

Links: The perfect terrain

Dr Tom Kavanagh has been a consultant to golf clubs for a quarter of a century. He has a special interest in links. Following early retirement from Kinsealy Research Centre in 1988, where he was Head of the Turfgrass Unit, he now advises courses throughout the Republic of Ireland as an independent consultant.

Golf courses on dune sand are recognised as providing the best challenge for golf as well as the best all year round conditions for play. They have enormous advantages in the quality of the turf, always dry underfoot with contours shaped naturally by the wind and with a beautiful unique flora. Golf started in Scotland on seaside grazing land where sheep did the mowing as well as forming the bunkers. As golf became popular, linksland was sought for golf courses but it was a scarce commodity. So golf migrated on to inland soil where greens were

initially mowed out of fields, top-dressed with sandy soil and eventually surrounded with mounds with possibly a bunker or two. All of that happened over a period of a hundred or so years. These kinds of greens could stand the use they got when golf was confined to one or two half days per week and membership was limited to a few professional people. As the game became more popular, and particularly in the last decade, these inland clubs were faced with reconstructing their greens or moving to new sites. Now the clubs and the contractors were faced with the high cost of having to import gravel and rootzone sand for green construction.

The position in links was quite different in that all materials for green construction were on site. But to understand how, even on links, drainage problems could occur in low fairways, one has to remember how links originated hundreds of years ago. Walking on a beach on a dry day, sand can

be seen moving in waves along the beach, carried by the wind. If the day is very stormy, sand will even hit walkers in the face. Over centuries sand has been moved inland in this way, covering agricultural fields. If these fields were free-draining, no waterlogging occurred in the sand but if the fields were marshy or peaty, the impervious nature of the underlying bog could affect the sandy covering in lower areas. Also if the fields were at sea level or below at high tides, this could lead to ponding in the overlying sand. In this last case, raising the level of the sand is the only solution but in other cases drainage of the underlying bog might be possible sometimes even by cutting through peat accumulations formed over many thousands of years to the mineral soil underneath. Sea water coming on to low lying parts of fairways in spring tides may cause no damage because over many years the fescues and bents have become adapted to these conditions.

The movement of sand on a beach depends on the strength of the wind and the size of the sand particles. Particles which hit a walker in the face have become airborne because they have a particle size below 0.1mm in diameter. Particles which blow in waves close to the ground are in the size range 0.1mm to 0.5mm. Particles above 0.5mm simply roll along the ground. Sand blowing inland from a beach is trapped initially by shrubs and rocks. As more sand accumulates, vegetation, especially marram grass, develops in the sand. This grass which thrives in a moving sand situation traps the sand and thus a dune is formed which grows in height depending on the exposure of the site and the supply of sand available. In the west of Ireland courses such as Ballybunion and Belmullet have very large sand dunes. The majority of sand particles in the dunes will probably be in the 0.1mm to 0.5mm size. Sand covered areas behind the dunes become colonised by red

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fescues chiefly with a wide variety of wild flora which are so attractive in the rough on links golf courses.

In designing a golf course on linksland the architect has the task of producing a challenging course with minimum alteration

of the terrain. Where some modification of fairways is necessary, the original turf should be removed together with the attaching black sand which is usually not more than 150mm deep. This black sand is an invaluable and scarce commodity

on links invaluable because of its lower pH, its organic content and its microflora. When modifications to shape the fairway have been made, these turves and black sand can be returned and rotovated into the surface in preparation for seeding. If the

Ballybunion

Picture: BRIAN MORGAN

original turf and black sand are not saved when fairways are modified, alternatives are hydroseeding with a mulch of peat and woodpulp, or slurry or a chemical stabiliser such as poly-

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acrylamide, but saving the turf and black sand is preferable as this method facilitates seedling establishment which can be very difficult on links due to wind blow. Organic sand also provides moisture retention and promotes deeper rooting.

If greens can be mowed out of fairways with minimum modification, all the better – these will have very natural contours. They will have a tough sward mainly of fescue if they have been grazed by sheep. If not grazed, a deep pile of moss, fescue and miscellaneous weeds and sedges will have developed which treatment with ferrous sulphate and traffic will quickly reduce to a mowable condition. Where major modifications are necessary, saving the original turf and underlying black sand is essential. These turves can be laid back on the modified ground preferably in their original condition with black sand and roots attached extending up to 150mm in depth. Obviously these cannot have been cut with a sod cutter but to have been dug out with spades. When laid back roughly and allowed to begin to grow, a mechanical compacter can be used to produce a reasonably smooth surface which will be further improved by repeated topdressing. This method of green construction and establishment is very successful.

Links sand is usually limey due to the marine shell it contains.

The amount of lime can range from zero to over 5070. Greens on courses with very limey sand usually suffer severely from Take All disease especially in their early years as a result of topdressing with the sand or after hollow coring. Use of black sand for topdressing may reduce this problem because of its lower pH, its organic matter content and the microorganisms which it contains. Wind blown sand coming on to greens from a beach or from bunkers can be another source of Take All.

'In recent years our changing climate has put a severe strain on links which had no irrigation arrangements on tees and fairways'

Nutrition on links differs from that on inland courses in that care must be taken to preserve the links character by not over fertilising. Too high nutrition especially with nitrates and phosphates would favour annual meadowgrass invasion at the expense of fescues. Golfers tend to expect greens, tees and fairways to have a rich green colour such as they see on tournament courses on television. However, aiming to produce such colour

would damage links which should have a pale greenish brown overall colour typical of seaside links. Forcing green colour by fertilising will introduce annual meadowgrass.

Leatherjackets are usually abundant in links and can damage fairways, tees and greens if not controlled. Crows and other birds can do severe damage searching for leatherjackets in the turf. An insect which is more difficult to control is the garden chafer. These occur in large numbers in uncompacted areas around greens, tees and bunkers. They damage the turf by eating the roots and birds searching for them do further damage. Chafers seem to have increased since persistent insecticides were withdrawn. Spraying as for leatherjackets does not seem to be effective because they are deep in the sand. When they emerge as beetles in late May or early June, spraying is more effective.

In recent years our changing climate has put a severe strain on links which had no irrigation arrangements on tees and fairways. Now such provision is standard particularly in the drier eastern coasts of these islands. However, in the interest of preserving the links character, irrigation should be restricted. Another climatic effect on links courses is the increasing occurrence of severe gales and the consequent erosion of the coast. Some clubs

spend large sums on counteracting erosion and these will be pleased at the prospect of getting financial assistance through recent EU directives on coastal zone management. The forecasted rise in sea levels due to global warming will be a topic of great interest to links early in the next millenium.

Apart from the quality of links as golfing terrain, its flora is a major attraction. The number of flowering species is extraordinary, ranging from eyebright, lady's bedstraw, cowslip and birdsfoot trefoil to orchids, burnet rose, dwarf willow and gorse. More than 50 such species have been identified on one course. Needless to say, apart from daisy control on fairways, no broad leaf herbicide is used on areas of rough in these courses, undesirable weeds such as ragwort being controlled by hand rogueing. It is unlikely that further development of linksland for golf will take place because of EU habitat directives and establishment of Special Areas of Conservation. Sand dunes will undoubtedly be ranked as priority habitats. What restrictions will be placed on existing links courses, of which there are only about 150 in existence, remains to be seen. One restriction which will be necessary whether from an EU directive or not is the limitation of traffic on these scarce and sensitive areas.