

**INVESTIGATIONS ON FERTILIZER AND PLANT DENSITY
REQUIREMENT OF OPEN-POLLINATED POPCORN**

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Popcorn (*Zea mays everta*) is a variety of corn in which the kernel expands and puffs up when heated and uses for human consumption. There is no recommended fertilizer and spacing for popcorn in Sri Lanka. An experiment was carried out at Field Crops Research and Development Institute (FCRDI) to investigate suitable fertilizer (Urea, TSP, and MOP) levels and plant density for productive growth and yield of popcorn. Twelve treatment combinations were evaluated using a Randomized Complete Block Design (RCBD) with three blocks. Treatments were comprised of different spacing combinations and fertilizer combinations: Department of Agriculture (DoA) fertilizer recommendation for maize and also with 75 % reduced, 50 % reduced and 25 % reduced amounts (for individual plant basis) and no fertilizer as the control: with 60×30 cm, 45×30 cm, and 45×45 cm plant spacings. Plant height, seed count per cob, number of cobs, seed weight, and Soil Plant Analysis Development (SPAD) values were measured and recorded. The ANOVA and Duncan's new multiple range tests were used for the analysis of data statistically. The results confirmed that the treatment with DoA fertilizer recommendation for Maize for individual plant basis, 60*30 cm, and two plants per hill had a significant ($p<0.05$) effect on grain yield (5.18 tha^{-1}). The number of seeds per cob was significantly higher ($p<0.05$) when the Urea topdressing was applied in two splits. The highest ($p<0.05$) seed count per cob (405.3) was observed in the treatment with two split applications of nitrogen (Urea). The highest ($p<0.05$) leaf chlorophyll concentration (SPAD values) (49.53) was recorded in treatment with fertilizer recommendation for Maize by the Department of Agriculture and two plants per hill were the lowest SPAD value was recorded in the control. The plant heights and number of cobs increased when added fertilizer amounts increased. It can be concluded that the fertilizer recommendation for Maize by the Department of Agriculture with two plants per hill and 60*30 cm plant spacing was the best suited for growth and yield of popcorn in the Dry Zone of Sri Lanka.

Keywords: Fertilizer, Growth, Popcorn, Spacing, Yield