

Shallow drainage for slow-draining soils

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Shallow drainage is the preferred option for land improvement where soils are impermeable, where water is unable to flow down from the surface or sideways within the soil. It usually involves installing relatively shallow carrier pipes and then ripping open cuts in the soil above to allow rainwater flow down into the pipes. The main rationale behind shallow drainage is cost. Making openings in soil with a machine like a subsoiler or mole plough is cheaper than installing stoned drainage pipes at close intervals.

➔ The carrier pipes are typically placed at a depth of about 1m and are covered with a layer of stone.

➔ The drainage cuts are opened at the surface using a subsoiler or a similar soil-ripping machine. These run across the piped drain and intersect the stone cover, giving water access down into the pipes below.

➔ The soil openings must be made close enough together to allow all surface water find its way down into the collector drains.

➔ Openings made by a subsoiler or mole plough will close up again under traffic and must be redone at intervals. Subsoiling must also be carried out in dry conditions.

Stone must be used over collector pipes for the system to be effective. The teeth of the ripping machine must be able to cut into the stone layer – without coming too close to the plastic pipes. If you have collector pipes installed in your land, be sure to record how deep



O’Keeffe Engineering best-selling machine is the single-leg mole plough seen here. The mole expander can be taken off and replaced by subsoiler wings in a few minutes. It sells at €2,000, including VAT and delivery anywhere in Ireland. The firm is based in Newmarket, Co Cork.

they are placed and what cover of stone is put over them.

Many farmers with free-draining soils also like to carry out targeted subsoiling or ripping to relieve localised compaction. This is effective where there are permeable layers below the top soil. It will also help where soil tends to form an iron pan. While there is some disturbance of the surface, the sward remains in place with no need for ploughing, reseeding, etc, leaving the overall cost comparatively low.

Opening the soil can be done using a variety of machines, including subsoiler, panbuster or mole plough. This work is most effective when soil is dry. The disturbing action of the implement creates many small cracks, which allow surface water drain down to the collector pipes below.



Good fencing lasts over 20 years

Farmers are putting more value now on long-life fencing products, says FRS Fencing manager Robert Birney, based in Roscrea. “Our sales of creosoted fencing posts are growing year on year. It’s popular for high-tensile sheep fencing and for dairy paddock fencing too.” Creosoted posts come with a 15-year guarantee. However, according to Robert, a farmer can expect them to last at least 20 years.

The standard strainer post is 2.1m long, allowing up to 1.1m to be driven into the ground, Robert said. “That ensures you get a good strain on the wire. If not sunk deeply enough, they can lie over or pop out of the ground. You may have to dig them in if ground is stoney. These are 6in to 8in in diameter.”

“The standard intermediate posts are 1.5m long and 100mm to 125mm diameter. This allows approximately 600mm to be driven into the ground. We recommend 2.5mm (12-gauge) high-tensile galvanised wire. It will hold its strain much better than mild steel wire and have a long life.”

Picture one

I went with Robert to look at a fencing job being done by his team on a dairy farm in Co Offaly. First, we looked at a fence line erected on the same farm in 1991 by FRS – that’s 24 years ago. The creosoted strainer posts are rock solid, the timber is sound and well able to withstand good tension on the wire.

Picture four

Robert showed me the creosoted gate post, off which the top had been cut. We can see that the pressure treatment has driven the preservative well into the wood, giving an effective barrier against fungal invasion.

Over time, the preservative will permeate further through the entire timber. Normally, the top is left on a post to maintain the preservative barrier. The top of this one will be painted with creosote.

Picture two

We applied the push test to this original 4in stake – the stake won.

Picture three

This dairy farmer has expanded, buying adjacent land, and he called back in FRS Fencing, once again specifying creosoted timber for strainer and intermediate posts.

– Paul Mooney

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Water flows quicker in twin-wall pipe

Twin-wall drainage pipe allows water to flow faster and is therefore more likely to keep itself clean than single-wall, corrugated drainage pipe. So claims Galway firm JFC, which manufactures CorriPipe. The pipe is made by a twin extrusion process, which forms two pipes and heat welds them together as they are formed. The outside wall is corrugated but the inside one smooth.

“This smooth internal wall ensures there is no build-up of silt or solids - they are washed down the pipe,” says David Curley, CorriPipe sales manager. “Studies have shown that you need a velocity of 0.5m/second to ensure that the pipe will clear itself of silt. JFC’s 4in Corripipe laid at a gradient of 1:100 will generate a flow rate of 0.75m/second and will carry over six litres of water per second, which is important during heavy downpours.”

In contrast, 4in single-wall, corrugated land drainage coil pipe laid perfectly even along the bottom of a

trench at the same gradient will generate a maximum flow rate of only 0.55m/second and will carry just 4.6 litres of water per second, he claims.

“At the same gradient, a 3in single-wall coil will generate a flow rate of just 0.48m/sec and carry just 2.15 ltrs of water/second. This obviously makes the single-wall coil more prone to silting up.” These calculations are based on Manning’s equation for calculating gravity flow in open channels, Curley says. “In addition, because the twin-wall pipe is rigid, it lies level on the floor of the trench.”

JFC makes the twin-wall pipe in sizes ranging from 4in to 24in (110mm to 600mm). The price of the 4” twin-wall pipe is €1.75/m for orders of up to 1,000m. However, for orders of above 5,000m, the price is €1.55/m. These prices exclude VAT at 23%.

– Paul Mooney