

Water Management on Your Farm: Irrigation



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As climate conditions continue to change the sustainable management of water on farm is of great concern for many land managers around Scotland. From unprecedented wet weather to drought conditions, farms need to become resilient to ensure that they can try to minimise the impact of these changing weather patterns on land.

Why should I invest in irrigation?

As climate patterns continue to change in Scotland, land managers need to become more resilient and prepared for change. Moving forward it is expected that **summers are more likely to become drier, while winters are wetter**. This may lead to issues with crop health during summer months as farmers will have less available water for their crops during dry periods. Ensuring that you have the most appropriate irrigation systems to suit your business now could help improve water availability and utilisation in the coming years.

Scotland's National Water Scarcity Plan and its impact on irrigation

In response to changing climate and water availability SEPA have produced a [National Water Scarcity Plan](#) to lay out how they will respond to periods of reduced water availability. Ensuring that your business plans in advance, and mitigates against water availability, the impact can be reduced. SEPA encourage businesses to have contingency plans in place for the likelihood of water scarcity events, whereby access to water may be reduced. The stages at which SEPA will act are laid out in tables so that irrigators are prewarned and can adopt the appropriate mitigation measures recommended.

Irrigators should ensure that they are fully aware of these stages so that they can incorporate these into business plans and have back up options available when water levels are reduced.

This document focusses on various irrigation systems available to farmers, focussing on the different attributes they offer. Review [Rainwater Harvester](#), [Resilience](#) and [Slowing The Flow](#) for innovative solutions to storing and retaining water within your land to ease irrigation requirements and demand on land.



What irrigation options are available?

Rainguns

Rainguns are mobile systems where water is thrown out of a tripod system to service crops from a wheeled carriage, normally attached to hose reel. The systems are designed to dispense a high volume of water per irrigation.

Advantages

Rainguns are designed to be left to work on their own via a timer. Due to their design they can be located in difficult terrain or left in areas, which otherwise would not be able to be accessed by other means.

Disadvantages

Due to the high volume of water these systems can project, issues can arise with erosion to bare, loose soil. This can increase erosion and potential runoff from the field affecting local water quality and soil loss from farm. In addition, the system should be monitored to ensure that water is used efficiently, and areas are not overwatered. Caution should be made during windy days so that water is not blown away from areas that are in need of water.

Booms

Booms are mobile systems where water is sprayed over the crops via fixed spray nozzles on a frame, mounted on a 4-wheel chassis, connected to a hose reel.

Advantages

These systems allow for a controlled, accurate distribution of water over crops. The water is distributed at low pressure, resulting in lower physical impact to the soil and crop and higher energy efficiency.

Disadvantages

Due to the equipment required, the systems do not suit irregular and uneven fields. Careful management is needed to ensure that soil erosion is not exacerbated through application.

Solid-set Sprinklers

A solid-set sprinkler system is a system that is installed at beginning of the life of the crop. Running through the crop.

Advantages

These systems can be an energy efficient option for small areas requiring irrigation. They offer flexibility with being able to be fixed or moved (depending on system installed).

Disadvantages

Suitable for small areas requiring irrigation and certain systems will need moved.

Trickle irrigation

Trickle irrigation systems are thin pipes, which are fitted with specially designed emitters along crop base, where water is drip fed to the crops.

Advantages

The water is slowly applied directly to the base of the plant, allowing for accurate application. Resulting in reduced energy and water needs through this method.

Disadvantages

Designed for more water vulnerable crops. The systems can be liable to sediment and algae build up, which will need maintained to ensure the systems work efficiently.



How to decide

When choosing your irrigation system, you need to decide which system will suit and perform best for your business. Speaking to your local advisor to examine what options are available to you could potentially offer your business more resilience to predicted water scarcity in the future. However, moving forward, being able to store water on your land is likely to become a necessary activity, especially in areas that are repeatedly experiencing drier conditions over the summer months.

Helpful hints

- Only irrigate to crop requirement
- Check for leaks
- Avoid hottest part of day (reduce evaporation)
- Planning irrigation systematically with neighbours
- Could you use ground water rather than river
- Know your soil and crop requirements
- Manage water application effectively
- Incorporate the weather extremes into planning

The [UK Irrigation Association](#) produced a 'How well do you think you are irrigating?' quiz within their '[Save water and money – irrigate efficiently guide](#)'. This quiz can highlight areas where you could improve the efficiency of your irrigation system.

Further Information

[SEPA \(2022\) The Water Environment \(Controlled Activities\) \(Scotland\) Regulations 2011 \(as amended\): A Practical Guide](#)

[SEPA \(2013\) Supporting Guidance \(WAT-SG-70\): Sector-specific Guidance: Agriculture](#)

[SEPA \(2020\) Scotland's National Water Scarcity Plan](#)

[SEPA \(2022\) Water Scarcity: Weekly Report](#)

[UK Irrigation Association \(2022\) Resource Booklets](#)

