

## File S4: Cattle breed-specific covariables

The table S4.1 below gives details about each of the 18 cattle breeds from the  $BTA_{\text{snp}}$  data set.

Breed Code	Breed Name	Region of Origin	Sample Size	SMS	Piebald pattern
ABO	Abondance	South-Eastern France (Alps)	22	-0.2542	1
AUB	Aubrac	Southern France (Massif Central)	22	-0.5484	-1
BLO	Blonde d'Aquitaine	South-Western France	29	2.0671	-1
BPN	Bretonne Pie-Noir	North-Western France (Brittany)	18	-2.0859	1
BRU	French Brown Swiss	Switzerland (Alps)	18	-0.098	-1
CHA	Charolaise	Center France (Burgundy)	20	0.3208	-1
GAS	Gasconne	South-Western France (Pyrénées)	22	-0.2549	-1
HOL	French Holstein	Northern Europe	30	0.7083	1
JER	Jersiaise	Jersey Island	21	-1.7698	-1
LIM	Limousine	Center France	44	0.1509	-1
MAN	Rouge des Prés	North-Western France	46	1.3074	1
MAR	Maraîchine	North-Western France	19	0.3085	-1
MON	Montbéliarde	Eastern France (Jura)	30	0.411	1
NOR	Normande	North-Western France	30	0.6308	1
PRP	Pie Rouge des Plaines	North-Western France (Brittany)	22	0.398	1
SAL	Salers	Southern of France (Massif Central)	22	0.364	-1
TAR	Tarine	South-Eastern France (Alps)	18	-1.0961	-1
VOS	Vosgienne	Eastern France (Vosges)	20	-0.5595	1

Table S4.1: Origin, sample size, Synthetic Morphology Scores (SMS) and piebald pattern (1 for pied breed and -1 for breed with a uniform color pattern) of the 18 cattle breeds.

The Synthetic Morphology Score (SMS) covariable was derived from a Principal Component Analysis (see Figure S4.1 below) of the average Female Weight, Female Withers Height, Male Height and Male Withers Height of each breed as reported in the French BRG website (<http://www.brg.prd.fr/>). More precisely, the SMS corresponds to the scaled first principal components that explained 88.0% of the variance.

## References

Dray, S., and A. Dufour, 2007 The ade4 package: implementing the duality diagram for ecologists. *Journal of Statistical Software* 22: 1–20.

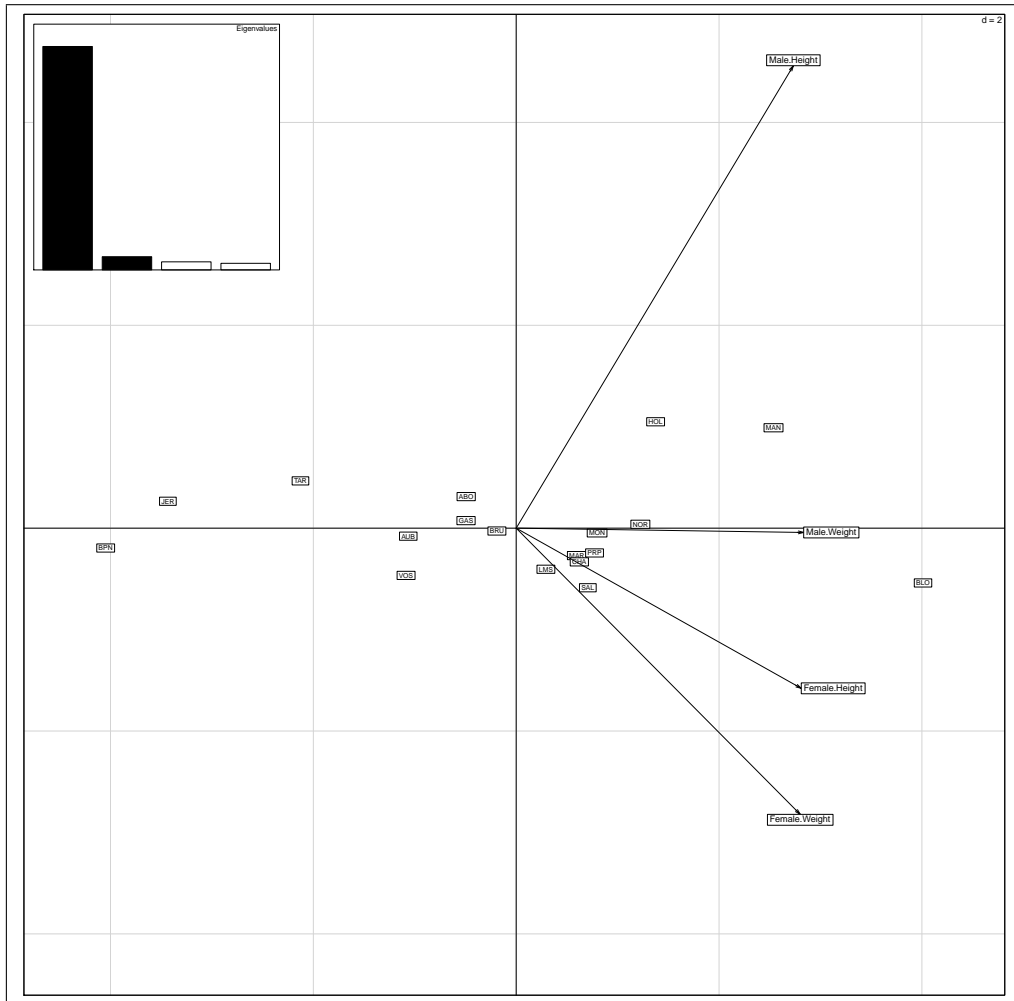


Figure S4.1: Biplot from the Principal Component Analysis of the four morphological traits at the 18 cattle breeds. The analyses were carried out with the R package *ade4* (Dray and Dufour, 2007).