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# Assessment of Stress-Adaptative Traits in Durum Wheat (*T. turgidum subsp. durum*) Landraces Using Agromorphological, Physiological, and Proline Content Parameters

**Bantewalu Hailekidan Dukamo[1,2]\*, Andargachew Gedebo Abitie[2]**
**Hewan Demissie Degu[2] Bizuayehu Tesfaye Asfaw[2]**

[1]Hawassa University, College of Natural and Computational Sciences, Hawassa, Ethiopia;
[2]Hawassa University, College of Agriculture, Hawassa, Ethiopia
\*Correspondence: bantewaluh@hu.edu.et;

**Abstract**
Drought is a significant challenge to wheat productivity in changing climate conditions. Breeding strategies have been successful in producing drought-resistant wheat varieties. This study aimed to assess the morpho-physiological and biochemical responses of durum wheat landraces to drought stress. Twenty landraces and four checks were grown in pots under non-stressed (70%) and stressed (35%) conditions, using a completely randomized design (CRD) with three replicates. Data on yield, yield-related traits, and physiological-biochemical characteristics were collected. ANOVA results indicated significant impacts of genotype and stress on all parameters, with drought having a noticeable influence on morpho-physiological and biochemical traits. Key characteristics for drought tolerance included earlier heading dates, optimal tiller production, and shorter grain filling periods. Maintaining high proline and relative water content (RWC) was crucial for supporting metabolic processes under stress. Phenotypic and genotypic correlations and path coefficient analysis offered insights into the direct and indirect effects of these traits on grain yield. Landraces ETDW/15DZ023, ETDW/15DZ04, 34217, and 31831 consistently produced high yields under non-stressed and stressed conditions, demonstrating superior drought tolerance compared to other tested genotypes. This highlights their potential for inclusion in breeding programs to improve drought resilience in durum wheat.

*Key words: Drought tolerance; Durum wheat; Greenhouse; Physiological trait; Proline content; Stress-adaptative*