

Dynamics of soil physical and chemical properties under wheat (*Triticum aestivum* L.) - poplar (*Populus deltoides* M.) based agroforestry system

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ABSTRACT: A field experiment was conducted to examine the dynamics and distribution of soil physical and chemical properties under different distances (0-3, 3-6, 6-9, 9-12, 12-15 and beyond 15 m tree line) in three- and four-year old boundary plantation of *Populus deltoides* M. The physical and chemical properties of soil were favourably affected by the distances of the poplar tree line. The surface soil bulk density was observed significantly lower near the tree line (0-3m) than the other distance in both years. Field capacity and plant available water after four years plantation were higher than three year plantation at each distance. The chemical properties viz., organic carbon, available nitrogen, available phosphorus, available potassium, exchangeable calcium and magnesium were significantly influenced by distances from the tree line. Except exchangeable Ca^{2+} and Mg^{2+} , these properties were significantly higher in the surface layer i.e. 0-15 cm and decreased significantly with successive increase in soil depth up to 90 cm.

Key words: Agroforestry, boundary plantation, exchangeable Ca^{2+} , exchangeable Mg^{2+} and soil organic carbon.