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RESEARCH ARTICLE

Nutrient dynamics of *Miliusa tomentosa* in a dry tropical teak forest of Rajasthan

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SUMMARY: A study was conducted in a dry tropical forest at Udaipur, Rajasthan, India during 2008 to study the nutrient concentration in *Miliusa tomentosa* (the second dominant tree species in the teak forest), litter and soil. Observations were recorded to determine the nutrient content *i.e.,* nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, chloride and sodium in the different parts such as lateral roots, tap root, bark, cork, bole, branches, leaves, flowers/fruits/seeds and litter, and to explore nutrient content *i.e.,* nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, chloride, sodium and organic carbon in soils at different depths like 0.00-10.00 cm,10.00-20.00 cm and 20.00-30.00 cm in the same LSE. It was found that the highest amount of the nutrients was present in the foliage and poorer concentration of the nutrients was recorded in the lateral roots. The concentration of the nutrients in the tree components was in the order: reproductive parts > leaf > branch > bole wood > cork > bark in the above ground parts and main root > lateral root in the below ground parts. Greatest amounts of the nutrients were recorded in the 0-10.00 cm depth layer while as the lesser or poorer amounts were recorded in the lower layer. The upper layer of soil was found to contain more number of nutrients because of the high organic content present in the upper layer. The leaf component of the plant was found to be the most metabolically active part and it accumulated the high amount of the nutrient. It was observed that the concentration of the nutrients in the soil decreased while as the concentration of the nutrients in the trees increased indicating the accumulation of the nutrients by the plant. There was the reduction in the nutrient concentration of the litter leaves as well as branch litter indicating the transfer of the nutrients from the litter to the soil.

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The functioning of the ecosystems, particularly with regard to primary production, is generally influenced by the availability of nutrients, and this in turn depends on their distribution and rates of cycling at the ecosystem level. Trees take up large quantity of nutrients from the soil system and, although much of the nutrient uptake is returned to the soil through litter fall, large amount of nutrient are also removed when trees are harvested. If the nutrients are not available to the tree species to an optimum in a forest, the forest is liable to get disturbed. The present investigation was an initial attempt to study the nutrient dynamics of *Miliusa tomentosa* in dry tropical forest of Rajasthan as the nutrient dynamics in dry tropical forests of India have not been extensively studied compared to the other forest types.

EXPERIMENTAL METHODOLOGY

The site was located between 24.580^{0}N Latitude and 73.680^{0}E Longitude in Udaipur of Rajasthan. It has an average elevation of 598 meters (1961 feet). The climate of Udaipur is tropical with the mercury staying between a maximum of 42.3^{0}C and a minimum of 28.8^0 C during summers. Winters are a little cold with the maximum temperature rising to 28.8^0 C and the minimum dipping to 2.5^{0}C. The annual total rainfall received at Udaipur is 61 cm. The forest type is dry tropical forest and the area is totally hilly with