300:225:300 mg N,P,K seedling^{-1} (19.04 g seedling^{-1}) which has registered an increase of 39.2 per cent over control.
The total dry matter production of neem, pungam, simaruba and jatropha (10.89, 13.66, 8.76 and 13.07 g seedling^{-1}, respectively) in saline soil was 71.7, 107.9, 58.6 and 49.1 per cent as that of neutral soil. Neem, pungam and simaruba recorded the highest total dry matter production with 200:150:200 mg N,P,K seedling^{-1} (14.02,16.79, and 9.74 g seedling^{-1}, respectively) recording a percent increase of 35.1, 70.1 and 21.9, respectively over control. In the case of jatropha, the highest total dry matter (16.33 g seedling^{-1}) was recorded with 300:225:300 mg N,P,K seedling^{-1} with an increase of 74.7 per cent over control.

The present study suggests that pungam and neem were the best suited species for alkali and saline soils followed by simaruba and jatropha. The performance of the crops was relatively better in alkali soil than saline soil. The fertilizer requirement under neutral soil was 300:225:300 mg N, P_2O_5 and K_2O seedling^{-1} for all the crops. Whereas for alkali and saline soils, the fertilizer requirement for neem, pungam and simaruba was 200:150:200 mg N,P,K seedling^{-1} and for jatropha, the requirement was 300:225:300 mg N,P,K seedling^{-1}.

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Impact of forest types on soil properties

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Soil and vegetation have a complex interrelationship, in which one influences the other. Both in natural forests as well as man-made plantations cycling of nutrients is an important aspect as considerable amount of nutrients are returned through litter fall are made available for re-absorption. The nature and amount of organic matter produced depends on the dominant tree species present and the site characteristics of the area, which regulate the physico-chemical properties of soil. Thus, the percentage return of nutrient varies with species, site conditions and topography.

The present study investigates the effect of forest types on soil properties. Soil samples were collected from different forest types covering different forest ecosystems *viz.*, dry deciduous forest, moist deciduous, shola forest, grassland, pine plantation, eucalyptus + wattle plantation, each at three depths *viz.*, 0-15, 15-30 and 30-45 cm and were analyzed for their physical and chemical properties.

The soil pH ranged from 3.52 to 7.60 and the dry deciduous forest registered a maximum pH of 6.54 and the minimum was recorded in shola forest. With increase in depth, there was a slight increase in pH under dry deciduous forest, pine plantation and eucalyptus + wattle plantation. Dry deciduous forest registered a maximum EC of 0.946 dSm^{-1}at top layer followed by shola forests. In general, grassland recorded lower EC values than other vegetations. Organic carbon content was higher under shola forest. With increasing depth, there was a progressive reduction in organic carbon.

Soil available nitrogen was in the range of 229 kg ha^{-1} to 1919 kg ha^{-1}. A higher value of available nitrogen was recorded in grassland soils followed by shola forest. Available nitrogen was found to occur in a decreasing order with soil depth in all the study sites excluding sholas and grasslands. The highest available phosphorus was recorded in sholas and minimum was found in moist deciduous forest. With increasing depth, there was a great reduction in soil available phosphorus in all locations. This may be due to increased uptake and less contribution of P by the litters. Soil available potassium ranged from 90 kg ha^{-1} to 941 kg ha-^{1} The maximum amount of potassium was recorded in tea plantations and the minimum was under pine plantations. With increasing depth soil potassium decreased drastically.

Bulk density (BD) increased with increasing depth in all vegetations. Sholas recorded lesser BD. This is because of more organic matter addition to the top layer of the ground floor. Particle density (PD) of top layer of grassland was the lowest followed by sholas. Like BD, PD also increased with increasing depth of soil. Percent pore space was maximum in the top layers of shola forest and it decreased with increasing depth.

From this study a very good fertility status of soil was observed under sholas and grasslands. The lower amount of nutrients was recorded under dry deciduous and moist deciduous forest and this is because of higher absorption of nutrients by the trees and erosional losses. Hence it is concluded that the soil physical and chemical properties are markedly influenced by vegetation.