

Effect of nitrogen with and without zinc and organic manure on growth, yield and quality of guava (*Psidium guajava* L.) cv. SARDAR

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ABSTRACT

In order to estimate the effect of nitrogen with and without zinc and organic manure the present experiment was conducted on 10 years old guava trees growing at Horticulture Garden of C.S. Azad University of Agriculture and Technology, Kanpur. The treatments consisted two levels each of N (400 g and 600 g), Zinc (0 and 20 g) and FYM (0 and 60 kg) per plant during two consecutive years of 2005-06 and 2006-07. N @ 400g, FYM 60 kg and zinc 20 g per plant individually caused significant improvement on fruits set, size and weight of fruit, TSS, total sugar, ascorbic acid and yield per plant. These attributes improved further in association of either zinc or FYM treatment. The combination of 400 g N + 60 kg FYM + 20 g zinc improved quality of fruit revealing significant improvement in the weight of individual fruit and yield per plant which increased by 28.6% over 400g N applied alone.

Key words : Nitrogen, Zinc, Organic manure, Yield , Quality, Guava.

Guava 'the apple of tropics' is one of the most common fruits in India. It is the fourth most important fruit in area and production after mango, banana and citrus in the country and covers an area of about 1,81,000 ha. with a production around 2,88,000 MT (Indian Horticulture Data Base, 2006). It is quite hardy and remunerative crop. But the yield and quality of fruit is poor due to either no manuring or unbalanced manuring. Use of organic manure plays pivotal role as it supplies all the essential nutrients in a balanced form maintaining the soil health physically as well as chemically. Nitrogen is required in relatively greater amount by fruit plants is universally accepted. Similarly zinc affects growth and development of plant in general and fruits in particular but it is highly toxic even in slight excess. An experiment was, therefore, planned to chalk out nutritional schedule with a view to improve the yield and quality of guava fruits.

MATERIALS AND METHODS

The experiments were carried out at Horticulture Garden, Department of Horticulture, C.S. Azad University of Agriculture and Technology, Kanpur on 10 years old guava trees of cv. SARDAR during the year 2005-06 and 2006-07. The treatments comprised two levels each of N ($N_1 = 400\text{g}$ and $N_2 = 600\text{g}$), Zinc ($Z_0=0\text{g}$ and $Z_1=20\text{g}$) and FYM ($F_0=0\text{kg}$ and $F_1 = 60\text{ kg}$) replicated thrice in a Randomized Block Design. Half of the dose of nitrogen i.e. 200g and 300g as per treatment, uniform dose of phosphorus 125g and potash 250g along with full dose of 20 g of zinc and 60 kg FYM per plant as per treatment, were applied in the middle of June and remaining half of

all the three major nutrients (NPK) were given after harvest in mid February. NPK were applied through urea, single super phosphate and muriate of potash, respectively and zinc through zinc sulphate. Observations were recorded on fruiting, yield and yield attributing characters as well as quality traits of fruit. The TSS was determined by hand refractometer and sugar, titrable acidity and ascorbic acid contents were estimated as per AOAC (1990) during both the years of study. The pooled analysis of the data obtained was done as per Panse and Sukhatme (1984).

RESULTS AND DISCUSSION

Nitrogen in guava influenced fruit set. Application of 400g N/plant could set 78.15% fruits against 77.80% noted under 600g N/plant (Table 1). Soil application of zinc 20g enhanced it significantly revealing 79.27% fruit set as compared to 76.67% noted under its control. FYM improved the fruit set further and the dose of 60 kg FYM gave 80.72% fruit set against 75.22% recorded under control. Among first order interactions F_1Z_1 gave fruit set of 82.65% whereas, the lowest of it was recorded under F_0Z_0 (74.55%).

The size of fruits (length and width) increased significantly under both the doses of N but did not differ statistically with each other. N @ 400g showed slightly greater improvement in these attributes (6.17 and 6.09 cm) than 600g N (6.15 and 6.05 cm) under respective attributes. Zinc 20g produced bigger fruits (6.25 cm length and 6.17cm width) than control. FYM 60 kg applied alone produced significantly bigger fruits expressing 6.32 cm