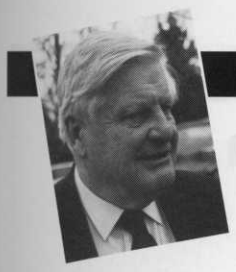

Straight talking JIM ARTHUR considers automatic irrigation

Let the grass tell you what you want to know

Already many water authorities are warning of severe restriction in water usage this year following yet another long period of unusually light rainfall. Agronomist Jim Arthur offers some sound advice on automatic irrigation and on using the 'human' computer to good effect

Greenkeeping is the bane of technocrats' lives, because it is not, and never can be, an exact science. It does not lend itself to being governed by arbitrary standards (shades of DIN numbers, for those who have ever had anything to do with building courses in Germany), partly because there are no universally accepted standards of perfection – they vary not only with the type of course, be it links or heathland, parkland or frankly meadow, but even between courses in each category. If standards are set they must be maintained and checked. How, for example, can you possibly set a standard of perfection for putting surfaces, which is not only an emotive assessment, depending on whether one's eye is 'in' or not, but which is so often affected even in the very short term by weather and other non-controllable factors. Stimpmeters have minimal credibility except to compare speeds of greens at a set time or the same green at different times. All too easily they can become a rod for greenkeepers' backs – with demands that they achieve greens of set speeds.

I have maintained for over 40 years that chemical (*not* physical) soil analyses mean nothing and are of no help to any reasonably efficient greenkeeper, whatever his age or experience. Why spend fortunes to accurately determine, say, phosphate levels to the umpteenth decimal place, when it has been known for nearly 90 years that we do not need anything other than bare minimal levels to support finer turf grasses. What do you do if you find you have phosphate levels well over 300 p.p.m. when you know you can grow the best fine turf grasses at levels far *below* 30 p.p.m.? The ideal ➡

'Overwatering is the cardinal sin of greenkeeping'

pH (level of soil acidity) is the one you have got!

It is by the same argument that erudite papers trying to set levels for golf course irrigation by using obscure and largely academic standards, based on data from agricultural sources, serve very little purpose. Even in the States, much of the abstruse calculations on how much water to apply relate to sand-only greens where there is effectively a 100% drainage rate, which eliminates one imponderable factor applicable in all other applications.

In the end, as such papers admit, the *decision* must be made by the man in charge ie. the head greenkeeper, who may be guided by some aids but who relies on the best of all computers – which lies between the ears of most of the species Homo sapiens! Moisture meters will never tell us how much to apply, but they can be very useful in giving a relative (ie. comparative) measure of soil moisture content at varying levels with a more representative sample of checking profiles when changing holes. It is no good waiting until the 'shine' on fine turf indicates severe stressing due to heat and drought. By then it is too late; but if it has occurred then we must break the rules and water heavily and aerate deeply to restore the root zone moisture.

There can be little fundamental disagreement with various statements on irrigation, such as:-

- start late in the season, as cold wet greens start growth much less quickly when the weather improves than dry ones. Late means May rather than April, which is a winter month in the UK.
- finish as early as possible to go into winter with dry greens, even if this means accepting the problem of a late drought!
- the main problems in the UK and Europe are of poor drainage and over-watering, not of drought.
- the soil moisture level must be maintained as uniformly as possible. Soaking surface soils with bone dry conditions below is asking for *Poa annua* and thatch to take over. In other words, never let greens dry out completely, but never saturate them. Again easier said than done, but intensive *deep* aeration helps.
- "Overwatering is the cardinal sin of greenkeeping" (Al Radko's immortal words!)
- water should never be used to make greens soft and holding.
- water is simply used to keep grass alive, not to make it green or even to make it grow.

What would be far more useful than trying to work out the theoretical calculations based on general (and therefore non-specific to each individual course and thus relatively useless) criteria – which frankly are not understood or believed by the majority (including me!) and cannot easily be measured – would be to agree methods of getting the best out of pop-ups.

One of the worst heresies to emerge from a northern seat of 'learning' a decade ago was their advice to thoroughly soak greens (with pop-ups) once a week and then let them dry out before watering again. This most emphatically is not only wrong but demonstrably impractical. Suppose a normal irrigation time in drought is 10 minutes per green nightly. To apply this quantity once a week means 70 minutes per green – or for 19 greens an irrigation cycle of 11 hours – and this is not counting the tees and approaches. Clearly the problem would be when to find time to let the members play. So these bright lads suggested watering six greens one night, six greens two nights later, and the last six at the end of the week. How does one play a course with six rock-hard greens, six soggy bogs and six in between? All this is a relic from the days of hose and sprinkler watering in day-time, not principles but expediency.

Not only is such a system impractical, but this is the best way I know of losing the capillary connection between deep root zones and the surface – and then it is the devil's own job to restore it, even with the aid of wetting agents. Any practical horticulturist let alone greenkeeper will know that frequent light showers at night are better for plants than infrequent torrential thunderstorms or cloud-bursts.

Of course, there can be no arbitrary rule covering all eventualities, but the general principle is that with pop-ups one waters to the minimum level needed by the *wetter* areas – say up to 2,000 litres per 600 square meter green (perhaps a different duration for different greens, shaded or exposed to the wind, as the case may be) *every* night in drought. This, I accept, leaves dry areas too dry, so what can we do?

'It is well to remember that water is not only predictably going to be scarce, it is also going to be much more expensive'

If the dry areas are dry because they are missed by the pop-ups in a poorly designed old system, then increased irrigation time will only make the rest of the green too wet while the dry areas stay dry. Clearly the answer must be to hand water with an open hose, especially on raised areas, with penetration aided by using wetting agents if need be and backed by intensive aeration. The best designed pop-up system at it most efficient can only apply water uniformly – and yet we do not want *uniform* coverage on featured greens, with different areas having different demands. Hopefully, we shall no longer hear members criticising head men for hand watering "when we have spent so much money in giving him an automatic system"!

Clearly, daily inspection is needed to check coverage – even of malfunctioning heads, but more usually wind-effect and run off on slopes. Moisture meters can confirm what the eye suspects, but none will tell you how much to apply. "If in doubt, don't" is still a very good rule. We should perhaps take our cue from weather forecasters, now being urged *not* to bemoan rainfall. We must learnt not to be frightened of drought – remembering that with skilled, experienced greenkeeping and a strong nerve, it can be used to get rid of a deal of rubbish!

Sadly, while bent and especially fescue will never be killed by drought alone, there is very little margin between checking and killing *Poa annua* and beginners have often been over-enthusiastic in their crusade against *Poa annua,* ending up with crisp dead grass and suffering accordingly.

Finally, it is well to remember that water is not only predictably going to be scarce but it is also going to be much more expensive. Claimants who insist that only the installation of fairway watering can give a better (and better quality) cover on thin fairways on sandy soils fail to understand that we play golf on turf *not* colour, and our native grasses bleach but never die in even severe droughts, though I accept that today's intensive traffic may put it under severe stress. Fairway watering over-generously used can severely cut back on the run of the ball, which matters more here where we play golf on the ground, compared with the States where it is played largely in the air.

The answer is to aerate intensively and to top-dress generously with humus-rich, moisture retaining materials such as fen peat, a policy used for 25 years on all the championship links with great success.

If there is insufficient water – or, worst still, a ban on its use is imposed – then turf which has adapted to a high watering routine will suffer severely. Impounding over the winter sounds an ideal way and is blessed by the National Rivers Authority, but if such impounding lakes double as water features in play, then as they are exhausted the effect of playing over a muddy, weed infested hollow is not brilliant. If we concentrate on greens and tees and *especially independently* on approaches, we can forget fairways in almost every case.

All in all, irrigation is not capable of being controlled by the book and there is no substitute for an experienced eye to suggest how much and when to irrigate. Skilled water management is the key factor in greenkeeping. Anticipation, as in all greenkeeping, is the secret and this can only come with experience. In its absence, it is better to under-water than over-water, but the grass will tell you what you want to know if you only have eyes to see.