



IDENTIFICATION OF QTLS ASSOCIATED WITH PERCENTAGE OF DRY MATTER AND MIDRIB COLOR IN SORGHUM

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Sorghum bicolor (L.) is a species of great agronomic importance, which has emerged as a feedstock for biofuel production (sweet sorghum) and power generation (biomass sorghum). In breeding programs, features such as the percentage of dry matter and/or the moisture content of the biomass should be considered for the development of sorghum cultivars with great energy potential. Thus, genotypes for sweet sorghum should have high water content in the stem and high juice extraction with fermentable sugars. For sorghum biomass, used for second-generation ethanol technologies and energy co-generation, genotypes with low moisture are preferred. In sorghum, the *d* gene is described as responsible for the moisture content in the plant, but there are no reports of other genes or QTLs that may be related with this feature. In this context, the objective of this study was to investigate the existence of QTLs associated with the moisture content in the plant, evaluated for the percentage of dry matter and midrib color. For this purpose, 396 RILs (Recombinant Inbred Lines) derived from the cross between the parents BR007B (opaque green midrib color and juice stem) and SC283 (white midrib and dry stem) were genotyped via GBS (Genotyping-by-Sequencing) and phenotyped for midrib color and percentage of dry matter in the stem. The analysis of phenotypic data was performed with GenStat software for percentage of dry matter, based on the mixed model approach, obtaining the variance components and BLUP (Best Linear Unbiased Predictions) means for each genotype. The QTL mapping was conducted with the R program using generalized linear models,



assuming binomial distribution for the trait midrib color and normal distribution for percentage of dry matter. Two QTLs were identified on chromosome 6, one for percentage of dry matter located at 51.80 Mb and one for midrib color located at 50.64 Mb. Based on these results, it is suggested that these QTLs could be linked to the *d* gene in sorghum, since this gene is located on chromosome 6, with position from 51.80 Mb to 51.89 Mb.

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