



# COMPACTION, SUBSOILERS AND HOW TO USE THEM

By Paul Collins and Bill Ritchie, Carrfields Ltd

CARRFIELDS HAS ADDED THE GRANGE RANGE OF SOIL-LOOSENING EQUIPMENT TO ITS PORTFOLIO OF CROP AND PASTURE ESTABLISHMENT TOOLS.

British farmer and engineer Rhun Jones established Grange Machinery specifically to produce conditioning tools to manage sub-surface soil damage. His company has quickly grown to become one of the UK's leading machinery manufacturers, well-known for its innovation.

Sub-surface soil damage, by its very nature, is difficult to see and its effects are often poorly understood or only identified when it is too late. Usually, this is later in the season when cropped soil or grassland is lying very wet.

Also, as larger equipment and heavier tractors have been progressively employed over the past 30 years, sub-surface damage from soil compaction has been hidden from view.

The type of tyres used on farm machinery, operating pressures, the timing of field operations, weather, and of course soil type, all have a significant effect on subsurface soil damage.

With the use of some basic technology and a bit of physical exercise it is not hard to identify and then rectify or prevent compaction.

When compaction or drainage issues are suspected, it is important to identify whether you have micro or macro drainage issues. The first step is to pick up a very simple and often neglected tool – the spade. Dig some holes and look at your soil composition.

The Carrfields team can help

with visual soil assessment and can use a slightly more sophisticated tool, a penetrometer, to help identify any compaction layers.

When it comes to micro-drainage, soil structure is the key. Look for a nice crumb structure throughout the profile.

Macro-drainage combines two elements: 1) Letting water infiltrate into the lower soil profile, and 2) Moving water away from the lower soil profile.

If the upper soil profile is well structured but infiltration to the lower profile is hindered by a compacted layer, then ponding will occur. Subsoiling may alleviate the problem, but first, the spade (or penetrometer) must be used to identify if there is a compacted layer and, if so, at what depth.

This is critical. Don't be tempted to run the subsoiler too deep. In some heavy soils, this may make the problem worse by causing upward compaction if the ground is too wet.

The idea of upward compaction may sound strange because this type of damage appears to be at odds with the effect of weight from tractors or heavy machinery. Subsoiling will only be effective if the deep sub-surface is porous (e.g., with gravel or sand) and the soil above it is dry enough to crack or fissure to allow root growth and water movement.



If your upper soil profile is well structured and there is no compaction layer, but your subsoil is not porous (e.g., if it is clay), then subsoiling will only 'increase the size of the sponge'.

In this case, subsoiling might improve short-term the amount of water the soil will absorb, but it will still become waterlogged after high rainfall. In this case, you can move excess soil moisture away with macro-drainage, either sub-surface (mole drains, tile/pipe) or surface drainage.

Timing is crucial. Subsoiling and mole ploughing differ in their optimal timing.

Subsoiling should be done when the upper surface layers are dry enough to create cracks radiating out from the point and wing of the subsoiler leg.

**THE FIRST STEP TO DEAL WITH DRAINAGE PROBLEMS IS TO GET OUT THE SPADE (OR PENETROMETER) TO CHECK SOIL COMPOSITION AND ANY COMPACTION LAYERS.**

On the other hand, mole ploughing should ideally be done in damp subsoil clay that then gets baked to a long-term mole channel in the following dry conditions.

Late spring will normally provide the best conditions for mole ploughing whereas there is more time flexibility with subsoiling.

Of course, the efficacy of subsoil macro-drainage relies on micro-drainage (good soil structure) to work. Both must go hand-in-hand.

If our future weather patterns are going to be more variable, then managing our soils to retain

**SOME GRANGE SUBSOILERS ARE DESIGNED TO BE USED IN COMBINATION WITH A DRILL WHILE OTHERS ARE DESIGNED TO BE USED ON THEIR OWN OR WITH AN AIR OR DISC SEEDER.**







# NORWOOD WELCOMES LANDINI TO ITS STABLE

NORWOOD AND ARGO TRACTORS ARE PLEASED TO ANNOUNCE THEY HAVE SIGNED AN AGREEMENT, GIVING NORWOOD THE EXCLUSIVE DISTRIBUTION RIGHTS FOR THE NEW ZEALAND MARKET.

The new agreement comes into effect in June. It will see Norwood take over all import and wholesale activities for Argo Tractors.

Norwood CEO Aaron Smith says his company is excited to enter a partnership with Argo Tractors.

“They have a strong track record, manufacturing 22,000 tractors globally every year, and they have technology and sustainability front of mind,” Aaron says.

Initial the agreement is only for Argo’s Landini tractors. Its McCormick range will be placed ‘on hold’ while the new partnership is established.

Argo Tractors general manager for Oceania Kim Findlay says they are delighted to collaborate with Norwood to develop a new chapter for Landini in New Zealand.

“Argo Tractors has undergone extensive development. We have increased the amount of high-tech and high range machines and attracted global recognition,” Kim says.

“Norwood will provide an exceptional supply chain channel with their experience, expertise and country-wide structure. This will ensure the Landini brand and its customers are in great hands for years to come.”

Landini has a 140-year legacy in machinery. They manufacture a range of products, from agricultural to speciality tractors for all food producing segments, whether on the farm, the orchard, or the vineyard.

Norwood says the new Landini tractors it will bring to Aotearoa include the Landini Rex 4-120 GT RoboShift Dynamic, which won the Speciality Tractor of the Year award at



Agritechnica 2024. It will also offer the new high horsepower Landini Series 7 and Series 8 ranges.

Aaron says Norwood’s goal is to provide current Landini and McCormick owners more support through the existing Argo dealer network, and to seek out extra market opportunities

“It is important to us that all Argo customers feel supported. They will have support and access to aftersales service for their tractors with the additional depth of extra dealerships and the largest agricultural parts warehouse in the country,” Aaron says.

Over the past decade Landini has had significant growth and Norwood is looking to replicate that success here. It will give affected dealers all the support they can through the transition.

Kim also extends his thanks to Agtek, which has represented the brand as import-

**THE LANDINI REX 4-120 GT ROBOSHIFT DYNAMIC WON THE SPECIALITY TRACTOR OF THE YEAR AWARD AT AGRITECHNICA 2024.**

er, distributor and dealer in the Bay of Plenty for more than 12 years.

Agtek managing director Gayne Carroll says he has worked with the Landini brand in New Zealand for nearly 30 years, first when the brand was introduced by Motor Holdings, then at Power Farming, and finally at Agtek.

Gayne says in the horticultural sector the brand has a reputation for no nonsense operation and productivity.

“We would like to say a sincere thank you to the independent, locally-owned dealers who have supported the brand over the years,” he says. **RC**

moisture more effectively in dry conditions and remove it in wet conditions will have a major impact on the resilience of our farming systems.

## GRANGE RANGE

Grange Machinery is made by and for farmers. The company takes its name from the Jones family’s farm at Sproatley Grange in East Yorkshire.

It offers a range of soil-loosening tools that can be used on their

own or in combination with other tillage or seeding machines.

The most effective way to use them is to identify and address the problem when the soil is dry and friable. This often aligns when seeding or preparing a seedbed, and therefore it can be combined with a drill or cultivator as a one-pass system.

Grange machines are designed to loosen soil only at the depth specified whilst minimising surface disturbance. This makes

them well suited for use in combination with min-till and no-till systems.

The Grange Close Coupled Toolbar (CCT) and Low Disturbance Toolbar (LDT) are ideally suited to complement a min-till or no-till drill. More traditional subsoiling options are the Grange Low Disturbance Loosener (LDL) and Grassland Loosener (GLL) which are designed to operate as independent tools to renovate soil that has been damaged, for

example, by winter pugging from livestock.

The LDL and GLL can be fitted with a pneumatic or spinning disc seed applicator, and with a smooth or toothed packer roller. Both machines are the ideal tools for restoring grassland or establishing a cover crop in stubble.

So if you think compaction is an issue on your farm, it is time to get out the spade. Then, if the conditions are right, reach for your Grange subsoiler. **RC**