INTISARI

Transformasi indeks kelengasan tanah memerlukan pengujian untuk diterapkan di Sub-DAS Kreo Semarang Jawa Tengah. Data spasial kelengasan tanah yang aktual dapat membantu dalam bidang pertanian untuk antisipasi lahan kering sehingga produksi tanaman pertanian dapat ditingkatkan.

Tujuan penelitian ini adalah : 1. Mengetahui hubungan antara lengas tanah permukaan dengan 4 indeks kelengasan tanah yang diterapkan pada citra Landsat Thematic Mapper, 2. Mengetahui model matematis pendugaan kelengasan tanah permukaan yang terbaik pada daerah penelitian, 3. Membuat peta kelengasan tanah permukaan berdasarkan model pendugaan kelengasan tanah permukaan.

Penelitian ini menggunakan citra Landsat TM tanggal 25 Juni 1996 dan pengambilan data lapangan dilaksanakan pada tanggal 8 dan 9 Juli 2000. Hasil analisis statistik korelasi menunjukkan bahwa hubungan antara lengas tanah permukaan dengan 4 indeks kelengasan tanah adalah tinggi. Koefisien korelasi indeks kelengasan tanah IKTwga ((wetness index + greeness index)/ brightness index I.Anglade) sebesar 0,74 , indeks kelengasan tanah IKTwgb ((wetness index + greeness index)/ brightness index Crist-Cicone) sebesar 0,78 , indeks kelengasan tanah IKTwna ((wetness index + NDVI)/ brightness index I.Anglade) sebesar 0,71 dan indeks kelengasan tanah IKTwnb ((wetness index + NDVI)/ brightness index Crist-Cicone) sebesar 0,78. Hasil analisis regresi menunjukkan bahwa indeks kelengasan tanah IKTwga yang paling baik untuk pendugaan kelengasan tanah permukaan. Peta kelengasan tanah permukaan Sub-DAS Kreo dihasilkan dari penerapan model pendugaan kelengasan tanah permukaan yaitu $Y= 13,325 \exp^{0,434 X}$ dengan $r^2 = 0,54$ dan $Se = 0,34$.

ABSTRACT

The transformation of soil moisture index needs to be examined for its application in Sub-DAS Kreo Semarang, Central Java. The actual soil moisture spatial data can help in agricultural field to anticipate dry land so that the production agricultural crops can be improved.

The purposes of this study were : 1) to identify the relationship between the surface soil moisture and 4 soil moisture index that application in Landsat Thematic Mapper image; 2) to identify the proper mathematical model of the surface soil moisture estimation for the study area; 3) to prepare the surface soil moisture map based on the surface soil moisture estimation model.

This study use Landsat Thematic Mapper image June, 25 1996 and fieldwork July, 8,9 2000. The results of correlation statistical analysis showed that the relationship between the surface soil moisture with 4 soil moisture indices were high. The correlation coefficients of the soil moisture indices were IKTwga ((wetness index + greeness index)/ brightness index I.Anglade) = 0.74, IKTwgb ((wetness index + greeness index)/ brightness index Crist-Cicone) = 0.78, IKTwna ((wetness index + NDVI)/ brightness index I.Anglade) = 0.71 and IKTwnb ((wetness index + NDVI)/ brightness index Crist-Cicone) = 0.78. The regression analysis results showed that the surface soil index IKTwga was the most appropriate for estimating the surface soil moisture. The surface soil moisture map of the Sub-DAS Kreo was prepared from the application of the soil moisture estimation model $Y = 13.325 \exp^{0.434X}$ with $r^2 = 0.54$ and Se = 0.34.