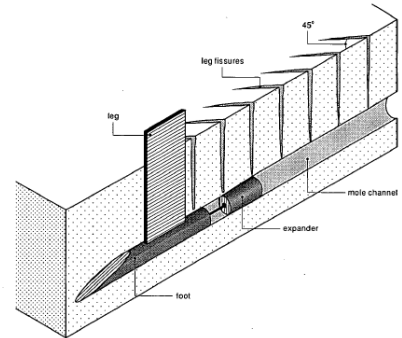


Summary

The aim of mole drainage is to fracture and crack the soil in order to improve the capacity of the soil to transmit water.

Mole drainage is used in impermeable soils as a cost-effective means of facilitating a shallow pipe drain network.

Mole drainage is suited to soils with a high clay content which form stable channels, otherwise gravel mole drainage may be required



Background

A large proportion of agricultural land in Ireland is characterized by the dual handicap of poorly permeable soils and high rainfall.

Under these conditions, the topsoil might never undergo significant drying because rainfall causes a rapid rise in soil moisture content.

Trafficability on these soils by both livestock and machinery becomes a major limitation with land becoming impassable for long periods.

As a result, efficient and economic management of the farmland becomes very difficult.

These soils need to be intensively drained if their full potential is to be realised.

Mole Drains and Gravel Mole Drains

Mole drainage and gravel-mole drainage aim to improve the capacity of the impermeable soils to transmit water, thus improving the effectiveness of a widely spaced pipe drain network.



Mole Drains

Mole drainage requires soils with a high clay content that form stable channels

They are formed with a mole-plough comprised of a torpedo-like cylindrical foot attached to a narrow leg, followed by a slightly larger diameter cylindrical expander.

The foot and trailing expander form the mole channel while the leg creates a narrow slot that extends from the soil surface down to the mole channel depth.

Gravel-Mole Drains

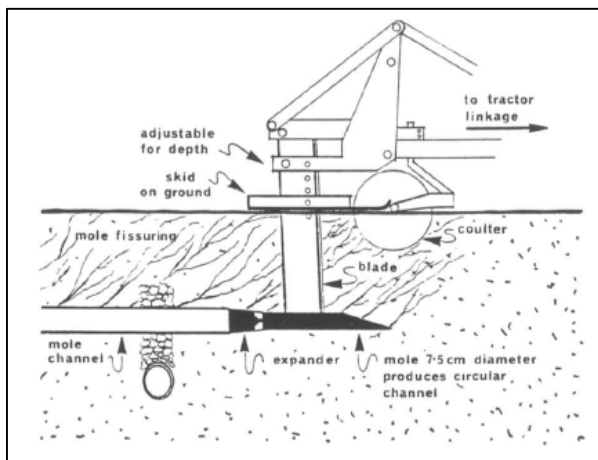
Gravel filled moles are required where the soil is unstable and will not sustain open channels; gravel fill supports the channel walls.

Washed aggregate within a 10-20 mm size range should be used.

Piped Collectors

Piped collector drains are required for all mole drains. These are spaced at 10 to 60 m, depending on soil-type and slope.

Stone backfill should be filled to within 250 mm of the surface to ensure interconnection with the mole channels.



Recommendation

The effectiveness of mole drainage is very dependent on soil type and installation conditions.

The suitability of any site for mole drainage must be established beforehand by means of detailed investigation.

A well laid piped collector system is essential as an outlet for the mole channels.

While a piped drainage network combined with mole drainage improves carrying capacity of the soil, it must not be mistreated; excessive poaching and or damage will destroy the newly created soil structure and effectively undo the work of the mole plough.

Every drainage scheme is only as good as its outfall. Cleaning and upgrading of open drains acting as outfalls from land drains is an important step in any drainage scheme. This will maximise the return on investment in land drainage.

