DOES THE REGULAR USE OF FERTILISERS PRODUCE BETTER GREENS?

Dave Weston writes about the benefits of using fertiliser and the types available.

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It is quite common for golfers to rate the quality of their own greens against those they have played in club matches, away days, in open competitions or on holiday. Precisely what are they basing their judgements on? Is it fair to rate the "quality" of the visited club greens on the basis of a one day's play, against the week-in, week-out presentation of those of their own home course? Is it fair to rate the speed of greens on a parkland course with predominately broader leaf grasses with those of a links or heath-land course with fine grass greens?

The current vogue is to rate greens in terms of speed, the faster the better. I would take issue with that view.

The course manager's first priority is to produce healthy greens. His second is to produce consistent greens, that is, the playing characteristics of all 18 greens on the course (and putting green) should be the same, and during the British playing season his greens should be of a similar speed week after week. The third is to produce a surface that is receptive to the pitch of a well-struck golf shot.

If the three factors above can be satisfied and the green speed increased so much the better. It is crucial that pressure from the club golfer to produce 'fast' greens does not result in regular cutting at so low a height that the sward becomes unhealthy and under stress. Such greens have poor root growth and are prone to fungal attack. Modern televised golf has not helped in shaping the 'average' golfer's view of what greens should be like. Those on view for the professional tour will have been 'produced' for that tournament only.

A much fairer evaluation can be gained by watching the 1960's American Challenge matches on the satellite channels, where the greens were not specially prepared for the match. The run of the ball is nowhere near as true, and the pace of the greens much slower than those shown on the current televised events. To the greenkeeper, what is going on below the putting surface is as important as what the golfer perceives on it. If the root structure of the grass plant is in good condition, and the soil profile is correct, then producing a true putting surface is relatively easy.

It is however difficult for the greenkeeper to work under the putting surface without disturbing it. Regular aeration is essential to allow water to move through the soil profile but the work done may worsen the roll on the putt in the short term. The roots of the grass grow down the air spaces and the nutrients, essential for healthy grass growth, are extracted through those roots. It is not necessary to fertilise fairway and rough areas of the course, because normally the grass cuttings are not collected and as they rot down the nutrients are returned to the soil, and can be continually reused by the plant. That is not the case on tees and greens where the grass cuttings are boxed and removed, gradually depleting the nutrients. These need to be replaced. Artificial fertilisers provide the nutrients.

There are three elements essential for healthy plant development: N-nitrogen, P-phosphorus and K-potassium. Each element has a contribution to make to a healthy plant. Nitrogen controls the leaf growth, phosphorus is necessary for root development and potassium is needed for the plant to produce seed. Each bag of fertiliser must be stamped with the NPK values of its contents by law.

Regular soil analysis can show the precise values of the three elements present, but it is part of the skill of the course manager that simply by observation of the grass growth on his greens, he will know when his greens are 'hungry', under stress, and need to be fed. The usual indicator of growth cycle of the greens is the number of boxes of grass cuttings removed from the 19-hole cycle. If the grass is growing quickly each day because fertiliser has been applied, the leaf area will be greater, hence the greens will be slower. The number of boxes of cuttings removed will be relatively high. However, when the greens are nearly ready to be fed again the leaf area will be at its lowest, the greens will be at their fastest, and relatively fewer boxes of cuttings will be removed.

There are two 'period' type fertilisers available. Autumn fertilisers tend to have an even balance of all three nutrients, the insoluble phosphorus compounds needing time over the winter for bacterial action to make that element available to plant the following season. Autumn fertilisers are usually in the form of solid granules. Spring/summer fertilisers contain relatively high nitrogen and potassium levels with very little phosphorus present as the plant can immediately use those two water-soluble nutrients.

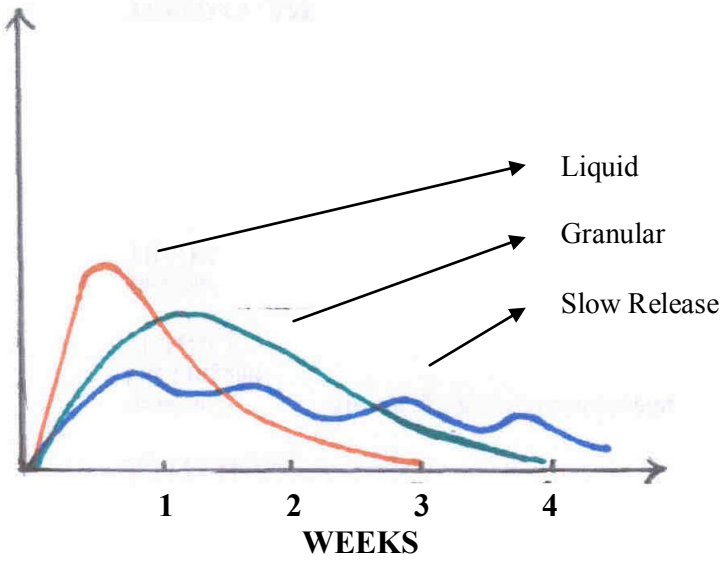
The course manager has a choice of how he purchases his spring/summer product. He can buy it in 'liquid' form, as granules, or in the form of slow release granules. Each has advantages and disadvantages and these are weather related. The term 'liquid' is a misnomer. The water-soluble fertiliser has been dissolved to form a concentrated solution. This is diluted in the sprayer tank and applied to the greens. In this form, the operative can achieve a perfectly even distribution of the fertiliser over the green surface and the nutrients are immediately available to the plant.

However, application can be made only when heavy rain is not anticipated, or the fertiliser will be washed straight through the soil profile before the plant has a chance to absorb it and the cost of the fertiliser will be wasted. A cyclone spreader is used to apply a granular fertiliser. Gentle rain is needed to dissolve the outer surface of the granules to take the nutrients into solution, allowing it to move slowly through the soil profile and be used by the plant. If no rain falls then the granules take water out of the plant. This 'drying out' of the plant causes brown speckles to develop on the sward as the plant leaf becomes dehydrated. Modern irrigation systems have almost eliminated this particular problem, as the greenkeeper may elect to water if no rain falls, but natural rain falls far more evenly over the green surface than any artificial application and pooling produces an uneven growth of grass.

The third option is to use a slow-release fertiliser. The specially formed spherical granules have layers of fertiliser separated by a coating. It takes time for each coating to be broken down by water action and release each layer, giving continual spurts of nutrients to the sward. Because these granules have to be specially manufactured this type of fertiliser is much more expensive than the other two. A lush green coloured sward is indicative of 'nitrogen' growth and the green will be slow. A yellow-green tinge indicates a green that is nearly ready to be fed and that green will be faster. It is obvious, but needs to be re-stated that during daylight hours, photosynthesis of the grass plant is taking place increasing the leaf area. The speed of the greens will always be at their fastest, when they have dried out immediately after cutting early morning. The evening golfer will always play on slower greens. Even if the height of cut is not changed in the month or so period between fertiliser applications, the playing speed of the greens will change.

It is part of the skill of the course manager that he will choose his pattern of fertiliser application and the type of fertiliser he uses to try to maintain greens of as consistent a speed as practicable. Often he will time his application so that the greens will be fast as possible for the club's major events, coinciding with the end of the growth cycle. What he cannot do is to produce exactly the same green-speed throughout the season.

As Growth Increases, Green Speed Decreases



The graph shows growth against time for the three types of fertiliser. The 'liquid' gives rapid growth that is short lived. Granular is slower to take effect but is longer lasting, slow release produces a much more even growth with undulations as each 'shell' dissolves and releases the nutrients.

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