Irrigation

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 scarred playing surfaces.

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 area. 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...but it creates a splash of colour!

Golf Course irrigation from: CAMERON

A division of Wright Rain Ltd. Ringwood, Hampshire, BH24 1PA

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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 Greenkeeper's 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 can hold.

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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. Now at East Sussex National they have introduced their advanced PC Computer Controlled Satellite system. This system combines the advantages of simple electromagnetic satellite units with a central computer programme. The computer takes over in automatic mode all the timings of the various stations and schedules their operation so that the correct hydraulic loadings. At the same time it can be set to monitor the pumping station, both electrically and hydraulically and to schedule total water usage to suit prevailing weather conditions.

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Watermation Ltd., Monument Way E, Woking, Surrey GU21 5LY. Tel: (0483) 770303. Fax: (0483) 755082 Offices also at Stirling: (0786) 70252, Dublin (0001) 789501, Paris (1) 47 06 04 19, Germany (2853) 5202
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 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 retarding 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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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 underline 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 change it seems inappropriate 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 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 appointment is to a professional irrigation consultant.

For further details, talk to York, Parker & Martin today. Phone, fax or write for an appointment.

York, Parker and Martin form what is probably Europe's most knowledgeable and experienced team of independent irrigation designers.

Their business is that of helping intending golf course and landscape irrigation system purchasers to obtain the most cost effective and efficient system to a budget, a system which is installed professionally - under supervision - and one which provides the most satisfying long term service...

York, Parker & Martin

Retained as design consultant engineers by U.K., U.S.A., European and Middle Eastern customers, York, Parker & Martin are leading irrigation system purchasers to obtain the most cost effective and efficient system to a budget, a system which is installed professionally - under supervision - and one which provides the most satisfying long term service...

Tailored to your needs, an automatic irrigation system can represent a considerable investment - with the professional assistance of York, Parker & Martin.

Remember, they are not in business to sell you or your organisation an irrigation system but simply to ensure the design, installation and long term results are the best you can possibly achieve for your money...
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-

Goof course irrigation?

CHOOSE THE SOUTH's SPECIALISTS...

Yes, if your club is considering up-dating or extending its present irrigation system or you are thinking of investing in this important "Greenkeeper's Aid", have a word with ISS. Established for over a decade, ISS have years of experience of golf course irrigation systems design, installation and maintenance – this experience is yours for the asking. ISS will gladly visit your course for a chat – phone or write to them now!

NORTH STAFFS IRRIGATION COMPANY

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.

In short, a family company without vast overheads but with a hand picked team of qualified engineers.

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CAPPERS CAPPERS P-C was formed as a result of a merger between Capper Plastics and the distribution companies of Plastic Constructions, including Industriplas, Stenglas and Plastic Fittings. They are now the largest specialist distributors of thermoplastic pipework products in the UK. Capper P-C offer comprehensive stocks of an extensive range of thermoplastic pipework products, both pressure and non-pressure, for general industry and the building and construction trades. Stocks are available in depth at all of their strategically located branches. Assessed quality stockist status is expected shortly.

Service starts with people. The staff at Capper P-C are well trained and motivated to respond to the needs of today's business imperatives. Modern computer systems at every branch mean instant response to all enquiries.

Capper P-C are authorised distributors for the leading British manufacturers of thermoplastic pipes, valves and fittings. In addition, certain products not economically manufactured in the UK are imported from other EC countries. Products handled cover all the commonly used materials such as uPVC, ABS, PP, MDPE, cPVC and PVDF and are offered to all the generally recognised international standards.

The sales people are familiar with all the materials in everyday use and can offer technical advice about material selection and installation problems based on long experience.

MAYFIVE TRENCHERS MAYFIVE Limited, the Whitchurch, Shropshire based supplier of the most comprehensive range of trenching and associated equipment and spares, can offer unmatched experience and advice to the water and allied industries and services.

The ever increasing use of polyethylene pipe for water services, bought about because of the speed and simplicity with which it can be laid directly into the trench, means that Mayfive chain trenchers are ideal for use by contractors and water authorities.

The Mayfive range of pedestrian, ride-on and track mounted trenchers rated from 12-750 hp, include units suitable for the vast majority of water and other utility installations.

Mayfive has also moved from Deeside to extensive new facilities at Whitchurch, Shropshire. Major investment in new product development together with an unmatched reputation for experience, quality and service will ensure that Mayfive - with the widest range of trenching equipment and spares available - will continue its rapid growth to a position of dominance in the market.

The Mayfive range of pedestrian, ride-on and track mounted trenchers is complimented by a spares facility providing the finest quality replacement parts for all models in current use including Barber-Greene and Cleveland equipment and also now including rotary carbide picks for all trenchers and cold planing machines.

PAR 4 Irrigation System Service

For the installation, maintenance and repair of irrigation systems on golf courses, bowling greens, tennis courts and any playing areas, farms and garden sites.

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