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SOLVING AN INTEGRATED MULTI-PERIOD WOOD PROCUREMENT PROBLEM.

The problem we consider is a practical annual forest harvesting planning problem from the perspective of Eastern Canadian context. Within this context, forest cutblocks are heterogeneous and have different sizes. The total planning horizon considered is one year, divided into 12 time periods (months). This forest management problem is difficult to solve since it integrates two inter-related problems: the forest bucking problem using a cut-to-length (CTL) bucking system and the multi-facility supply planning problem. In fact, the choice of areas to harvest in each period and how to harvest it affects the amount of different assortments provided to mills. The main decisions deal with which areas to harvest during each period so that orders from various wood-processing facilities, located in distant places are satisfied. Moreover, the model provides decision support with respect to how to harvest the different cut blocks according to the bucking priority list used, and in what quantities harvested logs from each block should be transported to sawmill. The problem includes overall decisions about transportation, storage in the forest and at the mill terminals. One considerable part of the harvesting cost is due to the productivity decrease with the number of harvested products per cutblock. There are also a number of restrictions to be considered during harvesting. In this paper, we develop a mixed integer linear model describing the problem. Then, we solve it directely using CPLEX. Computational results from an Eastern Canadian forest company are presented.