



# COPING WITH COMPACTION

Compaction is a major problem on heavily trafficked turf, causing lack of grass vigour and waterlogging. How prone any area is to compaction depends largely upon soil type, with the fine particles found in clay and silt soils more readily aggregated or compacted than sand. Nevertheless, it is possible to get high levels of organic matter which can block even sands. Several meth-

ods of alleviation are available to the greenkeeper, from long term remedies such as incorporating sand into the rootzone through less radical mechanical operations like tining, slitting and scarifying, or operations such as subsoiling or moiling. How radical an operation is needed will depend upon many factors such as soil type and condition, and the depth of the compacted layer. Operations such as sand slitting or gravel banding will also have an effect on compaction.

Compaction problems on a golf course tend to be relatively shallow, which means that alleviation can be undertaken with minimum disruption and effort. Although slitters and tinners were designed to 'aerate' and scarifiers to 'de-thatch' (and these are slightly different objectives from compaction alleviation) such tools can be expected to have an effect on breaking up compaction - to a greater or lesser extent according to design, operation and timing. Some manufacturers claim their scarifiers are able to penetrate into the root zone to 50mm thus (perhaps) removing surface smearing and providing some aeration of the rootzone. The displaced fibrous material requires to be col-

lected and several machines are able to do this at the same time. Slitting also has the effect of root pruning and fine turf slitters with narrow blades minimise surface disturbance, especially when there is a strong and healthy root system. However, minimising disturbance means that they do little to open up the rootzone. Likewise the principle of the tinner is to open up the turf for aeration and drainage rather than to cause disturbance of the soil, nevertheless the core tinner, by providing pathways for topdressing, fertiliser and roots to penetrate actively, assists opening up the soil. While most tinners are carefully designed to stab the soil without tearing it, several, including spoon tinners, can produce some loosening of the soil, - how severe and effective this will be is controlled by the intensity of the operation in terms of tine size and spacing. The removal of cores allows surrounding soil to spread into the vacant space, that is if not immediately replaced by sand or topdressing.

Perhaps the most revolutionary method of aeration to reach the golf scene in recent years is the Toro HydroJect, which uses jets of water at high pressure to punc-

ture the turf and rootzone with minimal surface disruption and no cores, and while it does not break-up compaction directly, simply punching holes through, it will answer the needs for easing compaction. The machine is self-propelled using an 18kW engine which is used (mainly) to drive a high pressure pump, with water being supplied through a hose from a hydrant or tanker. Penetration is normally to about 150mm although by using repeated shots it is possible to penetrate several times deeper. A number of firms are now offering a contract service using the machine.

Arguably the best known and most widely used machine for relieving compaction is the Verti-Drain, a machine able to operate down to depths of 400mm, depending on model and tine fitment. The principle of its action is a levering of the tip of the tine, rather in the way the greenkeeper might operate manually with a fork. Both pedestrian operated and tractor mounted/pto driven models are available, but one constraint may be owning and putting a suitable tractor on greens or tees, as this must have sufficient weight and power and a low enough bottom gear to oper-

## MAIN SUPPLIERS

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Sachs-Dolmar (UK) Ltd, Clare St, Denton, Manchester M34 3LQ.

Sisis Equipment Ltd, Shoreclough Works, Macclesfield, Cheshire SK10 2LZ.

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# COMPACTION

ate the implement. However as it is not a draft operation the power requirement with the smaller machines is not high, nor is weight required for grip. Timing the operation for maximum effect means working when soil conditions are optimum, i.e. dry and drying – a wet soil may be too 'plastic' to gain full benefit. A worthwhile surface aerifier is the Ransomes TM80, the action of which allows compacted soil to expand into the scooped out 127mm deep holes, leaving the rootzone open and loosened to receive nutrients and improve soil drainage. The TM80 incorporates a fixed axle to ensure that soil is removed by deeper penetration on high areas of undulating ground.

Sorting out soil structure below 400mm is liable to be a major operation, probably involving a drainage system, however limited areas can be deeply aerated using air blast injectors such as the multi-needle Terralift or the single

needle Fuji-Robin Dagger. These machines work by driving needles into the ground before releasing a blast of compressed air which heaves and shatters the surrounding soil. A different approach is that of Sisis with their Powadrill, a compact tractor mounted machine which uses 12 large masonry drills to drill holes at 100mm centres to a depth of 305mm. Most 'agricultural' methods of compaction relief result in a considerable degree of surface disturbance and so may only be acceptable for greens as a last resort, nevertheless they may be valid for fairways and walkways. Such methods mainly comprise the dragging of winged tines through the soil to get a lift and heave effect – with a disc before the leg and a roller after it reducing surface damage. Vibrating the tines, as on Turf Conditioner, Vibramaster and Shattermaster machines, reduces draft and so reduces the danger of tractor

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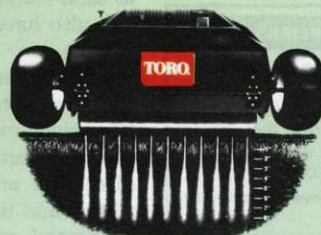
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wheel damage as well as significantly improving the 'shatter' effect. The Shattermaster was first seen in UK at IoG last year. Again such operations are soil condition dependent - dragging them through the soil when it is plastic is most likely to produce a mole channel with smeared sides. How-

ever in very wet conditions it may be valid to operate many of these machines to produce drainage channels, vertical or horizontal, just to get the water away and allow the rootzone soil to dry out so that a compaction relief operation can be carried out.

**HUGH TILLEY**

**The Ransomes TM80 Aerifier. On Page 21: the Sisis Powadrill**

**IMPORTANT MESSAGE FROM BIGGA EDUCATION OFFICER**

## **Certificate of Competence - PA1-2A. Application of Pesticides**

I have received many verbal complaints from members regarding problems associated with the above examination techniques and procedures. If any member has experienced any problems I would appreciate a letter outlining just where this operation can be improved.

The National Proficiency Test Council has acknowledged my concern and before they can investigate individual complaints, documented evidence would be required. With this in mind, whatever your problem please write to me at BIGGA headquarters. The major complaints received are as follows:

- Examiners having scant knowledge regarding fine turfcare.
- Equipment and machinery used in testing which is not familiar to course managers/greenkeepers.
- Chemical labels used in testing are not those which course managers/greenkeepers use in turfcare.

For those who have not yet attempted the examination please either contact your nearest college or book for the next BIGGA course scheduled for 5th-9th October inclusive, which will be held at Aldwark Manor. Jon Allbutt will again undertake training and the North Yorkshire Testing Council will carry out examinations.

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