

Water is a valuable resource and making maximum use of it and avoiding waste are high priority issues for farming

Water is a critical part of all forms of farming, but in some regions and for some crops rainfall or its timing is not sufficient to optimise yields, therefore, some form of irrigation is required. Most agricultural irrigation systems fit into one of two broad categories: sprinkler irrigation and micro-irrigation. Both forms can benefit from enhanced monitoring of equipment and growing medium to enhance efficiency and guard against damage and detrimental effects of malfunctions.

Sprinkler irrigation systems used in farming include centre pivot, linear move, traveling gun, permanent set, and solid set. Micro-irrigation systems include drip (or trickle) irrigation and micro-sprinklers. All these systems are there to deliver water to the crop (and in some cases carry feed and nutrients too) to optimise soil moisture and growth. Whilst at times water feels like an overly abundant resource when it is raining, run off, percolation, drainage and evaporation mean that it's not always available when or where we need it. Hence the value in irrigation. This starts with the water supply, which can be from the mains (usually metered), via abstraction (by permit) or rainwater harvesting. All of these have a cost and part of the return from proper management of irrigation is cost reduction.



The ongoing move to base farm payments schemes on Natural Capital, Climate Change mitigation and other Public Goods brings ever increasing focus on how farmers manage water on their land, and the impact of that use “downstream” in the water ecosystem.

Detecting irrigation equipment malfunction is an easy win. Devices can be mounted on pumping equipment to monitor that they are running when they should be and even to detect changes in pump performance indicative of the need for maintenance before a failure occurs.

Monitoring pressure in the irrigation pipework at the pump, the discharge head or at points along the way if you have a long pipe run enables detection of a burst pipe. Monitoring movement of the traveling system or rotation of the sprinkler gun head can detect a stop in the regular movement and hence over watering of an area.

Understanding the distribution of moisture in the soil is also critical to crop optimisation. Soil moisture sensors come in a variety of types and styles, but whichever you choose, offer the opportunity to monitor moisture levels at various depths, meaning that you can see not just the surface layer, but within the root zone too. Because of their ease of use and cost effectiveness if you have a variety of soil types, you can also deploy the same sensors in various areas of the same field to better understand how your crops are affected by the varying soil types and if changing irrigation practices can level up performance – something particularly effective in high value crops.

In short, such sensors and data collection offer a simple and cost-effective way to monitor water use, provide management information and an early warning alert, when required. This can save a lot of time sourcing the inevitable leaks, provide valuable agronomic information, and make best use of a hugely valuable resource. Making best use of our water resource makes good business sense, being able to demonstrate responsible use is good business, and (as the cost of water and demands of climate change increase) such advances only going to become more important.