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To cite this article: Fiorella Sbarra, Riccardo Dal Zotto & Roberto Mantovani (2009) A survey on Cattle Performance Testing Centres in Italy, Italian Journal of Animal Science, 8:sup2, 153-155, DOI: [10.4081/ijas.2009.s2.153](https://doi.org/10.4081/ijas.2009.s2.153)

To link to this article: <https://doi.org/10.4081/ijas.2009.s2.153>



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Published online: 07 Mar 2016.



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A survey on Cattle Performance Testing Centres in Italy

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ABSTRACT – Performance test is the main selection tool for beef and dual purpose cattle, but it is used also in dairy cattle, despite the different aim of testing in this case. This study has aimed to obtain all available information about organisation and characteristic of performance test in Italy carried out in year 2006 by Italian Cattle Breeders Associations. The results of the survey here reported have the final aim of exploiting actual organization of selection processes carried out in Italy for beef, dual purpose and dairy cattle breeds through performance test. The survey has indicated different intensity of selection among Italian breeds, ranging from 2.45 to 3.13.

Key words: Performance test, Survey, Italian cattle breeds.

Introduction – Since the 80's, after the report of the EAAP working group on performance testing for young bulls to be used in artificial insemination (AI) programs (Bech Andersen *et al.*, 1981), this method of evaluation has become the main selection tool for both dual purpose and beef cattle breeding programmes (Mantovani *et al.*, 1999). At present, the performance test represents the main tool used for the genetic evaluation of beef cattle, but it is diffuse also in dual purpose and dairy cattle, despite the different aims among countries and breeds due to the specific selection objectives (Bittante *et al.*, 1999; Bittante, 2006). In Italy, almost all national breeders associations have adopted this method for young bulls' evaluation, but differences exist among performance tests in order to the selection goals, the population size and breeds' characteristics. This study aimed to review the present Italian situation as regard the specific activity on performance testing of AI young bulls across National Cattle Breeders Association. A complete survey to collect all possible information on actual organization of selection in Italy for beef, dual purpose and dairy cattle breeds through performance test was carried out and results are reported in the present paper.

Material and methods – A specific form was designed to collect data on performance test carried out in year 2006 and given to Italian cattle breeders associations across the period 2007-2008. The survey involved the followings National Cattle Breeders Association (NCBA): ANABIC (Marchigiana, Chianina, Romagnola, Maremmana, and Podolica breeds), ANABORAPI (Piedmontese breed), ANARE (Rendena breed), ANAPRI (Simmental breed), ANARB (Brown breed), ANAFI (Friesian breed), ANAGA (Alpine Gray breed), ANABORAVA (Valdostana breeds), and ANACLI (Limousin breed). Data collected concerned national herd books' statistics (i.e., registered and controlled population), structures available at the genetic centres to know the main characteristics of performance testing and its organisation, traits analysed, and selection indexes obtained on bulls tested. In particular, the survey was organised in order to obtain data on the procedure for bulls' admittance at genetic centre, the number of yearly tested bulls and the people employed at the centres. Other data regarded the schedule of performance testing and its phases, if there were more than one, the feeding system, the data recorded on young bulls and the management of bulls after selection at the end of test. Moreover, the number of se-

lected bulls was collected in order to assess among breeds the different intensity of selection adopted. After data collection, descriptive statistics of the different performance tests were carried out.

Table 1. General characteristics of performance test in different Italian breeds.

Breed	Owner	Bulls tested/ year	Groups	Age at entrance (d)	Length of Adaptation (d)	Weaning phase
Marchigiana	Farmer	51	12	150	30	NO
Chianina	Farmer	56	12	150	30	NO
Romagnola	Farmer	55	12	150	30	NO
Podolica	Farmer	40	1	270	30	NO
Maremmana	Farmer	44	1	270	30	NO
Piedmontese	Farmer & NCBA	215	12	50	90	YES
Limousin	Farmer	38	1	270	30	NO
Rendena	NCBA	60	5	35	-	YES
Simmental	NCBA	234	12	34	34	YES
Alpine Grey	NCBA	30	6	28	5	YES
Valdostana	NCBA	62	3	30	30	YES
Brown	AI Centres	59	6	210	28	NO
Friesian	AI Centres	435	50	225	35	NO

NCBA: National Cattle Breeders Association.

Table 2. Specific characteristics of performance test in Italy.

Breed	Length of test (d)	Months on test	Age at end of test (m)	No. weighing	Frequency (d)	Body measurements
Marchigiana	189	6	12	9	21	2
Chianina	189	6	12	9	21	2
Romagnola	189	6	12	9	21	2
Podolica	189	6	14-15	9	21	NO
Maremmana	189	6	14-15	9	21	NO
Piedmontese	308	10	12	11	28	1
Limousin	180	6	15	6	30	1
Rendena	330	11	12	11	30	11
Simmental	294	7	12	7	42	NO
Alpine Grey	168	6	12	6	28	6
Valdostana	180	6		6	30	6
Brown ^(a)	120	6	12.5	2+1		3
Friesian ^(b)	120	3		3		1

^(a)Weightings at first semen collection and after one month, ^(b)Weightings at entrance, end of adaptation and end of test.

Results and conclusions

– Table 1 represents the descriptive statistics related to the main characteristics of the performance test of beef, dual purpose and dairy Italian breeds; for beef breeds the bull’s ownership remain the farmer (excepted for Piedmontese breed where NCBA owns some bulls), while for dual purpose breed the ownership is always the NCBA. On the other hand, AI Centres owns all tested bulls belonging to dairy breeds. The age at entrance at genetic centres results higher for beef and dairy breeds (excepted Piedmontese breed), with a mean value of 7 months, while it is about 30 d for dual purpose breeds and Piedmontese. Another main difference among breeds is the number of groups yearly tested, with monthly entrance for the most popular beef breeds, while the smaller breeds (i.e., rustic breeds and autochthonous dual purpose breeds) are conditioned by seasonal calving and therefore by a lower number of groups (1 to 6). As regard the dairy breeds, the Brown breed has a bimestrial entrance and Friesian has basically a weekly “continuous” bull’s admittance to genetic centre. **Sanitary controls on animals** at the genetic centers are related to diagnose the absence of Tuberculosis (TBC), Brucellosis (BRC), Blue Tongue (BT), Infectious Bovine Rinotracheitis (IBR), and Bovine Viral Diarrhoea (BVD) in **almost all breeds. The only exception** is represented by Alpine Grey and Valdostana that do not allow the introduction of animals

from any other part of the country. Therefore, they are officially certified and, for this reason do not need the testing for IBR and/or BVD. About feeding, during the performance test, 7 breeds on total use the automatic feeder, and usually hay is given separately from concentrates. The only exception is for Simmental breed that does not separate feeds, given as total mixed ratio.

In Table 2 some specific characteristics of performance test organization are summarised; for beef and dual purpose breeds (except for Piedmontese, Simmental, and Rendena), testing's length is about 6 mo. The main trait measured by all NCBA over the test is the weight, with differences in the frequency of weightings that range from 21 to 42 d among breeds. In some cases, together with weights, some body measurements are taken, but not used to construct selection indexes. However, the dairy breeds are characterized by a poor number of weightings, due to the different aim of testing for these breeds as compared with beef or dual purpose ones. At the end of test, the Italian beef breeds, the Simmental and the Brown breeds, record individual linear type traits; Limousine breed carries out a morphological evaluation, while Rendena bulls are evaluated both for linear type trait and commercial carcass conformation (EUROP grade) and dressing percentage estimated *in vivo* (Anon, 2004). Data on Table 3 showed the main results of the selection process and the intensity of selection operated in 2006 by the breeds surveyed (*i* from 2.45 to 3.13). As regard the use of selected young bulls and their distribution among farms, almost all breeds provide to the semen training and collection, with the exception of Maremmana, Podolica, Limousin, Alpine Grey, and Friesian. In some cases (i.e., Piedmontese, Simmental, and Valdostana) the NCBA provide also for the distribution of semen, while in many cases, young bulls are sold by auction after test.

Table 3. Selection on tested young bulls in beef and dual purpose Italian breeds.

Breed	AI Approved	NS ^(a) Approved	Rate of elimination	Approved/ born (%)	<i>i</i> ^(b)	IA approved sold	NS approved sold
Marchigiana	13	8	58.8%	0.24%	3.13	13	6
Chianina	28	11	30.4%	0.51%	2.90	23	9
Romagnola	22	11	40.0%	1.05%	2.66	20	8
Podolica	-	11	72.5%	0.27%	3.08	-	10
Maremmana	-	22	50.0%	1.77%	2.46	-	5
Piedmontese	47	120	22.3%	0.37%	2.99	47	75
Limousin	4	20	36.9%	-	-	1	20
Rendena	30	-	50.0%	1.86%	2.45	30	-
Simmental	33	61	59.8%	0.67%	2.82	0	61
Alpine Grey	15	2	43.3%	-	-	15	2
Valdostana	26	20	25.8%	0.56%	-	26	10

^(a)Natural service Bulls, ^(b)Intensity of selection derived from the percentage of approved bulls on total no. males born.

The Authors thank all National Cattle Breeders Associations that have furnished data.

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