

ABSTRACT

CORRELATION AND REGRESSION ANALYSIS BETWEEN BODY VOLUME AND BODY WEIGHT OF SABURAI GOATS USING NON-LINEAR EQUATIONS IN THE TANI MAKMUR II FARMER GROUP

By

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This research aimed to find out the correlation and non-linear regression of body measurements (chest girth and body length) and body volume on body weight of Saburai goats in Kelompok Ternak Tani Makmur II, Gisting District, Tanggamus Regency. This research was conducted in January 2023, using the purposive sampling method where the criteria for the chosen goats were female, 1-3 years old, and not pregnant. The data collected included chest girth and body length of the Saburai goats. Independent variables in this study were chest girth, body length, and body volume which was calculated from chest girth and body length. This data was analyzed using the R application to determine the value of correlation and non linier regression coefficient. The results of the correlation analysis of body length, chest girth, and body volume on body weight were 0,7418, 0,7986, 0,8408, respectively. Futhermore, non-linear regression equation resulted from body length, chest girth, and body volume on body weight were $BW = 87,3886 - 2,5264BL + 0,0253BL^2$ with reliability value of 99,03% and determination coefficient of 0,6009, $BW = -76,8074 + 1,9316CG - 0,0051CG^2$ with reliability value of 100,19% and determination coefficient of 0,6383, and $BW = 1326 + 1,3470BV - 0,00000537BV^2$ with reliability value of 100% and determination coefficient of 0,7084, respectively.

Keywords : Body measurements, Body volume, Correlation, Non-linear regression, Saburai goat.

ABSTRAK

ANALISIS KORELASI DAN REGRESI ANTARA VOLUME TUBUH DENGAN BOBOT TUBUH KAMBING SABURAI MENGGUNAKAN PERSAMAAN NON LINIER DI KELOMPOK TERNAK TANI MAKMUR II

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Penelitian ini bertujuan untuk mengetahui korelasi dan regresi non linier ukuran-ukuran tubuh (lingkar dada dan panjang badan) dan volume tubuh terhadap bobot tubuh kambing Saburai di Kelompok Ternak Tani Makmur II Kecamatan Gisting, Kabupaten Tanggamus. Penelitian ini dilaksanakan pada Januari 2023, menggunakan metode *Purposive Sampling* dengan kriteria kambing yang dipilih yaitu betina, berumur 1—3 tahun, dan tidak sedang bunting. Data yang dihimpun meliputi lingkar dada dan panjang badan kambing Saburai untuk menentukan volume tubuh. Variabel bebas dalam penelitian ini adalah lingkar dada, panjang badan, dan volume badan yang dihitung dari lingkar dada dan panjang badan. Analisis data menggunakan aplikasi R untuk mengetahui nilai korelasi dan regresi non linier. Hasil penelitian menunjukkan bahwa koefisien korelasi (r) panjang badan, lingkar dada, dan volume tubuh terhadap bobot tubuh kambing Saburai berturut-turut yaitu 0,7418, 0,7986, dan 0,8408. Selanjutnya hasil analisis regresi non linear didapatkan bahwa regresi non linier panjang badan, lingkar dada, dan volume tubuh terhadap bobot tubuh, berturut-turut yaitu $BB = 87,3886 - 2,5264PB + 0,0253PB^2$ dengan keterandalan 99,03% dan koefisien determinasi (R^2) 0,6009, $BB = -76,8074 + 1,9316LD - 0,0051LD^2$ dengan keterandalan 100,19% dan koefisien determinasi (R^2) 0,638, dan $BB = 1326 + 1,3470VT - 0,00000537VT^2$ dengan keterandalan 100% dan koefisien determinasi (R^2) 0,7084.

Kata Kunci: Kambing Saburai, Korelasi, Regresi Non Linier, Ukuran Tubuh, Volume Tubuh.