

One size doesn't fit all



“It's important to stop, take a step back, and consider what the soil actually needs.”

Machinery Cultivation & ploughs

With many different cultivation options on the market, it's important to match a new purchase with on-farm objectives. *CPM* gets advice on cultivation decisions from the experts, as well as looking at some of the most recent launches.

By Charlotte Cunningham

Quite often in crop production, experts like to give advice based on a 'normal year'.

But with the past few seasons encompassing everything from non-stop rain in the autumn to scorching hot Aprils, it seems that conditions now tend to be anything but 'normal'.

It's fair to say that lack of consistency can make forward planning difficult and while the weather is very much out of the hands of growers, something that could help is making soils more resilient to wet and dry conditions.

Soil resilience, and building that resilience, is something that's certainly in vogue, but knowing where to begin can be rather overwhelming...

However, according to agronomy firm,

Hutchinsons, a key starting point is choosing the right post-harvest cultivations.

In the rush to prepare ground for drilling it can be all too easy to go straight in with the cultivator or subsoiler as soon as the combine leaves the field, but Ian Robertson — head of soil health at Hutchinsons — says that may not be best for soil health or crop establishment.

“Before doing anything, it's important to stop, take a step back and consider what the soil actually needs.”

As such, Ian believes it's important to adopt a flexible 'clever cultivation' strategy.

“Clever cultivation can mean anything from not cultivating at all, to subsoiling or ploughing where necessary. As a general rule, never cultivate at the same depth every year and make sure whatever you do delivers what the soil actually requires.”

With the rising popularity of low disturbance subsoilers for rectifying structural issues in shallow tillage systems, Ian says that such implements are often needed to break up distinct layers that can form where ground has been repeatedly cultivated at a shallow depth (typically 50mm), potentially restricting water infiltration and root growth.

“In many cases, the need for this remedial action could have been avoided by adopting a more varied approach to cultivations.”

So just where should you start?

The first step in deciding what, if any, cultivation is required is to dig a few holes to identify whether there are any structural

issues that need addressing, such as compaction or poor drainage, says Ian.

Generally soil assessments are best made in spring or autumn when ground is moist and warm, with active root growth and biological activity. When assessing soils in summer, he says care is needed not to mistake dry, hard soil for being compacted. “The bubble test (see panel opposite) is a simple way of identifying whether dry soils are compacted.

“Infiltration tests are also useful, but when conducted in summer, make sure water does not flow straight down cracks.

“Typically, 50% of soil is made up of air and water, so it may be that rock hard ground just needs wetting-up again to return



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The bubble test

When assessing soils in July or August it can be easy to think that a dry, hard surface is compacted and needs subsoiling or other deep tillage. But that may not be the case, says Ian, who has a simple test that could avoid unnecessary tillage, saving time, money and benefitting natural soil structure.

The “bubble test” works on the principle that good soil structure typically comprises 25% air, 25% water, 45% minerals and 5% organic matter.

According to Ian, growers should dig a representative lump of soil (around the size of a house brick or large handful) and place it in a bucket of water. “The appearance of a steady stream of bubbles shows air is being displaced

from natural cavities and pores, so the soil structure is likely to be just dry and hard, rather than compacted. However, a lack of bubble activity could suggest air pockets have been destroyed by compaction and remedial action is needed.

“The test isn’t infallible and there are always exceptions, but it’s a simple, easy thing growers can do that might stop a lot of recreational tillage,” he explains.

The process also doubles as a slake test, which provides a simple indication of the stability of soil aggregates and their ability to withstand external factors. “Generally, soil that disintegrates has a poorer structure and lower organic matter content than one that remains intact.”

to a friable surface that can be drilled straight into.

“In the past two years we’ve seen examples where growers have rushed to create a seedbed after harvest, only for heavy rain to make it unworkable and un-drillable later in autumn. In some cases it may have been better not to touch it.”

Root networks left by crops, even low

yielding ones, do a fantastic job of stabilising soil aggregates, improving porosity and structure of the top layer that crops are drilled into, so leaving this undisturbed can often be a better choice, he adds. “Nine times out of 10 the top 50mm is actually in good condition.”

Hutchinsons technical manager Dick Neale agrees. “Stubbles generally handle



Dick Neale says it's essential to select operations and implements suited to the specific soil requirements.

moisture much better than a cultivated surface. If you’ve got a nice friable surface that’s managed moisture well, most modern drills are capable of drilling directly into stubble, so there’s no need to cultivate. Cultivations destroy aggregate structure, which takes time to rebuild.”

However, if soil assessments reveal some ▶

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Cultivations & ploughs



Opico recently launched He-Va's Disc Roller Contour XL at this year's Cereals event.



Lemken's OptiStone is designed to remove the barrier between ploughs and highly stony soils.



The autumn will see Väderstad launch its NZ Extreme 1250-1425 heavy-duty tine harrow after a successful pre-series.

easier and cheaper to rectify.”

Many soil water management problems in recent seasons have been caused by issues of consolidation, slumping or capping in the top 100-125mm of soil, not by deeper compaction. “In such situations, there’s no point running a subsoiler through at 250mm deep, as it could make the situation worse.”

Soil moisture content is critical to the success of operations such as subsoiling and mole ploughing, Ian adds. “Subsoiling, for example, requires soil to be dry enough for natural fissures and cracking, but if it’s too dry, there’s a risk of bringing up large slabs and creating an uneven surface. If conditions aren’t right, don’t rush into doing it.”

It’s also important to remember “cultivations create weeds” by stimulating germination and bringing fresh seed to the surface, notes Dick. “However this can be used to growers’ advantage, such as for managing blackgrass, where shallow (50mm) cultivations encourage a chit of black-grass that can be sprayed off before drilling. “Remember though, blackgrass won’t want to grow until September or October, so timing is key.”

Despite the clear benefits of reducing tillage intensity, Dick says that he recognises ploughing can be useful in some situations, such as where there has been a high blackgrass seed return that year. “Ploughing has got to be done well to properly bury seed to depth, and you must be sure you’re not just bringing up another problem in the form of old seed.

“Factors such as delayed drilling for blackgrass control should always be balanced against the need for good crop establishment to maximise crop competition and yield potential.”

Opico

Turning focus to the kit itself, for those looking for a heavier disc-type machine, Opico recently launched He-Va’s Disc Roller Contour XL at this year’s Cereals event.

The Disc Roller Contour XL has been

designed to provide a more aggressive cultivation than its sibling, the Disc Roller Contour, and is suitable for both primary and secondary cultivations in a range of situations — from stale seedbed preparation to the destruction of standing cover crops.

Lemken

For those looking for ultra-shallow tillage, Lemken’s hybrid cultivator — Koralin 9 — could tick a few boxes.

According to Lemken, the Koralin 9 protects the soil from erosion and maintains soil moisture. “It combines the advantages of both a disc harrow and a cultivator and is ideal for full area, ultra-shallow soil cultivation,” says Paul Creasy, managing director at Lemken UK. “This way you protect your soil and get good results.”

The Koralin 9 comprises three rows of duck-foot shares, 380mm wide, in shallow position as well as a combination of tools operating horizontally and vertically.

“The Koralin 9 cuts stubble both vertically and horizontally across the full working width to promote rapid microbiological decompositions. At the same time, it incorporates harvest residue at a very shallow depth,” explains Paul.

“The thought behind this is that it encourages the even emergence of weed seeds and volunteer cereals while also reducing evaporation and as a result, the water is retained in the soil.”

It’s also useful for stubble tillage in a second pass, he adds. “Emerged volunteer cereals and rapeseed are undercut at a shallow depth and distributed evenly in the soil to promote optimal natural decomposition.

“Trailing harrow tines move finer roots to the surface and this causes volunteers and weeds to dry out — which therefore ensures effective control.

“The risk of blockage is reduced thanks to the combination of cultivation tools operating horizontally and vertically, while the leading discs make it easier for the tines to penetrate the soil and therefore reduces traction requirements for the tractor.

Also new from Lemken is the OptiStone overload protection for ploughs — designed to remove the barrier between ploughs and highly stony soils. “OptiStone, the new hydraulic overload protection, is now even more stable and can avoid obstacles easily up to 38cm vertically and at the same time up to 20cm horizontally,” explains Paul. “The minimum and maximum values for the release force can be conveniently set to the individual ground conditions from the tractor seat.”

► form of cultivation is required, both Ian and Dick say it’s essential to select operations and implements suited to the specific soil requirements.

“If compaction is identified, consider where it is, how extensive it is and what depth it’s at, so that machines can be set up correctly to address this,” says Dick. “Don’t assume poor water movement from the surface is due to deep compaction and poor drainage; it may be a surface issue that’s

Top tips for planning post-harvest cultivations

- Identify what soil needs and any issues to rectify
- Plan how to solve these issues using cultivations, cover crops, or other options
- Target cultivations, machine setup, and operation, to field requirements
- Don’t confuse dry soil for compacted soil
- Beware of shallow infiltration issues and deep compaction
- Consider whether cultivation is necessary - why, what for?
- Avoid repeatedly cultivating at the same depth
- Build aggregate stability by keeping roots in the ground
- Don’t overwork seedbeds before drilling
- If conditions are not right, wait. Always have a plan B.

Väderstad

The autumn will see Väderstad launch its NZ Extreme 1250-1425 heavy-duty tine harrow after a successful pre-series.

Currently in the final phase of the product development, the firm says farmers and agronomists have been impressed with performance so far.

"The NZ Extreme is easy and quick to set up from the comfort of the tractor cab," says Wolfram Hastolz, commercial product manager for tillage equipment. "The machine brings several new patented solutions to the farm industry too, especially its strong and unique tine mounting.

"To ensure field contours are followed exactly, the NZ Extreme is built from a five-section frame, which is able to adapt to the field surface and maintain the selected depth. This is further increased by an innovative weight transfer, ingenious wheel setup and heavy machine design."

Kuhn

In response to the growing interest in minimal tillage cultivations, Kuhn has developed its Striger strip-till range — which was recently demonstrated at this year's Cereals Event.

Available from four to 12 rows, the Striger

100 is designed around a parallelogram system that allows all elements to operate independently to ensure reliable ground following.

To achieve the optimum conditions for seed germination within the cultivated row, the Striger 100 comprises six key elements, says Kuhn.

1. Ground following is achieved using the hydraulic parallelogram and the gauge wheels, with each element being independent of the frame and the other elements.
2. The opening disc cuts through any plant residues and creates a slot ready for the leg. As an option, a corrugated disc can be fitted which offers a better expansion of the furrow before the leg passes through.
3. Debris clearers remove any residue from the seed furrow to provide a clean seedbed. They can be lifted out when work is resumed in spring.
4. The leg and point cracks and loosens the seed furrow to allow good development of the roots. Working depth can be adjusted between 7cm and 30cm without tools. To prevent soil ingress from the inter-row, the leg is independent from the deflector discs.



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5. The deflector discs channel the flow of soil while creating a fine tilth. The inter-row remains intact and weed emergence is significantly reduced.

6. The rear press wheels reconsolidate the seedbed and avoid cavities in the seed furrow. The pressure is adjustable, and the press wheels can be raised during a pre-winter pass.

As well as this the Striger 100 can be adapted to work effectively in all conditions and can accommodate liquid, solid or slurry fertiliser applications. It can be used with varying inter-row widths and with a wide choice of working parts and equipment. It's available in 3m, 3.50m, 4.40m and 6m formats. ■



This exceptionally versatile drilling system gives the user the option to direct drill into stubble, minimum tillage and plough-based systems. Strip-till drilling minimises fuel and labour costs whilst creating a more supported soil structure.



Independently mounted strip-till coulters ensure effective contour following. Coulters only disturb the portion of the soil into which the seed is being placed.

Strip-till row spacings of 346mm for the DTS9 and 333mm for all other widths resulting in excellent root development.

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