OPTIMALISASI DAERAH IRIGASI LAKBOK UTARA

MENGGUNAKAN PROGRAM LINEAR

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ABSTRAK

Gagal panen kerap dikeluhkan petani setempat yang terjadi pada masa tanam ke-3 pada daerah irigasi Lakbok Utara. Kondisi tersebut berpotensi terjadi gagal tanam dan berpengaruh pada nilai manfaat yang akan diterima oleh para petani. Perlu adanya penelitian optimalisasi terhadap kesetimbangan air pada daerah irigasi untuk mencari skenario yang tepat dan optimal di Daerah Irigasi Lakbok Utara. Penelitian ini diawali dengan pembangkitan data debit menggunakan metode Thomas Fiering, analisis hidrologi dan klimatologi. Debit bangkitan tersebut selanjutnya akan diuji validitasnya, hasil analisis didapatkan nilai NSE sebesar 0,74 (Data Memenuhi). Data tersebut digunakan dalam perhitungan ketersediaan air dengan menggunakan $Q_{80\%}$ dan menentukan skenario optimalisasi daerah irigasi lakbok utara menggunakan metode program linear berbasis keuntungan maksimum pada optimalisasi. Berdasarkan hasil analisis didapatkan keuntungan maksimum sebesar Rp 345,384,084,180 terjadi pada bulan November-1 dengan luasan lahan MT-1 dan MT-2 dapat terairi penuh sedangkan untuk MT-3 lahan yang terairi sebesar 1054,72 ha dengan pola tanam padi-padi-padi. Sedangkan untuk jadwal tanam eksisting didapatkan keuntungan maksimum sebesar Rp 329,297,038,137.00 dengan luasan lahan MT-1 dan MT-2 seluruh luasan irigasi terpenuhi sedangkan untuk MT-3 hanya terdapat 4124,11 ha yang terairi dengan pola tanam padi-padi-palawija. Hasil optimalisasi dengan pemodelan program linear mendapatkan hasil faktor K=1 pada optimalisasi membuat penditribusian air atau cara pembagian air dilakukan dengan cara terus menerus.

Kata Kunci : Irigasi, Neraca, Air, Optimalisasi, Lakbok Utara

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OPTIMIZATION OF NORTH LAKBOK IRRIGATION AREA USING LINEAR PROGRAM

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ABSTACT

Crop failure that occurred during the 3rd planting period in the North Lakbok irrigation area was complained by farmers. This condition has the potential to cause crop failure and affect the net benefit that will be received by farmers. There is a need for research on optimizing water balance in the North Lakbok irrigation area. This research began with the discharge data generation using the Thomas Fiering method, hydrological analysis and climatology. The generated discharge will then be tested for validity, the results of the analysis obtained an NSE value of 0.74 (Qualified Data). The data is used in calculating water availability $Q_{80\%}$ and determining the optimization scenario of the North Lakbok irrigation area using the linear program method. Based on the results of the analysis, it was found that the maximum profit of IDR 345,384,084,180 occurred in November-1 with the land area of 1st and 2nd planting period fully irrigated, while for 3rd planting period the irrigated land amounted to 1054.72 ha with a rice-rice planting pattern. As for the existing planting schedule, a maximum profit of IDR 329,297,038,137.00 was obtained with a land area of 1st and 2nd planting period 6292.94 ha and 3rd planting period 4124.11 ha with a rice-rice-crop planting pattern. The results of optimization with linear program modeling obtained the result of the K=1 factor with modifications from the excision planting pattern that previously the rice-paddy-paddy adjusted the selection of the scenario with the paddy-paddy-palawija planting pattern, the K=1 factor in the optimization made water distribution or the way of water distribution was carried out in a continuous way.

Keyword : **Irrigation, Balance, Water, Optimization, North Lakbok**

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