

### **Hump and hollow drainage**

Hump and hollow drainage involves surface reshaping to create parallel ridges with even side slope to shallow drains and is most appropriate in swampland with large flat areas that have a regionally high watertable. Hump and hollow drains only work in conjunction with a good system of arterial drains requiring suitable outfall.

This form of surface drainage is appropriate when water either perches on the soil surface or winter watertables are at or near the surface and subsoil drainage is limited by restricted outfall. There is a need to either shed water off the surface by creating a slope on the ground, or elevating the soil above the watertable.

Important points to remember are:

Humps and hollows can be installed using an excavator with a 3 m wide bucket, a road grader, or a combination of both.

Drain spacing is generally approximately 25 m apart but can vary depending on soil texture. Heavy clay soils may require closer spacing of 15 m.

Check for even grade in the ditches during construction for continuous water flow.

Grass turf needs to be broken up prior to drain installation.

A good sequence of operations if using a road grader is:

- Cultivate in spring.

- Sow a crop of turnips.

- Feed off crop in February.

- Install humps and hollows with road grader in March when soils are dry.

- Sow down new pasture in autumn.

If using a wide bucket excavator:

- Cultivate in spring.

- Install humps and hollows with excavator in spring.

- Sow a crop of turnips

- Feed off crop over late summer to gain consolidation.

- Sow down new pasture in autumn.

An excavator can operate when soil conditions are moist to wet but due to losing wheel traction in the wet, a road grader only works efficiently when soils are dry.

Installing hump and hollow drainage should be seen as part of a package of drainage and pasture improvement. It also smooths out depressions left from land clearing. Even with hump and hollow drainage installed, you should still take care to prevent pugging and soil compaction by heavy mobs of stock. Maintenance of hump and hollow drains may require rolling the soil surface if cattle have pugged the ground, and the base of the hollows may need to be cleaned out with a spinner drainer to keep water flowing.

Costs for machinery hire for hump and hollow drainage are considerable. These include excavator and/or grader, ground tillage and the cost of seed, lime and fertiliser.

There is some concern that hump and hollowing results in poor soil fertility because much subsoil is brought to the surface. This can be the case if applications of lime and fertiliser are not applied.