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‘Pathway to efficiency’ recommended for improving irrigation

Improving the efficiency of irrigation can help farmers increase profits, meet regulatory requirements for renewing licences, and demonstrate sustainable use of resources for supermarket grower standards. A recent study has assessed water irrigation efficiency in the UK and suggests that the ‘pathway to efficiency’ approach can help farmers and water regulators manage irrigation and water abstraction.

About 70% of global freshwater use is for agricultural irrigation. In the face of climate change, irrigated agriculture is facing rising competition worldwide for access to reliable, low cost and high quality water. In England, UK, farmers are responsible for monitoring and collating relevant information to demonstrate ‘efficient water use’ to renew their permits to abstract water for irrigation from the regulator, the Environment Agency[1].

However, farmers and water regulators interpret the concept of ‘efficient water use’ differently. Most farmers link water efficiency to maximising the farms’ economic productivity, rather than saving water for future environmental sustainability. Irrigation is often also driven by the farmer’s need to meet production quality standards for their customers, supermarkets and processors through Farm Assurance Schemes, which promote best farming practices and provide retailers and consumers with confidence in produce. Demonstrating ‘best use’ of water is therefore far from straightforward. Farmers and water regulators need a simple framework that reflects the needs of the farming community, whilst providing a policy framework for saving water and protecting the environment.

The study surveyed eight farmers in eastern England using a postal questionnaire to assess their individual perspectives on the term ‘irrigation efficiency’. Each farmer was asked to estimate how efficient their own irrigation practices were and where their water ‘losses’ occurred. Although the number of farmers surveyed was low, they were carefully selected to represent a range of farm types and irrigation practices.

Most (63%) of the surveyed farmers considered their perception of ‘irrigation efficiency’ to be best defined as ‘applying the right amount of water, at the right time, in the right place’, aiming not to over- or under-irrigate, whilst minimising losses, such as run-off or leaching. Estimates of their own irrigation efficiency varied greatly depending on the farmer and their irrigation method.

The research promotes an alternative approach to irrigation efficiency, where it is viewed as a goal, rather than a number or equation, with various steps towards achieving that goal. In England, this has become known as the ‘pathway to efficiency’[2]. The method recognises that there are many inter-related aspects to consider when improving irrigation that vary according to individual circumstances. It breaks the irrigation system down into its component parts – water resources, crop and soil management and equipment - so that each can be examined separately.

Although this study had limitations, including its small survey sample size, it identified important ‘typical’ farmer perceptions regarding irrigation efficiency and the difficulty defining the term. The ‘pathway to efficiency’ method is applicable to other temperate and arid regions in Europe where water regulators have a duty to promote sustainability, rural employment and business. The study suggests the best way to achieve both goals is to match the requirements of water audits with those of Farm Assurance Schemes. Embedding the overarching principles of efficiency, rather than a subjective factor or definition, will provide the next steps to achieving best practice in irrigation management and abstraction control.

1. See: www.environment-agency.gov.uk/business/topics/water/32020.aspx
2. See: www.ukia.org/CD/dvd%20files/Waterefficiency.pdf

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