

# Water tight

Alternative water saving  
irrigation strategies



**Arden Lea Irrigation Ltd is a family run independent company founded in 1974. The company have installed major irrigation systems at some of the country's top golf courses and racecourses as well as Manchester United FC stadium and Terminal 2 Manchester International Airport.**

**Lancaster University PhD Researcher Richard Boyle is developing alternative water-saving irrigation strategies for commercial bedding plant production. Incorporating low-energy lighting into this model has also enhanced the sustainability of plant production.**

As part of this research, conventional irrigation and supplemental lighting strategies for plant production are replaced with environmentally-friendly and economically beneficial alternatives.

Irrigation frequency will be reduced, with the aim of limiting excessive water use but also enhancing plant quality.

LED (light-emitting diode) lighting has replaced current lighting (high-powered sodium or metal halide), with the intention of reducing energy consumption but also allowing greater control over plant production.

Within small scale research facilities, successful plant production was achieved under alternative irrigation and lighting management strategies. Reducing irrigation frequency resulted in significant water savings and also increased the efficiency



with which water was used. Delaying the irrigation frequency also provided greater control over plant growth.

Bedding plant quality was improved by producing smaller and more compact plants. By incorporating LED lighting, plant growth and water use could be increased or reduced depending on the light source. Different proportions of blue and red light were studied; vibrancy of red pigment in the leaves could be enhanced or reduced depending on the light source used. These factors contribute to the quality, and therefore the value of the plant, suggesting using the correct light source may be economically beneficial.

***“Bedding plant quality was improved by producing smaller and compact plants”***

Both alternative irrigation and lighting strategies explored in this project can be applied on a small scale for the production of bedding plants.

Using appropriate irrigation systems on a large, commercial scale could include hydroponic ebb and flow, or more accurate scheduling. Training and education, along with the development of technology, may also be beneficial for growers when implementing alternative strategies.

Ultimately, the overall economic and environmental benefits associated with alternative irrigation and lighting systems is significant and extremely positive.

**Benefits to the business as a direct result of this project include:**

- Reduced water use and therefore cost saving to the business
- Reduced energy use and therefore cost saving to the business
- Greater control over growth
- Improved plant quality

***“All of these factors benefit Arden Lea Irrigation Ltd by reducing the company’s environmental impact and also benefit the wider plant producing community.”***

**Dr Martin McAinsh**

Lancaster University

*Climate change has far reaching effects on the leisure industry, particularly on outdoor pursuits which rely on managed irrigation systems. A warmer climate not only means significant reduction in rainfall, but also extended use of leisure facilities, increasing the wear and tear on greens, fairways and sports pitches.*

**Philip Boileau** | Arden Lea Irrigation



**Richard Boyle** | Graduate researcher