



Response of Broadbean (*Vicia faba*) to Irrigation and Phosphorus Levels in Alluvial Zone of West Bengal

S. Sarkar and A. Sarkar

Department of Agronomy

Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia-741 252, India

E-mail: smritikanasarkar12@gmail.com

Abstract: The experiment was conducted in rabi seasons of 2009-2011 to study the effect of three irrigation regimes (rainfed, irrigation applied at $\Psi = -0.03$ MPa at 30 cm soil depth and $\Psi = -0.03$ MPa at 30 cm soil depth) as main plots and four phosphorus rates (0, 25, 50 and 75 kg P_2O_5 ha⁻¹) as sub plots on the productivity and efficiency of broadbean. Highest seed yield and efficiencies were recorded when the crop was irrigated at $I_3 - \Psi = -0.03$ MPa at 30 cm soil depth. There was a significant increase in yield, production and economic efficiency with increasing levels of P application. Highest net returns and net return/rupee invested were obtained with the application of irrigation at $I_3 - \Psi = -0.03$ MPa at 30 cm soil depth along with 75 kg P_2O_5 ha⁻¹. Different irrigation and phosphorus levels altered the soil moisture extraction pattern in all 4 layers (0-15, 15-30, 30-45, 45-60 cm) and extraction rate increased with increasing moisture level in the soil. Significantly highest water use efficiency (WUE) was recorded under rainfed condition when crop was fertilized with 75 kg P_2O_5 ha⁻¹.

Keywords: Broadbean, Yield, Irrigation, Phosphorus, Water use efficiency
