

Public Abstract

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Title:INCREASING SOYBEAN YIELDS THROUGH MANAGEMENT AND THE ROLE FOR NITROGEN FIXATION

Further research is necessary to assure future increases in soybean yields and to understand how the increased soybean nitrogen (N) demand will be met. The soybean N demand will be met by soil N and N fixation, which occurs in soybean root nodules. A field experiment was conducted to understand the contest winning yields of soybean yield record-holder, Kip Cullers in 2008 to 2010, and the effects on soybean nitrogen fixation. Employing high-input strategies of foliar fertilizers, micronutrients, irrigation and poultry litter applications, soybean yields increased over the three-year experiment, but overall there were no treatment differences between the management-intensive and conventional production practices. While yields increased from 2008 to 2010, soybean nodule numbers, weight, and size declined. Additional experiments were conducted to understand changes that may have occurred in soybean N fixation through plant breeding over time. Results of these experiments show increased soybean yields in soybean cultivars released through time, however a similar trend between cultivars was not observed in soybean nodule numbers, weights, or tissue N concentrations.