

Straw management:

To chop or not to chop...

As prices for compound fertilisers have rocketed, the nutrient value of straw has come under increasing scrutiny. Cereal growers are looking closer than ever at whether the returns from selling straw can offset the extra cost of P and K fertilisers. They are also more aware of the impact that extra organic matter can have on maintaining soil structure.

But it's not all cut and dried: Chopping straw uses a lot of diesel, and dealing with large volumes of residue can prove a headache when it comes to seedbed management. Cambs straw merchant and contractor Graham Lawman has seen the change in farmers' attitudes to straw impact heavily on his business. "Five years ago we didn't have to think about where our straw was coming from – sourcing it simply wasn't an issue," he says. "Now we're struggling to persuade farmers not to chop everything."

Straw merchant and contractor Graham Lawman has to work hard to persuade farmers to sell their straw. He believes straw's P and K values are overestimated.

...is a question that cereal growers are increasingly asking themselves as fertiliser prices rocket. Selling straw off the field may mean a bigger P & K bill, but it should provide useful extra arable income. Key to success? Use a reliable straw contractor to ensure baling and field clearance are carried out quickly and with the minimum of fuss. Nick Fone assesses the pros and cons

He puts this reluctance to bale down to a combination of factors. "Timeliness is a key concern for farmers. After these past two harvests they're particularly nervous about getting held up with straw on the ground and new crops to get drilled. "But by far our biggest challenge is P and K. Some agronomists suggest that by removing straw you're losing nearly 50kg of potash per hectare. I would question that. Ash from Ely power station shows a completely different picture."

Every year the straw-burning plant near Cambridge chomps through 200,000t of straw from East Anglia's arable farms to pump out 38mW of electricity for the National Grid. Mr Lawman supplies 1,000t every year.

Analysis of the ash from the power station indicates levels of less than 6% potassium and 0.5% phosphorus. That equates to a figure of approximately 30kg/K/ha – 20kg less than certain agronomists' estimates and those used in DEFRA's RB209

A John Deere 6920S is used to clear fields with a Walton bale chaser.



Lawman Line-Up

Machinery fleet

Tractors: JD 6600 (110hp), JD 6620 (125hp), JD 6920S (160hp), JD 7710 (155hp) and MF 8480 (290hp); JD 6930 (155hp) and 7810 (175hp) hired in for baling and chaser

Loaders: JCB 525-67, 531-70 and 532-120 telescopic

Balers: Krone 1290 HDP, NH BB980, MF 187 and Hesston 4755

Bale chasers: 1 x Walton and 1 x Heath SuperChaser

HGV: Scania R480 rigid and drag

Staff: Two full-time, three others at peak times

the crop even with such high fertiliser prices." Assuming a grain-to-straw ratio of 60%, you could expect an 8t/ha crop of wheat to yield just under 5t/ha of straw. That equates to a revenue of between £35 and £60/ha.

Aside from the financial arguments for baling, how does Mr Lawman counter the



The Walton chaser is capable of handling the wide variety of bale sizes produced by the firm's four balers. It can shift about 700 bales a day.

"It's expensive but makes all the difference. When you compare our wheelings to those left by 15t grain trailers running on super-single tyres, it's clear that the investment is worthwhile."

In a further effort to restrict the amount of traffic on the field the company has trialled a three-bale accumulator behind its MF187 baler this year.

Built in Denmark, the Pomi accumulator is sold by New Holland dealer Ernest Doe. It's a simple principle: As bales leave the chamber they pass on to a platform supported by four small wheels. The first bale is shunted to one side, the second to the other and the third bale slides in between the two. Once all three are in position the tailgate releases them as a pack. The operator can also choose to hold bales until the baler reaches the headland.

"By grouping the bales in threes rather than dropping them as singles we can cut down on loader travel by a third."

There are a number of reasons to avoid chopping straw, says Mr Lawman. Up to 30% less fuel is estimated to be used when straw is left in the swath. Claas says chopper power usage is dependent on crop conditions but generally takes about 70-100hp – that equates to about 25l/hr in a good crop of wheat.



Fresh on the fleet this year, a 290hp MF 8480 pulls the new Krone Big Pack 1290 HDP. The Massey's stepless Dyna-VT gearbox is reckoned to make the big red tractor ideally suited to baling work.

fertiliser recommendations. Mr Lawman is concerned that these are compiled from tests of fresh crop material rather than a dry matter adjusted sample.

"It's important to base nutrient calculations on DM content to give an accurate picture of soil and crop requirements. The growing crop contains a great deal more potash than is in the swathed straw."

As a past president and strong supporter of the British Hay and Straw Merchants' Association, Mr Lawman believes a basic calculation is all that is required to make the decision as to whether to sell straw or to chop it.

"With compound fertiliser prices averaging between £450-£650/t, that puts the nutrient value of straw at about £5/t.

"Farmers can expect to be paid between £8-15/t for straw in the field so there is still clearly a financial benefit in selling

other issues levelled against removing all straw from the field?

"We're conscious of people's serious concerns about straw holding up cultivations and drilling and make it our top priority to get fields cleared as quickly as possible," he explains.

"We operate two bale chasers and two handlers flat out to get bales off stubbles."

But it is these field operations themselves that attract criticism from the anti-baling camp. The extra traffic of tractors, trailers and loaders is said to cause unwarranted compaction.

"Soil damage is an issue that we have to recognise and avoid at all costs. Every piece of kit we buy we will order on the widest tyres practical," says Mr Lawman.



Grey skies and rain made 2008 a particularly difficult straw season. Typically Graham Lawman would expect to bale 10,000t of straw; this year it was just 5,000t.

"Not chopping will free up extra combine capacity of about 20-25%. That could be as much as an extra 10ha each day.

"Add to that the cost of replacing chopper blades at about £1,000 each year, and the argument for straw chopping doesn't look nearly as cosy."

Slug problems can also become more of an issue with high levels of crop residue;

Incorporating straw

Pros

Adds organic matter to the soil
Returns nutrients in the straw to the soil
Avoids compaction from baling and carting
Potential reduction in N loss from the soil in autumn
No delay from baling and carting
Lower labour requirement

Cons

Extra diesel used by combine to chop straw
Potential for slug problems
Competition with crop for soil N in decomposition process
Potential difficulties with incorporation
No additional income

Baling and sale of straw

Pros

Income from the sale of the straw
Potentially easier establishment of the following crop
Reduced potential for slug problems
Increased combine output (approx 25% when not chopping)

Cons

Costs of baling and carting
Removal of nutrients from the field
Possible delay in baling and carting, leading to delayed establishment of following crop
Possible soil damage if soils are wet during baling and carting

(Sources - Potash Development Association and British Hay and Straw Merchants Association)



With the Krone's 25% denser bales, shed space is used more efficiently. A JCB 532-120 stacks up to 10 high.

times have seen Mr Lawman switch his allegiances this year.

"It seems that we always have at least one big expense each season. Last year we had a new lorry and drag, and this year we've shelled out for a new tractor and baler," he explains.

"I probably left it a bit late, but when I got round to looking for a decent low-houred John Deere there was nothing about."

"We looked for a hire tractor of around 200hp, but we still had no joy."

Then local Massey Ferguson dealer Mark Weatherhead turned up with something that suited - a one-year-old MF 8480 with just 900 hours on the clock.

"We hadn't had a Massey for years, but this fitted the bill perfectly. I was particularly keen on its stepless gearbox having had a JD 6920 with AutoPowr."

He also enthuses about the DynaVT box's ability to automatically vary the forward speed according to load to maintain a set pto speed.

"It's absolutely brilliant where you need to keep the pto spinning at 1,000rpm. But what really sold the tractor for me was Massey's four-year warranty."

Arriving way back in 1985, Mr Lawman's first big square baler was a Hesston 4800.

Pumping out 10,000 bales a year it was quickly superseded by a 4900 in 1987.

"In the late '80s things were going well and the following year we had another 4900," he explains.

"Then in '95 a mini-Hesston 4755 model was brought in, mainly for silage."

More recently other colours have joined



The new Krone Big Pack 1290 HDP has lived up to its reputation in its first season, pumping out bales that are 25% denser than those from the firm's other machines. Mr Lawman would like to move to all high-density machines.

they are known to thrive in the damp mat of chopped straw. Each application of slug pellets can cost in excess of £20/ha. In certain situations that dense straw mat will require an extra cultivations pass to incorporate it. If this is the case it is worth factoring in an additional £30/ha.

Baling and Contracting

Based near Huntingdon, Cambridgeshire, Graham Lawman's business is primarily focused on the hay and straw trade. In a normal year the firm will bale up 10,000t of straw to supply a variety of customers. But this year and last have proved a very

different story, with delayed harvests prompting many growers to chop more straw than usual to ensure they can get following crops drilled on time.

"We've only managed 6,000t this year," says Mr Lawman.

"That makes things very tight because we haven't seen our costs reduced. We've still had to run four tractors and balers plus all the field clearance equipment."

Those four baling rigs form part of a fleet that extends to five tractors plus another two hired in for peak season. Thanks to good service from local John Deere dealer, Ankers, the line-up has traditionally been green and yellow, but long waiting



Straw is loaded onto the firm's own lorry with a JCB 531-70, one of three handlers operated by Mr Lawman.

the line-up, all of which have either been built at the Hesston factory in Kansas or have their roots there. Currently the fleet includes a Massey Ferguson 187 and New Holland BB980 unit, although this year's addition of a German Krone HDP machine is something completely new.

Krone's High Density Press (HDP) Big Pack 1290 baler is said to be capable of cramming 25% more material into each bale. And it was this simple but startling stat that swung it for Mr Lawman.

"If I can squeeze a quarter more straw into each bale, we end up winning on a number of counts," he says.

"We can load lorries to a full 27t, whereas we were only managing 23t before. In addition, we've got 25% fewer bales to pick up so we're running about on the fields even less – that's better for the soil and for our farmers."

He also points out that his buildings have become 25% more efficient. The significant investment that anyone storing big straw tonnages has to put into sheds is an unpalatable pill to swallow, so making the pay-back period 25% shorter is a major attraction.

"We try to get as many of our bales under cover as possible. The Krone has really helped with that this year. In time I would hope that all our big balers could become high-density machines. That way I would extend my shed space by a quarter."

The Krone 1290 HDP has a number of key design features to allow it to produce heavily compacted, rock-solid bales. The chamber is beefed up and lengthened, accentuating its funnel-type effect. Six hydraulic rams exert massive pressure on the sides of the chamber. Consequently, even though the wads match a standard 120cm x 90cm bale in size, they're 25% heavier. Adopting this approach means that there's even more resistance from the

Lawman straw customers

3,000t: Sundown Products, Kimbolton, Cambs – animal bedding and feeds

2,000t: Contract baling customers

1,000t: EPR power station, Ely, Cambs – electricity production

1,000t: Straw merchants across Holland and Belgium – animal bedding and mushroom compost

3,000t: Sold direct to farmers and merchants in the west Midlands and North West

material as it passes through the baler. For this reason a beefy 600kg flywheel is required to keep things moving.

"When it gets going, it is unstoppable – it doesn't slow down for anything," explains Mr Lawman. "But it takes a lot of power to start it moving. You have to feather the pto in gently. That will eventually take its

toll on the tractor's pto clutch, so we will probably fit Krone's new hydraulic start-up system for next year."

Summary: Mr Lawman's main message is a simple one – don't be too quick to chop, because in his view there is a genuinely cost-effective alternative.

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