# OPTIMIZATION OF NIPAH RESERVOIR OPERATION FOR IRRIGATION

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ABSTRACT
Nipah Reservoir is located in Banyuates, Sampang, Madura Island, conservedthe water source comes from Nipah River. Function of this reservoir is to supply irrigation water to the the area of 1.150 Hapaddy field. Until now, the reservoir has not been operated yet since there is a land acquisition problem in part of the inundation area especially in social concerned. However,the reservoir must be operated immediately altough storage capacity of reservoir has to be decreased by lowering spillway elevation.

This research aims to analyse water balance betwen inflow discharge, availability of reservoir volume and water requirement of Nipahirrigation area. Analysis of selecting cropping pattern accoriding to schedule of plant periods are introduced by using Linear Programming to obtain meximum prodiction benefits. Inflow discharge to the reservoir have been calculated by using FJ Mock methods from available rainfall data.

The amount of crop water requirements have been calculated, there are rice is occured in early planting Desember II equal to 14.862,86 $m^3$/Ha, for soy bean in early planting Nopember I equal to 2.986,64 $m^3$/Ha and corn in early planting Nopember II equal to 3.046,59 $m^3$/Ha.The results of optimisation using linear programming methods and simulation of storage capacity, obtained the optimumcropping pattern plantations for Nipah Irigation Areais rice-rice-soy bean/corn yielding maximum benefit. Cropping intensities, in accordace with optimum cropping pattern,can be suggested to begin plantation year in November II with total maximum intensity of crop is 222%, with area plant that rice at the rains of equal to 1.150 Ha, area of planting the soy bean and corn at the dry seasons Iof equal to 83 Ha and 167 Ha. From the optimization results is obtained the maximam production benefit equal to Rp. 27.623.150.000,-.

Keywords: Optimization, Reservoir, Irrigation, Linear Programming