

ABSTRACT

Title of the thesis/dissertation	:	Studies on the effect of Zinc and Boron fortification on physiological efficiency and seed quality attributes in chickpea (<i>Cicer arietinum</i> L.)
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Major subject	:	Plant Physiology
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Name of the university	:	Sher-e-Kashmir University of Agricultural Science and Technology of Jammu

Detailed systematic studies were conducted on the effect of Zinc and Boron fortification on physiological efficiency and seed quality attributes in chickpea. Variety GNG - 1958 was taken as an experimental material. The seeds of chickpea were obtained from Pulse Research Station Samba , SKUASTJ were sows in 6 kg of plastic pots filled with collected field soil and vermicompost in the experimental area of Division of Plant Physiology Foliar application of boron and zinc was therefore, applied at different levels , ie . Zn (0.5 %) , Zn (1.5 %) , B (0.5 %) , B (1.0 %) and combinations of Zn (0.5 %) B (0.5 %) Zn (0.5 %) B (1 %) , Zn (1 %) B (0.5 %) , Zn (1 %) B (1 %) , Zn (1.5 %) B (0.5 %) and Zn (1.5 %) B (1 %) . The present study was carried out on chickpea (*Cicer artetimum* 1.) variety GNG - 1958 to assess the impact of zinc and boron fortification on physiological efficiency and seed quality attributes of chickpea . Data were recorded at 140 days after sowing and at harvest (168 DAS) after giving foliar treatment of zinc and boron to crop at vegetative stage and at just before flowering stage . ; 1 1 1 In relation to morphological responses, the maximum plant height was recorded in Ta (3233 cm) in comparison to control (22.80 cm) . Maximum number of branches at harvest was found in Te (6.22) and lowest was found in control (3 11) . Maximum chlorophyll content at harvest was found in T. (2.56 mgg⁻¹) and lowest was found in control (1.18 mgg⁻¹) The maximum relative water content was noticed in T , (89.54 %) whereas the minimum was found in control (63.25 % 6) . The maximum grain Zn and B content was found in T6. (43.63 mgkg⁻¹), (40.55 mgKg⁻¹) and lowest was found in control (39.42 mgKg⁻¹) and (35.99 mgKg⁻¹ respectively . The maximum nitrogen content at harvest was found in T. (3.51 %) and lowest was found in control (2.99 %) with maximum protein content at harvest was found in Ts (21.96 %) and lowest in control (18.70 %) . Number of pods per plant at harvest was found maximum in Te (20.67) and minimum in control (15.33) . The highest harvest index was found in T , (33,11 %) and the lowest in control (30.01 %) .

Foliar application of Zn (0.5%) + B (0.9 %) combination was found best for yield and quality production of chickpea crop. Therefore foliar application of 0.5 % Zn and 0.5 % B can be included for detailed study in field condition for further recommendation.

Key words: Chickpea, zinc, boron , fortification , malnutrition, protein content, physiological efficiency , quantitative yield and harvest index .

Signature of major Advisor

Signature of the Student