

A theoretical approach to site quality and stand density

Teruhiko Marutani

Department of Economics, Kwansei Gakuin University, 1-1-155 Uegahara,
Nishinomiya, Hyogo 662-8501, JAPAN

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Abstract: In this paper, we propose a discrete-time-type timber harvesting model for simultaneously determining (i) the optimal volume of seedlings to be planted, (ii) the optimal volumes of timber harvested by thinnings, and (iii) the optimal rotation age. With the help of Microsoft Excel Solver, a generalized reduced gradient algorithm, numerical examples are developed to evaluate the impact of the variations in the quality level of a forest site on the optimal harvest strategy. It is shown that the level of optimal rotation age and optimal volume of seedlings to be planted can individually exhibit non-monotonicity to the increase in site quality.

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