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QTL ANALYSIS FOR EAR TRAITS IN A MAIZE RIL POPULATION SHOWED NOVEL LOCI CONTROLLING FASCIATED-LIKE PHENOTYPES

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Maize is one of the major worldwide grain crops, and its yield genetic improvement remains a main priority. It was previously shown that Fasciated-like phenotypes in the ear apical meristem could affect ear kernel number and therefore yield. In this study, a Recombinant Inbred Line (RIL7) population of 110 lines was produced by crossing Lo1016 and B73. Lines were grown in replicated field trials, phenotypically analyzed for ear morphology, and genotyped using high-density SNP array, with the objective to map QTL for ear morphology and yield component traits. Traits considered were kernel row number (KRN), cob diameter (expressed as rate of minor/major diameter), ear roundness, ear disorder, degree of Fasciated-expression in the ear. Results confirmed relatively high heritability for KRN ($h2 = 0.72$). Segregation for Fasciated ear was observed, with significant correlations with cob diameter, disorder and roundness (−0.38, 0.41, −0.52, respectively. $P < 0.01$). Three Fasciated-controlling QTLs were mapped on chr. 1, 7, and 8. Candidate genes analysis is being carried out at QTL regions with the final aim to identify the genes responsible for this interesting and potentially useful phenotype.