

Effect of foliar sprays of Zinc and Boron on the physical parameters of aonla (*Emblica officinalis* Gaertn.) fruits cv. BANARASI

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ABSTRACT

A field experiment was conducted during 2006 at Kanpur on thirty five year old aonla trees, to study the effect of foliar sprays of zinc and boron on the physical parameters of aonla (*Emblica officinalis* Gaertn.) fruits cv. BANARASI, revealed that fruit drop, fruit size (length and breadth), weight, volume, specific gravity and yield were maximized when foliar spray was done with 2% boron \pm 5% zinc sulphate.

Key words : Aonla, Boron, Zinc, Physical parameters, Yield.

Aonla or Indian gooseberry (*Emblica officinalis* Gaertn.) belongs to the family Euphorbiaceae and sub family Phyllanthoidae with the chromosome number $2n = 28$. It is suitable for semi-arid and arid regions and withstands well in salinity and drought conditions. It is also suitable for various types of wastelands. The aonla fruit is also valued for its products like preserves (murabba), sauce, candy, dried chips, tablets, chayvanprash, Trifla, Jellies, pickles, and tophies powder. It is used for treatment of diseases like dysentery, bronchitis, diabetes, fever and other diseases. It is also used for pharma cordials and cosmetic products. Nutrients play vital role in the bearing and improving the fruit yield and quality. Among the trace elements zinc and boron play significant role in flowering and fruiting process, N-metabolism, hormonal movement and cell division (Babu and Singh, 2001). Boron and zinc increase the fruit set, reduce fruit drop and improve fruit quality in various fruit crops (El. Sherif *et al.*, 1997). The present investigation was, therefore, undertaken to study the effect of foliar sprays of zinc and boron on physical parameters of aonla fruits cv. Banarasi.

MATERIALS AND METHODS

Thirty five year old aonla tree of Banarasi cultivar uniform in size and vigour growing in Horticulture Garden of C.S.Azad University of Agriculture and Technology, Kanpur – 208 002 were selected for the present investigation during 2006. Zinc sulphate 0.3% (T_1), 0.5% (T_2), 0.7% (T_3), borax 0.1% (T_4), 0.2% (T_5), T_4+T_1 (T_6), T_4+T_2 (T_7), T_4+T_3 (T_8), T_5+T_1 (T_9), T_5+T_2 (T_{10}) and T_5+T_3 (T_{11}) along with a control (T_{12}) were sprayed in 1st

week of March (4 March) and repeated in mid July (15 July). The experiment was laid out in R.B.D. with three replications. Both the minerals were applied through foliar feeding. Observations were recorded for fruit drop, fruit length, breadth, weight, volume, specific gravity and yield. The data so obtained were analysed statistically.

RESULTS AND DISCUSSION

A perusal of data presented in Table 1 shows that significant response in fruit drop (52%) was recorded with spray of 0.2% borax + 0.5% $ZnSO_4$ (T_{10}) followed by 0.2% borax + 0.7% $ZnSO_4$ (52.17) and T_9 (52.37%) in comparison to control (55%). The similar findings were also reported by Ram *et al.* (1977) in aonla, Singh and Vashistha (1997) in ber. Reduction in fruit drop of aonla may be due to the increased level of auxin induced by zinc sprays. Their findings are in agreement with the observations of Awasthi *et al.* (1975) who reported that zinc is required for the synthesis of tryptophan, which is a precursor of auxin.

The maximum fruit length (4.41 cm) and breadth (5.07 cm) were measured with foliar the application of 0.2% borax + 0.5% $ZnSO_4$ (T_{10}) which was significantly superior than 0.1 borax + 0.7% $ZnSO_4$ (T_8) and minimum fruit length (3.67 cm) and breadth (4.35 cm) were recorded under control. The fruit weight of aonla differed significantly with the sprays of zinc and boron alone or in combination. The maximum fruit weight (48.16 g) was recorded when 0.2% borax + 0.5% $ZnSO_4$ (T_{10}) was sprayed. It was followed by 0.1% borax + 0.7% $ZnSO_4$ (47.76g) while the minimum fruit weight (44.26g) was measured under control (T_{12}). The findings are similar to