

A CHARACTERIZATION OF THE ASYMPTOTIC BEHAVIOR OF OPTIMALLY MANAGED, MULTIPLE SPECIES FORESTS

ADRIANA PIAZZA

In abstract terms our model concerns the optimal management of a resource which can be either traded in the market or allocated to different activities that, after a fixed delay, provide a benefit and liberate the resource for immediate reuse. We study in particular the optimal harvesting problem where the resource is the land surface that may be allocated among several forest species (having different maturity ages) and/or traded in the market.

We characterize the asymptotic behavior of the state of the mixed forest, proving the existence of *sustainable states* and we discuss the conditions under which any optimal trajectory converges in the long run towards one of these states or towards the set of optimal periodic cycles. Our results are valid both in the discounted and undiscounted framework.

CENTRO DE MODELAMIENTO MATEMÁTICO (CNRS UMI 2807), DEPARTAMENTO DE INGENIERÍA
MATEMÁTICA, AV. BLANCO ENCALADA 2120, UNIVERSIDAD DE CHILE, CHILE
E-mail address: `apiazza@dim.uchile.cl`