

Identification of genetic loci for lodging resistance in spring wheat (*Triticum aestivum* L.)

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Lodging, the displacement of plants from their upright positions, is a major constraint which decreases the harvest efficiency, and grain yield and quality of spring wheat (*Triticum aestivum* L.). While lodging is a quantitative trait regulated by many genes that interact with environmental factors, the lower culm internodes of wheat play vital roles in supporting the plant to prevent lodging. The primary management approach of utilizing semi-dwarfing genes to decrease plant height may limit the yield potential of modern cultivars, prompting the need to identify alternate genetic approaches to lodging resistance. A genome-wide association study was conducted in multiple environments to investigate the genetic basis of lodging resistance in a diverse panel of spring wheat genotypes. The panel was phenotyped for lodging-related culm traits and genotyped using the 90K iSelect BeadChip Array. Marker-trait association identified multiple genomic regions associated with lodging-related traits considered in this study. The findings of the study may have potential use in marker-assisted selection for lodging resistance in spring wheat.