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Effects of Density, Variety, and Their Interaction on Mungbean Ecophysiology and Yield

Abstract

Mungbean (*Vigna radiata*) is a warm season, C3 pulse crop of the legume family that has been widely cultivated within Asian countries. As its demand continues to increase in the United States due to its low input and drought tolerance and consumption by health-conscious Americans, Africans, Asians, Caribbeans, and Hispanic immigrants, its true ability to perform in Southeastern states of the US has not been greatly assessed. A study was conducted at the Agricultural Research and Education Center of Tennessee State University to investigate the effects of three densities (5, 10, and 15 cm spacing) and four varieties (OK 2000, OK Berken, TSU, AAUM) on the ecophysiology and yield of mungbean. Leaf photosynthesis, transpiration, water use efficiency (WUE), chlorophyll content, height, leaf area index, pod number per plant, seed number per pod, 100-seed weight, harvest index and yield were measured. Results showed that plant height, WUE, pod number, seed number, yield, and harvest index were significantly different among the four varieties. Density only influenced transpiration, chlorophyll content, and dry biomass per plot. OK2000 had the highest pod number, harvest index, and yield. There were no significant difference in yield among the other three varieties. Plants in the high density (5 cm) treatment produced the highest dry biomass and transpiration, and showed a trend of high yield. Studies need to be continued to further investigate these effects on the mungbean yield in the future. This study was supported by the USDA and NSF projects.