AN EVALUATION OF SELECTIVE LOGGING AS A SUSTAINED YIELD TIMBER MANAGEMENT SYSTEM

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ABSTRACT

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A simulation model was developed to evaluate the conformance of selective logging with the concept of sustained yield timber management. The model was designed to be flexible enough to consider variations in: cutting cycle which also corresponds to the growing periods, diameter growth rate as affected by the species group and intensity of stand treatment, degree of site degradation, diameter cutting limit, utilization efficiency, extent and intensity of timber stand improvement activities and the area for timber production.

The computer program was written in Fortran IV and consists of a main program and 7 subroutines. It was test-run in the IBM 370 computer of the Agricultural Resources Center at College, Laguna, using data gathered from a wood industrial firm in Northeastern Mindanao.

Results of the simulation runs indicated that selective logging as practiced in the company will not give sustained yield of timber. Other variants of selective logging that were examined also showed the non-sustainability of timber yield. Most of the strategies investigated gave acceptable yield only up to the second cutting cycle. The few ones that reached the third cutting cycle had the common element of including timber stand improvement in the treatment combinations.

Some operational weaknesses of selective logging in the company were pointed out and discussed. These were: the use of unrealistic area for timber production in the computation of the allowable cut, the half-hearted implementation of selective logging, the obvious failure of tree marking and residual inventory to come up with acceptable residual stocking levels, the poor implementation of the forest protection program. Likewise, the apparent lack of sustained appreciation of commitment and sincerity on the part of the company and the government's regulatory agency to give selective logging the chance to succeed under the concept of sustained yield forest management were taken up. Recommendations for improving the timber production system for the dipterocarp forest and alternate systems are presented.

To serve as references in the development of the simulation model and the generation of alternative management strategies, some ecological analysis were done on the timber resources of the company. It was found out that the most important species were: mayapis (Shorea squamata) for common hardwoods; ulayan (Lithorarpus llanosii) for furniture and construction hardwoods; gubas (Endospermum peltatum) for softwoods and piling liitan (Canarium luzonicum) for other species. Species similarity was observed to be marked between areas having the same or nearly the same elevations than between areas differing substantially in elevation. Some dipterocarp species were confirmed to have greater altitudinal tolerance than the others. Dipterocarps were found to be most abundant on top of ridges than in other physiographic configurations.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER I

INTRODUCTION

Importance of the Dipterocarp Forest

The dipterocarp forest has been the mainstay of the forest economy of the Philippines, being not only the most extensive type of forest but also the most valuable timber resource. Furthermore, the dipterocarp forest contributes the most in social benefits and ecological influences among the other forest types. In area, it covers 8,865,767 hectares out of the 9,286,509 hectares or 95.46% of productive forest lands. In addition, 1,421,812 hectares of the 2,269,087 hectares or 62,66% of unproductive forest land is dominated by the dipterocarps. As of 1984, the estimated volume of standing dipterocarp timber was 805 million cubic meters out of the 5 million cubic meters remaining timber resource of the country or 84%. It used to be 1.42 billion cubic meters or 90.56% of the total volume of standing timber in the public forest (BFD Statistics, 1980, 1984).

The economic contribution generated by exploiting the dipterocarp forest accounts for the following: 1) the existence of 157 timber licenses covering an aggregate area of 6.3 million hectares and 233 major wood processing plants consisting of 189 sawmills, 6 veneer mills, and 38 plywood mills. The combined annual log requirements of these mills are 7.9 million cubic meters (BFD Statistics, 1984); 2) total investments on processing mills alone amounts to ₱6.5 billion; 3) foreign exchange earnings for the years,1978, 1979, 1980 and 1984