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# Course Feature



▲ Andrew Ross, Kevin Hill, Mark Campbell and Robert McTurk

## From Small Acorns...

Gareth Jones visits Thornhill Golf Club where a three man greenkeeping team are battling with limited budgets and time to produce a top course.

We have all heard and, most probably, used the phrase “from small acorns large oaks grow” at least once in our lifetime. This particularly poignant saying can be applied to many instances but it is no more apt than at Thornhill Golf Club, an 18 hole course nestled away in the Dumfriesshire countryside, where a three man green staff has been battling with restricted budgets, time and man power to produce a superb parkland/heathland golf course.

The club was established in April 1893 as a nine hole track and had to wait 86 years until it was extended to 18 holes in 1979, the club waiting until 1996 to enlarge its Clubhouse. In the years between the two extensions, particularly in the early to mid 1990’s, Thornhill enjoyed a membership of over 700 and a green staff of five full time and two seasonal workers.

However, as with many smaller clubs, as the 90’s progressed they were rocked by the changing times within the golf world, namely competition from other courses. The club was hit hard when two local, but higher profile and wealthier clubs, the Dumfries and Galloway Golf Club and Dumfries and Country Golf Club, opened up their membership. Thornhill’s membership plummeted to below 500, with the resulting decrease of income meaning an obvious cut back in resources and the greenkeeping team was reduced from five to three, with the seasonal workers being targeted also.

The tightening of the Thornhill purse strings came at the same time as Kevin Hill was promoted to the position of Head Greenkeeper, in 1996. Despite landing his dream job, Kevin, who has now been at the club for 16 years, faced the ominous task of improving the course in order to attract back wandering members, while working with impedingly small budgets and just two other men.

If the Headman’s job wasn’t already tough enough Kevin and his trusty men had to rewrite the wrongs of the past and put the course back to its rightful state before they could actually move on and improve the course, a case off taking two steps back to take just one forward.

“When I first got the job we focused all our energy on getting the course back up to scratch. We needed to improve the course and move it forward, but before any of that we had to mend what I considered some of the errors of the past. From a greenkeeping point of view a lot had been done to the course which just shouldn’t have happened,” said Kevin, as we chatted in a corner of the cosy clubhouse with Thornhill’s Green Convenor, Robert McTurk.

Inherited problems included poor drainage, tees, greens and disease; in Kevin’s first season he was spraying for fusarium every week.

“Previous to 1996 we fed the course all the time and we had so many problems with disease all over the course, we just never got rid of it. I believe in minimal feeding and I don’t use fungicides, mainly due to these early experiences, and when I took over I installed this policy straight away. Now we are at the stage when we don’t get too much disease at all, particularly on the greens. Obviously we still get a bit, which course doesn’t, but it is only the odd isolated spot and that is it. The greens are better than ever now,” stated Kevin proudly.

Drainage was the next headache for the three man team, the 4th fairway especially needed attention. Drainage pipes had been placed incorrectly, so that they actually ran up hill as they came to the ditch, which wasn’t deep enough in the first place, and to add to the predicament the pipes only ran to the edge of the fairway instead of all the way to the end of the rough. Visually, the 4th was the most dramatic portrait of this trouble but other parts of the course were suffering from the inadequate drainage. The materials used in the construction of tees and greens had left a lot to be desired and in the long run had cost the club both valuable time and money, both commodities it just cannot afford.

“The drainage that was put in just wasn’t up to the job and because it wasn’t done right it is still causing us problems 10 years down the line. Back in 1996 we rebuilt three tees straight away, as they were in such a bad way. The tees and greens had not been built correctly originally and the wrong materials were used, so they looked and played well for the first season, but after that we had so many problems with them.”

Kevin and his team of Mark Campbell, Senior Greenkeeper, and Andrew Ross, Assistant Greenkeeper, knew that, with constricted time, money and manpower, they could no longer afford continually to come back to elements of the course that needed repairing time and again. In order to eradicate this and achieve healthy, stable greens and tees they liaised closely with Richard Windows, Turfgrass Agronomist with the STRI, and developed a set method and standard of materials that all Thornhill tees and greens would be constructed from if required.

“We have a certain specification, based on USGA guidelines, in place now and we use this for everything. It doesn’t matter what the job, whether we are placing pipes in greens or fairways, we use the same sand, the same grit, and the same gravel all the time. We know this method works for us and it has benefited the course massively. Having a standardised set of methods also means that if I left the club and somebody else came in they could look at this system, see that it works well and carry it on,” said Kevin, who is a Dumfries lad and, despite his last comment, gives the impression that he will not be leaving his beloved Scottish course for a long time to come.

Rebuilding tees and greens, using a USGA based specific for this process and purchasing the correct materials doesn’t come cheap and it is here that the relationship between Kevin and Robert has become a crucial part of the club’s success.

“We have known each other for a long time, I used to play golf with Robert when I was a kid. I wouldn’t say we have always seen eye to eye, but

as both a Greens Convenor and before that as a Captain he has always been strong and has done a lot for me. He gets done what I want, rather than what he wants."

"We had a fundamental problem here that each Captain, rightly or wrongly, wanted to make his mark, this meant there was no continuity to what was happening on the course. We needed to put the course in the hands of people that really knew what was needed and we are very lucky that we have this with our greens staff, ably led by Kevin," said Robert, who has been in his current position since 2002.

"I see my role as the link between the staff and the Committee. As a four we discuss as much as we can in order to develop a better working relationship, as communication in a club this size is very important. Then we will go to the council and put our case forward."

It took six years for the team to get the course back up to a standard that they were happy with, now they could finally move forward and it was this new enlightened thinking from the club which would dramatically aid Kevin, Mark and Andrew's job. 1994 saw the greenkeeping team enjoying a budget of £36,000 plus, since then this has been radically reduced, in the past Kevin has had no more than around a £20,000 budget to play with and typically he is limited to £18,000, which is now on the increase.

Despite this, the club, which is essentially run by a six man panel consisting Captain, Vice Captain, Greens Convenor, Secretary, Treasurer and Bar Convenor, has done everything in its power to provide Kevin with the equipment and materials he requires to complete his and the club's aim of making Thornhill one of the top courses in the south of Scotland.

"The club has come a long way in recent years. I now feel that I can go to the Committee and tell them what I would like to do and what I need to do it and they will support me fully. I remember when I first started here I was sent out to cut the rough with a scythe and used hand shears to cut around the base of trees. It is changed days now, we have a replacement programme in place and we get most of the equipment we want," stated a delighted Kevin, who was promoted to the position of Course Manager in February, another sign that Thornhill is moving on.

"The club now realise that we have to try and take some pressure off the greenkeeping team. We just can't afford to employ another member of staff, so we have to find ways of easing the workload and freeing up their time as best we can so they can focus on improving the course rather than spending all their time just keeping it ticking over. If that means spending money on a certain bit of kit or rebuilding a tee so we don't have to come back to it time and again then so be it. In many cases we are spending money to save money in the long run," added Robert, a man clearly focused on bringing Thornhill into the 21st century and building up the club's reputation once again.

Kevin has learnt to be patient at Thornhill, special projects that he wishes to undertake to improve the course have to wait until time and finances allow and for the majority it is a case of prioritising tasks and being flexible.

"You have to be sensible and understand the club's position. You have to give and take, for instance, do you spend £10,000 a year on rebuilding one green or do you spend £15,000 on a verti-drainer which can improve all the greens year in year out? We chose to do the later. This is when you have to balance things out and wait to do those special projects when time allows. If we have a machine breakdown and need money to repair it the first thing to cut from the budget is a special project, that is just how we have to work. It is hard to run an 18 hole course on a £18,000 budget," concluded the Headman.

During his time in charge at Thornhill Kevin has overseen the rebuilding of 15 tees in total, including the medal tees at the 1st, 4th, 6th, 11th and 12th. Again Kevin has had to watch the accounts carefully. When rebuilding the 17th tee the club could not afford to fit real sleepers, so Kevin used scrap wood instead, the skill of the installation by the team ensuring that the golfer could not tell between the two.



▲ The old 16th tee



▲ Construction of the new 16th tee



▲ The 16th tee as it looks today

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## Course Feature

This winter's developments have been concentrated on the 16th hole, the main project of rebuilding the tee taking 14 days to do. Originally it was decided to build a new tee for yellow boxes. As the season wound down, the winter golfers came out and, as the three men prepared to start the work, Kevin placed a mat further back from the original tee in place of a winter tee. The result was that the members liked the new tee position of the mat so much that it was decided to add in a 180 square yard medal tee 20 yards further back. The outcome was a 450sq yd yellow tee, a medal tee sitting comfortably behind this, and a handsome red stone path running through the middle of them both.

"It looks great and we are very, very pleased with it. The thing with projects like new tees is that when the golfer comes back from their winter break they can actually see what work has been done and where the money has been spent, so this helps them appreciate it all. The problems come and more questions are asked when you spend the winter dealing with massive work that isn't as clear to see, like digging up and replacing drainage pipes," said Kevin.

Undertaking work of this magnitude, while still successfully managing and maintaining the rest of the 6102 yards, par 71, course, requires a strong staff dynamic between the three greenkeepers. Kevin is a self confessed perfectionist, a man who refuses to cut corners and makes sure all work that is done to the Thornhill course is completed to the highest of standards, using the best materials possible. Luckily for both Kevin and Thornhill, Mark, who has been at the club for four years, and Andrew, who has had two stints at Thornhill cumulating in nine years, are equally as obsessive about the course's health and presentation.

"Like in any other job, when I got promoted I found it hard to go from one of the boys to being the boss. It took me a while to find my feet and initially I had some problems," confessed Kevin, who has also found time to reinstate lost heather and gorse throughout the course during his time in charge.

"Changes were made, I developed into the role and we have a great team now. I like to think that we have a good respect for each other and it helps that we have a lot in common, that makes a big difference. We are all perfectionists and we all aim to produce a high level of workmanship.

"With just two guys under you it is difficult, you do have to manage time so well. It is hard but I am very lucky that Mark and Andrew are so good. I have full confidence to send them out on the course and I know that they will do what I have asked them to do to an excellent standard. They know what I want and I know what they can do, it makes things a hell of a lot easier."

The end result of all this hard work is a golf course described by the locals as a 'hidden jewel', the course is fully booked for May by visiting parties, something that is a first for Thornhill. The club also warmly welcomes any visitors to come and play the course and see for themselves just how far it has developed.

The course is the home to Ryder Cup golfer Andrew Coltart, who commented recently: "Every year when I return to Thornhill there is a marked improvement in the course, its condition, the presentation and the setup. I'm really proud of the work that Kevin has done, I can talk about my club with pride now and know that anyone who plays the course will enjoy the challenge and the ride."

Thanks to the efforts of Kevin and his team Thornhill has a course that is moving up to the next step. Kevin has planned to have all the greens and tees standardised within the next five years, with the 10th being the next on his list.

If Kevin and his team's future developments match the level of their previous nine years' work, forget the tiny budgets, overlook the undersized staff and ignore the limited equipment, because Thornhill Golf Club will grow into a great oak, it is already well on its way.



▲ The new 15th tee

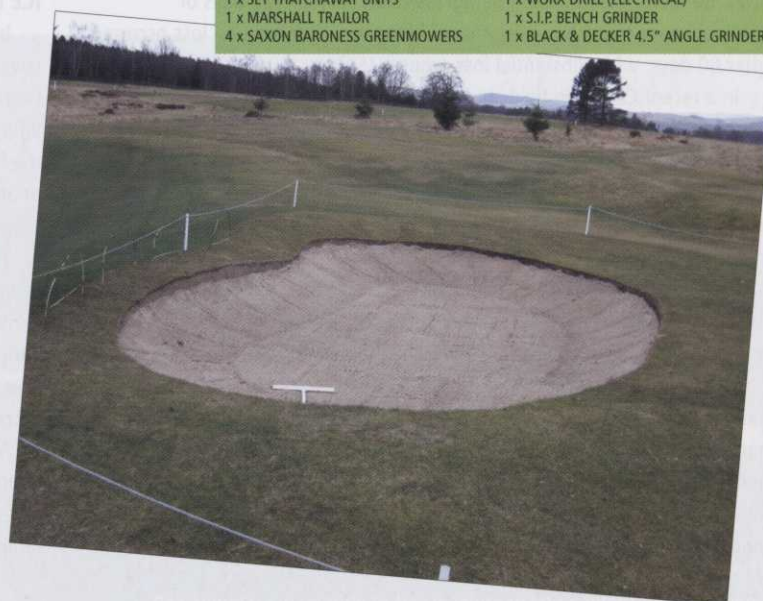


▲ The 9th

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▲ A new bunker thanks to the handy work of Mark Campbell

# Ice Cover: Its Role in Winter Injury

Intermittent ice formation on golf greens and fairways is a common event for the northern areas of Europe and the United States. However over the last few years ice formation has increasingly been singled out as the cause of, or strongly associated with, winter injury. Ice cover injury occurs either directly from continuous ice cover or as part of freeze injury - low temperature kill.



▲ Ice injury is a function of continuous ice cover. *Poa annua* compared to creeping bentgrass is susceptible to injury when continuous ice cover exceeds 45 to 60 days

## CONTINUOUS ICE COVER INJURY

The first type of ice injury is the direct result of a continuous ice cover. In the early to mid 1960's Dr Jim Beard conducted a controlled laboratory study where he looked at the survival rate of three cool season turfgrasses under a continuous ice cover and two turfgrasses under field conditions (Ref 1, 2). He found that creeping bentgrass could survive 120 days of continuous ice cover, however annual bluegrass - *Poa annua* - loss occurred after 60 days, with substantial loss around 75 days.

In a recent Canadian field study, both annual bluegrass and creeping bentgrass were subjected to 45 days of continuous ice cover and then the ice was removed. 75 days after initiating the study, and 30 days after removing the ice cover, creeping bentgrass still maintained its cold hardiness, while annual bluegrass was dead (Ref 3). From that Canadian study it might appear that ice needs to be removed from an annual bluegrass turf once 45 days of continuous cover versus 60 days. From these two studies I would suspect the critical time where annual bluegrass begins to suffer from ice cover is between 45 and 60 days of continuous ice cover.

The reasons commonly proposed for ice injury are the build up of toxic gases and/or the development of anoxic conditions, and the loss of cold hardiness. With herbaceous plants, carbon dioxide (CO<sub>2</sub>) accumulation under ice cover is a major contributor to plant death (4). Interestingly, intermittent thawing helped eliminate the CO<sub>2</sub> build up and injury to the plants in this study did not occur (4).

The loss of cold hardiness occurs under ice cover but varies among turfgrass species. Under continuous ice cover annual bluegrass loses its cold hardiness, while creeping bentgrass is not affected (3). The loss of cold hardiness in annual bluegrass is likely due to the anoxia - lack of oxygen - conditions that develop under an ice cover (3).

Although ice injury to creeping bentgrass is remote, and certainly not an issue in most of the world, I wonder about its role in winter injury to creeping bentgrass on golf courses in the Rocky Mountains or Scandinavia where ice cover may exceed 120 days. It is not uncommon to observe creeping bentgrass greens in these areas that have suffered winter injury believed to be caused by a combination of ice and freeze injury. It might be possible that prolonged anoxia conditions in areas where ice cover is excessive may reduce creeping bentgrass cold hardiness, making it more susceptible to freeze injury.

Beard (5) reported differences among creeping bentgrass cultivars to ice cover. He found that seeded creeping bentgrasses, especially 'Seaside', are less tolerant of ice coverage than the vegetative cultivars like 'Toronto'. In addition, the colonial bentgrasses were considerably less tolerant than the creeping bentgrasses. Although published over 39 years ago - and the creeping bentgrass cultivars used may not be relevant at this time - the idea that variability among cultivars to ice coverage exists may make it difficult in extreme situations of ice cover to say "creeping bentgrass is not affected by ice covers".

## ICE IN ASSOCIATION WITH FREEZE INJURY

In most of the Midwest and Northeastern United States, a continuous ice cover exceeding 45 days is unlikely. The winter weather pattern is generally broken with intermittent periods of thawing that melts the ice. Where 'ice injury' plays a more likely role is as a component of freeze injury. In this role the freezing of water that would occur with a rapid drop of temperature in or around the growing point during or after dehardening of annual bluegrass.

The critical precursor to freeze injury is the loss of cold hardiness through dehardening and subsequent rehydration of the annual bluegrass crown region. Rehydration of the crown region initiates in late winter or early spring. Between creeping bentgrass and annual bluegrass, annual bluegrass has a relatively high crown hydration level. Thus making it more susceptible to freezing.

Although ice covers contribute to the decline in cold hardiness, the most important factor in dehardening is temperature (6). In the case of annual bluegrass the dehardening process can occur quickly when soil temperatures exceed 8degC (46degF) for 48 hours (7).

As we move out of winter into spring Dr Karl Danneberger helps you to assess the damage that ice can cause.

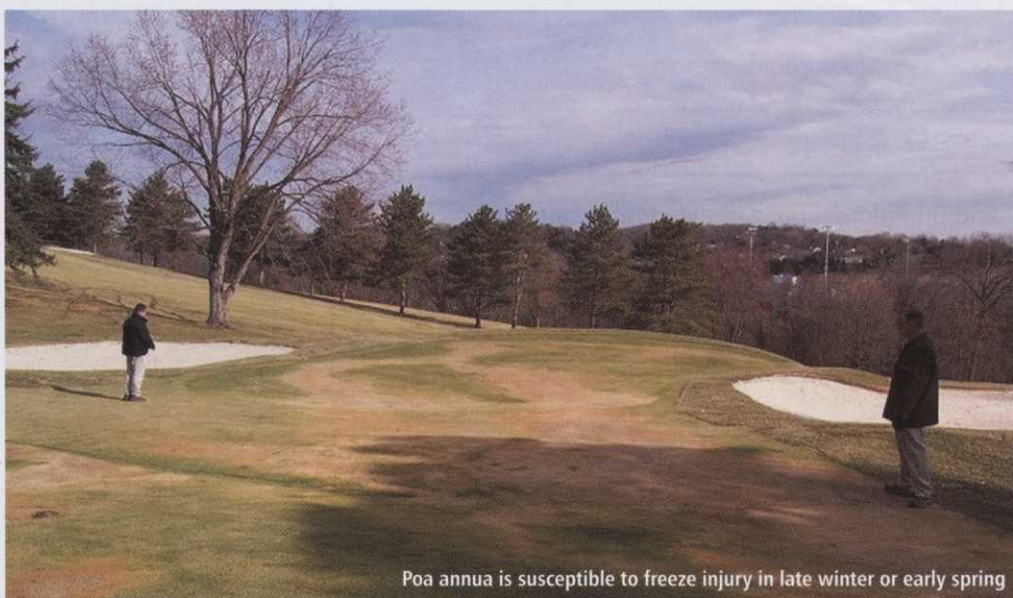


▲ Although creeping bentgrass rarely suffers injury from ice cover or freeze injury, in extreme situations like the Rocky Mountains or possibly in Scandinavia it might occur

It is at this point during late winter, when annual bluegrass begins to rehydrate, that it is most susceptible to a rapid drop in temperature and water freezing. The ice that is produced in and around the crown can cause death. With annual bluegrass, it is usually the lower portion of the crown where root initiation occurs that is highly susceptible to freezing. A common occurrence in freeze injury is to observe an initial green-up of the annual bluegrass followed by a rapid death. The green-up usually lasts three days followed by death due to a desiccating process resulting from lack of root production.

What cultural practices can be instituted to minimise ice injury and/or freeze injury? Numerous articles have been written that discuss management programmes for reducing freeze and/or ice injury (8). A few key points in developing a management programme for reducing injury should centre on:

1. Produce a healthy plant going into the winter. A weak annual bluegrass plant with low carbohydrate storage is not going to tolerate ice cover or be resistant to freeze injury as a healthy plant. Shaded areas are more prone to freeze injury than sunny areas, probably due to the carbohydrate status of annual bluegrass (9).
2. Eliminate poorly drained areas. Annual bluegrass growing in areas where water accumulates is at high risk to rapid freezing during freeze/thaw cycles (10).



Poa annua is susceptible to freeze injury in late winter or early spring

In conclusion, winter injury is normally a combination of several factors, one of which is ice cover. A continuous ice cover alone is not a common event for most northern golf courses. However, freeze/thaw cycles in late winter can create a situation where excessive water in and around annual bluegrass crowns can create freeze injury from the ice formed from the freezing of water.

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# Time for a Trim

James de Havilland measures his angles and investigates the best ways to trim tricky banks and hills.

Anyone who has spent a substantial amount of time operating a brush cutter to mow a bank will no doubt agree that these machines can be tiring to use. Combine a hot day, safety kit and a large heavy-duty model, and the word tiring upgrades to exhausting. So what are the alternatives?



The latest Kawasaki brushcutter. There is nothing 'wrong' with this type of equipment but this cannot hide the fact that even the best units are tiring to use for extended periods, particularly when working on a slope. So what are the alternatives?

On any golf course, there will be areas that are difficult to access with ride-on equipment yet still need to be kept trimmed. Typical examples will be around trees and shrubs and on banks. When it comes to controlling growth on the latter, the most typical solution is to carry out a periodic cut with a hand held brush cutter; either with a blade or nylon line cutting head.

Using a brushcutter to keep a modest area under control is no problem. Combine a steep slope and heavy growth in need of a full day's work and the job may still be manageable. When this job needs repeating perhaps three or more times a year, or when there are several long days of work in hand, it may be time to think of an alternative.

One item of bank mowing kit that is worth looking at is a pedestrian power scythe. Widely used on the continent, this type of mower was largely displaced by large pedestrian rotaries in the UK for long grass mowing, the latter having the advantage of arguably greater tolerance to debris and rough ground. On banks, however, a large rotary mower can be something of a handful.

The cutter bar of a power scythe, in contrast, is relatively light. The design also lends itself to working on a bank as the width of the cutting unit adds stability. Of equal importance, the 'pedestrian tractor' element of modern designs are far better balanced and easy to operate than some older generation machines. The much loved, but often cursed, Allen power scythe comes to mind as an example.



◀ Although a machine like the Etesia Atilla AV 95 ride-on brush cutter is not designed to work on really steep ground, it can work safely on a slope of up to 30 degrees. This 18hp machine retails for a shade over £6,300 plus VAT, with hire rates of around £100 a day or £400 a week.



▲ A flail mower attachment on the front of a two-wheel tractor will deal with heavier growth, but will not be as effective as a cutter bar in long grass. A 0.60m flail for a Tracmaster unit sells for £880 plus VAT



▲ The Toro Z500D ride-on mower has a 27hp Briggs & Stratton Daihatsu Diesel engine with a cutting width of 60"



▲ Hover mowers are by no means new, but they are now starting to find a new generation of users. Lloyds of Letchworth offers models it claims are particularly good at coping with longer grass thanks to a deeper deck design. The latest models are offered with extra long handles to make it easier to mow down slopes such as bunker sides. Prices around £450 plus VAT.