Examining SSR markers to improve breeding efficiency for iron chlorosis resistance in soybean. (C01-charlson100010-Oral)

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Abstract:

Iron deficiency chlorosis (IDC) results in yield losses whenever certain soybean varieties are grown on calcareous soils. Although IDC-resistant varieties exist, these varieties still may experience chlorosis and yield loss during some growing seasons. The importance of the environment on chlorosis expression impedes progress towards improving IDC resistance. Breeders could use molecular marker-assisted selection, an environment-independent tool, to improve IDC resistance. Our objective is to determine the efficacy of SSR markers to improve breeding efficiency for IDC resistance in soybean. Lines within a breeding population were genotyped with 16 SSR markers. Foliar chlorosis evaluations were conducted on these lines at two Iowa locations in 2001. According to single-locus analysis of variance, six SSR markers were significantly associated ($P<0.1$) with foliar chlorosis. Two of these markers were examined for their usefulness in selection. Both markers demonstrated greater selection efficiency relative to phenotypic selection alone. Our preliminary results demonstrate the potential of SSR markers as an environment-independent tool for improving IDC resistance in soybean.

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