



Gear-driven pop up sprinklers at Myerscough College. Picture: John Hacker.

GOLF COURSE IRRIGATION

IS your irrigation system in danger of running out of water at critical periods during the summer? Are you using or indeed wasting valuable water reserves? Sensible economies can help before the possibility occurs of being faced with an embarrassing shortage.

Take action now if you are concerned about this dry spell and the possible implications for your course if it continues. Consider carefully which parts of the course can manage with limited or no irrigation if needs be, and, more importantly, consider which parts of the course such as tees, approaches and greens which are paramount and need irrigating.

Do you really need to irrigate aprons?

Make a simple two column list, of those areas needing and not needing irrigation. Take the decisions now before you are forced into taking even more drastic ones. Then concentrate on those you have placed in the column needing irrigation and stick to the plan until supplies are plentiful.

It is better to use a limited supply to properly irrigate the main areas rather than take the risk of reducing the application across the whole course hoping restrictions in supply will not materialise. Can you be sure what will happen in a few weeks time?

Those courses fitted with adjustable arc sprinklers such as the Rainbird Pop-Ups, may be best advised to adjust them now to a reduced arc to save

water! Do remember of course that a reduced watering arc will also require reduced station timing accordingly to maintain the application rate per cycle to that required. If you do not adjust the station timing you will or may be applying too much water per cycle and will be wasting it.

Your local Wright Rain/Cameron branch or your installer will be pleased to provide assistance and guidance on this problem.

Actions now may well ensure a full season irrigation and consistent playing areas rather than drought scorched playing surfaces.

GOLF COURSE IRRIGATION

John Hacker, Senior Lecturer, Lancashire College of Agriculture and Horticulture and

Mike Harbridge, Consultant Agronomist, Professional Sportsturf Design (NW) Ltd.

PERHAPS the last thing you will be thinking about at this time of year is your irrigation needs for the summer. However, after last summer's drought, there may be more than one Greenkeeper wondering what might have been if only their course had automatic irrigation.

For some reason, irrigation on golf courses has become a contentious issue. This to me is rather surprising in a country where for much of the year it literally chucks it down. I have yet to hear of someone advising Greenkeepers to rush out and cover a green during a

rainstorm in the hope that, by reducing moisture levels, thatch will be prevented from building up.

Yet great emphasis is often placed on precise water application and overapplying, even the smallest amount, is supposedly going to do untold damage. Why then is there so much controversy about irrigation in a country where many areas, especially in the North and West, rarely need to apply water for longer than one month out of twelve.

The answer probably is that there has been little or no real research on golf course irrigation in the UK and much of the information given is based on personal preferences.

So before the mowing rush of summer starts, why don't we have a closer look at some of the aspects which affect irrigation needs in this country. Mike Harbridge and I will take a look at water and soils, water and grass growth and estimating water needs.

PART 1: WATER AND SOILS

Water -

Where does it come from?

Water is to be found all around us; in the air as water

vapour, in the soil, below the soil in the mother rock and, of course, in the rivers, lakes and oceans of the world. As most would expect, 97% of all water on the Earth is to be found in the oceans and of the remaining 3% to be found in or on continents, three quarters of it is frozen in ice sheets and glaciers. Only 0.4% of continental water exists in lakes, rivers and soil, so, however wet your golf course is, it contains only a tiny proportion of the world's water.

Due to the heating of the sun, water is moved through these various areas. Evaporation from ground water and transpiration from plants collectively known as evapotranspiration, leads to water vapour rising from the land and oceans before being returned by rainfall (precipitation). This cyclic movement of water is known as the Hydrological Cycle.

These natural water movements not only allow water to be moved from valleys and water bodies to the high ground, but also perform important functions, such as cooling, for the plant. The water

Cont. on Page 12

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IRRIGATION

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available to the grass plant is constantly changing with moisture inputs coming from precipitation from the air and capillary flow from the soil.

In drought conditions this is often supplemented by water from irrigation systems. Moisture losses from golf courses occur via evapotranspiration, drainage and surface runoff.

Reducing water losses

Water loss via drainage can be minimised by constructing greens with water retaining features such as a capillary break (U.S.G.A. green) or an impermeable membrane below the rootzone (Cell System green). Surface runoff from greens can also be reduced by having a sandy rootzone with a high infiltration rate.

This enables the water to go through the green and into the drainage pipes beneath making it available to the grass roots as it passes through. Runoff will also be reduced if thatch levels are kept to a minimum.

The rate and amount of

evapotranspiration however, is determined by a number of factors some of which are beyond the Greenkeepers control. These factors include:

- Relative Humidity
- Temperature
- Wind Speed
- Amount of Sunshine
- Soil Moisture Tension

Therefore, evapotranspiration rates are highest on hot, windy, bright days on soils which have sufficient available water and lowest on cool, dull, still days on dry soils.

Water –

Why do plants need it?

Millions of years ago life began in a water habitat and since that time both have been inextricably bound together. Active plant protoplasm contains 85-90% water and water is essential for photosynthesis, the means by which plants produce food and grow.

Water is also necessary for the formation, solution, and transportation of many substances including plant nutrients and sugars. It is also the medium in which all cellular reactions occur. So by now you will have got the vital point – take away water and you take away life.

Where do plants get water from?

Some plants, living in the humid tropical rainforests are able to absorb moisture through their leaves and stems. However, most plant leaves and stems are coated with substances which prevent this because the biggest problem is usually water loss in most climates.

Plants regulate water loss through holes in the leaves called stomates which are opened and closed by various stimuli. For most plants though, the majority of water used is taken up from the soil through their roots.

So the soil is very important in holding water for the grass plant to use. Water is held on the surface of soil particles by surface tension and in vapour form in the soil pores (voids) between them. After rainfall or irrigation the soil pores (voids) will become full of water for a time and the soil will be fully saturated. As gravity moves the excess water downwards, the soil will be left at 'field capacity' – that being the maximum amount of water it

PC CONTROLLED COMMAND SATELLITE SYSTEM

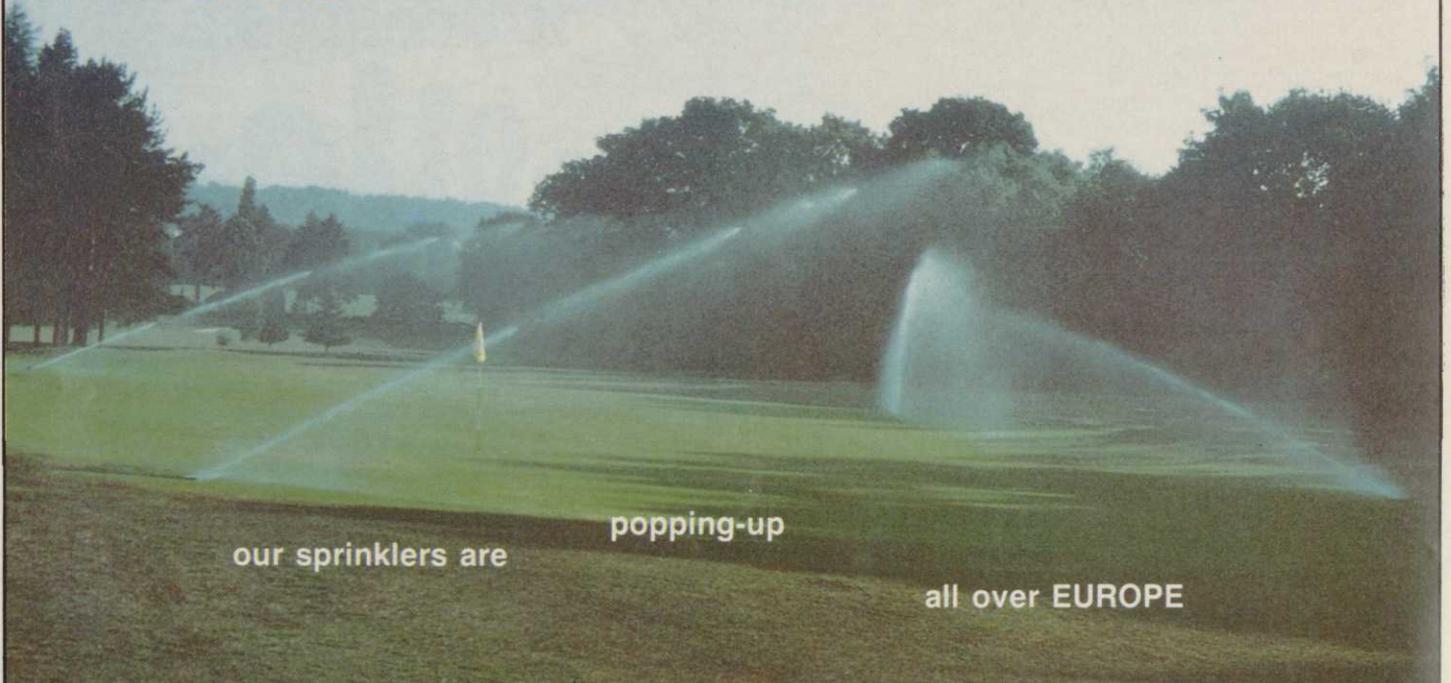
WATERMATION have always been known for their innovation in irrigation equipment. They brought to the market the revolutionary two wire controller, TW2, some 12 years ago and this has subsequently been used in hundreds of locations throughout Britain and Europe.

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can hold against gravity. Once all gravitational water has drained the plant has to actively remove water from the soil.

This the plant can do until the surface tension force holding the water on the soil becomes greater than the force the root can exert to remove the water.

Water which can be used by the plant in this way is known as 'available water' while that left on the soil particle which is not able to be used by the plant is known as 'unavailable' water.

Plants can make use of free water as it drains away or 'available water' in the soil. The amount of available soil water will vary depending on soil texture with clay containing approximately 14% available water, very fine sandy loam 23% and coarse sand only 8%. This is because the smaller the soil particles the greater the surface area on which water can be held.

Clays have very small particles (less than 0.002mm) while sands have much larger particles (0.063 - 1mm). It would seem then that clays



The authors - John Hacker, left, and Mike Harbridge.

should hold the greatest amount of water and they generally do, but much of it is unavailable because of surface tension. So the largest amounts of 'available water' are generally found in sandy loam soils.

So a heavy clay loam green will hold a lot of water although

much of it will not be available to the grass plant. However, because of heavy use and soil type, the soil may be quite compact and much of the rain or irrigation water may run off the surface rather than go into the soil. Sand greens, on the other hand, will naturally retain much less water than clay

loams but the water which is applied will, unless there is excessive thatch, generally enter the rootzone and be available for plant growth.

This is why green constructions based on sand usually have irrigation and incorporate some form of water retaining measure such as a perched water table or plastic barrier to prevent the water from quickly draining away. For although sand based greens drain quickly in wet conditions they can quickly drought out during dry spells.

- The Lancashire College of Agriculture and Horticulture offers courses in Greenkeeping and Turf Management at all levels including a full time BTEC National Diploma in Turf Science and Sportsground Management.
- Professional Sportsturf Design (NW) Ltd provides a specialist Consulting Agency Service for golf courses and other sports area.

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FURTHER READING ON IRRIGATION

- Turf Management for Golf Courses: James B. Beard, 1982. Burgess.
- Turfgrass Management: A. J. Turgeon, 1980. Reston.
- Turf Managers Handbook: W. H. Daniel and R. P. Freeborg, 1979. Harvest.
- Turfgrass - Science and Culture: James B. Beard, 1973. Prentice-Hall.
- Turfgrass Science (Agronomy No. 14) Chapter 6: A. W. Marsh, Ed. A. A. Hanson and F. V. Juska, 1969. American Society of Agronomy.
- Irrigation: MAFF Reference Book 138, 1982.
- Water for Irrigation: MAFF Reference Book 202, 1982.
- Water - The Fountain of Opportunity: H. G. Deming, 1975. Oxford University Press.
- The Atlas of Long Term Irrigation Needs for England and Wales: W. H. Hogg, 1967.
- The Agricultural Climate of England and Wales: MAFF Reference Book 435, 1976.
- Irrigation - Design and Practice: Bruce Withers and Stanley Vipond, 1974. Batsford.
- Irrigation - Its Profitable Use for Agricultural and Horticultural Crops: Sylvia Laverton, 1964. Oxford University Press.

IRRIGATION, TIME TO RE-THINK?

DEMAND for golf course watering systems in this country has never been greater than it is today. One obvious reason behind this statement is the dramatic change which we have experienced with our weather patterns.

The long dry months of 1989 plus a lack of consistent rainfall so far this year have served to compound a situation where, suddenly, it seems that every other golf club in the length and breadth of the land has identified the need for automatic watering.

This is causing problems. There are just not enough skilled irrigation engineers around to cope with the tremendous upsurge in demand.

The reason for this revolves around the basic economics of running a business. Most irrigation companies have, over the years, structured their staffing levels to deal with the average needs as dictated to them by the golf market.

"We cannot find additional engineers by simply snapping our fingers - it takes time to

train people properly" says one leading irrigation distributor.

Herein lies the crux of the matter. Irrigation systems we know them today have been available in this country for ten to fifteen years but with exceptions, a large number of clubs have not really given the subject enough thought. Nor have they anticipated the growth of the game or the wear and tear brought about by the big increase in traffic.

Past experience shows that green committees have tended to place their priorities in other directions. Extending or rebuilding the clubhouse enlarging car parking facilities or even re-shaping courses are typical examples of why the purchase of an irrigation system has been shelved . . .

All of this is understandable but it does underwrite the notion that keeping a golf course in good condition is just a question of cutting the grass and fertilising the greens.

Similarly, clubs with enough foresight to actually purchase an irrigation system have quite often put their investment at risk by not ensuring that their system was maintained properly. Unlike cars, which we accept require servicing at pre-determined intervals, irrigation systems are expected to work efficiently at the press of a button - in spite of being neglected!

Now as our weather continues to charge it seems apposite to suggest that golf clubs will have, of necessity, to re-think their priorities relating to automatic watering.

First and foremost, an irrigation system should be quantified as an insurance against the advent of dry weather.

Secondly but equally important, an irrigation system should be considered as an indispensable tool providing greenkeepers and greenkeeping staff with a vitally important element essential to their task of maintaining a course in good condition.

Given that these recommendations are taken up it is also pertinent to suggest that one member of a club's greenkeeping team be given the specific job of looking after the system and dealing with relatively simple cases of problem solving.

This has already happened at The Belfry and at the Monte Carlo Golf Club where irrigation is given high profile.

In both cases, day to day maintenance is looked after in-house but when major assistance is required, the ap-

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Q A YORK, PARKER & MARTIN

GOLF COURSE OR LANDSCAPE

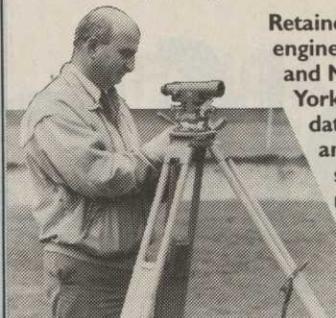
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appropriate distributor/installer is called in to add his weight and experience to resolve the situation.

This type of end user involvement is becoming more important as sophisticated irrigation equipment like the high tech, computerised Toro Network 8000 – which calculated ET rates every 24 hours and virtually eliminates over or under watering – now being installed at Wentworth, is introduced into the greenkeepers working life.

Training for greenkeeping staff is usually provided when a system is first installed on a golf course but this needs to be broadened by further education.

The British Turf and Landscape Irrigation Association help in this respect by running courses and so too, do Toro distributors, Turf Irrigation Services of Sandbach, who have recently completed yet another round of bi-annual, one-day irrigation maintenance 'teach-ins' aimed exclusively at those responsible for operating automatic watering systems.

Perhaps this is food for thought for all of us but mean-



Clay soil . . . holds a lot of water and cracks when dry. Photo: John Hacker.

while, don't beat your irrigation supplier over the head because your club's greens are un-seasonally fast. The fact that the greens committee have suddenly voted money for irrigation is irrelevant, it should have happened last year or the year before that...

CEDRIC JOHNS

NORTH STAFFS IRRIGATION COMPANY

NORTH Staffs Irrigation Company is a founder member of the British Turf Irrigation Association and as such has a wealth of experience and knowledge about the industry.

A family run business of

father and two sons, the other members of the team are chosen with care to ensure high class workmanship and a real sense of a job well done which has always been the watchword of the company.

Over recent years many changes have occurred in the irrigation industry such as the introduction of the two wire control system as opposed to the earlier multi-wire arrangement. More golf clubs now opt for tee watering and many require additional water holding capacity for their courses. North Staffs Irrigation has worked hard to keep abreast of these changes and is able to offer a package incorporating all the most modern equipment to irrigate a complete golf course automatically. The company is also happy to deal with any one aspect of a watering system and indeed the engineers are often called upon to advise a Club about a water pumping problem or the inclusion of automatic control for tee watering etc.

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With the advent of the newer equipment coming into use greens staff are finding themselves with systems that are harder to look after, this means that maintenance becomes a time consuming job, the need therefore is for better back-up from the experts in assisting clubs to keep their systems in operation.

available - will continue its rapid growth to a position of dominance in the market.

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AFTER nearly ten years in the business Par 4 Irrigation Systems Service have outgrown their premises at Ash Industrial Estate. Mrs Linda Simms said the move is due to the company's expansion.

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