

# Get Your Water Away

James de Havilland inspects the equipment currently on the market to aid in house drainage work.

Even the best courses can have problems with drainage. To help, there are several items of kit that can help produce effective DIY solutions. It is all too easy to get tripped up when writing about golf course drainage. The way in which courses have evolved, and more recent developments in how they are constructed, means there is no definitive 'right way to do it' drainage blueprint. Then there are issues to consider that will include soil types, slopes, run off areas, collection points, irrigation systems, water tables, lakes, ponds, water courses, effluent control, underground services, disruption of play, budgets, available labour; the list can be endless.

So first things first. The aim of this article is not to give a potted history of golf course drainage. Nor is it going to attempt to suggest the right and wrong way to deal with problems on an otherwise well drained course. The idea is to outline some of the equipment that is available to help a club tackle some of its drainage problems in house, with an overview of how they operate.

Starting with the basics, any drainage system will only work if water is able to reach the drains. This is pretty obvious, but it is all too easy to blame drainage when it is in fact compaction that is the cause of the problem. If water is puddling in areas that where once free draining, the first job is to find out why. All fairly obvious, but it is all too easy to overlook the impact year round mowing can have on a course that was once left pretty much mower free from October to March. Year round play does not help either.

Digging a neat small hole with a spade can help identify if there is a compaction layer and its depth. Regular spike tests can also help spot when a problem is building. It follows that knowing how the soil profile is altering is a key to understanding what work will be needed. Assuming compaction controls and aeration measures are all up to snuff, the next issue is ensuring any permanent drainage system is running freely. Again, pretty basic stuff, but it is surprising how blocked and collapsed drains can be missed when seeking to remedy a problem. Drain jetting seems to have gone out of fashion, but it can be an effective in both curing a problem and pinpointing where a drainage pipe is blocked or damaged.

With the basics in place, supplementing an existing system with additional drainage need not be difficult or costly. All a drain does is control the height of the water table to prevent the top layer of soil remaining saturated in wet conditions. Any water above the level of the water table established by an existing drainage system needs to be able to drain away via a medium that can be a slit or trench backfilled with sand, gravel or purpose developed material such as Lytag.

The simplest tools that can be used to create backfilled drainage slits are sand/gravel band drainers. These include the AFT Sandbander, this unit comprising a 1.0cu.m stainless steel hopper and hydraulically powered

vibrating single filling blade that can create a 25mm wide slit to a depth of 250mm. Twin leg variants also being available. AFT recommend the use of sand for this type of work, the unit consolidating the infill to prevent voids and to leave a firm, level finish. Shelton also offer a single leg slitter and hopper unit, but describe it as a gravel band drainer. Again, the tool produces a slit, which can be 25mm wide, and will deposit a band of kiln dried sand, gravel or Lytag at depths adjustable from 100mm to 350mm.



A basic pedestrian trencher, such as a unit from Barreto Trenchers, will be priced from £5,500, with a four-wheel drive model costing near £9,000. This type of machine is ideal for work that can include installing irrigation pipe, pedestrian control going away with the need to tie up a tractor.

For either type of blade slitter to work effectively, ground conditions need to be just right; too wet and there is a risk of damaging the turf and smearing the soil; in clay this can lead to lateral compaction. If the soil is too dry, the slits can be difficult to produce cleanly and the ground may be too hard for the blade to ease through the soil. It is for this reason the powered slitters are often seen as a more versatile alternative. As an aside, BLEC can fit its Groundbreaker slit aerators with a Sandhopper to produce four or more filled slits per pass. These units are claimed to be able to work in dry conditions.





Chain trenchers can produce a clean, narrow slot. This can be backfilled or used to install a drainage pipe. When spoil needs removal, think carefully about the trailers used to do the job. On the wrong tyres and liable to overload, a trailer can do tremendous damage.

Next up are machines like the Shelton System 25. In the place of a slitting leg is a powered trenching wheel. Again, this will produce a 25 to 95mm slit, with a working depth adjustable between 200mm to 400mm. A vibrating backfilling hopper is fitted, this allowing the slit to be filled with a drainage medium that can again include gravel or Lytag.

Unlike vibrating leg slitters, those with a powered trenching wheel can work in dry conditions, but are not recommended for use in soils that are anything more than moderately moist. In other words all types of 'light' surface 'micro' slit drainage needs carrying out at exactly the right time, but when the job has been completed there will be little surface damage, even to a green, with a good operator, and so play will suffer minimal disruption.

'Microband' drainage using sand, gravel or other infill medium will typically comprise slits of between 250 to 300mm in depth, with spacing at 400, 600 or 800mm centres. Buying a system will cost upwards of £8,500. Hiring in the equipment is possible, as is using an operator to do the job with their own slitter; Shelton suggest a green can be 'drained' by one of its operators using a powered slitter for around £650 with support from club staff.

Although the operation of these tools sounds pretty simple, getting it right takes

practice and good timing. A compact tractor of 20hp plus will be needed to power these tools, with wide, low inflation pressure tyres helping reduce the impact the tractor has on the playing surface.

Taking powered slitters one step further, Shelton and AFT also offer larger trenching units that can be fitted with soil removal elevators. AFT 'conventional' digging chain trenchers, such as its tractor mounted AFT 45 model, can be fitted with a choice of chain types or a Slitting Wheel alternative. There are also pedestrian powered chain trenchers available. These include machines from Barreto, Case, BT Trac Systems and Ditch Witch.

Trenching machines can do a great deal more than produce a 'slot' into which a drainage medium can be backfilled. They can be used to lay drainage or irrigation pipe as well as be used to install under ground services including water and electric cables. Although it is tempting to compare this type of kit with 'microband' drainage tools, the way in which trenchers can be used is different. For a start, a chain



Ian Marshall, Head Greenkeeper at Wellingborough Golf Club, has carried out in house drainage and irrigation pipe installation on the course at Harrowden Hall using an AF Trencher, AF45, fitted with a Slitting Wheel. A job quoted out at £50,000 was carried out using the pictured combination for around £15,000.





Tools such as the Shelton 'Microband' single leg gravel band drainer produce a slit between 6 and 25mm wide. Kiln dried sand, gravel or Lytag can be deposited in the slit, the depth of which can be varied from 100mm to 350mm. Soil conditions need to be right for this type of non-powered unit to operate correctly, ruling their operation out in dry conditions.

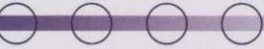
trencher such as the AFT 45 can produce an opening that ranges in width from 40 to 200mm and can be up to 1.20m deep.

The sheer volume of removed material that even a modest trencher can produce can mean there is a need for a secondary tractor and trailer to cart it away. This adds to the need to plan how and when to start using the equipment, with most courses using trenchers finding they are confined to winter project work.

Tractor mounted trenchers are not as easy to price up as all-in-one slit drainage systems simply because the list price will relate to the type of chain fitted and whether a soil removal elevator is also specified. As a guide, a basic AFT 45 frame is priced from £3,730 to which a digging chain, boom and crumbler assembly will need adding. These will be priced upwards of £2,400. Dedicated self-propelled trenchers, such as a 13hp Barreto Hydraulic Trencher, will be priced from upwards of £5,500. These units will dig down to 910mm and produce a trench from 100 to 150mm in width.



Carrying out any drainage related work needs careful consideration not only of the equipment, but the conditions as well. Note the large tyres fitted to the tractor. If the tractor wheels mark the turf, it follows that any work done to alleviate drainage problems will be compromised.



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