

**DO NOT DISTURB!**  
**by**  
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Putting surfaces dominated by the bents and fescues are provide more consistent year round surfaces. Unfortunately, many of our greens continue to be dominated by annual meadow-grass. Excessive fertiliser and water inputs are often blamed for this situation but this is not necessarily true. It may be more accurate to say that inconsiderate mowing and aggressive verticutting, grooming and scarification are the real reason for annual meadow-grass ingress.

Annual meadow-grass still dominates UK and Ireland golf greens. A recent study conducted by all STRI Agronomists for The R&A proves this is the case. The results showed the average species composition in our golf greens is 56% annual meadow grass, 32% bent, 7% fescue and 5% perennial ryegrass/Yorkshire fog. Out of 598 courses visited, 75% had greens supporting more than 50% annual meadow-grass. The annual meadow-grass dominance makes our greens vulnerable and inferior during the winter. This information shows how many courses are failing to reach their potential.

History has always blamed excessive fertiliser and water applications to be the main cause of annual meadow-grass dominance in our greens. I used to as well until I considered the ecology of the grasses involved. The article “Changing the Nature of your Greens” explains this in more detail ([www.stri.co.uk](http://www.stri.co.uk)). In summary, annual

meadow-grass enjoys disturbance while the finer grasses flourish in a more settled environment. Annual meadow-grass is so successful in golf greens because the environment is so disturbed or being constantly damaged. Disturbance pressure comes from surface preparations and of course play. In this article, we are concentrating on the effect of your surface preparations. My aim is to help you think about the preparation of your greens a little differently.

The true cause of annual meadow-grass ingress comes from the creation of gaps in the turf. Constant physical damage (or disturbance) of the grass plant creates these gaps. Modern greenkeeping practices have radically increased the disturbance pressure imposed on fine turf. We now incessantly mow, verticut and groom in an attempt to please the ever more demanding modern golfer. While such aggressive practices are done for the right reasons, they might, in the end, be causing untold harm. The symptoms can be seen when the turf thins and the soil surface is exposed. Annual meadow-grass is adapted to exploit these conditions. It may therefore be true to say the misuse of the triplex mower and modern turf refinement tools are one of the main reasons for annual meadow-grass dominance in our golf greens.

Before we had these ultra efficient tools the amount we refined our greens was restricted by time and the physical constraints of the human body. For instance, it took a long time to mow greens with a pedestrian mower and even longer when using a push mower or scythe! Not to mention the physically demanding nature of the work. This meant it was physically impossible to over-manage and over-disturb putting greens. Consequently, the golf green environment was settled, which allowed the fine grasses to dominate. Fertiliser and water were kept to a minimum, as over-application simply made the grass grow faster! Greenkeepers knew the surface would be inferior if grass growth was rapid. Growth was the last thing they wanted. A settled, undisturbed and unproductive environment suited the finer grasses. It also produced the best year round putting surfaces. Old Tom Morris understood this.

The tranquillity of this settled and unproductive environment was forever interrupted with the introduction of the triplex mower in approximately 1968. Suddenly, greens could be mown in a fraction of time meaning they were done so more regularly. They were even mown when it was not necessary! Further technological advances allowed

the machines to follow contours, which facilitated ever closer mowing. In essence, triplex mowing increased disturbance pressure on the turf.

Soon after the triplex mower came the introduction of more efficient and effective turf refinement tools. These mechanical tools with their motor driven rotating steel blades (now with tungsten tips) were much more aggressive than the bristles of a brush – you can almost see the fine fescue and bent turf quivering at the prospect! Their ease and efficiency of use allowed the frequency of operation to increase. The result was increased disturbance pressure on the turf.

The use of the triplex mower and more efficient turf refinement tools gave golfers the faster surfaces they demanded. However, little regard was given to their damaging effect on our fine turf. To put it simply, the fine fescue and bent could not cope with the damage. Consequently, the sward began to thin and gaps were created. Annual meadow-grass exploited these gaps – the invasion had begun. To help the thin and damaged turf recover, more fertiliser and water was applied. The annual meadow-grass thrived in this more disturbed and productive environment. Our fine turf putting surfaces began their decline and many would never be the same again. The era of aggressive surface preparation and high input greenkeeping had arrived (to our shame).

Many sensible greenkeepers ignored the trend of more aggressive surface refinements. They knew it would make their surfaces no better. To this day, the great Scottish links courses are the best examples. The greenkeepers charged with the management of these courses still follow what Old Tom did all those years ago. They know the slow growing fine fescue and bent grasses only require gentle refinement to produce high quality putting surfaces. While modern machinery is used, it is used with great caution. For instance, verticutting is implemented occasionally, and only when the fine grasses are growing strongly. The greens are never scalped. Fertiliser and water are always kept to a minimum; as over application will only require more aggressive refinement. Consequently, these environments remain settled and unproductive, which is why the fine grasses continue to flourish. Old Tom Morris taught us this approach. We now call it ‘traditional greenkeeping’.

The results of traditional greenkeeping were once again highlighted to the international golfing fraternity during the 2005 Open Championship played across the Old Course St. Andrews. During the Championship, the greens were maintained at 4.5 mm. Mowing was omitted when it was not necessary – the slow growing fescue and bent simply did not need to be mown every day. Light brushing, light top dressing, a little rolling and May verticutting was sufficient to provide over 10.5 foot on the Stimpmeter and smooth, true ball roll for the world's best players. Contrast this to the normal maintenance for major championships when the greens are scalped two or three times a day! It is obvious which grass this will promote.

I have perhaps blamed the triplex mower and modern turf refinement tools rather unfairly, as they are, of course, great innovations and have improved the quality and efficiency of surface production. Of course the problem does not lie with the machines but the way in which we use them. All too often they are used too frequently and too aggressively. Such misuse increases disturbance pressure on the turf. When the pressure becomes too great, the turf thins, gaps are created and annual meadow-grass invades. To help the turf recover from the pressure requires a heavier hand with the fertiliser bag and irrigation sprinklers. It is this combination of disturbance and greater productivity that leads to annual meadow-grass dominated greens.

There is no doubt the production of better putting surfaces will be achieved by the promotion of the finer grasses. To be successful in this aim, we must adapt our management practices to minimise disturbance and reduce productivity. In essence, the way in which we prepare our surfaces must become less aggressive. This is not too difficult to achieve so let me describe some simple strategies...

- Reduce mowing frequencies. Ask yourself; do you really need to mow all the time? Can occasional operations be missed?
- Raise the height of cut. Every greenkeeper knows what height is comfortable and stress free for their turf. You should go no lower than this height. Do not push the limit of your turf it simply will not cope.

- Miss out the final perimeter cut a couple of times a week. The perimeters of the greens are where we see the first symptoms of excessive disturbance. Never engage groomers or verticutters on this perimeter pass.
- 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.

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# FOOD FOR THOUGHT

- How to approach fertilising for the finer grasses.

by

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## **It's not what you think**

In these times of healthy debate, chew on this thought...

*...overfeeding does not directly discourage the development of the finer grasses.*

It just results in consistently poor putting surfaces. Over-fertilising creates soft, lush and disease prone greens. But high fertiliser input does not necessarily mean that the finer grasses will decline. The bents and fescues don't actually mind good growing conditions. The balance of a fescue/bent sward might move toward the bentgrass but not automatically to annual meadow grass. If you have ever grown-in a new green you will already know that they actually respond beautifully to plenty of fertiliser to actively exclude annual meadow grass ingress. Don't think that the finer grasses need to be starved to survive. To favour the finer grasses you need to understand the situation properly.

## **The downward spiral**

The problem is that too much fertiliser forces you to rely on intensive verticutting and aggressive mowing to prepare firm, fast and true playing surfaces. Hollow tining and deep scarification become necessary to get rid of the deeper thatch. It is this incessant damage that the finer grasses can't stand. Such an aggressive method of preparing putting surfaces will inevitably require additional fertiliser applications to ensure that the turf recovers from the onslaught. It is constant disturbance coupled with high productivity that brings annual meadow grass dominance.

### **This is it**

We try to minimize fertiliser inputs to reduce the need for disturbance. A more settled and less intensively managed environment will give the bents and fescues a fighting chance. A less disturbed environment will also take some stress to allow you to weaken the annual meadow grass. Let me tell you about fertilising golf greens to favour the finer grasses.

### **Step back and think**

When greenkeeping, our single objective is to create playing surfaces of the highest possible quality. If this means we want to favour a predominance of the finer grasses we will have to set the correct environment. Ultimately, this should involve minimising the level of disturbance, which is why we reduce fertiliser inputs. We then impart controlled beneficial stress at some point during the summer to pressurise the annual meadow grass at a time of overseeding to let the finer grasses take advantage. We impart this stress with judicious irrigation rather than fertiliser because it is easier to control. We generally try to keep irrigation inputs to a minimum to prevent thatch accumulation but we only use it to actually lever stress for a short period. This will serve to weaken the annual meadow grass before the new seedlings emerge. Too much stress for too long weakens all the grass species and golf greens are too busy to be weak. See “Changing The Nature of Your Greens” on [www.stri.co.uk](http://www.stri.co.uk) for more detail.

### **Just enough**

So, we want to minimise fertiliser inputs to reduce the need for incessant aggressive treatments. Minimal (some would say “optimal”) means producing just enough growth for the surface to be prepared and be able to withstand play without deteriorating. The desired level of growth will vary depending on what we need to achieve at different times of the year. For example, during spring we will need to generate a certain level of growth to bring recovery from winter wear and to allow the early season preparations to take place. During the summer, once we have set-up our surfaces, we would want to keep growth quiet to reduce the need for any further aggressive treatments. Into autumn we must ensure that the turf is strong enough to withstand and recover from the end of season renovations prior to the onset winter dormancy. When minimising your fertiliser inputs concentrate on finesse and timing.

The old boys used to feed by hand to allow localised areas to be missed-out or receive extra nutrient depending on the turf condition – now that *is* finesse! Essentially, you should only apply what is necessary and no more.

## **Nitrogen**

In terms of nitrogen input, for soil-based greens the Danish experience finds 5 – 7 g/m<sup>2</sup> N per annum to be sufficient. You should aim to apply as little as necessary so you don't have to verticut too often through the summer. Be careful when weaning greens off a high-N approach because there may be an adverse reaction in the form of disease attack. Just take it steady and trust your judgement, that's all.

The source of nitrogen should be mainly ammonium sulphate for its acidifying effect. The finer grasses can tolerate a pH below 5.5 whereas the annual meadow-grass cannot. Nutrient availability and microbial activity are factors here but not in this article. Generally, lowering the pH is a way of selecting-out annual meadow-grass. Sulphate of ammonia should represent roughly 75% of the total nitrogen.

The remaining nitrogen can be balanced up with lesser amounts of dried blood for prolonged release or urea-based liquids during the summer months. Don't use too much organic nitrogen as this will promote disease prone lush growth and don't be fooled into using nitrates for the same reason. Disease equals disturbance and plays into the hands of annual meadow-grass. Just try to minimise nitrogen inputs to reduce the need for disturbance.

Fescues will flourish in a high pH but annual meadow grass dominance can only be avoided with the influence of an overriding environmental stress such as raised salinity or droughting. Liming generally plays into the hands of the weeds, worms and diseases.

## **Phosphate**

The results of research on the effect of phosphate applications on fine turf quality have actually been inconsistent. Incessant phosphate fertiliser applications undoubtedly encourage the development of annual meadow-grass but at lower levels the relationship is not so clear-cut. Regular phosphate applications will create an

ideal turf base for seed germination to the advantage of the annual meadow grass. Just don't lose your head about phosphates. If you are going to apply some then don't do it when the meadow grass is seeding. It is my feeling that the famous rabbit urine scorch tale should have been interpreted as scorch disturbance laced with urea fertiliser to encourage annual meadow-grass invasion rather than as being the direct effect of high phosphate levels.

### **Potassium**

Potassium is more mobile and might well need supplementing on sandier soils. Potassium certainly has benefits in terms of drought and disease tolerance but don't hang all your hopes on it. Monitor potash levels on an annual basis if there is any doubt. Just remember that favouring the finer grasses is all about reducing disturbance.

### **Keep it simple**

So, what does this mean in terms of your fertiliser programme? As an example you could kick off growth in spring with an application of lawn sand. This should be applied with the onset of spring growth and will generate recovery from winter wear. An application of 8:0:0 or 8:0:6 fertiliser could then be made when strong spring growth is established. This growth will allow the early season preparations to take place. Using sulphate of ammonia based feeds during the spring will discourage annual meadow grass from invading gaps within the sward by lowering the surface pH. Liquid feeds can then be applied occasionally during the summer months to sustain healthy rather than lush growth. Seaweed soil conditioners may be tank mixed in with liquid feeds if it is felt that they have a beneficial effect. Finish off in the autumn with an application of a turf hardener type product (2-0-2 or 3-0-3 plus Fe or similar) to strengthen growth and harden the sward against disease attack. The rate of applications should be as little as necessary. Your fertiliser programme should be focused on controlling growth so you don't need to employ consistently aggressive surface preparation techniques.

### **Surface preparations**

So, how do we prepare surfaces without incessant verticutting or employing ever-lower heights of cut? Apply heavy top dressings with spring growth to firm and true-

up the surfaces. A certain amount of verticutting will be necessary at this time but don't be unduly aggressive or too frequent. Once the surfaces are prepared we should then be aiming to let them be. We maintain our firm, true and smooth surfaces without undue growth by brushing, with light in-season top dressings, rolling, maintaining sensible heights of cut and employing isolated light verticutting if necessary.

Regular top dressing has the added benefit of keeping the turf base sandy and unattractive for annual meadow-grass seed germination.

### **Less is more**

If you want to fertilise for the finer grasses you should be thinking in terms of minimising the need for aggressive surface treatments. You will need strong growth to prepare your surfaces in spring but from then on try to let them go to nature. Your job is to find the minimum growth level possible for you to be able to sustain quality surfaces without incessant verticutting. Ask your fertiliser supplier to concentrate on this when making recommendations based on soil analysis results.

The finer grasses are tender souls that don't like incessant rough treatment but they can withstand stress. Remember, at no point do we withhold fertiliser to exert stress. We exert stress on the annual meadow grass for a limited period in summer by controlled droughting in conjunction with overseeding to give new seedlings a chance to take hold. Be patient and stick to your principles and the finer grasses will come.

Get this thought into your head...

...aggressive greenkeeping is the  
death of the finer grasses.

Kapeesh? (*sic.*)

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