Abstract

The introduction of bamboo in South Nyanza region in Kenya as an alternative source of income initially met pessimism due a lengthy wait, of at least three years, before harvesting. To convince the farmers to plant bamboo, they needed to know the expected quantity of harvest, its timing and consequently its associated income. The harvest is determined by the height and multiplicity of bamboo clumps. This varies from place to place due to diverse environmental conditions and other growth factors. A Markov model for forecasting bamboo harvest is introduced. The study sites included Rangwe and Suba (in Homa Bay County), Ngege and Kuria/ Ikierege (in Migori County) in South Nyanza region, Kenya. The major cash crop in the selected areas has been predominantly tobacco. Time series data on growth measures progressively collected from the four project sites, each with 30 experimental gardens, was used to determine probability distributions of growth measures at discrete time intervals. Since the growth measures were random in nature, the stochastic modeling approach by Markov chains was applied. The resultant estimates from the model were 2,640 poles of *Bambusa vulgaris* and 1,188 poles of *Dendrocalamus giganteus* per acre of land per year. The model was tested for validity during the actual harvesting and found to be a good estimate of the actual values.