AMAS IV Abstract Sample
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Seed Isoflavone Quantitative Trait Loci Analysis of Soybean in Two Environments and Gene Annotation for Flavonoid Biosynthesis

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Abstract

The objective of this study was to map quantitative trait loci (QTL) for seed isoflavone contents in the 'PI 438489B' by 'Hamilton' recombinant inbred line (RIL) population of soybean grown in two different seasons and environments. A total of six QTL for seed isoflavone content were identified on 5 different linkage groups (LGs) and nine QTL for seed isoflavone content were identified on nine different linkage groups (LGs) of the soybean geneome from the seeds grown in 2010 at Fayetteville State University (FSU) campus, Fayetteville, North Carolina (NC) and in 2011 at Saint Pauls, NC. In 2010, two QTL for daidzein (*qDAID001-2010* on chromosome 2/LG M; *qDAID002-2010* on 17a/LG D2), two QTL for glycitein (*qGLY001-2010* on chromosome 2/LG D1b; *qGLY002*Q-*2010* on chromosome 8/LG A2), and three QTL were identified for genistein (*qGEN001-2010* on chromosome 8/LG A2; *qGEN002-2010* and *qGEN003-2010* on chromosome 12/LG H). From the seeds of 2011 growing period, two QTL were identified for daidzein (*qDAID001-2011* on chromosome 6 (LG C2); *qDAID002-2011* on chromosome 13b/LG F), two QTLs for glycitein (*qGLY001-2011* on chromosome 1/LG D1a; *qGLY002-2011* on chromosome 17c/LG D2) and five QTLs for genistein (*qGEN001-2011* to *qGEN005-2011*) were identified on chromosome 3 (LG N), 8 (LG A2), 9 (LG K) and 18 (LG G) respectively. The QTL identified here can be introduced in breeding programs aimed at producing cultivars with high seed isoflavone contents.

Keywords: soybean, genistein, daidzein, glycitein, isoflavone, RIL.