Growth pattern of two Amazonian tree species

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To understand the growth dynamic of different tree species, aiming its management, it is necessary long series of growth measurements, covering all stages of development. Only then it is possible to analyze properly the growth according to the transition among diameter classes and their contribution to compose the commercial volume in the management cycle determined by legislation, inferring a sustainable rate cut. As dendrochronology has become a powerful tool in supporting the management planning of natural tropical forests, the objective of this work was to analyze the growth dynamic of two species from Amazon Forest, by long series of growth rings measurements. The annual growth rings were measured in discs collected from the trunk of the trees. Equations were tested to fit the growth curves and analyzes and simulations were carried out to identify the asymptote of adjustments. *Apuleia leiocarpa* presented maximum diameter increment in class center of 35 cm diameter at breast height (DBH), reaching 0.58 $cm.ano^{-1}$, decreasing thereafter. Gompertz model was selected, presenting R^2 0.99 and 15.88% of CV. The class presenting the highest basal area increment was 85 cm DBH, equivalent to 166 years old. Schumacher growth model presented the best adjustment to *Erisma uncinatum,* with R^2 of 0.99 and 17.15% CV, showing a different pattern compared to *Apuleia leiocarpa*. The simulation indicated that the class presenting the highest basal area increment was 75 cm DBH at 230 years old. *Erisma uncinatum*, unlike *Apuleia leiocarpa*, presented increase of increment until central class of 75 cm DBH, reaching the maximum of 0.77 $cm.ano^{-1}$. These data are consistent with the limits of DAP found in the 100% survey tree assessment for the species, with records of *Apuleia leiocarpa* trees up to 125 cm DBH class, and *Erisma uncinatum* up to 165 cm. Considering the increment in the different DBH classes, and the time necessary for trees to the transition among diameter classes, 35 cm of DBH trees of both species would reach the commercial limit of 55 cm of DBH, in a 30 years cutting cycle. With additional information of mortality, these data could be used to determine which classes of DBH should receive more intensive silvicultural treatment. They also would be useful to determine the most important classes to recover the exploited volume and the sustainable amount that could be exploited in each stand. This approach will enable the establishment long term sustainable management plans in tropical forests.
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