PERFORMANCE OF SOYBEAN AND RICE MIXTURES AS INFLUENCED BY NPK RATE AND ROW ARRANGEMENT IN A GUINEA SAVANNAH ECOSYSTEM

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ABSTRACT
Field trials were conducted at the research farm of the Institute for Agricultural Research Samaru (11°11'N, 70°38'E and 686m above sea level) in the Northern Guinea Savannah ecological zone of Nigeria to study the performance of soybean and rice mixtures as influenced by four NPK fertilizers. (0:0:0; kg ha⁻¹, 40:40:40; kg ha⁻¹, 80:80:80 kg ha⁻¹ and 120:120:20 kg ha⁻¹) and three row arrangement i.e. 1:1, 2:1 and 1:2 of soybean: rice during 2005 and 2006 cropping seasons. The treatments were laid out in randomized complete block design (RCBD) replicated three times. The applications of 80:80:80 and 120:120:120 kg NPK ha⁻¹ produced significantly the highest number of pods, 100-grain weight and grain yield of soybean than the other rates of NPK used in both 2005 and 2006. The rice produced significantly higher number of grains/panicle, grain weight/panicle, 1000-grain weight and grain yield (kg ha⁻¹) at 80:80:80 and 120:120:120 kg NPK than the other rates used. The 1:2 row arrangements resulted in the most significant increase in 100-grain weight and grain yield. Rice also responded significantly to 1:2 row arrangements which produced high 1000-grain weight, number of spikelets per panicle, and grain yield. The land equivalent ratio (LER) showed that 1:2 row arrangement (soybean: rice) has the highest yield of 4739 and 1716 kg ha⁻¹ for soybean and rice respectively over 1:1 and the sole crops. In conclusion, the study shows that planting soybean and rice in 1:2 row arrangement and fertilized with 80:80:80 kg ha⁻¹ NPK fertilizer rate gave optimum yield.

Keyword: Soybean, rice, NPK fertilizer, intercropping and land equivalent ratio (LER)
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