The success of body condition score (BCS) method and live body weight (LBW) as measures of body reserves is a function of the distribution of body fat depots and this distribution could be determined for a sheep genotype. A total of 36 adult Churra ewes, with a range of BCS between 1.25 and 4.00 and a range of LBW between 30.3 and 52.6 kg were used with the aim of understanding the relationships among different fat depots and BCS and/or LBW. At slaughter, internal fat depots (IF; omental, OF; mesenteric MF and perirenal PF) and chemical fat of carcass (CP) and non-carcass (NCF) were measured. The relationship of different fat depots and chemical fat against BCS and LBW were:

\[
\log_{10} (\text{IF}) = -0.741 + 2.591 \times \log_{10} (\text{LBW}) + 1.029 \times \log_{10} (\text{BCS})
\]

\[
\text{residual s.d.} = 0.2199; r = 0.772
\]

\[
\log_{10} (\text{OF}) = -12.293 + 3.255 \times \log_{10} (\text{LBW}) + 1.032 \times \log_{10} (\text{BCS})
\]

\[
\text{residual s.d.} = 0.1342; r = 0.832
\]

\[
\log_{10} (\text{MF}) = -14.275 + 3.709 \times \log_{10} (\text{LBW}) + 0.936 \times \log_{10} (\text{BCS})
\]

\[
\text{residual s.d.} = 0.2584; r = 0.664
\]

\[
\log_{10} (\text{NCF}) = -8.169 + 1.39 \times \log_{10} (\text{LBW}) + 0.395 \times \log_{10} (\text{BCS})
\]

\[
\text{residual s.d.} = 0.1095; r = 0.806
\]

\[
\log_{10} (\text{CF}) = -3.553 + 0.151 \times \log_{10} (\text{LBW}) + 1.515 \times \log_{10} (\text{BCS})
\]

\[
\text{residual s.d.} = 0.1435; r = 0.896
\]

When BCS and LBW were used as methods of body fat reserves estimation, we must use BCS to predict carcass fat and LBW to predict internal fat depots. When both parameters are used jointly the estimation of total body fat was better, because Churra genotype, as Mediterranean milk production breed, showed a high proportion of non-carcass fat (405 g/kg total body fat).

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