

## **Abstract**

Improving crop structural biomass can be achieved via specific structural traits, such as stem diameter and wall width. These traits might influence biomass productivity and quality due to their impact on the plant's cell wall composition. However, the relationship between stem morphological and physiological traits and their contribution to forage production and quality has been less studied, particularly in relation to different stem segments, and varying environmental conditions.

This study aimed to investigate the relationship between stem characteristics (such as stem diameter and wall width) and various agronomic and forage quality traits in bread wheat under Mediterranean environment. To assess the impact of stem structural traits on the productivity and quality of advanced bread wheat lines, we conducted a comparative analysis of forage yield and nutritive profile across 14 advanced wheat lines and varieties over a two-year period in the semi-arid regions of Israel.

Based on two years field assay we have found that stem structural traits exhibited no significant correlation with either forage yield or quality in our tested materials. That's include both DM yield parameters and NDFD and CP parameters. Interestingly, Late heading genotypes had higher DM yield compared to early heading lines. Targeting late heading wheat genotypes for wheat forage production under Mediterranean conditions could sustain higher DMY and improve fiber digestibility, potentially enhancing intake and overall nutritional value.