suitability test looks for those things that will affect plant growth such as sodium, bicarbonates and chlorides. It is important to test the water throughout the year to document the changes that may occur on a seasonal basis.

The second step should be soil sampling. The soil test will ultimately determine the degree of poor water that the turf grass will be able to tolerate. Samples should be taken throughout the golf course and from all greens, tees and fairways.

**What Does It Mean?**

After you receive the results of your water tests, how do you make sense of a page full of chemistry formulas. The components of water quality can be broken down into five main areas.

1. **Salt Concentration** - TDS (Total Dissolved Salts) EC (Electrical Conductivity)
2. **Sodium Hazard** - SAR (Sodium Absorption Ratio), sodium in ppm or meq/l.
3. **Bicarbonate Content** - Adj SAR (Adjusted Sodium Absorption Ratio) and pH Ratio
4. **Toxic Ion Concentration** - In turfgrass the main ones are boron and chlorides.
5. **Water pH** - pH scale is from 0-14 with 7 being neutral. For ideal turfgrass growth pH should be between 6.5 and 8.4.

Several problems may occur to turfgrasses growing in situations where high levels of soil salinity and irrigation with the saline water source are common. These problems are usually not uniform across the site but many occur sporadically. A high level of soil salinity can reduce or delay seed germination and seedling development. On establishing turf the first sign of a salinity effect is a blue-green colour of turf similar to drought. Salinity problems are most often encountered during periods of heat and/or drought stress. This occurs because the demand for water by the turfgrass plants is high at this time. Water availability to the plants is reduced because of the high salt content of the soil solution. High demand by the turfgrass coupled with reduced water availability due to salts causing drought-like conditions. This is compounded by the fact that it is very hard to leach excess salts from soil during periods of high temperatures and limited rainfall.

**What Can I Do?**

Following are some suggestions to help fight a poor irrigation source.

Remember, a solution to the problem may not be found in just one of the suggestions. Your problem may require a combination of several (or all) of the following suggestions.

- **Plant Salt Tolerant Grasses** - Not all grasses perform equally under the same conditions. When selected grasses play close attention to the electric conductivity of the irrigation water.
- **Improve Drainage** - Any additional tools that can be utilized to add aeration, reduce soil compaction and improve percolation may be beneficial in the removal of harmful salt concentrations.
- **Leach Excessive Salt** - Leaching salts through the plant root zone by exceeding the leaching fraction will carry dissolved salts with it through the zone.
- **Acidification of Irrigation Water** - The addition of acidification agents will cause the soil sodium to be more easily leached from the soil profile and neutralise the bicarbonates from the water and soil, freeing up available calcium forming better soil structures and increased water percolation.
- **Additional Soil Amendment** - Careful consideration should be given to the base saturation of exchangeable mentions portion of the soil test. In poor quality water, the reduction of available calcium and magnesium is critical and must be replenished as required.

**Summary**

Use of poor water quality for irrigation of golf courses presents a unique set of advantages and disadvantages.

They potentially affect every decision the greenkeeper must make.

However, despite increased problems, concerns and cost, these impacts are not necessarily unsurmountable. Rather, they present a challenge which demands attention to every agronomic and management detail.

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**THE ONE THING WHICH WOULD MAKE THE JOB SO MUCH EASIER IS**

*"If you received quotes for what you actually asked for"* – Mark Anderson, Newbury Race Course GC

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**ALlevIate WATER-logging BY THE SLOttING mEThOD**

Slot draining is the latest idea for effective draining of fine turf playing surfaces (golf greens, hockey pitches, football pitches etc.). The method by which this is achieved is by the Grasstex Slotter which cuts eight slots at 250mm centres 20mm wide, 170mm deep. The slots cross main drainage pipes set at three metre centres, 400mm deep, 35mm diameter pipe. These then run to collector mains which carries the water to an outfall. The slots are filled with a fine grit to within 40mm of the surface. The mains are also filled to 40mm below surface. The whole area then is top dressed and overseeded.

This system does not displace surface soil but removes soil completely from the slots, thereby not creating compaction.

**Full contracting service carried out by our own tradesmen**

Orders being taken for spring/summer season

**RTC GRASSTEX LTD**

The Mower Depot, Horsham Road, Ellens Green Rudgwick, West Sussex RH12 3AS TEL: 01403 823490
Around the Green

East Midlands
While you are all reading this month's article I shall be sunning myself in the States and playing plenty of golf - hopefully Bindleying to the Americans.

Congratulations to Carl Chamberlain on his appointment as Deputy Head Greenkeeper at Scroopt Golf. I'm sure all members would like to wish Carl all the best in his new position.

Finally congratulations are extended to Gavin Robson for the addition of a baby son to his family. I'm sure all members must have enjoyed this year's BTME. It was nice to see a few more Section members there. It just goes to show that things get BIGGA and better every year.

By the end of this month all members should have received their entry forms for the forthcoming Spring Tournament and the annual singles and pairs K/O competitions. Please try to support your section by entering as many as you possibly can. Also enclosed is this year's fixture card, which has again been kindly sponsored by Amenity Land Services and Scots UK. Any member who has not received their form can give me a ring and I will gladly forward a copy.

Finally this year's Autumn lectures are arranged at Hinckley GC on November 6 followed by the Christmas Tournament on December 12 at Charnwood Forest GC.

Antony Bindley

East of England
I have just returned from BTME at Harrogate and the exhibition seems to be getting better every year.

It is the ideal showcase for the products of the manufacturers and to talk at first hand with product representatives. For myself it was the bumping into so many friends that makes the show. Then there are the seminars, at one of which our East of England Chairman, David Walden, took to the stage with his experiences. I have just returned from BTME at Harrogate and the exhibition seems to be getting better every year.

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There will be a buffet after the lectures, please could members dress appropriately.

The fixture list will be sent to all members ASAP. Ritefeed are sponsoring a new Singles competition open to all members and the entrance sheets will be sent accordingly.

The Committee had a meeting on January 17 where it was decided not to put on a Skittles Evening at the moment as only six members had telephoned me to express their wish to attend.

Finally we welcome the new members for this month. They are as follows: Michael Bryan, Ian Underhill, Roy Gaskin, Graeme Hogg, Michael Wade, Robert Tomlin, Anthony Tysall, Stuart Hall, Colin Wood and Robert Jervis.

Kim Blake

sons. All you have to do is get there.
A team of 16 is required so please forward your name to me if you would like to play on the winning team. Members wishing to play in any of the golf events must book and pay their deposits at least one week before each competition.

Congratulations to Nick Bissett at Askham Bryan College who has recently been promoted to Head of Horticulture.

I would like to convey the Section's best wishes for a speedy recovery to Alan Gamble, our Chairman, who has been ill recently. Look forward to seeing you at the Dinner Dance on March 16, Alan.

Please contact me if you have any news or gossip. Tel: 01782 750539 or 0850 235554.

Bob Lupton

Midland
Here we go again, another season just about to start. After the cold weather and snow, it will be nice to have a bit of good old sunshine.

I spent a very enjoyable and educational week at Harrogate. There were some very good speakers at the National Conference, and I would like to congratulate Dean Cleaver on his becoming the Chairman of the Association. It was good to see a fellow member achieving this position.

On March 29 at 2pm we have the second winter lecture at Telford Golf and Country Club. Arrival time is between 12.30 and 1pm and the bar will be open to welcome you.

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never allowed any change at Temple without prior consultation with a golf course architect among them Henry Cotton, a former professional of Temple GC, Frank Fennick and Donald Steel. It was only natural for us to contact Donald when we had reached this stage of our development.

I rang him not just to talk about architecture but also because he has been Chairman of Green at Denham for many years,” explained Malcolm.

“He came and asked what we wanted to do and we said that we wanted him to review the course generally. We decided to walk round the course and he would ask us on the tee what we thought and he would either agree or not as the case may be.

“Then he did us a report hole-by-hole which is now our long term plan of what we want to achieve.

“The more I talked to Donald the more I came to realise that we had some superb short par fours. We wanted to extend the course where possible, but not if it might be to the detriment of a hole.

Much of the work involved changing the shapes of the greens or, more accurately, returning them to how Willie Park Jnr had designed them in the first place.

“We are trying to return to Willie Park Jnr’s design, and particularly the bunkering, and that is where Donald helped us,” said Martin.

“It’s quite exciting as we are getting quite close to it now. Reshaping the greens have given us an immense variety of new pin placements which some of he members haven’t even seen yet,” added Malcolm.

“A Temple to excellence

“Very few courses reach their true potential because they are prevented by the very people who misguided seek to improve them’

after the first two years that we need comparisons. People would conveniently forget how bad something once was and by showing them the photographs they could actually see the improvement which had been made. I was getting bored with people saying ‘I’m sure that was better before,” said Malcolm.

The album and the monthly report to the Board will give the people who follow Martin and Malcolm a total history of what has gone on at the Club and they way it has developed and provide the continuity which is missing at many golf clubs.

“Very few courses reach their true potential because they are prevented from doing so by the very people who misguided seek to improve them. It is a damming indictment of the golfing population when you consider that many of these people, in the form of committees, are responsible for the day to day running of the nation’s golf courses.

It is hardly surprising that a lot of courses, many of them high profile, are in a state of decline,” said Malcolm.

Martin adds a cautionary note to his colleagues not fortunate enough to have the continuity he enjoys.

“I believe that a lot of Course Managers and Head Greenkeepers are not going to survive this period unless the problems of continuity are solved. People are setting objectives almost on a year to year basis and you can’t survive like that. You need direction which stretches for a period of time.”

“Very few courses reach their true potential because they are prevented by the very people who misguided seek to improve them’

Martin has nothing but praise for his own Board of Management which has backed him to the hilt.

“I have seen a marked increase in my budgets in machinery and labour and we now have a different set of objectives. When I first took over the objective was “To Maintain the Golf Course’ now it is “To Maintain, Improve and Take Forward the Golf Course’ which is a very different concept.”

THE ONE THING WHICH WOULD MAKE THE JOB SO MUCH EASIER IS

“If rabbits had to cross a road to get here”

- Martin Gunn, Temple GC
tem of grass cutting is being heralded as the way forward, but the idea is far from new.

On fairways and sports areas in this country we have been recycling our grass clippings since the first gang mowers were introduced well over a hundred years ago!

There has always been criticism that the rotary mower when used without a collector, leaves the cut grass too long. The over all appearance is unsightly and clippings take a long time to disperse. For over three decades small mulching systems have been available to eliminate this problem, but it is only in the last two years that there has been any significant development. With the mulching principal, grass clippings are retained inside the cutting deck and chopped into fine particles before being blown back into the turf.

Research has shown that there are a number of environmental advantages in using this system. Nitrogen and water contained in the grass are returned to the turf to provide nutrients and moisture. For it to be effective the mown grass has to be left fairly long which is ideal for the rough.

Greenkeepers are beginning to recognise the benefits of out-front rotaries with recycling decks and they can now be found in an increasing number of courses.

When walking round BTME this year the visitor could not fail to see the wide range of grass mowing equipment that is available. In fact, today's Course Managers and greenkeepers are spoilt for choice. Interestingly, a closer inspection often reveals that most machines have the same engine, hydraulic system and general layout. The only difference between these is all those extra features, so its worth finding out exactly what these are before making a final decision. With ride-on mower technology advancing a cracking pace you are likely to discover additions that will make your job easier and produce the high standards of finish you are now being asked to attain. Time spent thoroughly investigating just what is now being offered will put you at the forefront of today's technology and pay dividends in the long run.

Satisfied Customers:

"Every forward thinking Golf Club should have a Juno in their workshop, a truly excellent machine."
Mr. Mark Jones, Head Greenkeeper, Preston Golf Club.

"Hunter's relief grinding is far superior to anything I have ever seen, each blade cuts true, the savings are substantial and the cost is minimal."
Mr. Roger Shaw, Course Manager, Rendi Hall Golf & CC, Co Durham.

"Our sole plate/bottom blades are now lasting between 2-3 times longer than when we were spin grinding."
Mr. Philip Ballock, Head Greenkeeper, The Royal Purfleet Golf Club, County Antrim.

"It is the best piece of machinery this course has ever invested in, a fine machine that I would recommend to anyone."
Mr. John Bashford, Head Greenkeeper of the Green Hotel Golf Course, The Kinross Estate.

"A quality machine that gives a superb finish to our cylinders, and saves money."
Mr. Derek Green, Head Greenkeeper at Royal Liverpool Golf Club.

YES! All these clubs are breathing a big sigh of 'Relief' – let us tell you why!

With our unique and accurate 'Relief angle' grinding method which:  
- Reduces contact between cylinder and bedknife (blades can last up to four times longer)  
- Reduces drag which means less friction, less fuel, less problems, less maintenance  
- Makes cutting units easier to 'let'  
- Blades cut cleaner and stay sharp longer.

But the biggest 'relief' is cutting service costs, reducing downtime and improving standards.

Jupiter. 42" capacity Mower Cylinder and Bottom Blade Grinding Machine. A truly precision grinder, built to last a whole lifetime. Used and preferred by Professionals.

Juno 36" Will accommodate every make and type of professional cutting cylinder and bedknife. Can 'in-situ' grind many greensnower reels. Water cooled (eliminates dust and heat), simple and fast to use, accurate 'relief angle' grinder.
I became interested in greenkeeping late in life — I was serving Queen and country at the time but I became so interested that I used to work part-time to learn as much as I could. Being an Associate Member of BIGGA at that time I read in Greenkeeper International that education was the way forward for greenkeepers so prior to leaving the Armed Forces I took and passed City and Guilds Phase 2 Greenkeeping and Sports Turf Management plus PAl and PA2A to go with the experience and knowledge I had gained.

On returning to “Civvy Street” I worked as an Assistant Greenkeeper at a golf club for almost two years and, despite several requests was never given proper written terms and conditions of employment. The golf club ran into financial difficulties and had to be sold, and, as I understand it, all greenstaff had to be made redundant before buyers would complete the purchase. Course Maintenance was then contracted to be sold, and, as I understand it, all greenstaff had to be made redundant before buyers would complete the purchase. Course Maintenance was then contracted

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