

ASSESSING INTEGRATED NITROGEN AND PLANTING DENSITY ON GROWTH, YIELD COMPONENT AND FINANCIAL ANALYSIS OF MAIZE CROPS (*ZEA MAYS*)

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Abstract

The application of inter- and intraspecific nitrogen supplements is considered to be the most economical means for higher production and income of maize. In the current study, we evaluated the effect of integrated fertilizer on the growth, yield component, and economic analysis of maize, Azam variety. Azam is a white flint maize genotype that was developed by backcrossing the F1 of Pirsabak 7930 and Zia to Pirsabak 7930 as the recurrent parent.

The Azam variety was produced by Cereal Crop Research Institute at Pirsabak (Noshera, Khyber Pakhtunkhwa province in Pakistan). Azam maize is a semi dent type of white maize. Azam variety of maize take 95 days to complete its maturity. We used randomized complete block with a split-plot design and four replications. The plant population allotted to the main plots consisted of three treatment levels (P1 = 65,000, P2 = 75,000, P3 = 85,000 plants x ha⁻¹).

Integrated fertilization was applied to sub-plots consisting of six treatment levels (F1 = control, F2 = 0% farmyard manure (FYM) + 100% urea, F3 = 100% FYM + 0% urea, F4 = 50% FYM + 50% urea, F5 = 75% FYM + 25% urea, and F6 = 25% FYM + 75% urea).

Parameters as: plant height (cm), grain number/ear, ear diameter (cm), agronomic efficiency, biological yield (kg), and grain yield (kg) were measured by classical methods. The financial analysis measured on total income, net income, net return and benefit cost ratio.

The results indicated that the interaction between P3 (85,000 plant x ha⁻¹) and F4 (50% FYM and 50% urea) could influence the plant height. Grain number/ear, ear diameter, agronomic efficiency, biological and grain yield were strongly influenced by each 85,000 plant ha⁻¹ and 50% farmyard manure along with 50% urea. However, there was no observed interaction between the above parameters.

The recommended parameters as per Peshawar's agro-climatic conditions portray the highest output for grain ear⁻¹ (326), ear diameter (3.42 cm), agronomic use efficiency (14.15), biological yield (12.5 tons x ha⁻¹), and grain yield (3927 kg x ha⁻¹). Maize crops are productive farming to enhance the benefit-cost ratio (B/C ratio) which reached 6.2, total income 1140.5 euros, and net return reached 956 euros. Based on the results and discussion, the interaction between plant population of 85,000 x ha⁻¹ and integrated fertilizer 50% FYM and 50% urea could influence maize's plant height.

Key words: *Integrated, Maize, Planting population, Productivity, Yield.*