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Influence of foliar application of micronutrients on physiological characteristics and yield of Darjeeling tea (*Camellia sinensis* L.)

Rakesh Kumar, A K Singh, J S Bisen, M Choubey, Mahipal Singh and B Bera
Darjeeling Tea Research & Development Centre, Tea Board, India

Current fertilizer recommendation have emphasized much on macronutrients, such as N, P and K, but little attention has been paid to micronutrient elements despite continuous removal through harvesting. A study was conducted at experimental Farm, Darjeeling Tea Research and Development Centre, Kurseong during 2008 to 2013 to evaluate the impact of different micronutrients applied as foliar application on yield and physiological characteristics of mature tea. The uses of micronutrients have emerged as an important tool in improving production. The application of micronutrient was done twice in a year during March-April and August-September. The NPK dose was common for all treatment and applied at 90:45:90 Kg NPK/ha through Urea, RP and MOP. Highest net photosynthetic rate (PN $12.27 \mu\text{mol m}^{-2}\text{s}^{-1}$) was recorded from the plot where foliar application of 2% Zn + 2% Mg + 1% B (10 kg/ha $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ + 10 kg/ha MgSO_4 + 5 kg/ha H_3BO_4) was done which was closely followed by 2% Zn + 1% Mn + 1% B ($11.33 \mu\text{mol m}^{-2}\text{s}^{-1}$) but it was lowest in the plot where 400ml/ha Trasco-5 (Tea Special) was applied ($9.03 \mu\text{mol m}^{-2}\text{s}^{-1}$). Maximum Chlorophyll content was recorded from the plot where 2% Zn + 2% Mg + 1% B applied while it was lowest in control plot. Highest water use efficiency (WUE) was recorded from the plot where 2% Zn + 2% Mg + 1% B applied than other treatment. Positive correlation was observed between PN and WUE. Among pure salts Zinc, Magnesium and Boron (10 kg/ha $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ + 10 kg/ha MgSO_4 + 5 kg/ha H_3BO_4) gave the highest made tea yield (626.05 kg/ha), the increment of yield was 19.04 % over the control plot. The physiological analysis of photosynthetic pigments like chlorophyll revealed that there was positive and significant increase in all above parameters in treated plots as compared to control plot.

Biography

Rakesh Kumar was born on 08.12.1965. Passed MSc (Ag) in 1989 from Meerut University, Meerut, Uttar Pradesh. He joined as Assistant Teacher in 1989, obtained BEd (Ag) in 1992 from Regional Centre of Education, Ajmer, Rajasthan (NCERT). He joined as Jr. Sc. Asstt. (FM) in October, 1992 at Tea Board, Darjeeling Tea Research and Development Centre, Kurseong, Darjeeling West Bengal. Presently he is working as Junior Scientific Officer (Botany & Agronomy Division) since 2009. He had published more than 18 papers in National and International reputed journals and trained 25 Small Tea Growers of Darjeeling tea Industry and contributed one technical bulletin of young tea management of Darjeeling tea.

rk.jayantdttrdc@yahoo.com