Ask a farmer what to do, then do the opposite, says JIM ARTHUR

Lasting legacy of LIME

There is no better (or worse) example of the lasting legacy of lime than on an old abandoned tennis court turned into a lawn where the lining out was originally done with a lime-wash. Twenty years after such old courts had last seen a forehand smash or genteel lob the old lines can still be seen, narrow strips of dark green lush grass black with worm casts and covered in weeds contrasting with the old wiry turf. Of course if such lush, worm-ridden weedy turf is what you want, lime away with gay abandon! But surely we are agreed most grass sports are best played on fine wiry turf, which may not be bright green but is certainly worm and weed-free.

The problems of greenkeeping can so often be laid at the feet of farmers or agricultural advisers. Printed at the top of any report or feasibility study carried out by such 'specialists' should be the old greenkeeping adage "Ask a farmer what to do about greenkeeping, listen carefully and then go and do the exact opposite"! This is totally logical because 'grass' to a farmer means exactly the opposite of what it does to greenkeepers. Many of our problems in this direction stem from farmers on green committees in the periods after two World Wars, trying to equate the success they had on their farms from liming and feeding with managing their golf courses.

Good greenkeepers hate lime. It builds up fertility, encourages earthworms (now so difficult to eliminate but still so capable of creating soft, muddy, weedy turf) and favours our old enemy annual meadow grass, not to mention creating very poor surface drainage.

It is nearly a century since the first paper was written on the benefits of acidifying heavy soils by the use of acidic reacting fertilisers, *viz* sulphates of ammonia and iron and the harmful effects of lime. This was by Dr Murray in South Africa in 1904, anticipating the research work done in the States at Rhode Island, set up in 1890, which was the first greenkeeping research station. It was this paper and those which followed which generated so much enthusiasm here in the 1920s for the acid theory, and certainly, on heavier soils, acidification eliminated weeds, reduced earthworm casting, improved drainage and encouraged finer grasses, notably the acid-tolerant Agrostis family (bent grasses).

It was on this theory that RB Dawson as a young and inexperienced Rothamsted soil chemist pinned his faith in the early thirties after he was appointed as first Director of the Research Station at Bingley in 1929. Sadly – and especially sadly for him and his reputation – the theory was grossly abused in practice. On the principle that if one bottle does you good, two will do you better, ammonia and iron were applied with gay abandon, irrespective of soil type, climatic conditions and, above all, back-up irrigation facilities. Six and more dressings a year, at rates only marginally below those at which post-application scorching would be inevitable, were applied to links greens with at best primitive irrigation, if any. This brought the pH down with a run from 7.5 and 5.0 and below.

Initially highly successful control of broad-leafed rosette weeds and earthworm casting was followed by disastrous drought damage in the mid thirties, as the acidity burnt up the moisture-retaining humus. Dawson lost heart, panicked and changed back to NPK fertilisers and the inevitable annual meadow grass filled in the bare areas. We are still suffering from this in the turf quality on some of our *Poa annua* dominated links.

Ever since, there has been guarded and strictly qualified acknowledgment that acidity can produce fine wiry turf. So it does, on heavier soils, where the natural grass species is Agrostis, but on light sandy soils, where fine grasses are found, such acidification discourages the alkaline-loving fescues and where the turf thins out, annual meadow grass rather than Agrostis tends to take over.

Today, there is much less talk of manipulating the pH figure, which frankly can be summarised by saying that the ideal pH is the one you have got. "If it ain't broke, don't try to mend it" is a very sound philosophy. If one is favoured by desirable species being dominant, do not try to upset the soil conditions that encourage this desirable state. Even where undesirable lush species are dominant, think hard before acidifying (or liming). There may well be other factors: traffic and resultant compaction; over-watering or a legacy of gross over-feeding, which are responsible.

Liming acid turf because it is not sufficiently vigorous or even green is not the answer. Even less so is the use of alkaline fertilisers such as nitro-chalk. Liming bent turf without phosphates will assuredly result in a severe attack of the fungal disease Take all Patch, formerly *Ophiobolus,* now *Gaeumannomyces graminis,* for which we now have no legally permitted fungicidal cure, (even the illegal cures involving mercurial fungicides, practised by those with access to stocks of old fungicide, have now stopped as the material runs out).

A confusing factor is that pure sand, as opposed to sand/soil/humus greens, *need* lime plus complete fertilisers etc. and this inevitably encourages annual meadow grass and disease.

One answer to Take all Patch is to increase phosphates, but this causes *Poa annua* to take over. Acidification can sometimes reverse the ill-effects of liming and reduce the disease, but all too often the long suffering turf does not know whether it is punched, bored or hem-stitched and reacts accordingly. One classic way to deal cheaply with worm casting and lushness of heavy alkaline soils due to past liming, practiced for 60 years, is to use powder sulphur which *slowly* oxidises to sulphuric acid and produces an acid soil. The problem is that there is no way in which soil analyses can determine how much sulphur to apply. Excessive rates, while initially showing dramatic improvement, eventually produce so low a pH that grass dies, leaving only moss. Too little has no effect. The only way is to put down trials at say 1-4 ozs. sq. yard and wait 6-9 months before assessing the optimum rate. Beware of uneven application – or overlapping – so easy with a material notoriously difficult to spread evenly. Of course, if you do overlap, you can always *lightly* lime the scarred strip!

This sulphur treatment may be our only way to eliminate earthworms now that our masters in Brussels have banned the use of virtually all vermicides. Before long, I expect to hear that they propose banning golf on the grounds that it is a dangerous sport. Everyone at each and every level in golf should be well aware that the EC are planning regulations which will control every aspect, both of building new courses and maintaining existing ones. When the rules are made, it will avail nothing to protest – we must guide the rule-makers, who could quite easily lay down laws as to the ideal pH and even the grasses to be used! You can be sure, on their present track record, that they will get it wrong!