

Effect of planting density and nitrogen fertilizer on seed yield of maize (*Zea mays*) variety "Aruna" grown on alfisol in the low country dry zone of Sri Lanka

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An experiment was conducted during yala 2000 and maha 2000/01 season on alfisol to investigate the effect of high density planting and higher nitrogen fertilizer on the grain yield of recently released early maturing inbred maize variety "Aruna". Nine treatments comprised of three plant densities, 55,555 (60 x 30 cm), 75,555 (45 x 30 cm), 111,111 (30 x 30 cm) plants/ha and three nitrogen levels (150, 300, 450 kg/ha) were tested in a Randomized Complete Block design with four replication. The plot size was 4.2 x 3.0 m. Both seasons, density of 74,074 plants/ ha gave a significantly higher yield over the other densities. The yield increase at 74,074 plants/ha was (17.7%) 0.89 t/ha over the 55,555 plants/ha population. Per plant cob number was not significantly affected by plant density. Increasing plant density has negatively affected the grains number per cob and 100 grain weight. However, major contributing factor for higher yields at higher density was the increased number of plants/ unit area. Yield response to increase nitrogen fertilizer was varied with the season and significant response observed only during yala season. Yield increase in yala season at nitrogen levels of 300 and 450 kg/ha over 150 kg/ha was 0.8 and 1.14 t/ha respectively. Economic analysis shows that increasing plant density is the best option to increase yield as well as the income. These results suggests that the grain yield of maize variety "Aruna" could be further increased by increasing recommended plant density of 55,555 to 74,000 plants/ ha under the current nitrogen level of 150 kg/ha.

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