

"The "Aqueel" system has the potential to reduce soil erosion and irrigation costs"

AQUEEL PROVES ITS VALUE

The economics of using the Aqueel roller definitely add up, says Philip Lee, who has just replaced the roller he has run as the central pressing unit of his power harrow combination drill.

The usage cost of the original roller worked out at about 74.5p acre for around 2,000 acres of drilling, which he feels compares very favourably with that of the traditional steel packer roller it replaced, in terms of replacing scraper blades over the same period.

"...the economics of using the Aqueel roller definitely add up"

In effect, it also means he gets all the practical and agronomic benefits of the unique, unblockable roller for free, while also avoiding downtime and helping achieve more accurate drilling.

Mr Lee has three Aqueels at Seago & Lee, Home Farm, Quidenham. As well as the one in the drilling unit, he runs another behind his sub-soiler and another on a front press.

Between them they highlight the Aqueel's range of benefits. When used with the combination drill it is the roller's unblockable properties that are valuable; when run to consolidate behind the subsoiler it is the imprint of divots which "weatherproof" the bare land which are



important; while on the front press it is effective consolidation which is key.

The Aqueel in the combination drill proved its ability in all sorts of conditions during its life, coping with soil types that range from blowing sand to heavy clay with equal ease and helping him to achieve accurate and trouble free drilling: "I reckon we would have had to replace eight sets of blades on our old steel roller in covering that sort of acreage - so the costs are broadly comparable. But we avoid the hours we used to spend crawling around the roller in damp conditions unblocking blades and adjusting them to cater for different soil types or replacing them.

"That job always annoyed me, mainly because you always throw 90% of the blade away. It's the edge and the corners which wear first and then the roller starts to bung-up and no matter how you adjust them the problem carries on getting worse".

Mr Lee grows a wide range of vegetable crops, and often drills autumn cereals behind them:

"We drill from September until May, often working in late autumn after vegetables and sugar beet, when conditions can be less than perfect.

"Using the drill in damp conditions felt like driving with the brakes on. Even when the roller

"As it plays such an important role in preventing runoff we believe it will help us meet the cross compliance rules".

was working well it would flick little lumps of mud off as you travelled, so the final seed-bed was not as even as it should be".

One major frustration was the number of times he had to stop working in conditions which were still perfectly acceptable for drilling but in which the roller continually blocked, which meant he was losing drilling days, which placed further pressure on other parts of the system.

If he does not drill another crop behind roots and vegetables, then the land may be subsoiled and left bare ahead of spring drilling. In this scenario the Aqueel behind his subsoiler plays an important role:

"When we subsoiled with the old roller it would leave the surface level and flat. Any rain tended to cause capping, so any further rain ran off laterally, taking soil with it. But the divots the

Aqueel creates have greatly reduced that problem.

"When you stone pick land it can leave it less stable than it should be and it can take time for the natural percolation to re-establish itself. The Aqueel's divots capture rainfall where it falls and give it time to percolate into the soil,



while also avoiding ponding on sloping fields.

"As it plays such an important role in preventing runoff we believe it will help us meet the cross compliance rules".

The Aqueel on the front press also plays an active part in improving the quality of cultivations. Philip uses it to knock down ploughing ahead of the combination drill, in which role it has several key advantages over the ring press he used previously:

"It achieves a more consistent result than the rings. It doesn't bulldoze or sink into the sandy soils and runs clean even when working on clay soils which have been rained on and have got sticky".

He says it also presses the seed-bed far more effectively, which reduces the depth of wheelings made by the tractor, so the power harrow/drill have a much more even seed-bed in which to work. As a result, drilling is more consistent.

"We had to partially 'carry' the cast ring press. Although it weighed 470kgs/metre, we might only get 250-300kg/m effective pressing action. We can lower the Aqueel fully, so we benefit from the full weight. That also means the tractor driver is not continually worrying about the balance of the tractor. He can concentrate on actually doing the job, which further improves drilling quality".

"The "Aqueel" system has the potential to reduce soil erosion and irrigation costs"

AQUEEL ENDS THE SAND DANCE



Sand blowing from behind the position from which the photograph was taken would have previously blown right across a level field. Once Aqueeled, it falls to the ground within 25 metres of the field boundary

The Aqueel roller is a simple, practical, low-maintenance tool which helps protect soils against erosion by wind and water while also improving the efficiency of crop production.

That's not a bad set of credentials for a lumpy piece of rubber, suggests Richard Limb, who uses two of them at his 500-acre Normanton Larches Farm, near Worksop in the North Nottinghamshire sandlands.

Soil erosion used to be a major issue for him, but using the Aqueel to finish off seed-beds - both flat ones and raised beds - has dramatically reduced the problem.

And with growing pressure on farmers to operate in environmentally benign ways - not least from the Cross Compliance protocols included in the new style CAP - he believes such solutions will be of interest to many other farmers, especially those working on sensitive soils like his.

While he had used other methods to reduce erosion, none was as effective as the Aqueel - which can be run behind existing cultivation, bed-forming or planting equipment - and all were more complicated.

These included a system that raised small earth dams in the tramlines: "We didn't even try this one.



While the divots gradually fill in during the crop's development, they are still visible when the plants are burned off prior to harvest

We felt that unless every dam was perfect there was a danger that an imperfect one would break and you would end up with a domino effect as all the other dams down the tramline were inundated". In contrast, the Aqueel treats the whole of the bed, retaining water on it and ensuring it is evenly distributed across the seedbed, a valuable agronomic benefit if you are aiming to grow premium quality crops for the supermarkets.

He does use cover crops, but admits they have drawbacks as well as advantages: "They are useful in some situations, but do require extra operations and extra cost, including spraying them off when they have served their purpose".

Ring rollers had also featured in their discussions, but were rejected because they do not guarantee protection: "The grooves they leave would work fine, until the wind came from that particular direction, when they would offer no protection at all".



Cultivating land before sugar beet drilling can consolidate the surface, avoid capping and reduce extensive wind erosion.

Working across the slop - as is being advocated by some authorities - might also cause real problems, he says, particularly for operations like de-stoning, spraying and using cultivation trains.

He also sees a clear danger from water running along lateral tramlines, collecting at the lowest point and then breaking out in a more concentrated flow which would have the potential to cause serious, localised gullying and erosion.

By contrast the Aqueel achieves all his key aims in a much simpler operation, with the fact that it can be run behind existing equipment being a major bonus: "We use it straight behind the hood that raises beds, directly behind the planter, or behind the subsoiler or cultivator we use to finish seedbeds for crops like sugar beet".

He got an early example of the implement's capabilities in the first spring he used it: sand particles

lifting from one field which has not been finished with the Aqueel blew across a track and over a field which had been subsoiled and Aqueeled ahead of being raised into onion beds.

Whereas previously the particles would have blown right across the field and into the woodland beyond, they all dropped to the ground within 25 metres of crossing the boundary of the Aqueeled area, he says.

He grows salad potatoes for the supermarket trade. This crop is only in the ground for 12 weeks. The Aqueel is run directly behind the planter so it presses the lattice of divots right across the top of the bed. The whole bed is more stable, Richard says, because there is much less water running off the edge causing marginal erosion, and the end wheels of the Aqueel help press and consolidate the edges of the bed.

During the crop's growing cycle irrigation and rainwater is held in the divots, so it has time to percolate into the soil and reach the plants' roots. In addition, the divots help achieve more effective fertilizer use, he says:

"Previously a significant portion of the solid fertilizer we spread might bounce off the bed and end up in the wheelings between the beds. Now more of it stays on the bed so - like the water - it is more readily accessible to the crop".

While the divots gradually fill in during the crop's development, they are still visible when the plants are burned off prior to harvest, so even in the final days of growth they are holding water and ensuring it is available to the maturing tubers. Initial fears that the divots might increase the 'greening' of shallow tubers have proved unfounded: "There has been absolutely no increase" he says. The roller plays a key role in the preparation of seedbeds for sugar beet, which traditionally follows potatoes: "We don't plough after potatoes to avoid mixing the stones we separated out of the soil through the seedbed again. We sub-soil to remove any compaction caused by field operations and finish the seedbed with the Aqueel".

The crop is drilled into this seedbed, with much of the Aqueel's lattice pattern surviving the operation so that it can help protect the emerging seedlings, which might otherwise be damaged by flying soil particles:

"The divots do fill in eventually, but only once the crop has met in the rows and covered the soil surface, and by then they have served their purpose. The criss-cross network of ridges between the divots means the wind can never pick up significant volumes of soil. The ridged finish ensures there is a soil surface facing the sun, so that should help warm the soil up more quickly in the spring".



"The "Aqueel" system has the potential to reduce soil erosion and irrigation costs"

TACKLING THE TOUGH STUFF

Simba's innovative Aqueel roller may be made of a spongy material (or micro cellular polyurethane, to be exact) but it can handle the 'tough stuff', as Northumberland farmer Peter Hogg can attest.



Peter Hogg

One of the features on his 1,100 acre Causey Park Farm, North of Morpeth, is the remains of a brick works - a clear indication of how heavy some of the soils he works are:

"The soils run from really heavy clay-based types through to some lighter loamy fields", says Peter. On this mixture he grows 600 acres of arable crops, with the rest being down to grass for beef and sheep.

He uses an Aqueel roller as the central pressing unit on his power harrow combination drill and is impressed with the results, even on his heaviest land: "We tried a variety of scraped presses and rollers and

being a thoroughly nasty job was also a dangerous one. It took about half an hour each time, so the Aqueel saves a lot of time as well. In addition we might have to completely replace the scrapers several times a season because they were worn out - and that was at least a half day job". He first saw the Aqueel when his old roller (and his patience) were both worn out. During its first three seasons on the farm - in which it has covered some 2,000 acres - it has proved itself both maintenance free and unblockable, as well as highly durable, with only one lug being seriously damaged thus far.

His drilling rig - built around a 150hp Ford tractor on dual wheels - starts with a set of Guttler presses combined with a 1960s set of Ransomes discs carried on the front linkage, with a 4m Lely power harrow/drill



Xxxxxxxxx

...I got sick and tired of lying under it unblocking the scrapers, which as well as being a thoroughly nasty job was also a dangerous one...

they all had the same problem. While they ran well in ideal conditions, they tended to bung up or block in any other conditions". "I got sick and tired of lying under it unblocking the scrapers, which as well as

combination incorporating the Aqueel roller on the back. The press and discs on the front linkage do an important job: "They crush and level the land between the tractor's wheels. I decided



Xxxxxxxxx

using the press and discs made more sense than just putting weight on the front linkage".

The Aqueel has proved able to cope with all their soil types, and has lived up to its "unblockable" tag:

"If we go through a really sticky patch it may clog up temporarily, but it shrugs the soil off the moment you get moving again. It has definitely achieved what we wanted in terms of consolidating the seedbed effectively, while also reducing the amount of down-time we suffer.

"The rings themselves are very durable. We have scratched and split them in a few places, but only

one lug has been badly ripped, which may have happened when we cornered with the drill in work".

A further testament to their durability came when a wire caught around one of the power harrow spindles and trailed backwards out of it. The end of the wire scored the edge of a set of rings, opening up a split in each lug. But despite covering hundreds of acres since the incident, these splits have not spread or increased in size at all.

"The "Aqueel" system has the potential to reduce soil erosion and irrigation costs"

POWER OVER WIND AND WATER



Sand blowing from behind the position from which the photograph was taken would have previously blown right across a level field. Once Aqueeled, it falls to the ground within 20 yards of the field boundary



Lane's Aqueel at work in Colorado

IN THE SAN LUIS Valley, Colorado, Chris Lane uses an Aqueel to negate the threat of winds reaching 50mph which whip across the valley floor each spring.

That wind has already removed thousands of tonnes of topsoil from the valley floor and piled it in huge dunes at the foot of the Rocky Mountains, which tower 14,000 feet high on both sides of the valley. To compound the problems, annual precipitation is just seven inches - most of that falling as snow.

In this scenario, the Aqueel is now playing

an important role in his cultivations for the alfalfa and barley he grows in six circles of between 120 - 160 acres, each served by a centre pivoting irrigation system. This May one severe windstorm removed enough soil



Cultivating land before sugar beet drilling can consolidate the surface, avoid capping and reduce extensive wind erosion.



Solo and Aqueel press in a one pass system - Colorado, USA where consolidation of the soil surface and reduction of wind erosion is very important.

to remove 80% of young alfalfa crops. This spring the soil was too dry for the Aqueel run behind his drill to press a perfect

lattice pattern, but the divots it did create were still highly effective - as was the consolidation it achieved.

Chris noted that emergence on the Aqueeled land was a couple of days later, but the better soil-to-seed contact achieved and better root development mean the crop looked much healthier, while the divots were very effective in helping protect the seedlings against wind damage.

He predicts the Aqueel will become standard



In conjunction with potato planters the Aqueel will firm the bed with the indentations being capable of retaining irrigated water until the crop is established.

equipment for many American farmers: "In high winds the soil literally causes a fog - especially in the potato-growing areas of the valley, where it is very sandy - which severely damages the crop. Personally, I would think the Aqueel is going to be a huge step forward for agriculture in many countries, and standard equipment for many farms".

The Aqueel is already chalking up sales all over the world, says Colin Adams, General Manager of Simba's Components Division: "We have made sales all over Britain, as well as in Australia, New Zealand, Saudi Arabia, France, Germany and Scandinavia. Models range from 8m wide ones being used on 16,000 hectares of irrigated field crops in Saudi Arabia, to one less than a metre wide being used on a five acre nursery in Hampshire".