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## Seasonal Trends of Chlorophylls a and b and Carotenoids in Native Trees and Shrubs of Northeastern Mexico

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### Abstract

For range ruminants and wildlife, native shrubs and trees that grow in the semiarid regions of northeastern Mexico are important feed resources; however, are affected by climatic conditions and probably causing differences in the concentrations of photosynthetic pigments when considering effects in space (sites) and weather (seasonality). The study was carried out with aims to quantify and compare seasonally the content of chlorophylls a and b and carotenoids (x + c) during two consecutive years in foliar tissue of native trees (T) and shrubs (S) such as *Acacia rigidula* (S), *Bumelia celastrina* (T), *Castela texana* (S), *Celtis pallida* (S), *Croton cortesianus* (S), *Forestiera angustifolia* (S), *Karwinskia humboldtiana* (S), *Lantana macropoda* (S), *Leucophyllum frutescens* (S), *Prosopis laevigata* (T), *Zanthoxylum fagara* (T). Pigment determinations were carried out in a region of the state of Nuevo León at three county (Los Ramones, China, Linares) sites, which are grouped under a similar climatic pattern. Measurements were quantified spectrophotometrically and data are shown in fresh weight (fw). With exception of the interaction year\*plant of carotenoids content at Los Ramones site, all pigments were significantly different between years, seasons and between plants within years and seasons. All plants had marginal higher chlorophyll a content at Linares (overall mean = 0.79 mg g<sup>-1</sup> fw) than China (0.71) or Los Ramones (0.66) site. Chlorophyll b content followed a similar trend as chlorophyll a (0.29, 0.25 and 0.23, respectively). Marginal differences in carotenoids content, in all plants, were found among sites being the overall mean of 0.2 mg carotenoids g<sup>-1</sup> fw. Yearly and seasonal variations in plant pigments might have been related to seasonal water deficits, excessive irradiance levels during summer and extreme low temperatures in winter that could have affected leaf development and senescence.

**Keywords:** Carotenoids, chlorophylls a and b, native trees and shrubs, northeastern Mexico