIM card where RTK correction over a mobile phone network is necessary. Guidance accuracy is potentially excellent. During our test we found software shortcomings; both in the controller's ability to bridge correction signal dropout, and in the app itself. All these, says the maker, have subsequently been fixed by updates.

Anja Böhrnsen, Andrew Pearce



An A-B line can be set when driving the headland. Closing the headland track isn't always easy.



The FieldBee app numbers and records passes. But a software problem meant the coverage map wouldn't reload.

Strube BlueVision:

Tech for beet breeding

Swiss seed breeder Strube shows us what technology it's employing to develop sugar beet varieties under its first Sugar Beet Innovation Day



The latest BlueBob from Strube is still a prototype. This spring it should be able to detect weeds using image analysis.

It is not just the slog of a wet harvest that's testing sugar beet growers; there are new challenges also being thrown into the mix, with mounting regulations as well as having to deal with banned or less effective herbicides and pesticides due to resistance. These challenges have led to greater demands on breeding schemes. With its new 'BlueVision' strategy, Strube wants to enable its customers to grow their beet crops in a more sustainable, economical and resource-saving way.

CT test for germination

To achieve this, Strube is relying on modern technology for breeding and testing seed quality, developing new methods with the Fraunhofer Institute. The SeedInspector, for example, uses 3D Computer Tomography (CT) to study inside the seeds. This gives info on the quality or state of the seed. The PhenoTest determines seed germinating and shooting capacity at the laboratory and at high throughputs. Further CT images with

KEY POINTS

- ▶ 'BlueVision' is the name of Strube's beet growing strategy.
- ▶ Strube uses computer tomography to determine seed quality.
- ▶ The BlueBob robot also hoes the rows of beet.
- ▶ Real-time weed detection should be possible this year.



The seed breeder has converted this Holmer Terra Dos T3 beet harvester into a mobile harvest laboratory.

digital image analysis measure the seedlings in real time. In addition it will also analyse the root, hypocotyl and cotyledons so they can be classified as normal, abnormal or not germinated. Robots water the germination trays and automatically place them in the CT device for the measurements to take place.

Robot scans individual plants

In the field trial plots, the 'PhenoFieldBot' documents germination and growth. It knows every single plant as soon as it peeps out of the ground as a seedling. It relies on RTK-based GPS to pinpoint each plant.

The robot is mounted on the platform of French firm Naïo-Technologie's autonomous 'Dino' hoeing vehicle. Instead of mechanical weeding, the PhenoFieldBot has four cameras with RGB colour sensors and an NIR sensor. At a forward speed of 2.4km/hr, the robot scans 340 test plots per day – an area that would usually require a dozen people. Another advantage is that the cameras can be used to document the dynamics of field emergence, leaf development and the death of entire plants or parts of the plants more precisely – on a plant-by-plant basis.

Autonomous hoes with weed detection

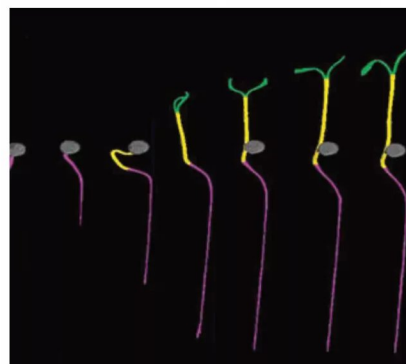
With the aim of making sugar beet cultivation more environmentally friendly and profitable, Strube is developing the autonomous BlueBob hoe – a project in which Naïo-Technologie and the Fraunhofer Development Centre for X-Ray Technology are involved, too.

The 1.2t robot navigates its way autonomously through the rows of beet, guided by its RTK correction. Employing rigidly mounted tools, it mechanically weeds between the rows. This technology has been on the market for some time, but what's new is the fact that the tools are complemented by hydraulically driven knives that hoe in the rows from the moment the seedlings emerge until the rows have closed in.

In future, BlueBob will be able to distinguish between beet plants and weeds in real time by means of digital image analysis. This function is not yet part of the demonstrator prototype. The robot knows the position of each beet and hoes around them with RTK accuracy. This year, Strube plans to present the first BlueBob with online weed detection for the field.



BlueBob's electro-hydraulically driven hoeing knife can hoe in the row.



CT images and image analysis are used to evaluate seedling shoot growth.

App detects leaf spots

Strube has also developed the CercoSpot app, not just for researchers but also farmers. This Android-based app can determine infestation with the Cercospora leaf spot disease using photos. Based on further information on climate, location, sowing date and properties estimation, the app then generates a forecast on the future course of the disease and gives recommendations for treatment. For now the app is only being used by consultants.

Laboratory on the harvester

At the final stop on our tour of the Sugar Beet Innovation Day, the focus was on the field trials. Visitors were shown a Holmer Terra Dos T3 beet harvester that has been converted by the seed breeding company, with an in-field laboratory taking up residence in what was the bunker.

The 'BlueMobil' from Strube washes off and chops the sugar beet from one plot, creating a homogenous pulp. Samples are then taken from the pulp, even during lifting, in order to determine the constituents of the beet with the help of an NIR sensor.

Anja Böhrnsen



At the 'Beet goes on' event, Strube presented the PhenoFieldBot camera-equipped robot (right) and the mechanical weeding BlueBob. PhenoFieldBot documents crop germination and growth.

Grass seed specials - Part 2:

More mowing marvels

That Dutch contractors go to extreme lengths to ensure they have the right kit to tackle grass for seed is evident by the two latest examples, which are based on modified self-propelled sprayers



Dutch contractor Hal's grass seed mower is based on a 2005-built 4,000-hour Tecnomaster Laser 3000.



We caught up with the first of these modified self-propelleds which is based on a 2005-built 4,000-hour Tecnomaster Laser 3000, in a field of Italian rye grass on the Dutch/Belgian border. Owned by Dutch contractors John and Marco Hal, cutting grass for seed is a new activity for the two brothers, and last season was their first.

Getting stuck in

The two men set to work in the workshop in early January last year. Attaching the mower to the front of the Laser was not an option and they quickly decided it had to go on the

rear to replace the spray boom. They didn't like the cramped dimensions of the Laser's cab so ended up buying one from a Claas Xerion, and to improve operator visibility this was turned 180° to face what was the rear of the sprayer but now the front of the grass seed mower. Kuhn doesn't offer a 4.0m front-mounted mower, so the two brothers purchased a 3.0m version, removed the cutterbar, widened the frame and added the mower bed from a 4.0m trailed unit. Just as in part one of this story in the April issue, grass grown for seed must be handled as

gently as possible to limit losses. All the standard safety guarding has been removed to improve the material flow, while the front roller gently bends the grass seed heads in tall crops. The guide rail at each side of the mower, and the design of the outer disc, help to reduce the swath width to 3.8m to allow it to pass between the wheels without being trod on. After shortening the chassis of the sprayer by 50cm, the two men modified the hydraulically sliding axles to stretch out from 3.0m on the road to 3.8m in the field. Narrower tyres were also required. All four are now 320/105 R50.

Working speeds are generally around 12-13km/hr and average hourly outputs are 2.5-3ha.



More juice and paint

Other jobs included removing of the sprayer's 150-litre diesel tank. The 180hp engine burns around 20-25l/hr, so they fitted a new 400-litre capacity version behind the cab (the old tank was below it).

The roughly 8.5t machine, which was finished and painted in Kuhn colours in time to start work at the end of May last season, is driven by Marco van de Wijinkel. It depends on conditions, but working speeds are generally around 12-13km/hr (max. field speed is 20km/hr). In a good crop of English rye grass, outputs average 2.5-3.0ha/hr. Depending on the weather, once the grass has been knocked down it can take anything from three to five days to dry before it is picked up by a combine harvester. Seed yields of 4.0t/ha are possible. The front wheels of the grass mower are steered by GPS. At the headland, the operator activates four-wheel steer for a shorter turning circle. Looking ahead, the two men are confident that if they look after it then their self-propelled grass seed mower then it should easily be able to run for another 10-15 years. "The chassis is as good as new," says John.



That the Hal brothers are a big Kuhn fan is evident by the paintwork and branding of the machine.

The 180hp engine drains fuel from a new 400-litre capacity tank. This replaced the Laser's standard 150-litre version.



The Hal brothers removed the mowing elements from a Kuhn 3.0m mower, widened the frame and added the mower bed from a 4.0m trailed unit.

New life for Agrifac sprayer

Taking the photographs for this story was a challenge. Grass seed mowers work at night when the grass is damp. Complicating matters was the small issue of the machines being spread out over a fairly wide area, making it difficult to capture many once it was light enough to get out the camera before the grass became too dry.



The guide rail each side of the mower, and the design of the outer disc, reduces the swath width to 3.8m.

Operator Marco van de Wijnkel inside the roomier Claas Xerion cab.



The hydraulically sliding axles push the 320/105R50 tyres out from 3.0m on the road to 3.8m in the field to straddle the swath.

I had to wait until the next day to catch up with the second self-propelled sprayer based grass seed mower. Parked in a shed crammed with seven tractors (four Deutz, two Fendt and a Lamborghini), John Deere 1188 and 2064 combines, a 30-year-old Claas Quadrant 1200 and numerous other machines, this configuration is based on a 2006 Agrifac ZA3433.

It is owned by Ewald Baecke-Buysee, who together with his wife Diane, run a contracting business at Eede on the Dutch/Belgian border. Grass for seed was previously cut using a 1.9m Kuhn GMD 500 attached to a Deutz K100 both of which are still in the barn.

The tractor/mower combination got the job done, but was slow and the contractor was never happy with the seed losses each side of the crop. What he really wanted was a



The operator activates 4ws on the headland to reduce the shorter turning circle.

faster and wider solution. Ewald mulled over plans to develop a self-propelled grass seed mower for many years, but it took him a while to find the right people to build it.

Sticking to what you know

The contractor runs a mixed fleet of Deutz and Fendt tractors, high up on his wish list for the self-propelled machine is that it had to be a Deutz engine, which he reckons are the best blocks on the market. His preference was to use a Deutz-powered Delvano self-propelled sprayer as the base for the grass seed mower. He saw a couple of dozen of them at a Belgian dealer, but the engines in most needed quite a bit of revision. He contemplated buying a new block, but then spotted a 2006, Deutz-powered Agrifac ZA3433 on the internet. He was not overly concerned that its 180hp Deutz engine had done in excess of 10,000 hours. He liked what he saw and bought it directly from the Dutch farmer and sold the spray tank and boom to a local dealer.

What's changed?

The machine arrived in December 2019 and was trucked directly to his local Claas dealer LMB Buysee. Most of the modifications were carried out by the dealer's engineering firm Astrix Construction. The 260-litre hydraulic oil and 240-litre fuel tanks are still in their original locations, but they added a second 260-litre oil tank, oil pump and cooler. The sprayer retains its wheels and tyres but gained hydraulically extending axles. These slide out from an outer width of 3.2m to 4.2m. They renewed all the hydraulic plumbing and the spray pump now powers the mowers. The engineering team considered adding heavier-duty wheel motors, but ultimately decided this wasn't necessary. The removal of the



The base of the grass seed mower owned by contractor Ewald Baecke-Buysee is a 2006-made Agrifac ZA3433 self-propelled sprayer.



The mower bed is a 4.0m Claas Disco 4000, but then with heavy duty discs and blades and a lot of additional metal.

Ewald has been a Claas customer for more than 30 years, which explains the paintwork and the name of his latest grass seed mower.



Ewald likes the possibility to quickly change the speed of the hydrostatically-driven cutting discs from 2500 to 3500rpm.

4,000-litre spray tank and boom made the machine much lighter and the wheel motors were deemed plenty powerful.

At the business end

The mower bed is a 4.0m Claas Disco 4000, but then with heavy duty discs and blades as well as a bit of additional metal. Ewald has been a Claas customer for more than 30 years, which explains the paintwork and the name of his grass seed mower; Claas Disco 4000, which weighs a tad over 9.0t.

The machine, including the mower, is hydrostatically driven. The major benefit of this is it allows Ewald to quickly vary the speed of the mower from 2,500 to 3,500rpm. "The faster speed is really useful when working in heavy wet crops," he comments.

The mower is worthy of closer inspection. During its development, the contractor was adamant that the 4.0m rig had to be road legal. The engineering solution sees the

The removal of the 4,000-litre spray tank and boom made the machine much lighter and the wheel motors were deemed plenty powerful.



mower hydraulically rotate 90° and slide between the wheels of the self-propelled machine for transport. Operated from a control panel on the side of the machine, for safety reasons the operator has to depress and hold a button on the side of the control box to activate the push buttons. The process takes just under a minute, and with the mower folded and locked in position below the cab and the hydraulic axles retracted, the result is a compact 3.0m outfit that can legally head down the road. The process is simply reversed when he arrives at a new field.

Quicker all round

Ewald cut somewhere between 100ha-120ha last season and was satisfied with fuel consumption figures of around 15l/hr. His new mount is not only more comfortable, courtesy of the air-suspension system, but with a top speed of 50km/hr is much faster than what he was used to. "Travelling times used to take a lot longer."

He reckons it used to take five to six hours to cut a 2ha field with the 1.9m tractor-mounted mower. "Now, it is an hour's work. I can easily work at speeds of 15-16km/hr whereas the fastest I could travel in the field with the K100 was 6-8km/hr."

Looking ahead, the enthusiastic Dutch contractor is currently preparing the former sprayer for the coming grass seed season. This includes installing GPS to make his life even easier. He is also changing the paintwork of the mower to the darker Claas grey. "There is too much reflection with the lighter colour from the lights when working in the dark." Finally, he has plans to automate the four-wheel steer system so that it automatically engages when he turns at the headland and disengages when he straightens up for the next pass.

Steven Vale



The former Agrifac sprayer retains its standard wheels and tyres, but gained hydraulically extending axles. These slide out from 3.2m to 4.2m.



A big features of the mower is the way it is hydraulically rotated by 90 degrees and slid in between the wheels of the machine for transport.

The top speed of 50km/hr is much faster than what he was used to with his tractor/mower combination.

The contractor cut 100ha-120ha of grass for seed with the modified Agrifac sprayer during its first season.



STORTH

EXPERTS IN SLURRY MANAGEMENT

STORE IT

SCRAPE IT

PUMP IT

MIX IT

SEP IT

APPLY IT

01524 781900

www.storthmachinery.co.uk

W T Carr and Sons:

Well-cared-for kit

Auctioneer Shouler and Son recently held a complete dispersal sale on behalf of Leicestershire-based W T Carr and Son. The online, timed auction included the following lots



The New Holland FX30 forager with 2,712 engine hours and equally low 1,999 cylinder hours was a bit of a bargain ... the £23,000 tag included the 346 pick-up, a six-row row maize cutter and corn cracker.



A 2018 Spearhead Twiga Classic S60 hedgecutter, with EX65 hydraulic joystick controls and DP12 head, sold for £12,600.



In very good nick, this 2016 Teagle Dual 2.85m flail mower, which can be either front- or rear-mounted, went for £4,700.



This sweet-looking Puma CVX 175 was a 17-plate. After 2,333 hours the 650/65 R38, 540/65 R28 tyres were at 80%.

The spec sheet included ACU guidance ready, ISObus screen and trailer air brakes with an ABS plug. Serviced at 2,000, it made a fair £58,400.



In superb condition, the six-rotor, 2018 Pöttinger HIT 6.80 tedder found a new home for £7,200.

Buyer's premium

A buyer's premium of 5% of the hammer price is payable on all lots up to £4,000. Any lots sold over £4,000 attract a fixed buyer premium rate of £200 per lot. Both are subject to VAT at 20%.

Online bidding

Lots could only be bought online via i-bidder.com or bidspotter.co.uk. A 4% plus VAT internet surcharge was added to the hammer price.

VAT

Bids made for lots that attract Value Added Tax shall be exclusive of VAT chargeable.



With 7,078 hours, the Merlo TurboFarmer P28.7 came with a Matbro-style pin-and-cone headstock. Tyres were 25%, and the farm had serviced it every 500 hours. It left the Melton Mowbray farm after reaching £14,400.



The 10-year-old, long-wheelbase Puma 215 had a powershift box and clocked a relatively modest 5,483 hours. At best the 710/60 R42 and 600/60 R30 tyres were at 50%. Serviced last autumn, it went away for £34,200.



Another well-cared-for machine, the 2018 Kuerneland Exacta TL ISObus 3,000-litre fertiliser spreader sold for £9,400.



One of the older implements in the W T Carr and Son sale, this tidy 1995 set of OPICO Variflex VF630HD Cambridge rolls made £2,800.



In pretty decent order, the Redrock FD14 mixer wagon finished at a surprisingly cheap £410.



Simba's answer to the Sumo Trio ... the DTX300. This machine had new points/wings in 2020. As a result, it fetched strong money at £11,000.



The 16-plate JCB Fastrac 4220 had been back to the dealer for an uprated front diff and hub in 2020. It had 540/65 R34 tyres at 90%, a front linkage and five spools (four rear, one front). Field Pro GPS Ready and with 3,000 hours, it sold for £64,200.

CHEFFINS

CAMBRIDGE MACHINERY SALES

The Saleground, Sutton, Ely, Cambs, CB6 2QT

Categories Include:

- Tractors
- Implements
- Forage Harvesters
- Telescopic Handlers
- Grassland Machinery
- Wheels & Tyres
- Excavators
- Combine Harvesters
- Trailers
- Digger Loaders

Next Sale: Monday 12th April 2021

Sales and Valuations Undertaken Nationwide



cheffins.co.uk

machinery@cheffins.co.uk

01353 777767



The 2008 Kuhn HR4003D power harrow and Accord drill combination arrived at its new home just in time for spring drilling at £6,400.



Although this Rapid 500P had a working width of 5.0m when it left the Väderstad factory, it has since been converted to 4.8m and came with an upgraded new-style control box, new coulters and rigid tines. The rigid tines will have limited its appeal, but it still made £5,600.



Fetching £37,200, this 2009 New Holland BB9080 square baler had pumped out only 26,000 bales. The single axle was shod on 710/45 R22.5 flotation tyres.



Dating from 1990, the New Holland TX36 combine had 4,421 hours and came with a 6.0m (20ft) header. Its new owner parted with £10,800 for the privilege.



This robustly built 2009 Bunning HDB120 muckspreader, with horizontal rear beaters and a spinning deck, sold for a strong £19,400.



The 10-year-old Lely Splendimo 321PC trailed mower conditioner, which had a new driveshaft in 2019, was a bit of a bargain at £3,600.



On the trailer front, a 2013 Marshall QM14 14t tandem-axle silage trailer sold for £8,500, while a pair of 2012 QM16s, with air/oil brakes and 560/45 R22.5 tyres, commanded £10,200 apiece.



Even the 2010 Keenan MechFiber 340 diet feeder, which had been relined and received new blades in 2019, wasn't bad value at £3,000.



The newer 18-plate JCB 536-60 had just 2,142 hours, with the back tyres at 50% and fronts 30%. Sold with pallet tines, it went to £49,400.

Yorkshire farmer and contractor, Nigel Thornborrow:

The march of time



Firstly an introduction, if only to put most of my rantings into context. Step back over half a century, and your typical farming scene would be full of diddy two-wheel-drive tractors, equally small equipment and loads of staff. Jump forwards 25 years and into the hills of Yorkshire, and, if it weren't for the Austin Montego outside the farmhouse, you'd be excused for thinking that time hadn't moved on at all. This is where I started my farming career, on a 1980s' hill farm where the machinery had to be capable of making hay in summer and feeding said hay in winter ... and that's it. My early years of this busy hay-making period were spent at the helm of a rake, a real one, a hand rake, made of wood and dragged for mile after sullen mile cleaning up behind an arthritic New Holland 65E baler with fewer teeth than The Pogues' Shane MacGowan. This waste-not attitude was born from living memory of subsistence levels of farming in the area – forming habits that

were understandably hard to break. Perhaps it was here, combing negligible quantities of hay from the grass stubble, that an interest in machines and how they work was hatched. Advances in technology did slowly filter up those valleys. Making hay next door to the Lake District was a nerve-wracking process, and, all too often, fields could be seen littered with orange rows of 'rated' hay, slowly being pulled back into the soil by the fresh grass growth. Fast forward to today and those conventional balers are still in use, but to a far lesser degree, and are now made to go around a field by 130hp+ tractors. The industry-wide problem of more to do, in less time, with fewer staff, is partially to blame for the decline, coupled to today's volatile weather patterns. Ensiling is now king, utilising technology from the latest self-propelled foragers through to venerable old round balers. And this is where I find myself today, running a small contracting outfit from an even smaller farm in the Yorkshire Dales. Additions



Today, the grass-conserving scene on the Yorkshire hills is dominated by 100hp+ 4WDs, big balers and similarly big, black plastic-covered packs ...



... in stark contrast to the kit operated in the past. To say that farming life back then was different is clearly an understatement of some proportions.



Arguably one of the saddest farm trends over the past four decades has been the reduction in staff. More folk tended to be more fun ... most of the time.

to the toy box aren't undertaken lightly and have to pass a thorough selection process: Do we really need it? Will it pay for itself? Is it reliable? Questions like these must be agonised over for at least six months (day and night), or until the courted machine has been sold to someone else, thereby solving the problem, temporarily. Ultimately, cost and projected returns are the biggest players in the game, and our strategy of

buying second-hand gives a massive head start, so long as maintenance costs can be mitigated. Here is where knowledge gained from an engineering degree, the repair of cherry-pickers and even a spot of lecturing have helped make some of the firm's business decisions viable. See, Dad, I told you all of those years at college would pay off in the end.

Nigel Thornborrow

	Pick-up width	Bale size (width x diameter)	Chamber: fixed/variable	Number of knives
CASE IH				
RB545 Silage Pack	2.2m	1.22x1.25m	Fixed	0/10/20
CLAAS				
Rollant 455 Uniwrap	2.10m	1.20 x 1.25-1.35m	Fixed	Selectable 0,12,13,25
FENDT				
Rotana 130F Combi XtraCut 13	2.25/2.40m	1.23 x 1.25m	Fixed	13
Rotana 130F Combi XtraCut 17	2.25/2.40m	1.23 x 1.25m	Fixed	17
Rotana 130F Combi XtraCut 25	2.25/2.40m	1.23 x 1.25m	Fixed	25
Rotana 160V Combi XtraCut 13	2.25/2.40m	1.23 x 0.70-1.60m	Variable	13
Rotana 160V Combi XtraCut 17	2.25/2.40m	1.23 x 1.25m	Variable	17
Rotana 160V Combi XtraCut 25	2.25/2.40m	1.23 x 1.25m	Variable	25

Baler wrapper combinations:

Baling wrapped up

Want to speed up silage baling? Combination baler wrappers can boost work rates and ease labour worries. As well as listing who sells what, our round up looks at how the various bale transfer systems have been designed to be quicker and more secure

Combi-balers originated when contractors began towing wrappers behind their balers to save time and labour. Krone claims to have pioneered the idea in 1996 while McHale started from a clean sheet of paper to develop their combination machine before hitting the market in 2002.

Some of the early integrated designs resulted in a very long outfit that lacked the stability to work on more sloping ground, often the very conditions where they would be most useful. Access could also be an issue in narrow lanes and gateways.

Over time, more compact designs emerged, many of which have since been equipped with the latest innovations in baling, from pre-compression chambers to the application of barrel film for an improved package and easier plastic recycling. Manufacturers have also explored ways of making bale transfer more efficient and enhancing wrapping in difficult conditions.

Weight is still something to consider, with tandem axle systems on many designs spreading the load, plus the need for a more powerful tractor than for standalone balers and wrappers.

Jane Carley



Case IH

Case IH offers a combination version of its RB545 fixed chamber round baler. It uses the tipping wrapping table which tilts forward to receive the bale, aided by a pair of moving side plates at the back of the chamber, to transfer the bale for wrapping. The table also tilts backwards to unload the wrapped bale, with an optional tipping device which uses a wheel and tyre to turn the bale on its side. ISOBus as standard, the complete baling and wrapping process can be controlled using



Case IH's AFS 700 terminal.
www.caseih.com/emea/en-gb/home

Bale binding system	Film dispensers	Controls	Machine length/width	Weight	Min power	Price
Net/film (opt)	Twin x 750mm	Case AFS 700/Isobus	5.90x2.99m	4500kg	134hp	£77,773
Net/film (opt)	Twin x 750mm	Communicator II/ISObus	6.99m, 2.95m	5,800kg	160hp	£78,790
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,450kg	140hp	£88,013
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,450kg	140hp	£90,805
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,450kg	140hp	£92,326
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,550kg	140hp	£91,657
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,550kg	140hp	£94,449
Net	Twin 500/750mm	E-LinkPro/ISObus	6.30m, 2.90m	6,550kg	140hp	£92,326



Claas

Claas offers a single model, the fixed chamber Rollant 455 Uniwrap, which has selectable knives for non-chopping or a choice of chop lengths.

To transfer the bale onto the wrapping table, the transfer platform is closely mounted behind the baler so that the whole process takes 12 seconds from the tailgate opening to it closing again. Laterally mounted plates centre the bale on the platform, raised to transfer the bale onto the wrapping table, which tilts towards the baler to accept the bale. The Uniwrap has the capacity to carry 14 rolls of film and in the event of one of the two rolls running out, with the driver alerted, the wrapping process carries on automatically at half speed using the one remaining roll.

www.claas.co.uk



Fendt

Fendt offers the Rotana 130F (fixed chamber) and 160V (variable) combi balers. When the bale is completed in the chamber and the net has been cut, the rear door can be set to open automatically, as long as the wrapping table is empty of the previous bale.

As the door is opened and the bale is sat in the transfer arm, side guides move with the bale onto the wrapping table. Once the transfer arm has moved the bale, the arm retracts back into its home position which allows the chamber door to shut. A sensor is located under the middle

belt of the wrapping table, detecting the presence of the bale, and monitors the rotation within the wrapping process.

With wrapping completed, the bale deposit can be executed in three ways, which can be pre-selected by the operator. The wrapping ring lifts up, which in turn lowers the wrapping table allowing the bale to roll on to the ground. A bale mat can be attached to the wrapping ring to prevent stubble from piercing the film, or a bale kicker can be used to turn the bale onto its flat side.

www.fendt.com



BERGMANN

Take The Short Cut

Market Leading 53 Knives @ 34mm Cut

0345 548 5210

www.bergmann-uk.com

	Pick-up width	Bale size (width x diameter)	Chamber: fixed/variable	Number of knives
GOWEIL				
G5050 Kombi	2.20m	1.25 x 1.25m	Fixed	30
JOHN DEERE				
C441R	2.00/2.20m	1.21 x 1.25-1.35m	Fixed	13
C441R	2.00/2.20m	1.21 x 1.25-1.35m	Fixed	25
C451R	2.00/2.20m	1.21 x 0.80-1.60m	Variable	13
C451R	2.00/2.20m	1.21 x 0.80-1.60m	Variable	25
C461R	2.00/2.20m	1.21 x 0.80-1.85m	Variable	13
C461R	2.00/2.20m	1.21 x 0.80-1.85m	Variable	25
KRONE				
CF 155 XC	2.15m	1.20 x 1.25-1.50m	Semi-variable	17/26
CV 150 XC	2.15m	1.20 x 1.00-1.50m	Variable	17/26
CF 155 XC Plus	2.15m	1.20 x 1.25-1.50m	Semi-Variable	17/26
CV 150 XC Plus	2.15m	1.20 x 1.00-1.50m	Variable	17/26



PICKED. BALED. DELIVERED.

DISCOVER MORE AT YOUR NEW HOLLAND DEALERSHIP.



ROLL BALER 125 COMBI

Bale binding system	Film dispensers	Controls	Machine length/width	Weight	Min power	Price
Net/film	Twin x 750mm	ISObus	7.40m, 2.94m	8,900kg	150hp	£98,000
Net	Twin x 750mm	Greenstar 4240/ISObus	6.83m, 2.98m	5,750kg	110hp	£98,066
Net	Twin x 750mm	Greenstar 4240/ISObus	6.83mm 2.98m	5,870kg	130hp	£101,305
Net/B-Wrap (opt)	Twin x 750mm	Greenstar 4240/ISObus	7.53m, 2.98m	7,880kg	110hp	£113,193
Net/B-Wrap (opt)	Twin x 750mm	Greenstar 4240/ISObus	7.53m, 2.98m	8,000kg	120hp	£117,606
Net/B-Wrap (opt)	Twin x 750mm	Greenstar 4240/ISObus	7.53m, 2.98m	8,030kg	110hp	£116,311
Net/B-Wrap (opt)	Twin x 750mm	Greenstar 4240/ISObus	7.53m, 2.98m	8,150kg	120hp	£122,394
Net/film	Twin 500/750mm	DS500 or ISObus	6.57m, 2.96m	6,400kg	100hp	£86,490
Net/film	Twin 500/750mm	DS500 or ISObus	7.23m, 2.96m	6,800kg	100hp	£92,295
Net/film	Twin 750mm	DS500 or ISObus	7.16m, 2.96m	7,500kg	100hp	£95,460
Net/film	Twin 750mm	DS500 or ISObus	7.66m, 2.96m	7,900kg	100hp	£101,735

Goweil

Available in Ireland from importer Cooney Furlong, the Goweil G5050 Kombi fixed chamber baler uses the wrapping table with its four guide rollers to transfer the bale once it is wrapped with net or barrel film,

a method said to offer security even on sloping land.

The tailgate closes as the table moves to its wrapping position, allowing the baling process to continue without interruption. Wrapping is via twin wrapping arms with 750mm film stretching units, and once the bale is fully wrapped, the table moves to the rear and lowers to the ground to gently deposit the bale.

www.cooneyfurlongmachinery.com

John Deere

John Deere recently added C451R and C461R variable-chamber wrapping balers to the existing C441R fixed chamber model. Both of the newcomers use the company's fast release system in conjunction with a high capacity feeding system.

The trio of wrapper models can be specified with the MaxiCut HC rotor with 13 or 25



BIGBALER HIGH DENSITY



ROLL-BELT

NEW HOLLAND TOP SERVICE 00800 64 111 111 24/7 SUPPORT AND INFORMATION.
The call is free from a land line. Check in advance with your Mobile Operator if you will be charged.



www.newholland.com/uk





knives, controlled from the cab.

All three versions now feature a 15% faster wrapper working at 40rpm and an 18% faster table transfer system compared to the previous C440R model. Variable chamber models are also available with a tandem axle



as standard for improved stability and reduced ground compaction.

The wrapper and Table Transfer System (TTS) form an integral part of the baler. When the bale reaches full size, the tractor driver is warned to stop and the netting cycle starts; the bale is automatically ejected onto the transfer table, which then moves rearward to its wrapping position. Once wrapping is complete, the table pivots to ground level and lays the bale down. The operator can choose one of three modes for dropping the bale to the ground.

When the wrapper is not being used, one bale can be kept on the table while the next is being formed, so that two bales can be ejected at the same time to speed up collection. www.johndeere.co.uk

Krone

Semi-variable and variable chamber Comprima balers from Krone are available in combi-baler format. On the semi-variable CF155 XC and CF155 XC Plus as well as the variable CV150 XC Plus, the bale chamber opens and the bale is transferred to the wrapping table by a lever, activated when a gauge roller senses its weight.

The wrapping table forms a deep cradle with large bobbins on the side to help turn the bale during the wrapping cycle in difficult conditions such as sidling land. The table can also be used to group unwrapped bales in pairs.

A rubber mat at the rear protects the film as the bale is placed on the ground; an optional bale turner folds up against the wrapping table when not in use.

The CV150 XC uses a chain and slat elevator rather than the lever to transfer the bale to the wrapping table.

www.krone-uk.com

Kuhn

Kuhn offers a range of baler-wrapper combinations, with the I-Bio+, FBP and VBP baler-wrapper combinations also featuring a twin-reel film binding system which uses standard 750mm stretch film rolls in the chamber. Film and net binding systems are separate, allowing both to be carried at the same time, and switching between the two is tool-free.

Kuhn's fixed chamber I-Bio+ has an



integrated wrapper to combine the two operations in one chamber. Once the bale is complete, the upper part of the bale chamber is raised and the bottom part of the chamber then functions as a wrapping table. The wrapping ring has two integrated pre-stretchers which rotate close around the bale at up to 50rpm. To unload the bale, the table tips to the rear.

FBP and VBP fixed and variable chamber models use side guide protection guards to help with bale security as it is collected from the chamber by a loading fork onto the wrapping table which tilts forward to meet it. A second loading fork transfers the bale onto

“ I LOOKED AT THE NEW
MASSEY FERGUSON BALERS
AND LIKED THE DESIGN
WHICH OBVIOUSLY RETAINS
ALL THE BEST POINTS
FROM THE WELGER MODELS
BUT INCLUDES PRACTICAL
IMPROVEMENTS TOO. ”

DARREN HOBBS

AGRICULTURAL CONTRACTOR, SOMERSET



BUILT FOR GENERATIONS.

The 2017 launch of the new MF Round Baler range saw the established design of Lely Welger integrated into the Massey Ferguson family, encompassing features which make these the most reliable and high performing range of baler models on the market.

Tailored to your specific needs; producing high density hay, silage or straw bales, they remain simple, easy to set up and adjust.

TO FIND OUT MORE, CONTACT YOUR LOCAL MASSEY FERGUSON DEALER OR VISIT WWW.MASSEYFERGUSON.CO.UK



MASSEY FERGUSON
EXPERIENCE

	Pick-up width	Bale size (width x diameter)	Chamber: fixed/variable	Number of knives
KUBOTA				
BV5160 SC14 Flexiwrap	2.20m	1.20 x 0.60-1.65m	Variable	14
KUHN				
FBP 3135 Opticut	2.30m	1.20 x 1.25m	Fixed	14/23
I-bio	2.30m	1.20 x 1.25m	Fixed	14/23
VB 3165 Opticut	2.30m	1.20 x 0.80-1.60m	Variable	14/23
VB 3195 Opticut	2.30m	1.20 x 0.80-1.85m	Variable	14/23
* price is without terminal				
MASSEY FERGUSON				
RB 3130 F Protec 13	2.25/2.40m	1.23 x 1.25m	Fixed	13
RB 3130 F Protec 17	2.25/2.40m	1.23 x 1.25m	Fixed	17
RB 3130 F Protec 25	2.25/2.40m	1.23 x 1.25m	Fixed	25
RB 4160 V Protec 13	2.25/2.40m	1.23 x 1.25m	Variable	13
RB 4160 V Protec 17	2.25/2.40m	1.23 x 1.25m	Variable	17
RB 4160 V Protec 25	2.25/2.40m	1.23 x 1.25m	Variable	25



the wrapping table before the baler tailgate is closed automatically. The four-belt wrapping table with two large rollers and four side cones are designed provide maximum bale traction, even bale rotation and proper film overlap, regardless of the bale shape. The low-mounted table allows the wrapped bale to be discharged while driving, either automatically or manually. Kuhn's FBP 3135 fixed chamber combination will be available for this season with a bale weighing system on the wrapping table. www.kuhn.co.uk

Kubota

The BV5160 SC14 variable chamber combi baler uses a bale transfer table with four belts and two guide rollers, which moves to the tailgate of the baler once the bale is formed, and the bale is dropped directly onto it. This is said to offer smooth, secure transfer even in hilly conditions. The low table height makes for gentle unloading and an on-end bale kit can be specified. Control options include the IsoMatch Tellus Pro 2 which can combine the baler interface on the top half of the screen with a camera display in the bottom half. www.kubota-eu.com

SIP
3
Years
WARRANTY

www.sip.si

Robust grass harvesting

INCREASE YOUR FORAGE QUALITY

SIP AIR technology is designed for efficient swathing and clean, high-quality forage.

E: martin.holden@sip.si @SIPGreatBritain


Bale binding system	Film dispensers	Controls	Machine length/ width	Weight	Min power	Price
Net/Twine	Twin x 750mm	ISOmatch Tellus Pro	7.40m, 2.99m	6,050kg	80hp	£103,277
Net/Film	Twin x 750mm	*Optional ISObus CCI50/ CCI1200	6.46m, 2.99m	5,600kg	109hp	£76,620
Net/Film	Wrap ring 2x 750mm	*Optional ISObus CCI50/ CCI1200	4.50m, 2.75m	3,700-3,800kg	109hp	£60,680
Net/Film	Twin x 750mm	*Optional ISObus CCI50/ CCI1200	6.60m, 2.99m	5,400-6,300kg	109hp	£82,990
Net/Film	Twin x 750mm	*Optional ISObus CCI50/ CCI1200	6.60m, 2.99m	5,500-6,300kg	109hp	£84,835
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£87,895
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£90,777
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£92,298
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£91,421
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£94,421
Net	Twin 500/750	E-link Pro/ ISObus	5.90m, 2.90m	6,450kg	140hp	£95,942

Massey Ferguson

Protec combination units are available in fixed and variable chamber formats. They are mounted in a fixed chassis and the baler has an 8° pitch to the rear with a lower centre of

gravity promoting stability, which allows the baler to deliver the bale onto the wrapping table easily. The satellite wrapper is close coupled to the baler for stability and ease of operation.

Once the transfer arm moves, two patented side plates one on each side travel with the bale from the chamber to the wrapping table ensuring positive movement and stability even on slopes.

VBP BALEPACK

Variable chamber baler-wrapper combination

MAXIMISE FORAGE QUALITY



FILM BINDING

Patented award winning technology

Reduces costs, enhances bale quality and simplifies wrap recycling.

The KUHN baler-wrapper combination range



i-BIO



FBP



VBP



be strong, be **KUHN**

www.kuhn.co.uk



	Pick-up width	Bale size (width x diameter)	Chamber: fixed/variable	Number of knives
MCHALE				
Fusion 3	2.10m	1.23 x 1.25m	Fixed	25
Fusion 3 Pro	2.10m	1.23 x 1.25m	Fixed	25
Fusion 3 Plus	2.10m	1.23 x 1.25m	Fixed	25
Fusion Vario	2.10m	1.23 x 0.60-1.68m	Variable	15/25 (opt)
NEW HOLLAND				
Roll Baler 125 Combi	2.30m	1.15 x 1.25m	Fixed	20
POTTINGER				
Impress 124 FC Pro	2.30m	1.20 x 1.30m	Fixed	32
Impress 155 VC Pro	2.30m	1.20 x 0.80-1.55m	Variable	32
Impress 185 VC Pro	2.30m	1.20 x 0.90-1.85m	Variable	32
VICON				
RV5216 SuperCut 14 FlexiWrap	2.20m	1.20 x 0.60-1.65m	Variable	14
FastBale	2.00m	1.26 x 1.27	Fixed	6,12,13,25

Two rollers, three belts and four cone-shaped support rollers hold the bale securely once it has been transferred to the table; there is a work light for night working and a camera that can be used with a separate screen or through the ISObus terminal. The camera enables the operator to view the wrapping process or when empty use it as a rear-view safety camera.

A roller sensor under the belts ensures the wrapping does not start until the bale is in the correct position - it also measures the belt speed so uniform layers can be applied. The process is controlled entirely by setting from the cab or from the control pad situated on the rear of the baler.

www.masseyferguson.co.uk

McHale

McHale offers a trio of Fusion 3 fixed chamber baler wrappers with various equipment levels and the Fusion Vario variable chamber model.



The Fusion 3 offers the Expert Plus control console which makes the baling and wrapping process fully automatic; Fusion 3 Pro adds 7in touch screen monitor, in-cab net and density adjustment, camera, and faster wrapping speeds, while the Fusion 3 Plus can apply film or net wrap to the barrel of the bale.



It's Not Just Netwrap IT'S A SOLUTION



When you buy TamaNet+, you get a world-leading edge to edge solution product, support and a whole lot more.

Tama - We're more than just products... we're solutions

Tama UK
Tel: +44 (0)1420 545 800
www.tama-uk.co.uk
www.facebook.com/Tama.fgs

Bale binding system	Film dispensers	Controls	Machine length/ width	Weight	Min power	Price
Net	Twin x 750mm	Expert Plus Console	5.80m, 2.76m	5,550kg	107hp	£67,438
Net	Twin x 750mm	I Touch control/ISObus (opt)	5.80m, 2.76m	5,550kg	107hp	£72,090
Net & Film	Twin x 750mm	I Touch control/ISObus (opt)	5.80m, 2.76m	5,650kg	107hp	£74,319
Net	Twin x 750mm	I Touch control	6.30m, 2.94m	6,500kg	114hp	£75,838
Net & Film	Twin x 750mm	ISObus	6.83m, 2.93m	6,200kg	136hp	£75,000
Net & Film	Twin x 750mm	Electronic, ISObus compatible	7.24m, 2.89m	7,600kg	130hp	£101,446
Net & Film	Twin x 750mm	Electronic, ISObus compatible	7.24m, 2.89m	7,700kg	130hp	£109,741
Net & Film	Twin x 750mm	Electronic, ISObus compatible	7.24m, 2.89m	7,900kg	130hp	£114,350
Net/Twine	Twin x 750mm	Isomatch Tellus Pro	7.40m, 2.99m	6,050kg	80hp	£103,277
Net	Twin vertical x 750mm	Isomatch Tellus Pro	5.85m, 2.75m	7,500kg	150hp	£115,391

McHale's bale transfer system is the same on all three versions of the fixed chamber machine. When the bale is formed, net or film is automatically applied, and the chamber then splits like a clamshell. The lower section of the bale chamber transferring the bale into

the high-speed vertical wrapping ring. Once the chamber is closed the operator can continue working and the fully automatic machine will start the wrapping process. In difficult ground conditions bales can be loaded at the operator's convenience by

pressing the tip button. When the bale on the back is wrapped the machine will hold the wrapped bale and automatically tip it while the next bale in the chamber is being bound with net or film. At this point the bale on the wrapper can be set





Experts in your field



Redefining Large Bale Wrapping

Q SERIES

Compact and lightweight, the Q series can wrap all bale sizes.

Michael 087 2062629
Joey 07767 202013



Or visit us at
www.tanco.global

TANCO





Pöttinger

The baler range at Pöttinger extends to both fixed and variable models with the three Impress baler/wrapper combinations offering a double wrapping arm concept controlled from below, including the new Impress 185VC Pro aimed at large farms and contractors.

A new optional combined binding unit allows both net and barrel film to be carried with the ability to switch between the two. A linear transfer unit moves the completed bale to the wrapping platform, offering safe transfer up to a slope inclination of 40%, and the process can be activated in automatic or manual mode. The arrangement of the wrapping arms from below enables a low centre of gravity and

to automatically tip.

On the Fusion Vario, as the transfer cradle ejects the bale onto the wrapping platform, the wrapping roller closest to the bale chamber pivots out of the way which reduces the height the bale has to transfer to get to the wrapper.

www.mchale.net

New Holland

The Roll Baler 125 Combi fixed chamber combination baler wrapper features a mechanically locked bale chamber which maximises compression to provide heavy bales.

The bale is ejected from the bale chamber onto the wrapper loader which transfers the bale onto the wrapping table. New Holland says that this system provides numerous benefits including zero soil contamination prior to bale wrapping, gentle bale drop to reduce plastic/net damage, improved machine stability on hills due to low centre of gravity and encompasses a simple reliable design.

www.newholland.com

easier continuous loading of large bales. As an option the bale turner rotates wrapped round bales to be deposited in the vertical position.

The optional tilt sensor automatically adjusts the speed to the terrain and ensures reliable bale transfer even on steep ground. Hydraulic functions such as tailgate, wrapper and bale placement are adjusted automatically.

www.pottinger.at

Vicon

The fixed chamber FastBale uses the wrapping table to transfer the bale, lowering below the main bale chamber to receive the finished bale. It's wrap-around main frame offers security, and houses the wrapping satellites which rotate around the vertical access, with the bale supported on two powered rollers. This reduces the space required for the rotation of the film giving a more compact machine and said to result in faster operation and higher precision in wrapping.

Vicon also offers the fixed chamber RV5216 SuperCut 14 FlexiWrap, a design shared with sister company Kubota, (see page 90 for details).

<http://en.vicon.eu>



**FENDT**

fendt.co.uk | Fendt is a worldwide brand of AGCO.

Fendt Rotana Combi. The flexible combination.

The Fendt Rotana baling-wrapping combinations are at home in any terrain, and offer everything you need for perfect bales. See for yourself at your local dealership.

It's Fendt. Because we understand agriculture.

COMING UP IN THE NEXT ISSUE!

TRACTOR TESTS • PROFESSIONAL • INDEPENDENT • UNIQUE
Driving Impressions • Used machinery • Workshop • Management • Vehicles

June 2021
profi.co.uk

profi

For farmers
and contractors

THE PROFESSIONAL FARM MACHINERY MAGAZINE

Malone Tedd-Air 840



PRACTICAL TEST

Claas Convio and Vario headers

Draper headers seem to be the next trend in combine fashion, so when testing the Lexion 5500 for this issue we also compared the conventional Claas Vario header with the firm's new Convio. Find out whether it makes a difference to output in the June magazine.

◀ Looking forward to hotter days and the smell of grass baking under the summer sun? We've been testing Malone's six-rotor tedder to see if it deserves its solid reputation.

Out on
May
7th



TRACTOR TEST

Seven 120hp tractors

Our seven 120hp tractors return in the June magazine for a further look at their good and not-so-good points.



WORKSHOP

Vogelsang ECL distributor overhaul

Until very recently, Vogelsang has been the 'go-to' supplier for slurry applicator distributors. We run through what steps to take when overhauling an ECL unit.

DON'T MISS OUT!

**MAKE SURE OF
YOUR COPY NOW**



DRIVING IMPRESSION

Kubota BV5160 baler wrapper

The Kubota BV5160 baler combination (which is also available as the Vicon RV5216) has benefited from a number of updates for the coming baling campaign. We tried out the suitably refreshed variable-chamber baler wrapper at the end of last season.

DRIVING IMPRESSION

Manitou MLT841-145PS+ telehandler

Manitou's model numbering seems to get longer with every new generation of telehandler. Next month our testers take a tour of the updated 4.1 tonner, part of the New Ag XL range.



MARKET ROUND-UP

Muck spreaders

In a special round-up of rear-discharge muck spreaders, we study the horizontal beater systems for achieving wider spreading widths, especially of lighter materials.



USED MACHINERY

Moore Unidrill and Sky EasyDrill

It's seven years since the first of Sky's EasyDrills landed on UK shores, and a few are just starting to filter through onto the second-hand market. Our guide gives tips on what to look out for and also assesses the EasyDrill's closely related cousin – the Moore Unidrill – as an alternative option.

PROFI International

Kelsey Media, The Granary, Downs Court, Yalding Hill, Yalding, Kent, ME18 6AL, United Kingdom

EDITORIAL

Editor: Mervyn Bailey Tel: 00353 87 683 5472

Email: mervyn.bailey@kelsey.co.uk

Contributors: Hubert Wilmer, Anja Böhrnsen, Geoff Ashcroft, Tobias Bensing, Alexander Bertling, Christian Brüse, Lucas Colman, Jane Carley, James de Havilland, Dr. Gottfried Eikel, Nick Fone, Andrew Pearce, Sönke Schulz, Howard Sherren, Stefan Tovornik, Steven Vale, Martin Zäh
Editorial director: Frank Berning
Editorial services: Andrew Faulkner
Language services: Barbara Sabel
Designer: Mark Aston

ADVERTISING AND MARKETING

Mark Brazier

Tel: +44 (0)7813 671 484 Email: mark.brazier@kelsey.co.uk

Advertising copy production manager: Simon Warby

Tel: 01733 362701

Email: kelseycopy@atgraphicsuk.com

MANAGEMENT

Chief Executive: Steve Wright

Chief Operating Officer: Phil Weeden

Retail Director: Steve Brown

Publishing Director: Steve Kendall

Subscription Marketing Director: Gill Lambert

Publisher: Mark Brazier

Subscription Marketing Manager: Justin Williams

Print Production Manager: Georgina Harris

Print Production Controller: Kelly Orriss

Audience Development Manager: Andy Cotton

SUBSCRIPTIONS

Subscription customer service team: 0044 1959 543747

Toll free USA subscription order line: 1-888-777-0275

Customer service email address: subs@kelsey.co.uk

Customer service and subscription postal address:

Profi International Customer Service Team, Kelsey Media, The Granary, Downs Court, Yalding Hill, Yalding, Kent, ME18 6AL, United Kingdom

Subscription offers at: shop.kelsey.co.uk/profi

Buy back issues at: shop.kelsey.co.uk/profiback

Already a subscriber? Manage your subscription online at:

shop.kelsey.co.uk/myaccount

13 issues of Profi International are published per annum

UK annual subscription: **£51.90** (Direct Debit) or **£62.90**

Europe and USA annual subscription **£70.00**

Rest of world annual subscription price **£85.00**

DISTRIBUTION

Marketforce (Great Britain),

3rd Floor, 161 Marsh Wall

London E14 9AP

Tel: 0330 390 6555

Irish Edition: Newsread, 2023 Bianconi Avenue, Citywest Business Campus, Naas Road, Co. Dublin, Ireland
Tel: 00353 23 886 3850

PRINTING

PCP Ltd

Kelsey Media 2019 © all rights reserved. Kelsey Media is a trading name of Kelsey Publishing Ltd. Reproduction in whole or in part is forbidden except with permission in writing from the publishers. Note to contributors: articles submitted for consideration by the editor must be the original work of the author and not previously published. Where photographs are included, which are not the property of the contributor, permission to reproduce them must have been obtained from the owner of the copyright. The editor cannot guarantee a personal response to all letters and emails received. The views expressed in the magazine are not necessarily those of the Editor or the Publisher. Kelsey Publishing Ltd accepts no liability for products and services offered by third parties. Kelsey Media takes your personal data very seriously. For more information of our privacy policy, please visit <https://www.kelsey.co.uk/privacy-policy/>. If at any point you have any queries regarding Kelsey's data policy you can email our Data Protection Officer at dpo@kelsey.co.uk. Profi is available for licensing worldwide. For more information, contact stefanie.buerger@lv.de

Order just this issue:

Shop.kelsey.co.uk/PFI2106

Buy an annual subscription:

profi.co.uk

Or call: **01959 543 747**



K KELSEY media



We've made eight changes to this picture of a Kubota M 135 GX tractor cab. Simply locate our changes and then mark them on the gridline picture at the bottom of the page.

Submit your answers (A1, B2, C3, for example) via our website profi.co.uk by the 21st April 2021 and we'll pick one correct entry at random and send the lucky winner a profi goodie. Don't get too competitive – it's just for fun!

The differences spotted in last issue's picture of a Claas Scorpion 7055 telehandler were correctly identified by:

Guy Bassett
Darfield
New Zealand

Congratulations!

THE DIFFERENCES WERE
IN THE FOLLOWING
SQUARES:

**D/E3, G8, E10, F8,
B4, H2, D11, B8**



ORIGINAL



NEW



To submit your
answers, please
visit **profi.co.uk**
and look for the
Competition tab.

YOUR ANSWERS

	1	2	3	4	5	6	7	8	9	10	11
A											
B											
C											
D											
E											
F											
G											
H											

UK contractor charges

This is the National Association of Agricultural Contractors (www.naac.co.uk) charge guide, based on info supplied by its members in the spring of 2020. The figures are **only a guide** and assume a red diesel price of 60p/litre. Prices will vary according to UK region, size of job, type of equipment used etc

General operations

Operation	Cost /ha	Cost/acre
Ploughing	£63.13	£25.55
Cultivations – heavy	£60.21	£24.37
Cultivations – light	£40.40	£16.35
Power harrowing	£53.46	£21.64
Rotavating	£69.19	£28.00
Subsoiling	£66.39	£26.87
Mole draining	£88.17	£35.70
Stubble raking	£22.24	£9.00
Discing	£59.00	£23.89
Bed-tilling	£259.55	£105.04
Separating clod/stone	£265.00	£107.24
Potato planting	£185.33	£75.00
Spring tine cultivating	£40.40	£16.35
Rolling (flat for grassland)	£27.83	£11.26
Rolling (cambridge rolls)	£18.03	£7.30
Cereal drilling – combi-drilling	£61.59	£25.74
Cereal drilling – direct drilling	£58.72	£23.77
Cereal drilling – min-till	£49.98	£20.23
Rape drilling with subsoiler	£67.00	£27.18
Grass seed drilling with harrow	£34.14	£13.82
Grass seed (broadcast)	£31.30	£12.67
Grass seed (cross drilling, per pass)	£63.32	£25.62
Sugar beet/fodder beet drilling	£61.25	£24.80
Maize precision drilling	£48.29	£19.54
Maize drilling under plastic	£138.99	£56.25
Fertiliser – granular	£12.31	£4.98
Fertiliser – variable rate	£15.57	£6.30
Fertiliser – liquid	£13.16	£5.41
Spraying (up to 200 litres/ha)	£13.37	£5.41
Slug pelleting	£7.93	£3.21
Avadex application	£18.29	£7.40
ATV spraying (per hour)	£41.57/hr	£41.57/hr
Combining cereals	£92.96	£37.62
Extra for straw chopper	£19.06	£7.71
Combining OSR	£94.12	£38.09
Combining peas/beans	£94.89	£38.42
Swathing OSR	£57.00	23.07
Grass mowing	£30.30	£12.26
Grass topping	£38.00	£15.45
Grass topping (per hour)	£44.36/hr	£44.36/hr
Tedding	£17.55	£7.10
Raking	£17.98	£7.28
Silage – grass (full service)	£166.63	£67.43
Maize harvesting incl. three carting and clamping	£186.94	£75.65
Silage – wholecrop (full service)	£179.54	£72.66
Forage wagon	£117.00/hr	£117.00/hr

Operation	Cost /ha	Cost/acre
Potato harvesting (no trailers)	£690.00	£279.24
Sugar beet – harvester only	£238.00	£96.31

Piece work

Slurry spreading – umbilical	£89.00/hr
Slurry spreading – umbilical extra pump	£46.50
Lime spreading	£8.89/t
Baling (per bale) – conventional (straw/hay)	£0.74/bale
– 120cm x 70cm	£5.04/bale
– 120cm x 90cm	£6.21/bale
– 120cm round	£3.31/bale
– 150cm round	£3.51/bale
Bale-wrapping – 120cm round six-layer	£6.25/bale
– 120cm round four-layer	£5.00/bale
– 120cm round (without plastic)	£2.66/bale
– 120cm x 70cm six-layer	£7.62/bale
– 120cm x 70cm (without plastic)	£3.49/bale

Jobs charged per hour

FYM spread – tractor and rear disch. spreader	£53.90/hr
FYM spread – tractor and side disch. spreader	£56.00/hr
Weed wiping	£55.00/hr
Hedge cutting – flail	£38.97/hr
Hedge cutting – saw blade	£50.67/hr
Ditching 360° digger	£43.89/hr
Ditching 180° digger	£35.00/hr
Telehandler	£43.52/hr
Tractor and post knocker plus operator	£46.00/hr
Tractor and 12/14t trailer plus operator	£46.25/hr
Tractor (100-150hp) plus operator	£38.12/hr
Tractor (151-220hp) plus operator	£42.32/hr
Tractor (221-300hp) plus operator	£55.76/hr
Tractor (300hp+) plus operator	£72.82/hr
Snow ploughing	£57.00/hr
Labour only	£19.38/hr

Livestock operations

Sheep shearing – ewes	£1.65/hd
Sheep shearing – rams	£3.10/hd
Sheep shearing – crutching	£0.70/hd
Sheep dipping	£1.20/hd
Mobile feed milling/mixing	£19.75/t
Crimping	£11.25/t

BELT SPREADERS



MUCK SPREADERS



WATER BOWSERS



STONE CARTS



Made in UK

www.spreadpoint.co.uk

E: info@spreadpoint.co.uk T: Richard - 0044 (0)7917135513

International Dealers
Wanted



McHale

SQUARE
BALE
WRAPPER



CALL TODAY

Finance*
& Special
Offers
Available



*Offer Available in Mainland U.K. Only.
Terms and Conditions Apply.
For Full Details Contact McHale.

998 | HIGH SPEED

35%
More Output
Over a
Standard 998**

**Based On Field Test Conducted in 2017

AS STANDARD



Load Sensing
Hydraulics

AS STANDARD



Fast Loading
Conveyor

AS STANDARD



Patented Bale
Rotation

- + Patented Oscillating Rollers for Even Wrap Application
- + 2 X 750mm High Speed Dispensers
- + Automatic Bale Levelling
- + In Cab Control Console



CALL TODAY



①

Scotland & Northern England
Gary McConnell
07796 148 769

②

Midlands / Wales & Southern England
Kieran Hughes
07850 373 145



McHale Superior Forage Solutions



www.mchale.net