



Arsenal Training Ground – A Profile

“A tool like the Rain Bird Controller is as valuable to me as the players are to the Club!”

Steve Braddock, Head Groundsman
Arsenal Training Grounds



RAIN  BIRD®

Using new technology to achieve the ideal irrigation



Steve Braddock, Arsenal's Head Groundsman

Arsenal's training grounds comprise ten full scale football pitches, each of which has to provide the ideal balance of grass cover and softness so that some of the highest value players in the world can practice hard without risk of injury.

Steve Braddock (inset, above) is the Head Groundsman who, with his team of 11 other ground staff, has the ultimate responsibility of delivering and keeping those pitches in top condition. The typical overnight watering requirement during the main playing season is 5mm, and the pitch surface should feel firm to walk on but soft to the touch or foot. Each pitch is used extensively for two weeks, then rested and nurtured for a month. The First team

has three pitches dedicated to their sole use; the Reserves and Youths teams have the other six pitches, again, using each one for two weeks and then a month to recover to peak condition. The other pitch is used extensively for Academy and Reserves matches, as well as 'behind closed doors' matches.

When you add in the fact that each pitch is completely renovated by removing all the existing foliage every year between March and July, so that every pitch's top surface is effectively renewed – and with the first ready to be used by July – you start to realise that Steve's responsibilities and challenges go a long way beyond those of most groundsman.

Rain Bird's Controller – achieving a difficult balance

The watering requirement for the fourteen hectare playing area is upwards of a million litres every night in summer, but the mains water supply is limited. The training ground has a holding tank, but this is of insufficient capacity to meet the normal requirements of the system, so Steve has a particularly complex balancing act to achieve. That's where the Rain Bird technology really plays its part.

Controlling the amount of water that each of the 200 sprinkler heads delivers, the length of time each is operating, and which ones are working together in what sort of pattern, can only be done by using Rain Bird's Site Control software. Steve also has the Freedom radio remote control system, which gets used extensively to relay irrigation commands from the sharp end of the irrigation system to the office-based PC control system.

Each pitch has a similar sprinkler layout comprised of Rain Bird impact and valve-in-head rotors. Each of the valve-in-head rotors are installed with artificial covers to which Steve has added extra sand, soil and seed to ensure as complete a grass cover as possible, so that players are training on 100% natural grass. The 200 sprinklers are laid out along the following lines:

- six in the playing surfaces
- three down each touch line (ie. six in total)
- four at the corners
- and two along the goal lines,

so there are all sorts of different permutations and irrigation programmes that Steve has been able to develop and set up, using his Rain Bird Control system. He's written 53 so far, including a special one for the time when the England squad come to train at Arsenal's ground.

Lots of different variables to take into account

The variables are largely to do with the condition of the pitch, the time of year, the temperature and weather, and although nowhere near sufficient for the amount that Steve needs, the available rainfall. Steve needs to control the amount, so that when required, a pitch that's growing in can get a light spray, whereas one in full growth can get a much heavier watering, especially in the summer.

Wind is another factor that has to be allowed for; the training ground is relatively open and unprotected by a stadium, so even a 10mph wind can make a huge difference to the area that actually gets watered, compared to the area on the windward side of a sprinkler head that gets far less. The average wind speed across the site is 20 mph.



The Rain Bird system in detail

Let's look in more detail at the operation of the system. Steve's guided almost completely by the ground condition, rather than what the grass needs. The ideal condition is the stadium pitch condition; the players and their coaches are his 'customers', and each coach will be quick to tell Steve if the ground is too hard or simply not moist enough. He also has a Rain Gauge that's set to shut off irrigation if more than 3mm of rainfall should fall when the system is running.

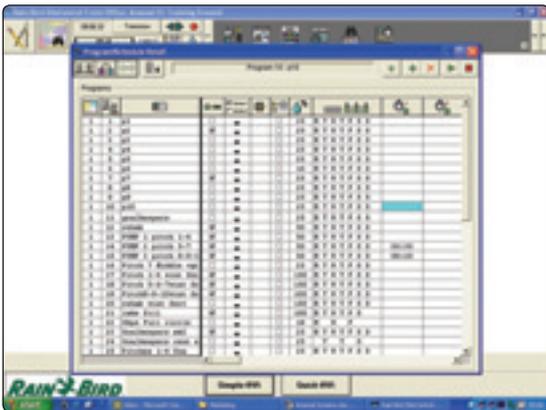
Using the Controller

What sort of difference has the Rain Bird Controller made to Steve? "I used to be a pen and paper man, and don't regard myself as a natural when it comes to computers! But while the potential complexity of the system blew me away to begin with, I could see the advantages and started to settle down, growing in familiarity with each day that I was using the Controller."

Irrigation programmes

So what are the irrigation programmes for an Arsenal training pitch? The following are standard set ups:

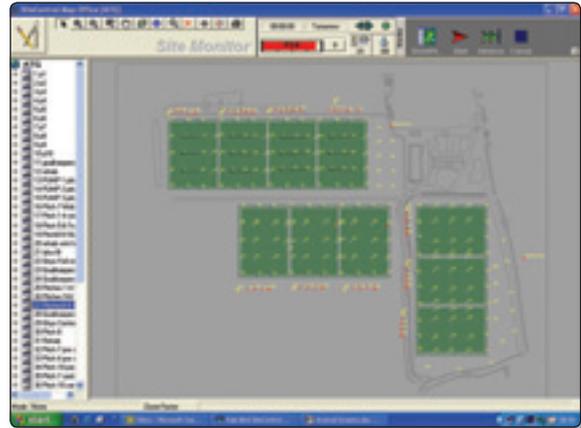
- Centre sprinkler only – one programme
- Corner sprinklers only – one programme
- Touch line sprinklers only – one programme
- Goal line sprinklers only – one programme
- Renovation watering, with variable programmes for different sprinklers set to operate at different times, eg. 18 minutes at 50% or 9 minutes at 25%
- Pre-season watering for the period before the start of the football season
- Fertiliser watering, ie. very light amounts to help the fertiliser to soak down into the roots.
- And any combination of the above!



The PC is linked through a decoder interface by a cable path to the decoders controlling the sprinklers. Each Rain Bird valve-in-head sprinkler can be controlled individually. These sprinklers are used for the First Team pitches, running throughout the centre of each pitch with the turf covers making them virtually invisible when not in use.

On the office PC screen, the main screen for everyday usage shows a grid with each pitch and sprinklers, to show the precise water usage settings. A series of columns arranged across the grid show:

- if a programme's on or off
- up to 5 different priorities, should different programmes be running for different pitches; so eg. the First Team's pitch may get priority for the first watering of the day, because they're arriving at 10am
- weather station inputs
- percentage adjustments, so that Steve can set sprinklers to run from 0 to 300% operating capacity
- which day of the week something is set to run
- and multi start times



There is also a dry run feature that will help Steve to see immediately what the impact will be on the water usage, enabling him to make new adjustments if necessary to start and stop times. Bearing in mind that his main water tank holds only 126,000 litres, this is an essential tool for Steve.

Controlling the system to match the available water capacity

Supplying the entire watering system are three separate pump stations:

- one operating at a maximum capacity of 11 cubic metres per hour
- another at 18 cubic metres per hour
- and another running at 9.

Steve uses the Controller to achieve the ideal balance between usage and available capacity in the main water tank, so that eg. he can run a programme that has up to four start times a night with four sprinklers running simultaneously. The staggered start times mean he can be sure that the main water tank has enough time to replenish the level of water needed for the next burst.

Typically, a programme will have a run time averaging 1.5 hours to put the required amount of water on each pitch. One of the newer features that Steve particularly appreciates is the system's ability to remember when it was interrupted, eg. by a local electrical power failure. Once the interruption's resolved, the Rain Bird Controller will carry on and deliver the required amount, rather than re-start and over-soak a playing area.

Summary – using the best equipment to deliver the best condition for the best players

Arsenal's training pitches are always, as you might expect, in superb condition for the moment their superstar customers come on to practice. But as we have seen, achieving that condition is far from easy or straightforward. The power of the Rain Bird Controller to help as competent and professionally experienced a groundsman as Steve Braddock is clear, and he maximises its ability to deliver what he needs.

"It's a great tool, for two reasons. One, it takes care of complex watering requirements at the click of a mouse, and I know it will give me what a pitch needs, whether it proceeds to rain or whatever. Two, I can change things at a moment's notice, depending on the nature of the playing surface, or more likely, if a coach or player feels it's not quite right! And with that and ten pitches that we're renovating annually, let alone the challenge of working with limited water supplies, a tool like the Rain Bird Controller is as valuable to me as the players are to the Club!"



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