

## Effect of micronutrients on growth and yield of mango (*Mangifera indica* L.)

cv. DASHEHARI

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### ABSTRACT

The response of mango cv. DASEHARI to micronutrients viz., Zn, B and Mn respect of growth and yield was observed during 2004-05 at experimental farm, Central Institute for Subtropical Horticulture, Lucknow. During the experimentation three levels of Zn (0, 200 and 400g), Mn (0, 200 and 400g) and B (0, 100 and 200g) were applied as basal dressing in each tree in the form of Zn SO<sub>4</sub>, MnSO<sub>4</sub> and Borax. The results showed that higher levels of each micronutrients effectively enhanced the growth and yield (21.2%) of mango when applied either alone or in combinations.

**Key words :** Mango (*Mangifera indica* L.), Dashehari, Zinc, Manganese, Boron

Mango is indubitably, one of the most important fruit crop of the tropical and subtropical regions. In North India, Dashehari is one of the leading commercial cultivar known for its excellent quality of fruits. In the year on year problem of undersized fruits has been observed deformed shape of fruits with uneven ripening. This problem is the outcome of imbalanced nutrients status in a particular tree or orchard. Symptoms of Zn, Mn and B deficiency have been observed in the mango cultivars, Dashehari (Agarwala *et al.*, 1988), consequently addition of Zn, Mn and B from direct external sources became inevitable for crop production. Singh *et al.* (2003) reported that 30kg ha<sup>-1</sup> ZnSO<sub>4</sub> + 20kg ha<sup>-1</sup> borax may be applied in soil for better yield of mango cv. DASHEHARI in Uttar Pradesh and Uttranchal area. It could, be overcome by exogenous application of the micronutrients. Experiment on Zn, Mn and B requirement and their application was planned and conducted during crop growing season of 2004 and 2005. The response of micronutrients and their interactions effects were assessed in term of growth, yield and quality of mango. In this paper, attempt has been made to discuss the results of the experiment and to offer explanation and scientific evidences for the observed variations with a view to derive valued conclusion. Therefore, present experiment was carried out to evaluate the relationship between micronutrients doses and growth and yield in mango cv. DASHEHARI.

### MATERIALS AND METHODS

An experiment was undertaken at the orchard of the Central Institute for Subtropical Horticulture, Lucknow during 2003-04 and 2004-05. The soils of experimental orchard was well drained and yellowish brown alluvium

derived from Aravali and classified as member of sandy loam, mixed hyperthermic family of Typic Ustochrepts. There were 27 treatments combination with three replication. Zinc, manganese and boron as per treatments were applied as basal dressing through Zinc sulphate (0, 200 and 400g/tree) Manganese sulphate (0, 200 and 400g/tree) and Borax (0, 100 and 200g/tree). The micronutrients were applied through commercial grade zinc sulphate (33% Zn), manganese sulphate (30% Mn) and borax (15% B). The experiments were laid in randomised block design. Recommended dose of NPK (1.00 kg N, 0.5 kg P<sub>2</sub>O<sub>5</sub> and 1.0 kg K<sub>2</sub>O/ tree) was applied to all trees during II<sup>nd</sup> week of September. The observations were recorded on length and girth of shoots, Number of leaves/shoots, length and width of panicles and yield tree<sup>-1</sup>.

### RESULTS AND DISCUSSION

Observations on growth parameters clearly indicated that the higher concentration of Zn, Mn and B were more effective in promoting vegetative growth in Dashehari mango as compared to control (Table 1). Out of three concentrations, the highest concentration of Zn, Mn and B regulated length of shoots during both the years.

The perusal of data revealed (Table 1) that interactions of zinc, manganese at higher levels and boron either at lower or higher concentration caused significant improvement in vegetative growth of mango cv. Dashehari in relation to length and girth of the shoots and number of leaves per shoot in respective method of application. Russel (1957) explained the possible role of boron in nitrogen metabolism. When boron is in optimum level in plant, the supply of carbohydrate to the meristematic tissue