

*Abstract*

# Advancing Brewing Science †

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**Abstract:** Cereals were some of the first crops to be domesticated by humans. Today, cereals represent the biggest starch source in the world and are the primary raw material for food and feed. Modern breeding techniques produced high yielding varieties, but were based on a limited genetic background, which resulted in significant loss of genetic diversity. This could potentially result in major challenges due to recent climate changes and altered growing conditions. It is estimated that an increased global temperature will lead to dramatic loss in plant productivity in many parts of the world. The barley breeding effort of the Carlsberg Research Laboratory combines decades of expertise to provide new varieties with unique quality and sustainability traits such as drought tolerance. Combining traditional breeding, genome data and a new method for screening genetics variants, we have radically shortened the development time of varieties with new traits. This has already resulted in the identification of several hundred genetic variants related to climate adaptation, sustainability, productivity and brewing quality. This accelerated approach can easily be applied for the development of other crops in both developing and matured markets around the globe, and help securing a sustainable supply of food and other agricultural products.

**Keywords:** climate change; sustainability; rapid trait identification; cereals



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