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Icelandic barley is extremely early maturing

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Inspection of trials with cultivars and new breeding lines. The harsh climate in Iceland is at the northernmost range of barley cultivation, and the selection pressure is strong for early maturing cultivars. Photo by Morten Lillemo.

The world's agricultural production is threatened by climate change. To keep up with global demand of food and feed, cereal production needs to expand into the rapidly warming regions of the Arctic and Subarctic.

A challenge in the northern frontier of cereal cultivation is to reach maturity in the short and relatively cold growing season. A few Icelandic barley breeding lines have previously proved to be extremely early in field trials, but little has been known about the genetic factors underlying this extreme earliness.

In an article recently published in *Crop Science*, researchers from Iceland, Norway, and Sweden confirm the extreme earliness of Icelandic barley in controlled environment climate chambers. Furthermore, they dissect the genetic components behind the traits most important for northern adaptation. The team found the *Ppd-H1*, *FT1*, and *Mat-a* loci to be associated with early flowering and maturity and *GA20ox1* with height.

The novel insight of the genetics behind extreme earliness provides a base to further adapt barley and other cereals to the climatic conditions of the extreme north.

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Göransson, M., Hallsson, J.H., Bengtsson, T., Bjørnstad, Å., & Lillemo, M. (2021). Specific adaptation for early maturity and height stability in Icelandic spring barley. *Crop Science*. **https://doi.org/10.1002/csc2.20459**.

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