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TALKING

Six of the country's top men give their views on the changing weather trends

Weather trends

Compiled by Malcolm Huntington MBE



Name: Jim Paton.
Course: West Kilbride Golf Club, Ayrshire
Region: Scotland
Course Type: Links
Staff: Course Manager plus five



Name: Ian Buckley
Course: De Vere Northop Country Park Club
Region: Northern
Course Type: Parkland
Staff: Head Greenkeeper, plus three groundsmen and one mechanic (250 acres to look after)



Name: Barry Holt
Course: Burford Golf Club, Oxfordshire
Region: Midland
Course Type: Parkland
Staff: Head Greenkeeper plus four



Name: Raymond Day
Course: Saunton Golf Club, Devon
Region: South West and South Wales
Course Type: Links (36 holes)
Staff: Course Manager, plus ten, plus a mechanic



Name: Robert Lucas
Course: Royal Blackheath Golf Club, Eltham, London
Region: South East
Course Type: Parkland
Staff: Course Manager plus seven



Name: Ken Moore
Course: Scrabo Golf Club
Region: Northern Ireland
Course Type: Heathland
Staff: Course Manager plus four

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1. In your experience what changes to the regular weather patterns have you notice over the last 10-15 years?

The winters are definitely a lot warmer and wetter. We get very little snow in this area because of the gulf stream

Winters are a lot wetter, but we have also had a lot of rain in summer in recent years. We used to have three to four days of snow at a time, but now it's much milder

There have been very definite changes in the last four or five years in particular. We don't seem to get winter now, although there is some frost and a little snow and there is a lot more rain. I have never known a winter like this for floods in the area.

In this part of the world we tend to get colder springs and now warmer winters up until Christmas. There are cooler temperatures in April these days

We have lost our traditional seasons and we now have warmer summers and winters.

Winters are wetter and warmer. We used to get a lot of hard frosts in Northern Ireland, but we don't seem to get them now. We get a bit of snow after Christmas usually.

HEADS

2. How has this affected your cutting and feeding regimes?

We are cutting for far longer periods now. We hardly touched it in winter for years but I remember a couple of years ago the staff were off from Christmas to New Year and when we came back it was only just possible to out the grass with mowers because there was so much growth.

We try to keep our greens (USGA) fed as the water goes straight through. I use high potassium content as a pick-me-up. Cutting was once a month in winter, but nowadays we struggle to get on the greens as it has been so wet. To give an example of the changes, I can recall seeding in January some years back and getting good results.

Milder means you have more cutting to do. I have cut greens almost weekly this winter, whereas before we could go weeks without cutting when it was very cold. I don't use feeds in winter, apart from sulphate of iron and perhaps a bit of seaweed to harden off the greens.

The early feeding has been affected and now we put a bit of iron on, partly for cosmetic purposes to keep people happy. Cutting in early spring is a bit less and the height of cut remains up for a bit longer.

Cutting regimes are now lasting 10 months whereas before it was more like eight. In November end March we originally cut once a month, now it is more like two or three times.

Basically we have stopped cutting earlier because of increased rain. The grass doesn't grow much after September. We didn't fertilise the greens until May 2 last year and the fairways were not done until May 17. East winds are the reason, keeping the temperatures down and resulting in a lack of growth.

3. Has the type, or severity, of turf disease affecting the course changed over the past few years?

We are very lucky because we are not bothered too much by disease but we had some Fusarium in November and December, quite a bit more than in years gone by.

Fusarium has certainly got worse over the years. Years ago we didn't really see any in winter.

Certainly. As it is so mild we got more disease, mainly Fusarium. There's no change of type but disease is more severe.

We have altered the feeding programme on greens in the last couple of years and we have reduced disease by more aeration and putting on a bit of feed. It's a question of trying to get a balance.

Anthraxnose has reared its ugly head in the last four years, but Fusarium hasn't really altered because we get more chance to aerate in the warmer winters. There is no major problem at the moment but maybe there will be in time because of the changes.

Things haven't really changed at all. We get a spot of anthracnose and some Fusarium, but there is really no major problem.

4. What other work have you done to protect your course in terms of new drainage or irrigation for example?

We have worked on the drainage a lot. The drains that were in were very old and they were also covered by ash, which had gone solid, making it difficult for water to drain away as it wasn't reaching the pipes.

The course was built six and a half years ago and since then we have been putting more and more drains in. The builders of the course didn't leave any drainage plans so we have almost had to start again. Irrigation has been updated for similar reasons. I think some of the old irrigation is four feet deep.

We have upgraded the irrigation system around the greens and introduced a watering system on the tees. We have also put in a few more laterals on the greens and done some deep aeration, also using a drill and fill machine.

In the last five years we have redone the main drain through the course and improved the drainage at the top end of the course, known as the gull pit. We have added irrigation to high wear areas.

We have put in new irrigation, including the fairways, in the last 12 months and this will help to counteract the warmer summer periods. Drainage work has increased over the last year as well.

A year ago we finished irrigation on the course. Previously we had only six holes with sprinklers. Drainage is not good, but we are planning improvements and money will be put into the budget for this.

5. If changing weather patterns continue what long term affect do you think it will have on your golf course?

The warmer winters mean that there is a lot more play now and the season is extended to 12 months. Many come to play on our course from the Glasgow area when their courses are closed. Global warming has also seen a big difference in tides and we spent £100,000 on shoring up the edge of the course because of coastal erosion, using armoured rock, some of them three and five tonne pieces.

When the course dries out - we have been closed a lot - we will be doing a great deal of aeration. If winters remain mild we expect to have more players on the course and so more compaction — another problem.

There is going to be a lot more wear because milder winters are encouraging golfers to play more. It has often rained overnight and then been fine during the day so there is more traffic damage. We have also more damage from rooks pecking for leatherjackets and chafer grubs in the mild winter.

We have no control of English nature. You might say nature does what it wants and that stops us from doing what we might want to do. Because we are a links course we may suffer from even more traffic in winter as our course is often open when others are closed because of the wet conditions.

Our membership is ageing and so the change in weather pattern will see more golf in winter. This has resulted in us considering a change to USGA greens from the traditional method to give a 12 month service rather than 10.

Basically it will result in a lot more winter golf and with that in mind we are changing to a 50-50 soil sand mix from 100% soil on the greens

Kristian Waagen, a Briton abroad reports from Meland Golf Club in Norway, where different problems require well thought out solutions

Against all odds

Life at Meland Golfklubb

Meland Golf Club is on the island of Holsnøy, on the west coast of Norway. Average rainfall in the region is about two to 2.5 metres each year. The average winter temperatures fall between 1.5°C and 3°C. The average summer temperatures fall between 10°C and 15°C. The highest summer temperature recorded was a staggering 30.1°C. The lowest winter temperature was minus 16.7°C.

When I was considering the job at Meland back in 1997 I had some concerns about this information which I came across while researching the area on which the golf course was to be built. Questions pertinent to drainage and rootzone materials were forefront considering the amount of rainfall, also the low temperatures fall in the spring, which would take forever to warm heavy wet soils.

However, the interview process and openness of the Club Manager resolved many issues of concern and I accepted the job in November 1997. I moved my family from America and found myself supervising the final stage of construction, working closely with the Norwegian construction company, the Architect, and the club project development team.

The real work began in earnest in the summer of 1998 as more and more of the course was seeded my two staff members and I juggled our time between overseeing construction and maintaining a developing golf course. We grew with the course and I made many observations in relation to soil conditions, fertiliser response, drainage, and the weather - observations that later were instrumental in developing the maintenance plans for the course. The course opened (well six holes anyway) in August of 1998 and was highly publicised throughout Norway. However, no tee times were taken that year upon my advice that the course was simply not ready to sustain play.

May 1999 saw the opening of the first nine holes with the second nine following later in August. The course was closed in October for the winter period and we opened all 18 holes in the end of April 2000. In November of 1999 we were listed as one of the Top 100 courses in Europe - although sneaking in at number 100.

Rainfall is without a doubt the main concern. Its impact, because of the sheer volume, cannot be ignored in the day-to-day management of the course. The staff are supplied with rain suits and work outside in all weathers to ensure the course is presented to a high standard at all times. The people from this part of the world do not stop what they are doing because it is raining, if they did they would never really do much at all! The golf course is therefore expected to be open at all times rain or shine which of course brings with it a host of problems in managing high traffic areas such as tees and greens.

Between April 1 and October 16 last year, despite receiving 31 inches of rain, we were only closed on four occasions, and on two of those we



were open again by lunchtime.

The course is closed from mid October to the last weekend in April and sees intense play during the short summer season. During the mid-summer period when there are almost no hours of darkness you can see golfers out on the course from early morning to 11pm. The conditions and circumstances at Meland dictate its management as at any other course and the remaining article discusses some of that management. During the planning and construction of the course the weather was at the forefront of everyone's mind and a brief description of materials and techniques used is given here.

Tees

The tees are constructed on a solid base of blasted rock, having removed the peat down to bedrock. The sub-grade was finished using crushed rock ensuring all large cavities were filled to prevent settling. A 10cm drainage layer was then installed using a 2-4mm pea gravel, and where necessary drain outlets were led away from the tee area and tied in with main drainage lines or natural water channels. The rootzone material used was the same as used in the greens. The specifications on the sand are to the recommended USGA specification and a composted material was added at the source prior to shipping. The ratio of sand to compost is 95 to 5 by weight. The blended mix was tested for percolation rates and the actual ratio was adjusted to give us the

Above right: The 16th tee, May 2000

Below: The Meland team with Kristian in white shirt





required rates of percolation, which ended up at 177mm/hour. The finish depth of the root zone was 20cm. Tees are seeded with a blend consisting of the following:

20% Bargreen, *Festuca rubra* spp. *commutata*
25% Barcrown, *Festuca rubra* spp. *litoralis*
25% Enjoy, *Festuca rubra* spp. *commutata*
10% Highland, *Agrostis castellana*
10% Baron, *Poa pratensis*
10% Nugget, *Poa pratensis*

Greens

The same method of construction was used in building the greens and the tees. The difference being that in the greens we have a 30cm root zone depth as opposed to 20 cm as found in the tees. The greens are seeded with L-93 creeping bentgrass. This particular species was chosen for its natural resistance to many diseases specifically *Fusarium*, *Typhula* and leaf spot, that were typically the main concerns at other courses on the west coast of Norway.

Fairways and Semi Roughs

After much blasting, clearing, and filling these areas were finally capped with clay excavated on the site. Topsoil that was removed from the areas of the property that actually had any, was stock piled and blended with imported sand with particle sizing that ranged in size from 4 to 16 mm. The idea was to create a more freely draining soil. All the blending was performed at a central site and trucked out on to the course where

it was then spread to a depth of 15cm over all areas that were to be maintained fairway and semi-rough. The fairways were shaped to move water away from play areas using contours, mounding, and swales. Drainage was installed extensively during the construction period with the knowledge that water had to be removed quickly from the surface to allow establishment and future management.

The fairways and Semi Roughs were seeded with the following blend:

25% Bargreen, *Festuca rubra* spp. *commutata*
20% Barcrown, *Festuca rubra* spp. *litoralis*
10% Highland, *Agrostis castellana*
30% Ryegrass, *Lolium perenne*
15% Baron, *Poa pratensis*

Course Management

Operating the golf course in typically wet conditions, with heavy play creates a lot of compaction in high traffic areas. Maintenance of the course under these conditions compounds the problem of compaction. The management of the course is centered therefore around aeration. We aerify everything and often.

Fairways

Fairways and semi roughs are aerified using a pull behind Aero-king 9672 either with hollow tines or knives, and a Charterhouse vertidrain. We hollow tine in the spring, mid April time, to open up the soil and assist with drying, with the idea of increasing soil temperatures more

rapidly resulting in a jump on growth. Fertility is timed to coincide with this and if necessary damaged areas will be slit seeded. At this time I use a 15-0-0 ammonium nitrate fertiliser, supplemented with Ca and Mg. This is one of only two times I feel safe using such a readily available form of nitrogen as it is typically a stable period with almost no rain. From May to September we aerify with the knives each month running a different direction and to a depth of 10cm both in the fairways and semi roughs, with high traffic areas receiving extra attention. The vertidrain is then used in the fairways and foregreens in the autumn around the middle of September, when we go down to the interface between root zone and sub grade, which is about 15cm below the surface.

Fertiliser applications are split between using granular products and foliar products. We use a slow release product, 28-3-10 sulphur-coated toward the end of May, with a second 15-0-0 in July, finishing with a 10-5-25 50% slow release in the beginning of September.

The total amount of nitrogen applied in the season is 2.5 lbs of N per 1000ft². (1.2 Kilo N per 100 sq. metres) this includes the foliar applications of iron sulphate and micronutrients at very low rates spaced 28 days apart.

We use no plant protectants on the fairways and see very little disease activity, other than an occasional spot of red thread.

The fairways are maintained at 15mm and are mown three times a week with two Jacobsen LF128 4WD units returning clippings. Irrigation is kept to a minimum to promote firm fairways and discourage moss, algae, disease and *Poa annua*. In respect to weed management we have moved away from blanket spraying and now spot spray when needed.

Drainage issues are addressed as they occur and due to the extensive drain system installed during construction we don't have to trench too far before being able to tie into and existing run. All additions are added to the drainage maps supplied by the building contractor, continually updating for future reference.

Tees

In the spring we hollow tine the tees using 5/8" tines removing the cores. At this time we also topdress and overseed the tees still using the original blend. This all takes place about two weeks prior to opening. Germination is observed and new seedlings start to fill in voids from left over damage from the previous autumn. Each month from May to August we hollow tine, overseed and topdress the tees. Each Monday, despite two sand boxes being present on each tee, we fill all divots by hand and use a lute to smooth out the damaged areas. The combination of divot filling, aerifying, dressing, and overseeding have preserved conditions, maintaining turf cover and level tee boxes.



Fertility is geared towards promoting strong growth and recovery. The total amount of nitrogen applied to tees between April and October is 3.5lbs of N per 1000 sq. feet. (1.75 kilo N per 100 sq. meters) which includes the foliar applications of iron sulphate, chelated nutrients, and kelp derived products. Low rates at frequent intervals and the use of iron sulphate maintains steady growth, eliminating surges in growth and unnatural flushes of colour while supplying the plant with sufficient nutrients to grow, recover, and resist attack from disease.

Like fairways no plant protectants are used and back pack spot spraying for weeds has only been necessary one time in three years. The tees are monitored closely for irrigation purposes maintaining sufficient moisture in the soil profile to maintain and encourage germination and divot repair. The sprinkler heads all have adjustable arcs and surrounds receive almost no water as the heads are adjusted to cover the teeing surface only. Tee

surrounds are cut with a push type rotary for about one metre wide, with walkways mown out for player access.

Tees are hand mown with 26" Jacobsen 526 mowers at 10mm; all clippings are collected and distributed in the maintained rough in out of play areas. The size of the tees adds up to a total of 6500sq. meters and tee rotation is performed daily. The tees are split into left, middle and right zones and we work each zone on a weekly rotation. This gives each area a clear two-week rest time, at minimum, allowing for recovery from both foot traffic and divots. Verticutting is performed each month during the growing season to remove thatch, horizontally growing shoots and helping with the control weed development.

Greens

Starting with hollow tining in the spring using 5/8" hollow tines the aerification program for greens is quite intense. The aerification programme this last year is outlined below:

April

Hollow Tined using 5/8" hollow tines to a depth of 7.5cm on a 2x2 spacing

May

Hollow Tined using mini tines to depth of 6cm on a 2x2 spacing

June

Solid Tined using 3/8" solid tines to a depth of 7.5cm on a 2x2 spacing

July

Solid Tined using mini tines to depth of 6cm on a 2x2 spacing

August

Hollow Tined using 5/8" hollow tines to a depth of 7.5cm on a 2x2 spacing

September

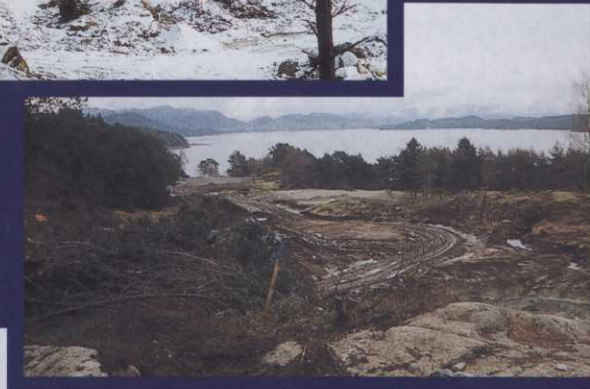
Solid Tined using mini tines to a depth of 6cm on a 2x2 spacing

Fertility applications with granular and foliar products between April and November sees a total application of nitrogen of 4.75lbs N per 1000 sq. feet (2.3 kilo N per 100 sq. meters) No herbicides have been used on greens to this date. Some Take all Patch was observed the first year and its development was held in check by using acidifying fertiliser and iron sulphate. We used an Andersons 13-2-13 ammo-

num sulphate on a three weekly interval split with applications of iron sulphate.

Greens are hand mown six days a week at 3.5mm, there are no weeds, no moss and if you find a poa annua plant you might be considered lucky! Each operator spends 10 minutes before mowing the green fixing ball marks, and handpicking any poa annua trying to establish itself. From the first day we trained all the staff to identify that wonderful little plant even at 3.5mm and we haven't budged from the programme. They mow the same greens each time and know every bump and dip. Pride plays a huge part in the success of adopting this type of practice and competition to have the best set of greens is as strong as I have ever seen in a greens staff. The five staff members who mow greens walk every step of the way, it takes them three hours to mow four greens each, return to the barn, wash up and be ready for the next task.

All have been trained to observe and report on anything amiss, from a



bunker not being raked, identifying a possible irrigation leak and specifically being aware of the quality of cut, not just with their machine but with those of others. Also I find the extra 20 minutes it takes to walk between four greens observing and enjoying the surroundings promotes a higher standard of employee and one who is more apt and able to report back to the senior staff.

Plant protectants were used in the first establishment year when *Fusarium* seemed to be enjoying the presence of all those young seedling plants. The last two years though I have made a total of four applications of Iprodione one each Spring and one each autumn as preventative applications.

The greens are verticut every three weeks after which they are topdressed and brushed. Several greens have severe slopes and scalping was a huge problem when we started to drop the cutting height. To solve this problem we hand dressed the slopes each week and used the lute to work in the dressing. This had the effect over one

summer of softening the severity of the slopes and the areas of scalping slowly shrank in size and are now almost undetectable. The walk mowers are fitted with groomers, however, I have no hard and fast rule about using them. Visual quality more than anything dictates their usage, horizontal growth and perhaps tournament preparation may see more frequent use if green speed becomes an issue.

Flags are moved and we have three sets of aluminium cups that are rotated around, sanded and repainted before being used again. Each day the cup is wiped clean preventing the build up of algae and dirt within the cup. We also use a three-colour flag system to indicate the location of the hole on the green. Red flags indicate the front third of the green, yellow the middle third and white the back.

The greens are monitored closely for irrigation purposes and are typically allowed to dry considerably between deep watering. It often rains before the need for irrigation occurs, with May and August being the two months that

I can truly control soil moisture. I have spent numerous hours defending keeping the greens firm and dry and I know I am not alone on this subject.

Staffing at Meland

Full time staff at Meland consists of the Golf Course Superintendent, Assistant Superintendent, the Equipment Technician and two Greenkeepers.

During the golfing season we bring on additional help starting in April with the addition of one seasonal employee and two Student interns, one from England and one from the United States. In the middle of June the main influx of summer help begin bringing staffing up to 12 for the months of June, July and August. Last year we had 16 people on the payroll but at any one time we only had 12 reporting for work. The scheduling of staff is a task in itself as everyone takes at least one-week vacation, even the seasonal people.

Since writing this piece Kirsten has moved from Norway to take up a position as Centre Director for Open Golf Centres in Bournemouth

Above top: 8th tee, fairway and green, Feb 1998

Above middle: Same hole, June 1998

Above bottom: Completed 8th hole, May 2000

Far left: Double cutting the 5th green, May 2000

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Contracts Manager, Swan Plant Services Ltd.



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BIGGA
ESSAY
COMPETITION

David Roy, of Linlithgow GC, winner of the 2000 BIGGA Essay Competition for Head Greenkeepers/Course Managers, reveals his winning entry

Write stuff?

Managing without chemicals Is it possible and how would I cope?

When asked to consider whether it is possible to manage a golf course without chemicals, my thoughts immediately turned to European legislation and the impending likelihood, that at some stage in the future, there may be very few chemicals with which to combat turf problems. That this often talked about change in attitude has come about at all is due to a recent shift in the way in which European governments view the natural environment and how it is con-

trolled, which is perhaps how the title of this essay came into being.

Ever since the first alchemist attempted to use science to turn lead into gold, man has lived with the notion that nature can be distilled and separated into elements and that these can be used to twist and bend our environment to suit our needs.

Man has seldom, if ever, accepted that the human race should live within the bounds set by mother nature, but

recently there has been enough publicity about the European Community's attitude towards chemicals to suggest that this may be changing.

The golf industry is obviously bound to be affected by any change in pesticide regulations and I, in turn, will be affected, but how will I cope?

Read on...



BIGGA ESSAY COMPETITION

Managing without chemicals

Is it possible and how would I cope?

It must be accepted that a golf course can be cared for and excellent playing surfaces produced without the use of chemicals, but what is required to change for this to happen? I will readily admit to using any pesticides that I consider appropriate to solve a specific turf problem, but is this really necessary? The amount of resources placed at our disposal for the maintenance of a golf course are based on what is available in terms of the pesticides that can be used to save labour; but what if these are to be withdrawn? Are we producing better courses by utilising every available pesticide or are they simply different from those on which the game was first played?

There are probably only a handful of problems associated with the care of a golf course that can be solved most easily by the application of chemicals, but we have become used to the amount of time that this saves. There are very few Greenkeepers who would deny that all of the most common turf problems can be controlled without the use of chemicals and it is probable that the only thing that prevents this from being the case is the golf culture of today. It is the pressure brought to bear on Greenkeepers to save time that drives the use of chemicals to control the common problems associated with the production of fine turf.

I am sure that the skills and knowledge exist to manage turf problems culturally, but are golf clubs prepared to find the necessary extra resources to do this and to continue to present their courses in their current fashion. I am old enough to have experienced highly labour intensive practises on a golf course that are no longer necessary - but where has the time saved gone? Instead of spending weeks mixing, spreading and dragging twenty tons of top dressing by hand we routinely carry out this operation in one day giving us the rest of the week to cut as much grass as is humanly possible.

Without too much trouble, we can pinpoint what was different on the average golf course in Britain twenty years ago. Fairways were cut once per week with trailed gangs, large areas of rough were only cut once per year and bankings or verges rarely saw a scythe. But golf was quick to adopt each new technological advance in grass cutting techniques and fairways are regularly cut twice per week with ride-on mowers, acres of rough are now kept in check with an array of implements and trimmers have shorn unkempt corners in every course.

This attitude towards unquestioningly accepting "progress" has had a great influence on the way that chemicals are used to help create golf tracks that allow two hundred people to speed around in average round times of four hours. The thought of returning to the type of course that abounded fifty years ago with rank roughs, slow fairways and unkempt margins is abhorrent to most golfers used to the manicured motorway golf of the twenty-first century. Many golf clubs have grown to a point that their course has to be set up to accommodate over one thousand members playing golf twelve months of the year, and if the time is coming when chemicals are no longer to be used on fine turf and manual labour is to be used instead, will this type of course continue to be viable?

If the choice between using labour intensive cultural controls for weeds, pests and diseases and using chemical pesticides is taken away from us, what will change and who will find it more difficult to cope? I would like to argue that it would be the modern golfer, rather than the modern Greenkeeper who would find it more difficult to cope and the entire culture of golf management will be forced to make difficult decisions about the type of courses that can be produced without the use of chemicals. In order to explain this more clearly, it is neces-