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The misuse of irrigation delivery is one of the reasons for the decline of the finer grasses on UK golf courses over the last forty years. This, alongside the arrival of the triple mower and compound fertiliser in all its forms, spelt disaster for the bents and fescues. The production of softer and lusher turf made the game easier and also happened to suit the TV companies who could send appealing ultra green images into our living rooms. The “green is god” age had dawned and we quickly descended into agronomic oblivion to drown in a sea of *Poa annua*!

So, how do we set about righting the wrongs and creating the correct environment for our preferred grasses? Well, the very tool that partly initiated the decline could be the salvation. Irrigation is the most powerful agronomic tool providing it is used correctly.

In the article “Changing the Nature of Your Greens” the argument is made that unnecessary disturbance is the main reason for the loss of finer grasses on our golf greens. We have inadvertently created an environment more suited to opportunistic grasses such as annual meadow grass (*Poa annua*) by feeding and watering and then having to use aggressive disturbance techniques to create the playing surface. The finer grasses simply cannot cope with intensive disturbance whereas *Poa annua* likes nothing better.

Greenkeeping requires a basic knowledge of the ecological strategies of the two or three major grasses. Success will come if we create the right environment for the finer grasses to flourish. In summary, the fine bent and fescue enjoy settled and unproductive environments while the annual meadow-grass dominates when productivity and disturbance pressure is high. By understanding these simple ecological strategies, we can easily reverse the botanical decline of our putting surfaces experienced during the last century. We need to move away from high input and aggressive greenkeeping practices. One of the key tools in this process is the correct use of irrigation. Believe me, if we get this right, the finer grasses will return and we will restore the true enjoyment of real golf.

Let us consider two scenarios. The first is the classic annual meadow grass dominated surface. It has been over fed and overwatered for years with two inches of thatch residing at the base of the turf. The summer surfaces are satisfactory but the winter surfaces become soft and disease ridden. To improve turf and playing quality here, we must reduce the productivity of the environment by minimising irrigation and fertiliser inputs. At the same time, we must create the right soil conditions in which the fine grasses can flourish by removing the thatch. This

improves the firmness of the surface and reduces the need for excessive disturbance, which creates the more settled environment. When reducing productivity a gradual approach is required, as radical reductions in irrigation or fertiliser inputs will excessively compromise playing quality.

The second scenario is a sward dominated by both bents and fescues with some annual meadow grass contamination. Here the objective is to retain the dominance of the fine grasses. We do this by exerting controlled stress on the shallow rooted annual meadow-grass by tight regulation of irrigation to stop it gaining advantage. To help achieve this objective, we can be even more hard-line with irrigation inputs towards the late summer to further reduce the competitive ability of the annual meadow-grass before bent/fescue overseeding.

In both scenarios the aim is to create a more settled and less productive environment as possible. At the appropriate time, irrigation application should be relaxed to exert the necessary stress to reduce the competitive ability of the shallower rooted annual meadow-grass. As the fine grass component of the turf increases, greater stress can be exerted as the water requirement of the turf naturally decreases.

Proper irrigation is ultimately powerful in the restoration of fine turf surfaces. We use it to favour the strengths of the deep-rooted fine grasses and exploit the weaknesses of the shallow rooted annual meadow-grass. Managing irrigation correctly will restore the dominance of the fine grasses and provide golf surfaces commensurate with the heritage of our game.

The level to which irrigation is applied is of course the main challenge. This will reduce as we optimise delivery and maximise water penetration. In this day and age it is critical that applied water is fully utilised by the sward and not wasted. How much or how little do we apply? Well this is the \$64,000 question. I do not believe this can be taught in a classroom. Every site is different, every green is different and every square metre of turf is different. Trying to measure these differences empirically and come up with a "one size fits all solution" is fatuous. Trying to implement this approach will in all likelihood lead to further decline in turf standards. There is no doubt effective irrigation delivery is an art not a science. However, there is one overriding principle - water should only be applied to keep the turf alive and the surface uniform - nothing else!

Successful irrigation management can only be achieved by the correct deduction of the greenkeeper. There is no replacement for a good man with a sound knowledge of his site. The head man should know far better than any computer or tensiometer how much water is needed to keep the turf alive, to facilitate agronomic improvement and to optimise playing quality. If we are going to restore the fine grass content of our greens the golfers must trust the judgement of the greenkeeper.

Irrigation application is not just about pressing the button on the automatic system. This approach will generally lead to agronomic deterioration. We must create a healthy dry surface rather than a lush and vibrant one. To help with this we must

ensure the water we applied can penetrate into the ground. This is aided with the use of wetting agents combined with regular aeration. What is more, many clubs have great success with water injection aeration using the Hydroject. Not only does this aerate the soils but it also supplies water to the deeper rooted grasses giving them a greater competitive edge over the shallower rooted annual meadow-grass.

The irrigation systems of today are great and sophisticated tools but they are a disaster waiting to happen in the wrong hands. There have been too many wrong hands operating over the last forty years hence the decline of the fine grasses on our courses. We have a duty to correct this and reestablish the link between the grass upon which we play the game and the game itself. Our golfing heritage largely depends on correct irrigation.

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