

Effect of Boron Molybdenum and Nickel on Photosynthetic Pigments and Photosynthetic Rate of Blackgram (*Vigna mungo* L. Hepper)

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ABSTRACT

A field experiment was conducted on the effect of B, Mo and Ni as basal on photosynthetic pigments and photosynthesis rate of blackgram (*Vigna mungo* L. Hepper) at college farm, Agricultural college, Bapatla during Rabi 2017-18 in randomized block design with eight treatments of micronutrient application viz., control (T₁), B (T₂), Mo (T₃), Ni (T₄), B+Mo (T₅), B+Ni (T₆), Mo+Ni (T₇) and B+Mo+Ni (T₈) replicated thrice. The results revealed that soil application of B, Mo and Ni individually as basal resulted in increase of all photosynthetic pigments at vegetative stage. At later stages, Mo application had no effect, while B and Ni had the increasing effect on chlorophyll 'b' (7.2 & 8.8%) and carotenoids (5.6 %). The impact of Ni application on total chlorophyll was on par with that of combination treatments at pod development stage. All combination treatments increased the content of photosynthetic pigments. B, Mo and Ni application in combination (T₅ to T₈) enhanced the chlorophyll 'a' by 13.7, 7.2, 9.4 & 16.5 %, chlorophyll 'b' by 26.4, 19.2, 24.0 & 40.8 %, carotenoids by 22.2, 16.7, 19.4 & 27.8 % and total chlorophyll content by 16.9, 13.6, 15.6 & 18.9 % respectively. Photosynthetic rate increased continuously and this increase was declined at pod development stage. The increase in photosynthetic rate in T₂ and T₅ to T₈ at vegetative stage was 1.3, 1.5, 1.5, 1.4 and 1.6 folds, respectively. At flowering stage, it was 1.2, 1.5, 1.4, 1.3 and 1.5 folds, respectively. At pod development stage, B and Mo application showed 1.2 folds increase, B+Ni and Mo+Ni application showed 1.4 folds increase, while B+Mo and B+Mo+Ni application increased the photosynthesis rate by 1.6 folds.

Keywords: Blackgram, Boron, Chlorophyll, Molybdenum, Nickel, Photosynthetic rate