



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

Litterfall and Nutrient Deposition in a Microphyllous Shrubland Desert Community, Northeastern Mexico

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Abstract

The objective of this study was to determine the litterfall production and the macro- (Ca, K, Mg, and P) and micro-nutrient (Fe, Mn and Zn) deposition through leaf litter in two research sites of similar vegetation type site 1: La Soledad (1863 m a.s.l.), Galeana county, Nuevo Leon state, and site 2: San José del Alamito (1895 m a.s.l.), Saltillo county, Coahuila state, Mexico. The main vegetation type is a microphyllous desert shrubland. Litter constituents (leaves, reproductive structures, twigs and miscellaneous residues) were collected at 15-day intervals from September 2008 to August 2009. Collections were carried out in 10 litter canisters (1.0 m × 1.0 m) randomly situated at an previously experimental plot of about 2500 m². Total annual deposition was 1,621 and 4,070 kg ha⁻¹ y⁻¹ for La Soledad and Alamito, respectively. Of total annual litter production, leaves contributed from 53 % (La Soledad) to 50 % (Alamito) followed by twigs from 25 % (Alamito) to 20 % (La Soledad), reproductive structures from 21 % (Alamito) to 19 % (La Soledad), and miscellaneous litterfall from 7 % (La Soledad) to 4 % (Alamito). Ca annual deposition was significantly higher in La Soledad (51.7 kg ha⁻¹ y⁻¹) than Alamito (38.4 kg ha⁻¹ y⁻¹). K annual deposition for Alamito and La Soledad was 79.3 and 58.4 kg ha⁻¹ y⁻¹, respectively, Mg was 401.4 and 396.4 kg ha⁻¹ y⁻¹, P was 681.2 and 680.5 kg ha⁻¹ y⁻¹ for Alamito and La Soledad, respectively. The micro-nutrient annual deposition was for Fe was 540.9 and 217.6 mg ha⁻¹ y⁻¹; Mn 119.3 and 41.3, and Zn 57.4 and 16.9 mg ha⁻¹ y⁻¹ for Alamito and La Soledad, respectively. The results showed a higher nutrient deposition at the Alamito site and this could be related to the structure of the plant community on this site, along with spatial and temporal trends of leaf litter input.

Keywords: Litter, litterfall, northeastern Mexico, nutrient deposition