

ECONOMICAL WEIGHTING OF BREEDING OBJECTIVES AND DEFINITION OF TOTAL MERIT INDEXES IN BMC SHEEP BREED



A. Cheype¹, J. Guerrier², F. Tortereau³, D. François³, J.P. Poivey⁴, K. Chile⁵, J. Raoul⁶

¹ Institut de l'Élevage, Boulevard des Arcades, 87060 Limoges, France
² Institut de l'Élevage, 9 allée Pierre de Fermat, 63170 Aubière, France
³ INRA, UR 631 SAGA, CS 52627, 31326 Castanet-Tolosan Cedex, France

⁴ INRA UMR SELMET, 2 place Viala, 34060 Montpellier, France
⁵ ROM Sélection, Paysat Bas, 43300 Mazeyrat d'Allier, France
⁶ Institut de l'Élevage, BP 42118, 31321 Castanet-Tolosan Cedex, France

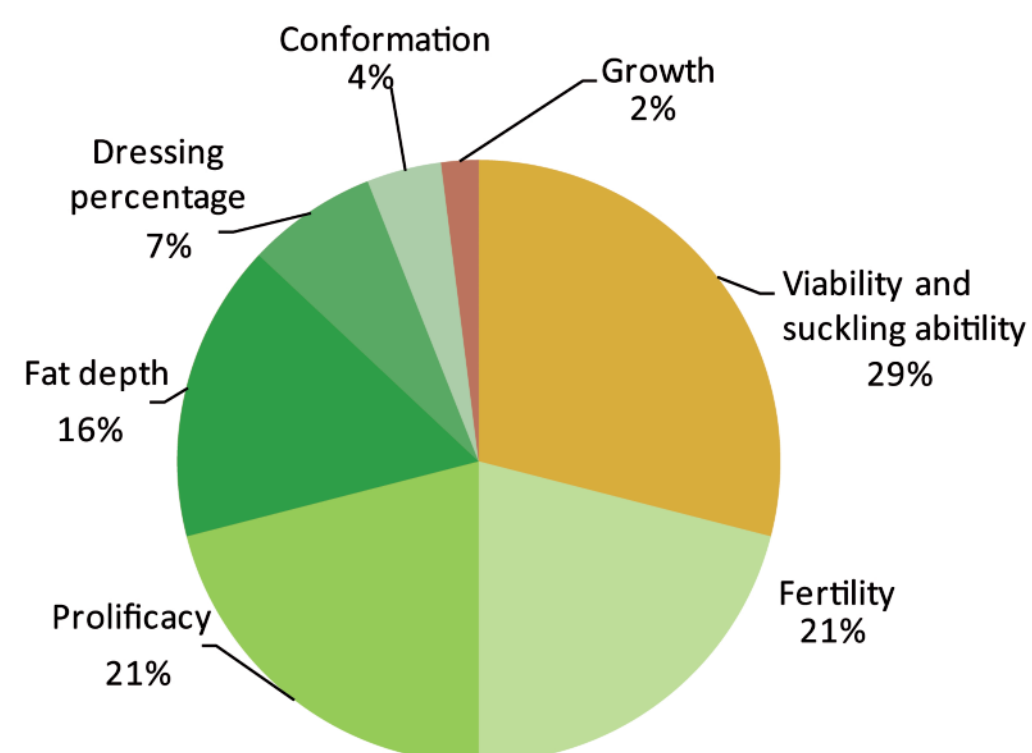
A new breeding goal to update the weights of traits in 3 total merit indexes (TMI)

Breeding objectives of the French Blanche du Massif Central (BMC) sheep breed scheme have been updated on **economical approach (eTMI)**, instead of a **technical (tTMI)** one.

New weights were estimated by **the expected change in profit** resulting from a change of one physical unit in that trait. Inputs and outputs of a flock were modeled.

The new breeding objective is presented on the graph. The aim of the study is **to update the 3 total merit indexes (TMI)** used for different kind of genetic evaluation: on farm (OF), own performance test station (OPS) and progeny testing (PT).

>Composition of economical breeding objective



Set up of total merit indexes

	Traits	Data	Method
OF	prolificacy, suckling ability	57 273 ewes BMC born from 2001 to 2011	stochastic optimization method of the response to selection
OPS	prolificacy, suckling ability, (estimated on ancestry), growth, fat depth, conformation age adjusted weight (AAW)	7 657 BMC rams tested on own performance station from 2001 to 2011	
PT	growth, fat depth, conformation	construction of a matrix of heritability, genetic correlation and phenotypic correlation	

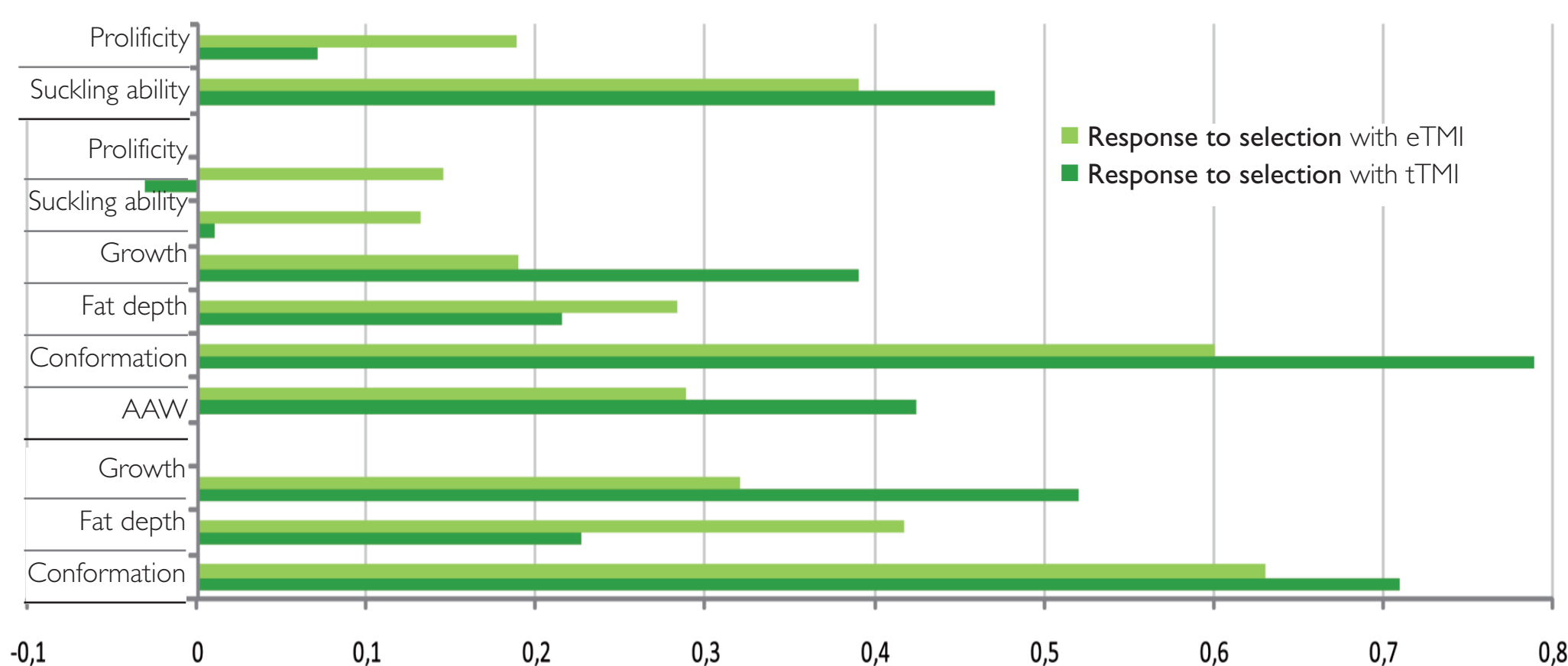
OPS Traits: Maternal and meat traits have been combined in a merit index, instead of using only meat traits.

Response to selection for each total merit index

Comparison of tTMI and eTMI for OF, OPS and PT. Selection responses on individual traits for each TMI.

		tTMI	eTMI
OF	Prolificacy	0.330	0.630
	Suckling ability	0.670	0.370
OPS	Prolificacy	0	0.341
	Suckling ability	0	0.224
	Growth	0.140	0.021
	Fat depth	0.290	0.217
	Conformation	0.430	0.180
	AAW	0.140	0.017
PT	Growth	0.285	0.110
	Fat depth	0.285	0.580
	Conformation	0.430	0.310

>Response to selection in genetic STD



OPS and PT: a constraint is applied to obtain a higher response on conformation. Responses are situated at 90% of the best global economical response for OPS and 94% for OPT.

Conclusion

A **new breeding goal** based on **economic references** has been launched thanks to **3 total merit indexes** for the BMC breed. Introduction of these new economical total merit indexes in the BMC selection program is in discussion with the breed organization.

Economic breeding objectives take full account of the link between **improving profit** on farms and **genetic selection**.

In the future, these methods will be applied to the others sheep breeds, as part of the **OSIRIS project**.