

The relationship between genetic diversity and phenotypic characteristics in the Irish Draught Horse

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The Irish Draught is a native Irish horse breed that was traditionally used for both draught and riding purposes. The breed has previously been characterised using both mtDNA and pedigree analyses using PEDIG software to assess its genetic diversity. Breeders are actively encouraged and supported in including genetic diversity as part of the mating plans. For example, mean kinship information on all purebred Irish Draught horses has been made available to all breeders and has been incorporated into the breeding programme of stallion and mare selection processes. The main market for the breed is in the production of crossbred Irish Draught progeny suitable for showjumping. Although this has been a key component in the survival of the breed, it has resulted in a decrease in the numbers of purebred foals produced and has raised concerns about the erosion of the traditional phenotypic characteristics of the breed. In order to assess this, the linear scoring results for 529 mares inspected in 2010 and 2011 and conformation characteristics for 506 stallions born between 1961 and 2008 were analysed using SAS software (GLM and chi-square analyses). The analysis of the conformation of stallions passed at inspection showed a significant decrease in bone circumference ($P \leq 0.01$) from 23.7 to 22.9cm over this time period although no significant change for observed in either height at withers or girth. The analysis of the mares' linear profiles showed that mares with a mean kinship value of less than 2% were significantly less likely to meet the required standard for breed type. Conservation of the breed including its traditional type will require mares to be considered on a number of criteria and not solely for their contribution to genetic diversity. Research into the effect of the use of AI and sales results for both purebred and crossbred ID horses will also be presented.

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