Identification of Soybean Yield QTL in Irrigated and Rain-fed Environments. (C07-lee162637-Poster)

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Abstract:

Drought is the major abiotic stress limiting soybean yield. Information of yield QTL from irrigated(IR) or rain-fed(RF) environments can be used to identify and introgress the positive alleles into an elite cultivar to maximize soybean yield and stability. Our objective was to identify yield QTL in a population of 160 F4-derived lines from Hutcheson x PI471938. Seed yield was determined at 9 IR and 4 RF environments in Athens GA, Marion AR, Portageville MO, Windblow NC, and West Memphis AR for 2 yr. Data on 150 SSR markers were collected on the 160 lines. Sixteen markers were associated with IR-YLD and 20 with RF-YLD. Multiple regression indicated that four markers accounted for 23% of yield variation in IR-YLD and five markers for 33% in RF-YLD. For the two QTL on LG-F the likelihood position of a IR-YLD QTL(R2=8%) is between Satt395-Sat_074 (4.2 cM) and an RF-YLD QTL(R2=17%) was identified between Sct_188-Sat_375(3.5 cM). At the IR-YLD QTL near Sat_074, the homozygous lines for the Hutcheson allele averaged 63 kg/ha higher yield than the lines with homozygous PI471938 allele, while at RF-YLD QTL near Sat_375 the lines homozygous for the PI471938 alleles averaged 75 kg/ha higher.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 4:00-6:00 pm
Poster Board Number: 1305L

Keywords:

Soybean, Yield, SSR markers, Drought