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Tillage and Intercropping Effects on Growth and Yield of Groundnut in Maize/Groundnut Cropping System

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Abstract : Due to high population pressure/human activities competing for agricultural land, the need to maximize the productivity of available land has become necessary; this has not been achievable in the tropics with monoculture systems where a single harvest per season is the practice. Thus, this study evaluates intercropping combination and tillage practice on yield and yield components of groundnut in a mixture with maize. The trial was conducted in the rainy seasons of 2020 and 2021 at the Kogi State University Students' Research and Demonstration Farm, Latitude 70 301 and Longitude 70 091 E in the Southern Guinea Savannah agro-ecological zone of Nigeria. Treatment consisted of three tillage practices [as main plot factor] and five intercropping combinations [subplot factor] assigned to a 3 x 5 Factorial experiment replicated four times. Data were collected for growth, development, yield components, and yield of groundnut. Data collected were subjected to Statistical Analysis in line with Factorial Experiments. Means found to be statistically significant at 5 % probability were separated using the LSD method. Regarding yield components and yield related parameters in groundnuts, better performance was observed in cole cropped groundnut plots compared to the intercropped plots. However, intercropping groundnut with maize was generally advantageous, with LER greater than unity. Among the intercrops, the highest LERs were observed when one row of maize was cropped with one row of groundnut, with the least LER recorded in intercropping two rows of maize with one row of groundnut. For the tillage operations, zero tillage gave the highest LERs in both seasons, while the least LERs were recorded when the groundnut was planted on ridges. Since the highest LERs were observed when one row of maize was intercropped with one row of groundnut, this level of crop combination is recommended for the study area, while ridging may not be necessary to get good groundnut yield, particularly under similar soil conditions as obtained in the experimental area, and with similar rainfall observed during the experimental period.

Keywords : canopy height, leaf number, haulm yield / ha, pod yield / ha, harvest index and shelling percentage
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