

Book of Abstracts of the 63rd Annual Meeting of the European Federation of Animal Science



Book of abstracts No. 18 (2012)
Bratislava, Slovakia
27 - 31 August 2012

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Economically weighting fibre and morphological traits in an alpaca breeding program

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Nowadays, the fiber diameter is considered as the main selection objective in alpaca populations all over the world. ICAR recommendations define the fiber diameter (FD) and its coefficient of variation (CV) as the most important traits to be considered in breeding programs for this specie. Using these two traits as selection criteria can be accompanied by desired or undesired genetic responses in other highly related and economically important traits for the industry such as comfort factor (CF) or standard deviation (SD) as well as to other less important traits being selection objectives such as these morphological traits: density (DE), crimp (CR) or lock structure (LS) for respectively Huacaya (HU) and Suri (SU) breeds, head (HE), coverage (CO) and balance (BA). The goal of this study was to study the expected correlated genetic trends by considering different alternative procedures of weighting all the involved traits. Heritabilities and genetic and phenotypic correlations estimated from the data set belonging to the PACOMARCA experimental farm for SU and HU were used. Three approaches were used to check the consequences of a set of subjective economic weights essayed. The coefficients of selection indexes were obtained for the set of economic weights, and equivalent economic weights obtained when applied those values as coefficients of hypothetical selection indexes directly on phenotypes were drawn. Also relative expected genetic responses were computed in different cases. Results showed that almost in all cases for both breeds, the weight applied to CF should be surprisingly negative. Concerning genetic responses, only CO was compromised in some cases for the HU breed, but morphological traits could be negatively modified in many cases for SU breed. If selection is focused in CV and FD, morphological traits will be penalized only in the SU breed.
