

Global Optimization in a Forest Model with Planting, Thinning, Clearcutting, and Rotation

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Abstract

This article reports a mathematical treatment of the linear control problem of managing a renewable resource. We present a dynamic timber harvesting model with a forest establishment cost function depending on the volume of seedlings planted by a forest firm. We show that if the firm plants seedlings within certain two distinct volume ranges, only the strategy of not performing thinning qualifies to be the best harvest strategy.

JEL classification: C61; D21; Q23

Keywords: Natural resource development; Faustmann formula; Pontryagin's maximum principle; Green's integration formula

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