DETEKSI GAGAL LAHAN DAERAH IRIGASI CIMULU MENGGUNAKAN METODE RISIKO GAGAL LAHAN DAN METODE SIMPLEKS

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ABSTRAK

Kekeringan yang terjadi pada daerah Irigasi Cimulu terjadi sekitar 19,63% atau 303,5 ha dari keseluruhan luas lahan 1546,2 ha. Kondisi tersebut berpotensi menyebabkan gagal lahan atau gagal panen yang berpengaruh pada keuntungan yang akan diterima oleh para petani. Daerah Irigasi cimulu mengalami perubahan tata guna lahan sehingga luas lahan potensial berkurang menjadi 1032,48 ha. Dengan adanya potensi gagal panen tersebut maka perlu di deteksi mengenai risiko gagal lahan dari kedua luasan daerah irigasi tersebut. Penelitian ini diawali dengan analisis hidrologi, klimatologi, dan pembangkitan data debit menggunakan metode Thomas fiering yang selanjutnya dilakukan uji validitas. Hasil analisis didapat nilai NSE sebesar 0,62 (data *qualified*). Data tersebut digunakan untuk menghasilkan luas lahan optimum menggunakan metode simpleks dan metode risiko gagal lahan (RGL). Selanjutnya dihitung luas lahan gagal berdasarkan luas lahan optimum tersebut. Hasil yang diperoleh ialah gagal lahan terbesar terjadi pada kondisi luas lahan 1546,2 ha $Q80_{eksisting}$ yaitu sebesar 41,2% atau 1911,08 ha (Okt-2) dalam periode satu tahun berdasarkan metode simpleks dan 6,86% atau 318,2 ha (Jun-2) berdasarkan metode RGL. Dan untuk presentase gagal lahan terkecil ada pada kondisi luas lahan potensial 1032,48 ha $Q80_{bangkitan}$ dengan presentase 19,15% atau 593,16 ha pada periode Jun-2 menggunakan metode simpleks dan 0% menggunakan metode RGL. Kondisi optimum terjadi saat kondisi gagal lahan tidak terjadi dan menghasilkan keuntungan maksimum. Pada kondisi luas lahan 1546,2 ha, skenario paling optimum ialah awal tanam Nov-1, pola tanam RTTG (padi-padi-palawija) dengan presentase gagal lahan 0% dan keuntungan Rp 71.114.376.600. Sedangkan untuk kondisi luas lahan potensial 1032,48 ha, skenario optimum terjadi pada Nov-1, pola tanam eksisting (padi-padi-padi) dengan presentase gagal lahan 0% dan keuntungan Rp 64.214.577.360.

Kata Kunci: Gagal Lahan, Keuntungan, Luas Lahan, Pola dan Jadwal Tanam.

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DETECTION OF FIELD FAILURE IN CIMULU IRRIGATION AREA USING FIELD FAILURE RISK METHOD AND SIMPLEX METHOD

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ABSTRACT

Drought that occurred in the Cimulu irrigation area has occurred around 19.63% or 303.5 ha of the total field area of 1546.2 ha. This condition has the potential to cause field failure or crop failure which affects the benefits for the farmers. The Cimulu irrigation area has a change in land use so that the potential field area was reduced to 1032.48 ha. With the potential for crop failure and changes in field area, it is necessary to detect the risk of field failure from the two irrigated areas. This research begins with analysis of hydrological, climatological, and discharge data generation using the Thomas fiering method, which is then tested for validity. The results of the analysis obtained an NSE value of 0.62 (data qualified). The data is used to calculate the optimum land area using the simplex method and the land failure risk (RGL) method. Furthermore, the area of failed field is calculated based on the optimum field area. The results obtained were that the largest field failure occurred in the condition of a land area of 1546.2 ha $Q80_{exist}$ the result is 41.2% or 1911.08 ha (Oct-2) in a one year period based on the simplex method and 6.86% or 318.2 ha (Jun-2) based on the RGL method. And the smallest percentage of field failure is in the condition of a potential land area of 1032.48 ha $Q80_{bkt}$ with a percentage of 19.15% or 593.16 ha in the Jun-2 period using the simplex method and 0% using the RGL method. Optimum conditions occured when field failure conditions do not occur and produce maximum profits. In the condition of a field area of 1546.2 ha, the most optimal scenario is Nov-1, with RTTG cropping pattern (paddy-paddy-corn) with a land failure percentage of 0% and a profit of IDR 71,114,376,600. As for the condition of the potential land area of 1032.48 ha, the optimum scenario occurs on Nov-1 with existing cropping pattern (paddy-paddy-paddy) with a field failure percentage of 0% and a profit of IDR 64,214,577,360.

***Keywords**: Cropping Pattern and Schedule, Land Area, Land Failure, Profit.*

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