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## FAUNA – ASSISTED LITTER DECOMPOSITION AND ITS IMPACT ON CHEMICAL AND BIOLOGICAL HEALTH OF *BALANITES AEGYPTIACA* BASED SILVIPASTURE SYSTEM

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### ABSTRACT

Interactions among soil fauna, litter diversity, soil nutrients and biochemical properties during litter decomposition in *Balanites aegyptiaca* (T) based silvipasture system of tropical desertic land of India was studied. The system has *Cenchrus ciliaris* (CC) and *Lasiurus indicus* (LS) grasses. Soil organic carbon (SOC), total soil nitrogen (TSN), soil ammonical nitrogen (SAN), soil nitrate nitrogen (SNN), soil available phosphorous (SAP), soil respiration (SR) and soil dehydrogenase activity (SDA) were determined in litter decomposing soil. Faunal association and litter decomposition were maximum in T+LS litter. The faunal population and litter decomposition were significantly ( $P < 0.001$ ) higher inside the canopy of tree and at 5 cm depth. SOC, TSN, SNN, SR and SDA were significantly ( $P < 0.05$ ) greater in the mixture of tree and grass litters than tree litter alone. TSN, SAN, SNN, SAP, SR and SDA were significantly ( $P < 0.05$ ) higher under the canopy zone. However, SOC was significantly ( $P < 0.05$ ) higher at surface and minimum at 5 cm. A positive and significant correlation among litter-associated fauna, litter decomposition, chemical and biochemical properties during decomposition demonstrated the interacting effects of fauna on functional aspects of soil in *Balanites aegyptiaca* based silvipasture system. Therefore, the strategy may be adopted for decomposition of litters and improvement of soil systems employing potentials of below ground biological resources.

**Keywords :** Desert region, fauna, soil nutrients, soil respiration, soil dehydrogenase, silvipasture system.