

Future projections for water scarcity in Scotland: Impacts on the Horticultural Sector



IMAGE: THE JAMES HUTTON INSTITUTE

What are the future projections?

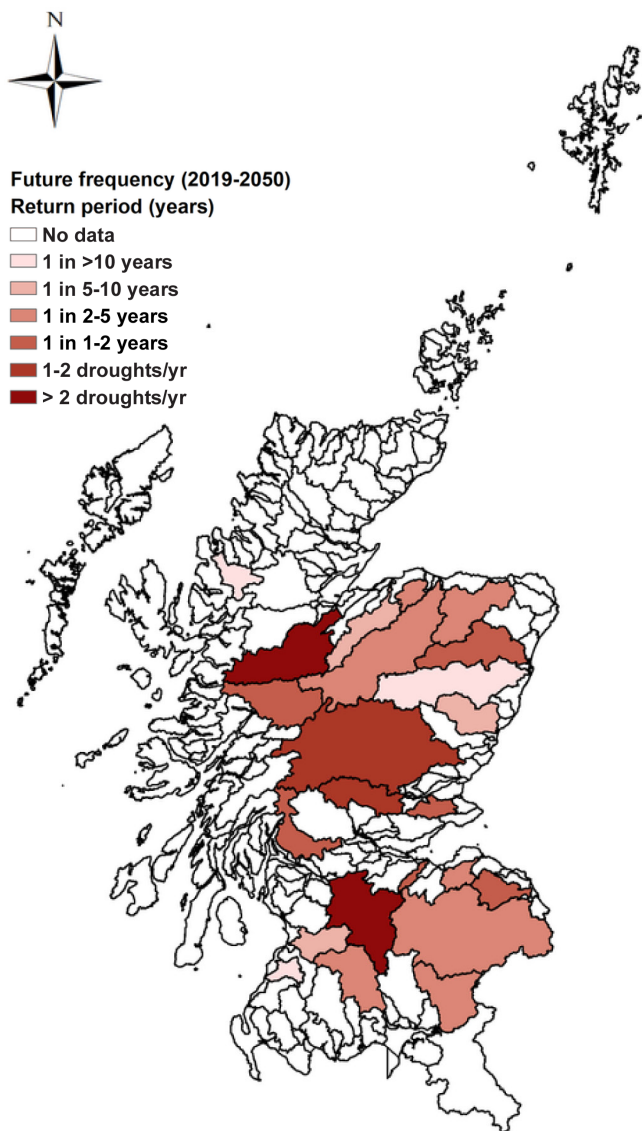
There is an increasing amount of climate variability leading to an increased risk of meteorological drought.

Projections to 2050 indicate that the frequency and duration of surface water droughts will double. Some catchments, such as the Eden, are projected to experience a drought every year (Figure 1).

In Eastern and Central Scotland, groundwater recharge during spring, summer and autumn is projected to decrease by up to 50% in the far future (2050-2079), making aquifers more vulnerable to long-term depletion. Abstractions from high-storage aquifers will be more resilient to projected increases in the frequency and duration of drought (Figure 2).

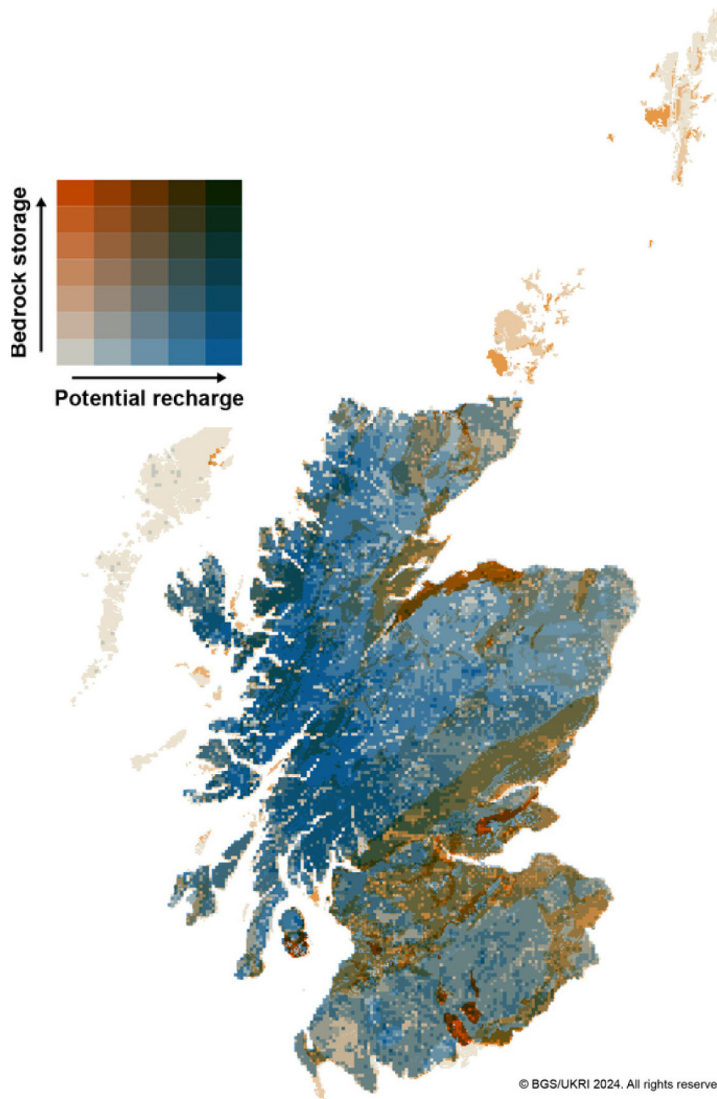
SURFACE WATER

Figure 1: Projected future (2019-2050) number of droughts in a sample of 23 catchments in Scotland. Darker colours indicate more drought events. Catchments in white were not included in the analysis.



GROUNDWATER

Figure 2: Groundwater security: areas with high groundwater storage and potential recharge (darker colours) will be more water secure; areas with low storage and recharge (paler colours), e.g. parts of Aberdeenshire, will be more vulnerable to future water scarcity.



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How is water used by the sector?

The horticulture sector relies on rain fed sources and additional irrigation from surface and groundwater sources to grow fruit and veg.

High soil moisture and wet agroclimatic zones need around 45mm per year of irrigation to grow potatoes ([see ref](#)).

Drier agroclimatic zones with low soil moisture require up to 195mm per year ([see ref](#)).

What are the future risks?

Increased number and duration of significant surface water drought events could lead to reduced access to surface water sources, risking vegetable and fruit crop failure.

Drier summers could lead to increased need for irrigation, potentially increasing irrigation costs for potato crops to between £240 and £456/ha per year ([see ref](#)), so long as irrigation sources remain available under future projections.

Whilst groundwater abstractions are a potential way of addressing surface water shortages, more information on where and when this is possible is needed.

What are the adaptation options?

Increasing soil organic matter can improve soil water holding capacity ([see ref](#)).

Measuring water use can help identify areas for improved water use efficiency to increase resilience.

Offline irrigation lagoons can reduce the reliance on surface or groundwater abstraction. Grants may be available in some regions.

Efficient irrigation systems, such as drip irrigation, can improve water efficiency, reduce abstraction volumes, energy and labour costs.

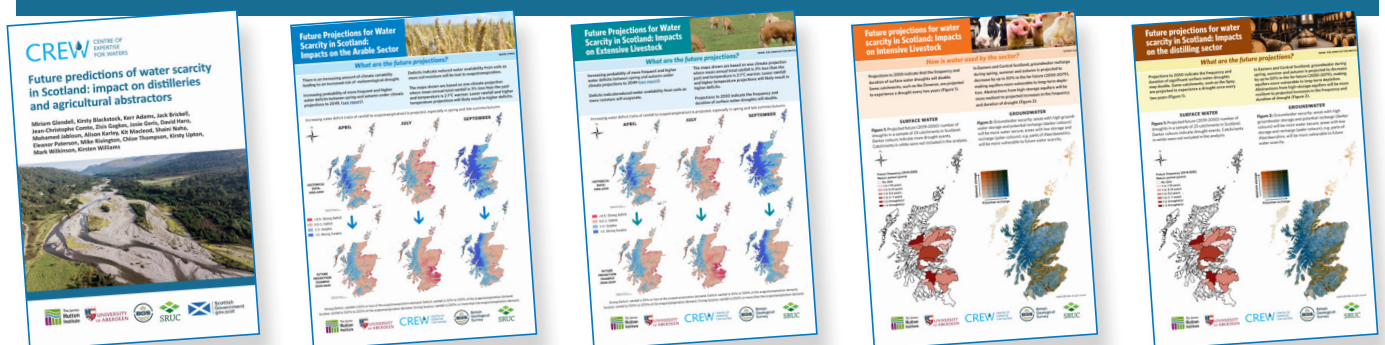
Sector	Soil conservation	Measuring water use	Drip irrigation	Off-line storage lagoon
Horticulture	●	●	●	●

● High uptake potential

● Lower uptake potential

Other adaptation measures may be available. Uptake potential will vary from farm to farm.

More Information



PROJECT MAIN REPORT



ARABLE INFOGRAPHIC



EXTENSIVE LIVESTOCK INFOGRAPHIC



INTENSIVE LIVESTOCK INFOGRAPHIC



DISTILLERY INFOGRAPHIC