APLIKASI MODEL INFILTRASI KOSTIAKOV UNTUK ANALISIS POTENSI ALIRAN PERMUKAAN PADA LAHAN PERTANIAN TEMBAKAU DESA SELOPAMIORO KECAMATAN IMOGIRI KABUPATEN BANTUL

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INTISARI

Laju air yang berinfiltrasi dalam tanah menentukan ketersediaan lengas tanah dan air tanah serta terjadinya aliran permukaan. Laju infiltrasi dapat diprediksi dengan menggunakan model infiltrasi Kostiakov. Kesesuaian prediksi laju infiltrasi dari model Kostiakov terhadap laju infiltrasi aktual perlu dipastikan. Sehingga laju infiltrasi prediksi dapat digunakan untuk perhitungan aliran permukaan lebih lanjut. Tujuan dari penelitian ini yaitu memprediksi laju infiltrasi dengan model Kostiakov, memvalidasi model dan menentukan potensi aliran permukaan dengan neraca air.

Penelitian ini dilakukan di lahan pertanian tembakau Desa Selopamioro, Imogiri, Bantul. Titik pengukuran infiltrasi ditetapkan dengan mewakili lereng bagian atas, tengah dan bawah, masing-masing sejumlah 3 titik, sehingga total ada 9 titik pengukuran. Pengukuran laju infiltrasi dilakukan dengan menggunakan alat *Double Ring Infiltrometer*. Evaluasi model menggunakan regresi linear dengan melihat kesesuaian model berdasarkan nilai R^2.

Penelitian menunjukkan rerata laju infiltrasi aktual lahan tergolong sangat cepat yaitu antara 501,43–750 mm/jam. Prediksi laju infiltrasi model Kostiakov diperoleh laju infiltrasi yaitu antara 454,69 – 746,08 mm/jam dengan rerata 583,89 mm/jam dan tergolong sangat cepat. Hal ini dipengaruhi oleh karakteristik tanah dan kadar lengas tanah dari lahan tembakau tersebut. Evaluasi model menunjukkan bahwa model Kostiakov sesuai untuk memprediksi laju infiltrasi di lahan tersebut. Aliran permukaan di lahan tersebut di musim kemaau sangat kecil. Aliran permukaan terjadi jika intensitas hujan atau laju pemberian irigasi lebih besar dari laju infiltrasi lahan tesebut.

Kata Kunci : Laju Infiltrasi, Model Kostiakov, Aliran Permukaan, Lahan Tembakau.

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APPLICATION OF KOSTIAKOV INFILTRATION MODEL FOR SURFACE RUNOFF POTENTIAL ANALYSIS ON TOBACCO FARMLAND IN SELOPAMIORO VILLAGE, IMOGIRI DISTRICT, BANTUL REGENCY

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ABSTRACT

The rate at which water infiltrates the soil determines the availability of soil moisture and groundwater and the occurrence of surface runoff. The infiltration rate can be predicted using the Kostiakov infiltration model. The suitability of the predicted infiltration rate from the Kostiakov model to the actual infiltration rate needs to be validated. So that the predicted infiltration rate can be used for further runoff calculations. The purpose of this study is to predict the infiltration rate with the Kostiakov model, validate the model and determine the potential surface runoff using water balance.

This research was conducted in the tobacco farm of Selopamioro Village, Imogiri, Bantul. The infiltration measurement points are determined by representing the upper, middle and lower slopes, each of 3 points, so there are a total of 9 measurement points. The measurement of the infiltration rate was carried out using a Double Ring Infiltrometer. Model evaluation used linear regression to determine suitability of the model based on the R^2.

The research showed that the field has very high average actual infiltration rate, ranged between 501.43-750 mm / hour. The prediction of the infiltration rate of the Kostiakov model obtained the infiltration rate ranged between 454.69 – 746.08 mm / hour with an average of 583.89 mm / hour and was classified as very high. This is influenced by soil characteristics and soil moisture content of the tobacco fields. Model evaluation shows that Kostiakov's model is suitable for predicting the infiltration rate in these fields. The surface runoff in these lands in dry season is very low. Surface runoff occurs when the intensity of rain or the rate of irrigation is greater than the infiltration rate of the land.

Keyword : Infiltration Rate, Kostiakov model, Surface Runoff, Tobacco Field

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