



Report by **DAVE SALTMAN**

DryJect

*revolutionising the
Aeration concept*

AERATION is the key to a successful sports turf surface; turf professionals, be they in a golf or sports situation are all too aware of the problems associated with a compacted, anaerobic, poor draining profile.

The armoury of machinery available on the market provides a fantastic choice to be able to carry out surface, shallow and deep aeration at prescribed intervals throughout the calendar year.

Much of the aeration that is carried out is also often combined with some type of soil amendment, usually sand or soil, but sometimes fertilisers, microbes, zeolite or other remedies.

Even today the option to really get these amendments into the soil structure has been simply to spread on top of the surface and brush in.

In terms of sand/soil additions this is less than efficient and actually leaves material in the base of the sward that leads to layering and its associated problems. For other soil amendments the efficiency can be even less and again, the turf professional is left to wait for these products to be broken down and make their way to through the soil to reach the intended target-usually the root system.

All that said and done, the machinery involved in spreading top dressings add to that compaction and often close the very holes that are trying to be filled.

As a Head Groundsman at Wolverhampton Wanderers, my staff and I would spend days filling vertidrain holes with kiln-dried sand, poured from watering cans, an idea

that was borrowed from Steve Braddock at Arsenal. In those backbreaking days, we would probably cover an area of a few hundred square metres. This operation was usually done on the worst draining areas of the pitch. Due to the length of time taken, we would limit this to an annual operation.

So imagine a machine that is capable of injecting sand at a rate of up to 300kg per 100 square metres. Or for an average football pitch or 18 golf greens about 25 tons straight into the top four or five inches of the profile.

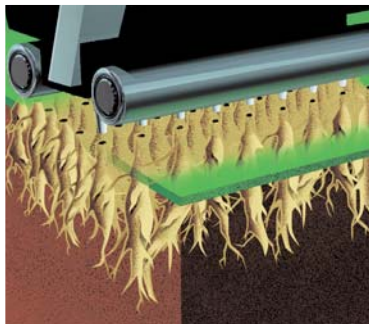
Then imagine that the machine is pedestrian and it weighs only around 250 kg's. Before I take you any further, remember the machine operates pretty fast as well, in fact an average 500 square metre green can be injected,

brushed and mowed and be ready for play in an hour and a half.

With three machines working in tandem it is possible to have all the greens on an 18-hole course treated and back in play in a day. In fact, if the front nine greens were closed in the morning and the back nine done in the afternoon, it allows golf play to continue with virtually no disruption and loss of revenue. Three machines will also allow the complete sand injection of a football pitch take place in a day, even the day before a game.

THE DryJect machine is available on a contract-by-contract basis, and prices are based on the spacings asked for on the machine. The machine will operate at three

“Three machines working in tandem will treat eighteen greens in a day”



different speeds, depending on the closeness of the spacings.

- 75mm X 50mm
- 75mm X 75mm
- 75mm X 100mm

The closer the spacing the more material is required, but many clubs tend to settle for the mid range spacing.

Well you can understand my willingness to hop on a plane to see this machine in action at a golf course in Portugal. With their trained operators, the whole operation is seamless; I watched green after green, injected, brushed and mowed with approximately one ton of dry sand per green. Each green was back in play within an hour and a half of the operation starting and the trueness of ball roll immediately after the mowing was excellent. There is only a small percentage of sand left on the surface and this was brushed into the sward leaving a near perfect surface.

The company showed me greens that had been DryJect'd two weeks earlier and it was almost impossible to see that the machine had been on the greens, despite the non-growing season.

I felt that the water would possibly cause some

problems, but the greens dried out within half an hour or so of the machine finishing its work.

Nearly all the material is injected into the hole and fissures left by the water injection. This stops the air space from being closed again, allowing increased air movement and improved water drainage rates. The filled fissures also allow roots to penetrate easier and the quicker degradation of black layer found in anaerobic conditions caused by over compaction and poor drainage.

So what is the DryJect?

It is a variation on the HydraJect, using high-pressured water injection to blow a hole into the profile; almost simultaneously an injection of dry sand is then blasted in filling the cavity left by the water. The DryJect aerates three dimensionally-side to side, front to back and even connects hole to hole. It is a revolutionary concept using powered water - a patented Venturi process - to open the soil for air, water and amendments in high volume without disturbing the surface.

The DryJect is capable of injecting a selection of flowable dry amendments - sand, peat, diatomaceous

earth, calcined clay, zeolites, top dressing, seed, wetting agents, insecticides, or biological products, you select the mix.

DryJect allows you to start a soil modification program even as part of your regular aeration.

The following observations were made by Ed McCoy, School of Natural Resources, Ohio State University.

The DryJect unit typically injects 4 cubic feet of material per 1000 square feet of green. Assuming a 5-inch injection depth, then the volume change needed to accommodate this volume of material is about 1% of the soil volume to 5 inches depth. [4 cubic feet/(1000 sq ft X 5/12 ft) = 0.0096 or about 1%.]

Thus, for a 1 m by 1 m by 0.127 m volume of soil a 1% increase is 1270 cm³ and adding this to the original 127000 cm³ volume yields 128270 cm³.

Then dividing this new, larger volume by the 1 m by 1 m area yields 12.83 cm or a change in the surface elevation of 1.3 mm.

In other words the DryJect injection causes “heaving” of the soil surface but since it is only 1.3 mm, it is virtually imperceptible. Continued use of the DryJect will cause some degree of increased density during each

application, but again there will not be any long-term detrimental effect.

Another aspect not considered in these simple calculations is the heterogeneity of soil density created by the water pressure fracturing and sand interfilling. This is where this and similar treatments have their greater effect (my belief). By injecting a channel in the soil and filling with loose sand, there will be areas that become more dense but also areas that are much less dense. This heterogeneity benefits a sand-based soil in just the same way that soil aggregates and structure benefit a native soil.

But as deep-tine aeration and Hydrojecting are well accepted practices that do not remove material but serve to fracture the soil, the added benefit of DryJect is that material is injected to stabilize the fractures.

DryJect is now available in the UK and Ireland, for further information on costs and its availability please call DryJect UK on 01902 824392 or 07920 488675 or e-mail mail@dryject.co.uk.

Access www.dryject.co.uk for more information.

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