courses have probably the most stabilising effect of all in maintaining or conserving natural environments.

The link between poor soils and good golfing turf has been known since the start of published greenkeeping literature, but it would be foolish to claim it was never disputed. Even architects as good as Tim Simpson or golfers as expert as Bobby Locke did not agree with low fertiliser and low irrigation regimes, but time has proved them wrong.

There are many false prophets in current times and I fully accept that a major problem in course maintenance is that many golfers do not really appreciate good golfing conditions and worship The Great God Green. There are many references all this century to poor soils growing the best turf grasses. I quote a fairly recent one, from Dr H.W. Woolhouse, professor of Botany at Leeds University, in the journal of the Institute of Chemistry, *Chemistry In Britain*, dated February 1980. 'It may seem a trifle odd to suggest that some of the finest scenery in Western Europe owes its existence to a metal toxicity, but it is a fact that much of our heath and moorland exists on soils where the concentration of free aluminium would be toxic to crop plants. If this were not so, most of them would have been taken over for arable agriculture long ago.'

Later, he shows that only certain species – for example, Agrostis, heather, bilberry, etc – are tolerant of this aluminium toxicity and so dominate the vegetative cover as sole survivors.

In other words, the poorest soils produce the best golfing grasses. The quote also explains the success of the 'acid theory,' especially on clay soils. The acidity releases aluminium and locks up phosphates and creates soil conditions that can be tolerated only by certain species. It is just chance that these happen to be ideal for golf, or is it a case of which came first – the golf or the grass on which it is best played?

Disaster can strike if naturally poor conditions are enriched or alien species introduced. Raising fertility permits 'alien' grasses to invade, or perhaps reduces the power of native fine grasses to keep them out, but such shallow-rooting species – for example, annual meadow grass –have poor drought resistance and so die with the first severe drought.This is quite apart from the fact that this ubiquitous species does not produce satisfactory golfing surfaces for many months of the year and has to be maintained artificially by water and fertiliser. Straight away, we are into a high-cost maintenance programme. Worse still, native flora are destroyed and an artificial cover replaces it.

Theory

For years, soil chemists have fallen for what I call the black-hole theory. They assume a constant loss of plant foods and imply that, without fertilisers, life on earth would cease, as plant foods become exhausted. They do not understand that such losses by leaching tail off and a level is reached that will always support some grass cover, outside tundra-like conditions, and there is not much golf played inside the Arctic Circle! After years of no phosphate fertilisers, analyses still show modest levels, enough to more than support fine turf.

Naturally, there are many stresses to which golf courses are subjected today that are far more severe than they were even twenty-five years ago. The chief of these is traffic! It is unarguable that the prime cause of damage and destruction to coastal dune structures is pedestrian traffic and especially scrambling motor cycles.

The loss of dunes and threat to many of our famous links courses – such as Rye, St Andrews, Royal Portrush and Formby, which have been threatened with severe coastal erosion or windblown sand overwhelming fairways – are all caused primarily by pedestrian traffic or motor-bikes. The first step in such conservation work is to stop the traffic! It is no good just putting up notices though, on one occasion, a notice that read 'Nature Conservancy – Keep Out – Adders' worked wonders!

It is no good trying to ban traffic – it has to be diverted or nudged in the right direction, rather than prohibited. Traffic along or across dunes must be restricted to specific walkways and lateral trespass made almost impossible by means of transverse chestnut paling barriers and other obstacles. Then we can start planting stabilising grasses, protecting them, if necessary, with fencing or pig wire laid flat on the sand.

Such repair work has saved Rye and the St Andrews courses from erosion, but there are cases where the task is impossible –

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