

Research
Paper

Relationship latent on integrated nutrient management on yield attributes and economics of sweet corn (*Zea mays* L.)

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ABSTRACT

Field experiment was conducted at Agronomy farm B.A.College of Agriculture, Anand Campus, Anand during *Kharif* season of the year 2004-05 to study the effect of organic and inorganic fertilizer on seed yield of sweet corn (*Zea mays* L.). The experiment was studied with split plot design having two levels of inoculation (PSB), FYM and phosphorus as main plot treatments along with five levels of nitrogen as sub plot treatment. Applications of organic manure had significantly increased height and all crop growth and 5.75 per cent more grain yield with application of FYM@10 ha⁻¹. Seed inoculation with *Pseudomonas* gave significantly increased growth and grain yield increased by 8.24 per cent. Application of phosphorus significantly increased plant height at all crop growth stages and higher grain yield was recorded 6.74 per cent than central. Seed yield of sweet corn as well as growth and yield attributes were significantly increased due to varying levels of nitrogen. The higher grain yield (1633 kg ha⁻¹) and stover yield (5783 kg ha⁻¹) was recorded with 120 and 160 kg N ha⁻¹, respectively. The net realization of Rs. 30525 and 29255 ha⁻¹ was recorded with 10 t FYM ha⁻¹ +seed inoculation gave 31485 Rs. ha⁻¹ and application of P₂O₅ at 0 and 50 kg. P₂O₅ ha⁻¹ and higher with varying levels of N recorded significantly higher net realization. The yield attributes such as plant height of 84 DAS, no. of barren plants / plot, no. of rows / cob, no. of cobs / plant, no. of grains / cob, grain wt. / cob, test weight and fodder yield were found significantly correlated with grain yield of sweet corn. Significant negative correlation was found between grain yield and no. of barren plants / plot (r=-0.7642). It also means that 58.40 per cent variation in grain yield of sweet corn is due to variation in number of barren plants / plot. The highest net return obtained with N₃ (120kgN/ha), followed by C₁ (Rs. 31485), N₂ (Rs. 30828) and P₁ (Rs.30645), respectively. Whereas the CBR was observed highest with C₁ (1:7.97) followed by N₃ (1:7.93), FO (1:7.50) and P₂ (1:7.46), respectively.

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KEY WORDS : Maize, Nitrogen, Phosphorous, Integrated nutrient management, Sweet corn, Yield attributes, Correlation, Net realization

Sweet corn (*Zea mays* L.) popularity known as maize is one of the most important cereal of the world, ranking third amongst the food crops, next to rice and wheat both in respect of area and production. In Gujarat maize is one of the important traditionally grown crops of tribal areas. Comprising the districts of Panchmahals, Sabarkantha, Banaskantha and Part of Baroda and Kheda districts, now recently this crop may be introduced in South Gujarat districts like Surat, Tapi. Among these districts Panchmahals is a leading district. Among various types of maize, sweet corn is very popular for the use of its green cobs in the United States of America. It differs from the field corn due to its higher sweetness, as it has high amount of sugar and alcoholic material. Besides, its consumption as vegetable purpose, it is also utilized for

extracting sucrose as an industrial purpose. The role of organic manure for increasing crop production has been universally established, as it plays significant role in improving physical and chemical properties of the soil. Application of 12-15 tonne of FYM helps in increasing the yield of maize crop to the tune of 1.5 to 5.6 per cent / ha. Sweet corn is one of the heavy consumers of plant nutrients. It remains about 72 kg N, 35 kg P₂O₅ and 220 kg K₂O / ha. Nitrogen is the key element in crop growth and is the most limiting nutrient in Indian soils. The importance of nitrogen for increasing the yield has been widely accepted.

Maize is one of the crop that responds well to phosphoric fertilizer in almost all the soil types. It plays vital role in plant nutrition. The deficiency of phosphorus