Near Isolines for Traits Putatively Associated with Drought-Tolerant N2 Fixation in Soybean. (C02king152932-Poster)

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Abstract:

N2 fixation in 'Jackson' soybean is tolerant to water deficits, and 'KS4895' is sensitive. Jackson has fewer but larger root nodules and maintains low shoot ureides; KS4895 has numerous, small nodules and elevated ureides during drought. Nodule size or shoot ureides may contribute to differences in sensitivity of N2 fixation to drought. Single-plant selections were made from an F5 population of a Jackson by KS4895 cross to give 92 F5:6 families. Nodule size and number from well-watered plants and shoot ureides from drought-stressed plants were determined for parents and F5 families grown in field studies in 2000. DNA from the parents was screened with 440 SSR markers. DNA from F5:8 families was screened with the 120 markers that differed between the parents, and two markers were associated with differences for nodule number (molecular linkage group (MLG) C2, Satt 202 and Satt 281), individual nodule weight (MLG D1, Satt 106; MLG D2, Satt 281), and shoot ureides (MLG M, Satt 220 and Satt 306). Single plant selections from the F5:8 families were used to identify near isolines for these traits based on SSR data. Current research is confirming the isoline marker data and evaluating the influence of each trait on the sensitivity of N2 fixation to water deficits.

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