

ABSTRACT

**Genetic relationship of feed efficiency traits of bulls with growth and carcass traits of their progeny for Japanese Black (Wagyu) cattle**

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Genetic parameters for feed efficiency traits of 740 Wagyu bulls and growth and carcass traits of 591 of their progeny, and the genetic relationship between the traits of bulls and their progeny were estimated with the residual maximum likelihood procedure. The estimations were made for the test periods of 140 days (77 bulls), 112 days (663 bulls) and 364 days (591 steer progeny). Feed efficiency traits of bulls included feed conversion ratio (FCR), phenotypic residual feed intake (RFI<sub>phe</sub>) and genetic residual feed intake (RFI<sub>gen</sub>). Progeny traits were bodyweight at the start of the test (BWS), bodyweight at finish (BWF), average daily gain (ADG), rib eye area (REA), marbling score (MSR), dressing percentage (DRS) and subcutaneous fat thickness (SFT). The estimated heritability for MSR (0.52) was high and for BWS (0.35), BWF (0.40) and ADG (0.30) were moderate, whereas REA, DRS and SFT were low. Positive genetic correlations among BWS, BWF, ADG and SFT and negative genetic correlations between MSR and DRS and between REA and SFT were found. The genetic correlations between residual feed intake (RFI<sub>phe</sub> and RFI<sub>gen</sub>) of bulls and bodyweights (BWS and BWF) of their progeny ranged from -0.27 to -0.61. Residual feed intake was positively correlated with REA and DRS and negatively correlated with MSR and SFT. No responses in ADG and weakly correlated responses in REA and DRS of progeny were found to select against feed efficiency traits of bulls. The present experiment provides evidence that selection against lower RFI (higher feed efficiency) would be better than selection against lower FCR for getting better correlated responses in bodyweights.