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## Evaluation of Total Protein, Starch and Hordein Gene Expression Profiles of Three Field Grown Kenyan Barley Genotypes Grown under Different Nitrogen Regimes and Seeding Rates

JAYNE BINOTT<sup>1,2</sup>, JULIUS OCHUODHO<sup>2</sup>, DOROTHEA BARTELS<sup>1</sup>

<sup>1</sup>University of Bonn, Institute of Plants Molecular Physiology and Biotechnology, Germany

<sup>2</sup>University of Eldoret, Dept. of Biological Sciences, School of Science, Kenya

### Abstract

Barley (*Hordeum vulgare* L.) suitable for brewing purposes is characterised by low grain protein and high starch content. Storage protein of barley is an important trait influenced by the growing environments. Nitrogen rich volcanic soils in major barley growing zone in Kenya have resulted in production barley with undesirable malting properties. We performed biochemical and molecular analysis to gain insights on grain quality under critical nitrogen requirements. An evaluation of different level nitrogenous (N) fertiliser application and seeding rate on seed protein and hordein expression profiles of two row barley were investigated using three commercial varieties used by the East African Malting Company in Kenya. The relationships between the traits were examined. Analysis of variance showed that there was significant difference in total protein content within the genotypes. A significant difference in D hordein was observed only in one genotype at 40 and 50 kg ha<sup>-1</sup> N fertiliser dose. Formation of D fractions was genotype dependent. Only two genotypes contained D, C and B fraction across the nitrogen levels. The data on gene expression is under progress.

**Keywords:** Barley, hordein polypeptide fraction, hordein gene profiles, *Hordeum vulgare*, nitrogenous fertiliser, SDS-PAGE