

# Minimising water use, maintaining productivity

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As the climate warms up, more and more farmers in Switzerland need to irrigate their crops. This is problematic because many rivers carry less water. If the increase in water use is limited, agricultural production will not be significantly lowered. This conclusion was reached on the basis of models created in a project of the National Research Programme "Sustainable Water Management" (NRP 61).

Climate change will lead to regional [water shortages](#). If the use of [river water](#) is not regulated, both [water quality](#) and biodiversity could be negatively affected. Overuse can be avoided by redirecting water from larger bodies of water via pipes and distribution networks. This comes at a considerable price and has an impact on the environment.

## Testing options on the basis of case studies

Researchers of an NRP 61 project investigated alternatives not in terms of sourcing more water but rather in terms of reducing the agricultural need for water. Based on models and an interdisciplinary approach, they tested a variety of options for a dry area (Plain of the Broye) and an area less dry (Lake of Greifen) up to 2050. They also took into consideration a number of economic and political conditions. "The aim is to maintain productivity while minimising the use of water and the impact on the environment," says Jürg Fuhrer, leader of the project "Water demand in Swiss agriculture and sustainable adaptive options for land and water management" (AGWAM) at Agroscope.

The authors of the study have reached the conclusion that, even if the climate changes, the cultivation of [agricultural land](#) will remain viable, at least theoretically, in areas that are threatened by droughts such as the Plain of the Broye. Farmers in these areas need to limit the climate-related increase of water use and at the same time the losses in production and income. The necessary adaptations include improving irrigation efficiency, changing the mix of cultivated crops to include more [winter crops](#) such as winter rape seed or barley, adapting soil management and adjusting the organisation of agricultural land, i.e. which crops are best grown in which place.

## **Step-by-step change to more water-sensitive production**

The aspect of the study that deals with farm management shows that farms will take measures to reduce their water needs if the price of water rises and water quotas are introduced. An environmental performance analysis shows, however, that agricultural production will continue to negatively impact the environment even if all measures considered in the study are taken. Further steps towards a resource-efficient practice are necessary, in particular, if the emission of greenhouse gases is to be reduced.

Society, the authorities and politicians will have to think about introducing incentives and rules to encourage a step-by-step transition towards an [agricultural production](#) that is more economical with [water](#). Alternatively, they can implement purely technical and less ecological measures to maintain the status quo. His team's study, says Fuhrer, provides the scientific basis for a discussion which will become increasingly pertinent in view of the expected [climate change](#) and the related risks for agriculture.

**More information:** [www.agroscope.ch/publikationen...7/index.html?lang=en](http://www.agroscope.ch/publikationen...7/index.html?lang=en)

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