Abstract

A growth study of Prioria copaifera (Caesalpinaceae) using dendrochronological techniques. The Cativo (Prioria copaifera) forms very homogeneous forests called cativales in the flooded plains of some rivers from Costa Rica to Colombia. For over 70 years Cativo has been the main base of the timber industry in the Colombian Darien area. Because of high productivity and high-dominance of Cativo trees, they represent one of the most prone tropical forests for sustainable forest management. The objective of this research is to model diameter and timber volume growth and growth rates (absolute, mean and relative) of Cativo as a function of age, using tree ring data derived from dendrochronological techniques. We evaluated the annual nature of the tree rings by radiocarbon analysis and crossdating techniques. Besides, the diameter and volume growth was modeled using von Bertalanffys model. As of our results, we estimated the life span of Cativo in 614 years as the time required to reach 99% of the asymptotic diameter. By the mean value we have found that the mean rate of diameter growth is 0.31cm/y. The species requires 90 years to reach 40cm in diameter, the regulated cut diameter in Colombia. We find that Cativo reaches maximum current annual increment (ICA) in diameter at 40 years and in volume at 90 years with rates of 0.5cm/y and 0.032m3/y per tree, respectively. The maximum diameter mean annual increments (MAI) are achieved at 80 years and for the volume at 140 year, with growth rates of 0.45cm/y and 0.018m3/y per tree, respectively. The generated information is useful for the sustainable management of Cativo forests.

Keywords

Annual rings, tropical trees, flooded forest, dendrochronology, Prioria copaifera, radiocarbon dating, life span.