

Litter dynamics under different pruning regimes of *Albizia procera* based agroforestry system in semi-arid region

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ABSTRACT

Agroforestry provides many direct and indirect benefits to the society. It not only meets the requirement of fuel, fodder, food, furniture, farm implements, employment etc. but also enriches soil, increases biodiversity, sequester C, prevent soil erosion, conserve water etc. For soil enrichment, trees capture nutrients from deeper layers and add to the surface soil through leaf shedding (litterfall) and incorporation of pruned biomass. Litterfall and pruned biomass consequent upon the decomposition, release nutrients and results cumulative build up and/or sustain soil fertility. Thus understanding the processes and mechanism of soil enrichment in tree based cropping systems is necessary. Therefore, the present study was undertaken at the research farm of National Research Centre for Agroforestry during 2006-2007. The results revolve that leaves formed the major component of the total litter followed by petiole, fruit and bark. Leaves formed 67.7, 67.8, 69.7 and 70.4 per cent of the total litter under *A. procera* un-pruned + fallow, *A. procera* un-pruned + cropping, *A. procera* pruned 50 per cent + cropping, and *A. procera* pruned 70 per cent + cropping, respectively. Annually, litter production under these systems varied between 6.32 – 26.0 kg tree⁻¹. It is observed that quantity of N, P and K addition through litter fall of MPTs depends on the nature of MPTs, amount of litter fall, season, nutrient composition, canopy structure/geometry and canopy positions underneath. In irrespective of *A. procera* based land uses and pruning regimes therein, maximum amounts of N, P and K addition in winter followed by summer and rainy season coincided with the amounts of litter fall in respective seasons.

Key words : Agroforestry system, Soil enrichment, Nutrient release, Litterfall, Pruned biomass

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