Article title	Evaluation of Sugarcane Bagasse Biochar on Soybean Production Under Different Irrigation Regimes
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Abstract	Conversion of agricultural wastes to biochar and reapplying back to agricultural lands creates a circular economy and has potential to improve crop yields and carbon sequestration. This two-year study was conducted at Louisiana State University Agricultural Center, Bossier from 2022 to 2023. The objectives were to: 1) determine optimum application rates of the Sugarcane Bagasse biochar on soybean production and 2) quantify irrigation effects on biochar application rates in soybean production. Biochar application rates are 0, 0.56, 1.12, 2.24, 4.48, and 11.2 Mg ha-1. These biochar application rates were evaluated under irrigated (furrow) and non-irrigated (rainfed) conditions. Plant parameters measured are germination rate, stand counts, plant biomass and grain yield. Soil moisture data was also collected before and after irrigation. Our results show that biochar application did not affect soybean germination rate and stand count for both years. In the year 2022, biochar increased soybean grain yield by 2 to 23% compared to the control under non-irrigated condition while no yield difference was observed under irrigated condition. In the year 2023, biochar improved soybean grain yield in both irrigated and non-irrigated conditions by 4 to 11% and 7.2 to 22.3% respectively compared to the control. Biochar influence on soybean grain yield in both irrigated and non-irrigated conditions varied in the two years of this study. There was no consistent influence of biochar on soil moisture at both 0-15cm and 15-30cm soil depth.
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