

ABSTRAK

PENDUGAAN BOBOT TUBUH KAMBING JAWARANDU BETINA MENGUNAKAN UKURAN TUBUH DENGAN METODE REGRESI LINIER DAN POLINOMIAL DI DESA FAJAR MATARAM, KECAMATAN SEPUTIH MATARAM, KABUPATEN LAMPUNG TENGAH

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Penelitian ini bertujuan untuk mengetahui korelasi dan regresi yang terbaik dalam menduga bobot badan kambing Jawarandu menggunakan persamaan linier dan polinomial melalui ukuran tubuh, seperti lingkaran dada (LD), panjang badan (PB), dan tinggi pundak (TP). Penelitian dilakukan di Peternakan Rakyat di Desa Fajar Mataram, Kecamatan Seputih Mataram, Kabupaten Lampung Tengah pada bulan Maret 2025 dengan menggunakan metode survei. Data yang diperoleh ditabulasi menggunakan Excel, kemudian data dianalisis korelasi dan regresi linier serta polinomial menggunakan program R. Hasil penelitian ini menunjukkan bahwa nilai korelasi linier antara ukuran tubuh (LD, TP, dan TP) terhadap bobot tubuh berturut-turut yaitu 0,960; 0,884; dan 0,813, korelasi polinomial (kuadrat) 0,963; 0,884; dan 0,805, polinomial (kubik) 0,963; 0,882; dan 0,793, polinomial (kuartik) 0,959; 0,876; dan 0,777. Hasil penelitian menunjukkan bahwa persamaan linier antara ukuran tubuh (LD, PB, dan TP) terhadap BT yaitu $BT = -43,38631 + 1,05331LD$, $BT = -39,67865 + 1,11759PB$, $BT = -33,84817 + 1,01048TP$, Polinomial (kuadrat) $BT = 9,118473 - 0,480514LD + 0,011086LD^2$, $BT = -12,841143 + 0,246433PB + 0,007002PB^2$, $BT = -96,987843 + 2,988678TP - 0,015342TP^2$, polinomial (kubik) $BT = 283,7 - 12,59LD + 0,1876LD^2 - 0,0008518LD^3$, $BT = 496,532556 - 24,609950PB + 0,408194PB^2 + -0,002142PB^3$, $BT = 195,5 - 10,63TP + 0,1942TP^2 - 0,001065TP^3$, polinomial (kuartik) $BT = -2130 + 129,7LD - 2,938LD^2 + 0,02946LD^3 - 0,0001096LD^4$, $BT = 247,2 - 8,273PB + 0,009339PB^2 + 0,002159PB^3 + 0,00001728PB^4$, $BT = 774,6 - 46,81TP + 1,035TP^2 - 0,009688TP^3 + 0,00003289TP^4$. Dapat disimpulkan bahwa persamaan polinomial (kuartik) menggunakan LD merupakan model regresi terbaik untuk pendugaan bobot tubuh kambing Jawarandu dengan R^2 0,9343.

Kata kunci : Bobot tubuh, kambing Jawarandu betina, korelasi, regresi linier dan polinomial, ukuran tubuh

ABSTRACT

ESTIMATION OF BODY WEIGHT OF FEMALE JAWARANDU GOATS USING BODY SIZE WITH LINEAR AND POLYNOMIAL REGRESSION METHODS IN FAJAR MATARAM VILLAGE, SEPUTIH MATARAM SUB-DISTRICT, CENTRAL LAMPUNG DISTRICT

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This study aims to determine the best correlation and regression in estimating body weight of Jawarandu goats using linier and polynomial equations through body measurements, such as chest girth (CG), body length (BL), and shoulder height (SH). The researchers was conducted at a smallholder farm in Fajar Mataram village, Seputih Mataram sub-district, Central Lampung district in March 2025 using the survey method. The data obtained were tabulated using Excel, then the data were analyzed for correlation and linier and polynomial regression using the R program. The results of this study show that linier correlation value between body measurements (CG, BL, and SH) and body weight is respectively 0,960; 0,884; and 0,813, Polynomial correlation (quadratic) 0,963; 0,884; and 0,805, Polynomial (cubic) 0,963; 0,882; and 0,793, Polynomial (quartic) 0,959; 0,876; and 0,777. The results showed that the linier equation between body measurements (CG, BL, and SH) on BW was $BW = -43,38631 + 1,05331CG$, $BW = -39,67865 + 1,11759BL$, $BW = -33,84817 + 1,01048SH$, Polynomial (quadratic) $BW = 9,118473 - 0,480514CG + 0,011086CG^2$, $BW = -12,841143 + 0,246433BL + 0,007002BL^2$, $BW = -96,987843 + 2,988678SH - 0,015342SH^2$, Polynomial (cubic) $BW = 283,7 - 12,59CG + 0,1876CG^2 - 0,0008518CG^3$, $BW = 496,532556 - 24,609950BL + 0,408194BL^2 + -0,002142BL^3$, $BW = 195,5 - 10,63SH + 0,1942SH^2 - 0,001065SH^3$, Polynomial (quartic) $BW = -2130 + 129,7 CG - 2,938CG^2 + 0,02946CG^3 - 0,0001096CG^4$, $BW = 247,2 - 8,273BL + 0,009339BL^2 + 0,002159BL^3 + 0,00001728BL^4$, $BW = 774,6 - 46,81SH + 1,035SH^2 - 0,009688SH^3 + 0,00003289SH^4$. It can be concluded that the polynomial (quartic) equation using CG is the best regression model for estimating body weight of Jawarandu goats with R^2 0,9343.

Keywords : Body weight, Female Jawarandu Goats, Correlation, Linier and polynomial regression, Body size