



Careful use of rollers can help provide the playing conditions golfers require without imparting excessive disturbance pressure on the turf

- Relax verticutting and scarification. Consider brushing or light grooming, to gently refine the turf. When verticutting or scarification is necessary, ensure the finer grasses are growing strongly to aid rapid recovery and follow with bent/fescue overseeding, to encourage the restoration of full grass cover. Under no circumstances scarify when annual meadow-grass is seeding.
- Increase top dressing frequencies to smooth and firm the surface, as well as diluting the thatch. Avoid harsh operations to work the material off the surface. This hurts your turf.

- Use rollers or a Turf Iron to provide a little extra pace and smoothness when required. This will ensure the greens can be maintained at a higher cutting height.
- Increase hand mowing instead of triple mowing, as it causes less disturbance and allows you to closely monitor the environment.

The true reason for annual meadow-grass ingress into our fine turf putting surfaces, was the creation of gaps in the turf. Aggressive surface preparations were one way such gaps were created. Excessive inputs of water and fertiliser were applied to restore the cover after damage. This created a productive and highly disturbed environment, in which annual meadow-grass thrived and dominated. The current era of aggressive high input greenkeeping, continues to promote this undesirable species. To restore the dominance of the finer grasses, we need to provide a more settled and less productive environment. To do this, we will have to prepare our surfaces differently but not to the detriment of the playing quality. The key to this strategy is the minimisation of disturbance. This means being less aggressive with your surface preparations, by more cautious use of the triplex mower and modern turf refinement machines. With this approach, you will soon see the finer grasses returning to your greens.

# Irrigation - The Tool of Agronomic Change

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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 40 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" ([www.stri.co.uk](http://www.stri.co.uk)), 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.



The installation and subsequent misuse of automatic irrigation systems, was one of the maincauses in the decline of our fine grasses





Hand watering is an essential but often forgotten aspect of accurate irrigation delivery

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 over riding 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 re-establish the link between the grass upon which we play the game and the game itself. Our golfing heritage largely depends on correct irrigation.



The Hydroject has the combined effect of aerating the soil and delivering water to the deeper-rooted fine grasses