STUDY OF PLANT PATTERN IN JATIROTO IRRIGATION AREA BY USING LINEAR PROGRAMMING

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Abstract

Jatiroto Irrigation area is located at Lumajang Municipality, East Java. Jatiroto irrigation area is being supplied by Jatiroto River passing to Jatiroto Dam ass arrester of its water. There are 16.316 Ha of irrigation area which is being handled by the dam. The Plants type at irrigated rice field consist of paddy, palawija and sugar cane with plant pattern paddy/palawija/sugar cane – paddy/palawija/sugar cane – palawija/sugar cane.

 During the time, the operation of Jatiroto Irrigation Area has experienced many changes and function depreciation. With the limited resource of water, an optimization study is being conducted to maximized farming profit based on the optimal working area. To analyze it, a linear programming is used with the help of Quantity Methods for Windows 2. With the existing reliable volume limit and water requirement for every planned planting pattern alternatives, are being used as limitation or input for the linier programming operation. Output from this calculation is area of each kind of plants in every plants season and also the profit which will be acquired as the results of plants pattern in Jatiroto Irrigation.

From many planned alternative, the highest profit come from planting pattern paddy-paddy-paddy/palawija and sugar cane with early plant in November I. Profil acquired in early plants reached 46,239,434,034.02 rupiahs with plant intensity 300%. While existing profil acquired from regional area of research 39,622,061,000.00 rupiahs with plant intensity 282,27%. From this results we can conclude that profit increasing could reach 6,617,373,034.02 rupiahs and intensity 17,73%.

Keyword : Jatiroto, irrigation, plants-pattern, optimalization, linear programming