Litterfall Deposition along an Altitude Gradient, Northeast Mexico

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Introduction . Litterfall and litter decomposition are key nutrient cycling processes in forest ecosystems (Isaac and Nair , 2006) . In addition , throughfall and stemflow help maintain forest floor soil fertility (Silva and González , 2001) . Despite the great number of floristic studies carried out in the northeastern region of Mexico , little research has been carried out to address the spatial and temporal patterns of litterfall deposition . Thus , the aim of this study was to assess the spatial litterfall production along an altitude gradient in northeastern Mexico , which covers three main vegetation types .

Materilas and methods . In this study , four experimental plots (50m×50m) were chosen . One plot was located in a pine forest (Bosque Escuela , 1600 masl) , the second was located in the ecotone of a *Querqus* forest and the Tamaulipan thornscrub (Ejido Crucitas , 550 masl) , and two plots were allocated in the Tamaulipan thornscrub (one located at the Faculty of Forest Sciences (Campus , 350 masl) , Autonomous University of Nuevo León , and the other in Ejido Cascajoso , 300 masl) . At each plot , 10 litter traps (1 .0 m^2 each) were used . Litter constituents (leaves , reproductive structures (flowers , fruits and seeds) , twigs or branches , and others (unidentified , fine plant residues) were collected at 15-day intervals between December 21 , 2006 and December 20 , 2007) . Litter deposition data (kg ha^{-1}) was subjected to a one-way analysis of variance design .

Results Total litterfall deposition ranged from 7 ,266 (Ejido Crucitas) to 4 ,119 (Bosque Escuela) kg ha^{-1} (Table 1) . Leaves represented the main component with a deposition that ranged from 74% (Bosque Escuela) to 86% (Ejido Cascajoso) of total annual litter production . Branches deposition ranged from 4% (Ejido Cascajoso) to 14% (Ejido Crucitas) , reproductive structures deposition ranged from 5% (Bosque Escuela) to 10% (Ejido Crucitas) , the contribution of others constituents of litterfall ranged from 1% (Campus) to 12% (Bosque Escuela) of total annual litter deposition .

Table 1 *Contribution of litterfall constituents (kg ha^{-1}) at research sites , northeastern Mexico .*

Litter	Research Site			
Constituent	Bosque Escuela	Ejido Crucitas	Campus	Ejido Cascajoso
Leaves	3 ,052	5 ,372	4 ,497	5 ,483
Reproductive structures	225	751	502	544
Branches	356	1 ,049	815	245
Others	487	93	51	111
Total	4 ,119	7 ,266	5 ,865	6 ,383

Conclusions Differences in spatial and temporal litterfall deposition among sites are related to plant phenology , plant tissue life span , community plant structure and environmental variables such as temperature and rainfall .

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