

Morphological and physiological responses of *Guazuma ulmifolia* Lam. to different pruning dates

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Received: 1 March 2017 / Accepted: 26 September 2017
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Abstract Pruning is an important management practice for regulating tree structure and physiology, and the timing of pruning can enhance forage production during dry periods of the year. Experimental pruning was performed on *Guazuma ulmifolia* trees to explain the morphological and physiological changes that occur when they are subjected to programmed defoliation to promote regrowth during the dry season. Three prunings (P-1, P-2 and P-3) were conducted from August to October (rainy season), and four foliage harvesting dates (H-a, H-b, H-c and H-d) occurred from February to April (dry season) over 2 years of evaluation. The trees developed similar

numbers of branches from pruning and harvesting ($P > 0.05$). Differing predefined pruning height resulted in greater tree height in P-3. Trees in P-1 developed shorter ($P < 0.005$) and vigorous branches, in contrast, those in P-3 had longer and less vigorous branches with long internodes. Nonetheless, trees in P-3 added less height from regrowth ($P < 0.001$) to the total tree height. The first pruning (P-1) induced greater foliage density ($P < 0.010$) and more senescent leaves ($P < 0.001$), but this greater senescence was further affected by later leaf harvests ($P = 0.001$). Trees in P-3 showed greater photosynthetic efficiency ($P < 0.001$) because they retained lower leaf area and more green foliage during the dry season. The timing

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