



***Eucalyptus*-based Agroforestry System under Semi-Arid Condition in North-Western India: An economic Analysis**

R.S. Dhillon, S.B. Chavan*, K.S. Bangarwa, K.K. Bharadwaj, Sushil Kumari and Chhavi Sirohi

Department of Forestry, CCS Haryana Agricultural University, Hisar -125 004, India

*E-mail: sangramc8@gmail.com

Abstract: The compact block with smaller spacing currently used for *Eucalyptus* plantations in the Northern India does not permit economical intercropping from succeeding year. This discourages the small landholders who need regular income from taking up *Eucalyptus* plantations and benefiting from the expanding market for pulpwood and plywood. Therefore, *Eucalyptus* planted in three spacing geometry of compact block (3m×3m), wider (6m×1.5m) and paired row (17m×1m×1m) was compared with sole *Eucalyptus* (3m×3m) and sole agriculture (without tree) cropping system at a constant density of 1111 trees ha⁻¹. In experiment, *Sesbania aculeata* (*kharif*) and *Hordeum vulgare* (*rabi*) were intercropped in three spacing geometry of *Eucalyptus* (till the harvesting of trees) and also compared with mono cropping up to eight years of plantation. Yield of agricultural crops was significantly reduced in different spacing geometry over control and reduced from 15 percent in second year and more than 60 percent in eighth year of plantation. The results showed that 17m×1m×1m spacing of *Eucalyptus* registered the highest NPV @ 12 percent discounting of INR 185336 followed by spacing of 6m×1.5m (Rs.140975). The B:C ratio of these agroforestry system was recorded maximum in wider spacing (17m×1m×1m) and ranging from 1:1.57 and followed by 1:1.44 (6m×1.5m), 1:1.25 (sole *Eucalyptus*) and 1:1.2 (sole agricultural crops). The all the agroforestry system had an IRR ranging from 15 to 32 percent. Therefore, on the basis of economic analysis, the study conclude that the *Eucalyptus* based agroforestry intercropped with *S. aculeata* and *H. vulgare* cropping system performed most efficient in 17m×1m×1m as compared to other *Eucalyptus* spacing and sole cropping of *Eucalyptus* and crops.

Keywords: Economics evaluation, *Eucalyptus*, *Sesbania aculeata*, *Hordeum vulgare*, Agroforestry system
