The benefits of using farmer scored traits in beef genetic evaluations

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Abstract

Voluntary farmer scored traits for calving difficulty, calf mortality, weanling quality, weanling docility, cow docility and cow milkability are included in the genetic evaluations undertaken by the Irish Cattle Breeding Federation (**ICBF**) for the Irish beef and dairy industry. Predicted transmitting abilities (PTAs) arising from the evaluation of calving difficulty and mortality scores are published as the official measure of genetic merit for calving ease and mortality for both beef and dairy animals. PTAs based on weanling docility scores are also published routinely while the remaining three traits as used as predictor traits in genetic evaluations. These traits are evaluated and published on an across breed basis (across beef and dairy animals for calving ease, mortality and across beef breeds for the other four traits). The routine collection of these farmer scored traits has helped to fill the void in data for traits where the ICBF industry integrated database is deficient in knowledge. The heritability of these traits and their genetic associations with other economically important traits are of a sufficient nature to warrant industry encouragement for their ongoing recording and use from a genetic improvement perspective. Knowledge transfer and communication to herd owners on the importance of recording these traits is vital to maintain ongoing levels of recording and usefulness of data received.
Keywords: farmer score

Introduction

The majority of Irish dairy and beef herds and cows can be categorised as non pedigree or commercial herds and animals. Within these commercial herds crossbreeding is popular in both dairy and beef herds. In 2011 there was 1,084,235 calves born in dairy herds on the Irish Cattle Breeding Federation (**ICBF**) database to 16 different breeds of dam and 43 different breeds of sire. Of these 65,171 (6%) were pedigree registered, 533,425 (49%) had the same sire and dam breed but were not pedigree registered, 98,788 (9%) were different sire and dam dairy breeds whereas 386,851 (36%) were calves from 28 different beef sire breeds crossed on the remaining dairy cows. The most popular breeds of sire of dairy herd calves in 2011 were Holstein (54%), Angus (13%), Hereford (9%), Limousine (6%), Friesian (5%), Charolais (3%), Belgian Blue (3%), Jersey (2%), Simmental (2%), Montbeliarde (1%) and Norwegian Red (1%). Similarly in 2011 there were 846,714 million calves born in beef herds on the ICBF database. Of these 35,354 (4%) were pedigree registered calves, 295,799 (35%) had the same sire and dam breed but were not pedigree registered, 515,561 (61%) had a different sire and dam breed. The most popular breeds of sire of beef herd calves in 2011 were Charolais (38%), Limousine (32%), Angus (8%), Belgian Blue (8%), Simmental (5%), Hereford (4%), Shorthorn (1%), Blonde d'Aquitaine (0.9%) and Salers (0.9%).

Commercial herd owners have a different perception on the benefits of performance recording to pedigree herds. The most obvious benefit to most pedigree herds from performance recording is the influence this recording will have on the genetic indexes of breeding stock they have for sale each year from both dairy and beef herds. While commercial herds may also periodically sell crossbred female breeding stock this is usually not the primary goal of the business and therefore is seen as a secondary component which does not require the large labour input which breeding stock sales from pedigree herds consume. Examples of the large labour input in pedigree herds would include pedigree registrations, halter training, grooming, participation in shows and sales, advertising and research and selection of semen, embryo transplantation, embryos and live animals to introduce new bloodlines to the herd. As a result of this lower level of engagement in commercial herds to recording for genetic improvement the high proportion of these herds in the ICBF database thus presents both challenges and opportunities to genetic improvement. One of the main benefits is that the high level of crossbreeding in commercial herds facilitates comparisons of genetic merit across breeds. Access to routinely collected livestock auction data and abattoir data from commercial herds allows for routine publication of genetic merit for weanling and carcass traits. This is available through industry structures developed by ICBF (Evans et al, 2007, 2008) and comes at no cost to the commercial farmer and is automatically sent to ICBF. Participation in performance recording for commercial herds needs to be low cost both financially and labour wise compared to the extra traits and regularity of recording carried out in pedigree herds. This paper will cover the recording and integration into genetic evaluations of six established farmer recorded traits including two which have an impact on both the dairy and beef breed goals (calving difficulty and mortality) and four which influence the beef breeding goal either directly (weanling docility) or indirectly (weanling quality, cow milkability and cow docility score).

ICBF routinely produce predicted transmitting abilities (**PTA**) across a range of traits affecting profitability from beef enterprises on both beef and dairy herds. The six evaluations cover traits related to calving, beef performance, linear type, docility, maternal milk and cow fertility. In total the evaluations incorporate data from 51 traits derived from different industry sources including commercial beef and dairy herds, pedigree beef herds, livestock auctions, abattoirs and the Department of Agriculture cattle movements database which monitors all cattle movements in the Republic of Ireland. Sixteen of the 51 traits are in the beef breeding index with an accompanying economic value which is termed the Suckler Beef Value (**SBV**) whereas the remaining 35 traits are included as predictor traits. Six of the 51 traits are farmer scored traits and include calving difficulty, mortality, weanling quality, weanling docility, cow milkability and cow docility score. Calving difficulty and mortality are currently included in the breeding goal with weanling docility published as a stand alone PTA.

Description, recording and evaluation of farmer scored traits

Calving difficulty and mortality scores

Calving difficulty and mortality scores are voluntarily recorded by dairy and beef farmers using the ‘Animal Events’ data recording system (Olori et al., 2005). Recording occurs at the time of birth registration. Birth registration under Department of Agriculture rules must occur within 27 days of birth. There are four options available to farmers when recording calving ease; 1 = no assistance, 2 = some assistance, 3 = considerable difficulty and 4 = veterinary assistance. There are two options available when recording mortality; 1 = abortion, 2 = dead at birth. Calves are assumed to be still alive after birth when neither option is recorded. Table 1 shows the pattern of records assimilated on the ICBF database by birth year for dairy and beef herds and also the percentages making the genetic evaluation for calving ease. The main cause of loss of records due to editing is a necessity for sire recording and also a contemporary group restriction of at least 5 animals per herd in a two month period. The majority of dairy herds were established on the ‘Animal Events’ recording system sooner than beef herds. This can be partly attributed to the earlier development and establishment of the dairy breeding index, Economic Breeding Index (**EBI**), which was established earlier than its beef equivalent the SBV due to the historic level of milk recording records available at the commencement of ICBF. However with the launch in 2008 by the Irish Department of Agriculture of a voluntary participation scheme for Irish suckler herds called the Animal Welfare, Recording and Breeding Scheme for Suckler Herds (**AWRBS**) the majority of suckler beef herds joined the ‘Animal Events’ data recording system which was a compulsory part of the scheme. The scheme rewarded farmers with a yearly monetary incentive per cow for the recording of certain measures such as sires of calves born, calving ease, mortality, disbudding, castration, weanling quality and weanling docility scores and commencement of meal feeding and weaning dates. The scheme was open to both pedigree and commercial suckler cattle. This resulted in a large increase in available records for the calving ease evaluation on beef herd animals (Table 1). There is large variation across herds in the patterns of calving scores submitted. Table 2 shows the different types of herd profiles for 1,176,981 calves born in 2011 for three types of herds; dairy, commercial beef and pedigree beef herds. The majority of herds record no incidence of calving difficulty (score of 1 only) averaging 54% across the three types of herds whereas the next most predominant scoring pattern is where some incidence of calving difficulty is recorded (scores of 1 and 2) averaging 21% across the three herd types.

The heritability used in the current genetic evaluation is 0.24 for calving difficulty and 0.01 for mortality. There are 5,916,818 records in the evaluation (beef and dairy animals) following editing steps (77% of the 7,686,061) calving records on the ICBF database. The two main edits are a known sire (9% loss) and a minimum contemporary group size of 5 (9% loss). The remaining 23% of records removed are from remaining edits including a known date of birth of dam, only the first ten parities of dam are included, and the exclusion of embryo transfer births. Calving difficulty score and mortality PTA are published as the official measure of genetic merit for calving ease and mortality for both dairy and beef animals. Calving difficulty PTA is analysed and expressed as percentage of difficult calvings classified as a 3 or 4 on the 1 to 4 scale. Due to the level of crossbreeding the PTA for calving ease and mortality are evaluated and published on an across breed basis which allows the farmer to directly compare the PTA for different dairy and beef breeds (Figure 1). In the dairy herd this is relevant due to the level of crossbreeding of both dairy breeds and also beef sires on dairy cows. This is similarly the case in the beef herd with a high level of crossing of beef breeds in commercial suckler herds.

Table 1. Recording of calving ease records for dairy and beef herds by birth year on the ICBF database

	Dairy herd calvings			Beef herd calvings		
Birth year	Records in ICBF database	% which qualify for evaluation	% of qualifying records which are pedigree	Records in ICBF database	% which qualify for evaluation	% of qualifying records which are pedigree
2003	251,045	76	23	6,625	63	17
2004	299,872	76	21	58,451	66	34
2005	314,488	78	19	77,096	67	30
2006	359,347	80	16	107,053	69	22
2007	355,810	80	17	118,777	69	20
2008	457,941	82	14	911,189	81	3
2009	464,605	83	15	769,295	79	3
2010	475,409	83	15	723,401	80	3
2011	523,390	83	12	653,591	78	3

Table 2. Scoring patterns for dairy, commercial beef and pedigree beef herds for animals born in 2011

Spread in scores	Dairy herds			Commercial Beef herds			Pedigree beef herds		
	Herds	% of herds	Animals	Herds	% of herds	Animals	Herds	% of herds	Animals
1 - - -	13,471	54.1%	103,860	19,271	46.6%	210,243	4,293	61.4%	15,110
1 2 - -	5,138	20.6%	159,729	11,252	27.2%	190,646	1,115	15.9%	8,384
1 2 3 -	2,216	8.9%	132,801	3,891	9.4%	88,166	168	2.4%	2,058
- 2 - -	1,449	5.8%	4,524	794	1.9%	3,731	563	8.0%	1,012
1 2 - 4	559	2.2%	31,663	1,827	4.4%	39,690	129	1.8%	1,589
1 2 3 4	783	3.1%	63,608	1,507	3.6%	49,289	58	0.8%	954
1 - 3 -	422	1.7%	12,413	873	2.1%	12,398	154	2.2%	1,043
1 - - 4	220	0.9%	6,833	989	2.4%	15,210	173	2.5%	1,261
- 2 3 -	194	0.8%	2,372	402	1.0%	5,309	68	1.0%	283
- - 3 -	217	0.9%	272	155	0.4%	638	102	1.5%	144
- - - 4	115	0.5%	729	82	0.2%	268	103	1.5%	143
1 - 3 4	57	0.2%	2,496	169	0.4%	3,273	18	0.3%	140
- 2 3 4	27	0.1%	788	94	0.2%	1,693	13	0.2%	114
- 2 - 4	35	0.1%	856	45	0.1%	401	28	0.4%	87
- - 3 4	16	0.1%	450	28	0.1%	266	12	0.2%	34

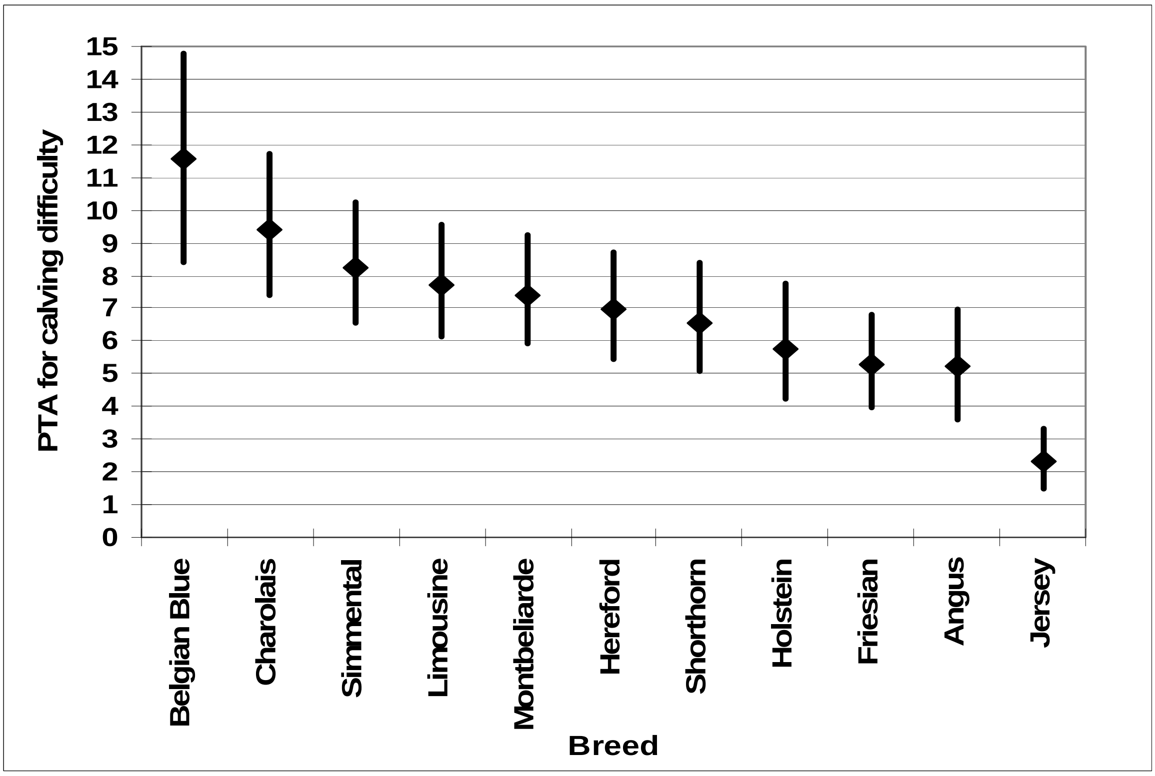
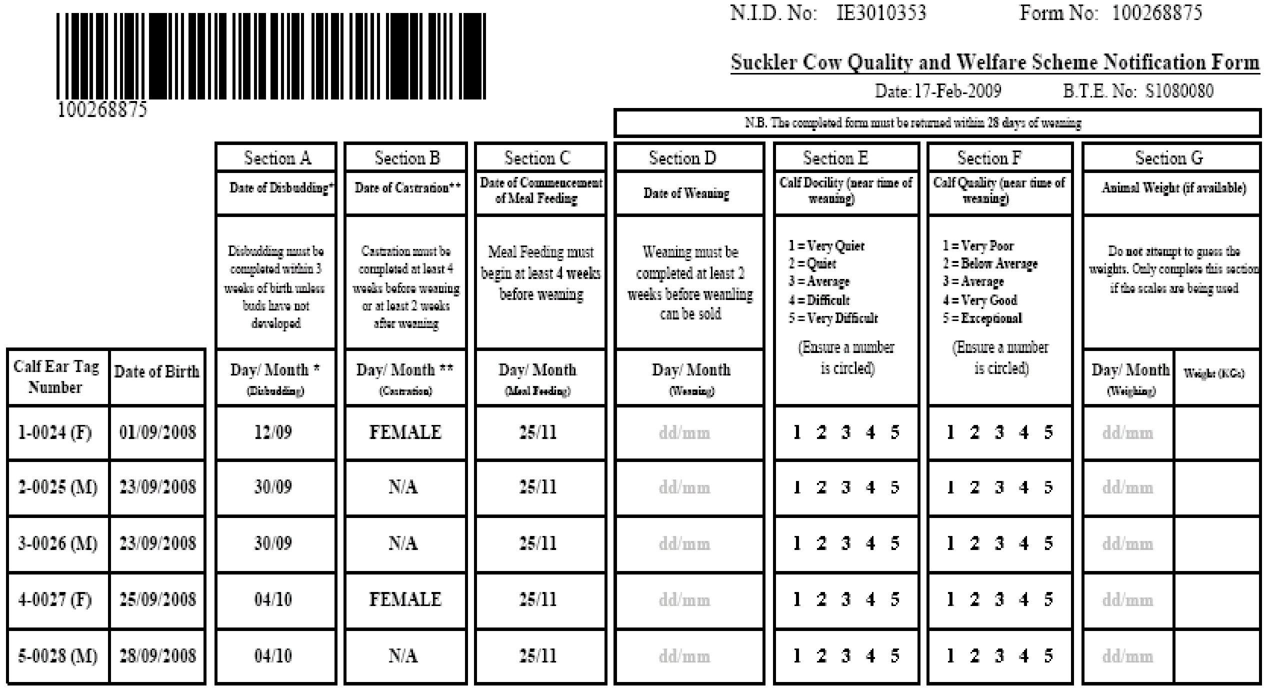


Figure 1. Stock chart showing the breed average, Top 5 percentile and Bottom 5 percentile of PTA for calving difficulty based on all pedigree animals in each breed born since 2007.

Weanling quality score

As part of the AWRBS national scheme (state aid N 140/2007), weanling quality is subjectively scored on a scale of 1 (poor) to 5 (excellent) by beef farmers to describe the overall quality of their weanling animals. The AWRBS scheme provides ICBF with a large dataset on both weanling quality (and docility) scores from 2008 to the present day. Recording can be paper-based (Figure 2) or internet based, and weanling quality is now incorporated into routine genetic evaluations as a predictor trait in the beef performance evaluation. The genetic correlations with some other routinely recorded traits are outlined in Table 3. The genetic correlations between weanling score measured between 150 and 300 days of age and measures recorded by professional linear scorers in pedigree herds would indicate that pedigree breeders place a high emphasis on the muscle traits (the average genetic correlation for the four traits width at withers, width behind withers, loin development, development of hind quarter is 0.53) relative to the skeletal traits (the average genetic correlation for the three traits height at withers, length of back and length of pelvis is 0.17).

Weaning weight and liveweight are traits recorded in both pedigree and commercial herds. There is a moderately positive correlation between these traits (0.34-0.35) and weanling quality score. The commercial herd trait weanling price (measured as cents per kg from 150 to 300 days) has a high correlation with weanling score (0.6) indicating that farmers are capable of ranking weanlings for quality score with likely future price received at auction. However as both traits are expressed around the same age, the sale of the animal is likely to occur soon after the weanling score has been recorded. Weanling scores for entry into genetic evaluations must be recorded prior to the animal leaving the farm. One of the main benefits of including weanling quality score is as a predictor of price per kg at auction between 150-300 days. The amount of data available for price per kg at auction trait is lower relative to traits as can be seen in Table 3. This is due to the fact that not all animals are sold between 150 and 300 days and for those that are sold not all of them are sold in singles which is necessary for inclusion in evaluations. Also contemporary groups for the price per kg trait tend to be smaller as very few farmers will sell all weanlings on the same day. In contrast farmers tend to wean larger batches at the same time and thus they follow the same pattern with the recording of the weanling score traits resulting in larger more powerful contemporary groups for genetic evaluations. Currently there are 564,999 weanling quality scores in the beef genetic evaluation. This represents 21% of the total weanling quality records stored on the ICBF database (2,772,756 records). Similar to other traits there are a range of data edits applied to the data prior to entry into the evaluation. The main edits and loss of data for weanling quality score include; records outside the age range of 150 to 300 days (28% loss) a lack of variation in scores on the day of recording (23% loss), date of recording occurred after the animal was sold (14% loss), a known sire (6% loss), contemporary group size less than 5 animals (4% loss) and animals recorded more than 100 days post weaning. The criteria imposed for variation in scores on the day of recording were a minimum of two different scores for a herd recording date with less than ten animals and a minimum of three different scores for herd recording dates with ten or more animals.


100268875

N.I.D. No: IE3010353 Form No: 100268875

Suckler Cow Quality and Welfare Scheme Notification Form

Date: 17-Feb-2009 B.T.E. No: S1080080

N.B. The completed form must be returned within 28 days of weaning

Calf Ear Tag Number	Date of Birth	Section A: Date of Disbudding* (Disbudding must be completed within 3 weeks of birth unless buds have not developed) Day/ Month * (Disbudding)	Section B: Date of Castration** (Castration must be completed at least 4 weeks before weaning or at least 2 weeks after weaning) Day/ Month ** (Castration)	Section C: Date of Commencement of Meal Feeding (Meal Feeding must begin at least 4 weeks before weaning) Day/ Month (Meal Feeding)	Section D: Date of Weaning (Weaning must be completed at least 2 weeks before weanling can be sold) Day/ Month (Weaning)	Section E: Calf Docility (near time of weaning) 1 = Very Quiet 2 = Quiet 3 = Average 4 = Difficult 5 = Very Difficult (Ensure a number is circled)	Section F: Calf Quality (near time of weaning) 1 = Very Poor 2 = Below Average 3 = Average 4 = Very Good 5 = Exceptional (Ensure a number is circled)	Section G: Animal Weight (if available) (Do not attempt to guess the weights. Only complete this section if the scales are being used) Day/ Month (Weighing)	Weight (KGs)
1-0024 (F)	01/09/2008	12/09	FEMALE	25/11	dd/mm	1 2 3 4 5	1 2 3 4 5	dd/mm	
2-0025 (M)	23/09/2008	30/09	N/A	25/11	dd/mm	1 2 3 4 5	1 2 3 4 5	dd/mm	
3-0026 (M)	23/09/2008	30/09	N/A	25/11	dd/mm	1 2 3 4 5	1 2 3 4 5	dd/mm	
4-0027 (F)	25/09/2008	04/10	FEMALE	25/11	dd/mm	1 2 3 4 5	1 2 3 4 5	dd/mm	
5-0028 (M)	28/09/2008	04/10	N/A	25/11	dd/mm	1 2 3 4 5	1 2 3 4 5	dd/mm	

Figure 2. Paper based forms submitted by farmers participating in the AWRBS scheme

Table 3. Numbers of records in the evaluation, heritability and genetic correlations with weanling quality score for beef performance traits

Type of herd	Trait measured	No of beef breed sired records in evaluation	Heritability	Genetic correlation with weanling quality score
Pedigree and progeny test herd traits	width at withers	140,963	0.36	0.51
	width behind withers	140,963	0.35	0.57
	loin development	140,963	0.28	0.49
	development hind quarter	140,963	0.37	0.53
	height at withers	140,963	0.38	0.17
	length of back	140,963	0.31	0.21
	length of pelvis	140,963	0.29	0.13
Pedigree, progeny test and commercial herd traits	weaning weight	514,831	0.44	0.35
	liveweight	520,159	0.51	0.34
	Cull Cow Carcass weight	138,288	0.40	0.38
Commercial herd traits	mart price per kg	320,301	0.40	0.60
	Carcass weight	1,283,379	0.54	0.48
	Carcass conformation	1,283,379	0.61	0.34
	Carcass fat	1,283,379	0.31	0.20
	Weanling quality score	564,999	0.38	-

Farmer weanling and cow docility scores

The ICBF genetic evaluation for docility (Evans et al., 2009) currently incorporates three different docility measures into a multi-trait animal model. Two of these are farmer scored traits (weanling docility and cow docility) and the third is a weanling docility score as assessed by ICBF trained linear scorers. Both the farmer and technician weanling scores are evaluated between 150 and 300 days of age. The weanling docility scores are available since 2008 from herds participating in the AWRBS scheme in the same way as the weanling quality score mentioned previously. Cow docility scores are available since 2011 and are based on voluntary scoring of both cow docility and milkability. Farmers are asked to score the cow for docility in the first six weeks after calving. Figure 3 shows an example of the voluntary cow scoring sheet. A recent re-estimation of genetic parameters incorporating the new cow docility trait resulted in a heritability of 0.30 for farmer scored weanling docility, 0.22 for linear scored weanling docility and 0.36 for farmer scored cow docility. Genetic correlations estimated included a correlation of 0.78 between farmer scored weanling docility and linear scored weanling docility, a correlation of 0.73 between farmer scored weanling and farmer scored cow docility, and a correlation of 0.83 between linear scored weanling docility and farmer scored cow docility. The current docility evaluation contains 774,546 animals of which 542,245 have farmer scored weanling docility, 109,649 have ICBF technician weanling docility and 129,594 have farmer scored cow docility. The main edits and loss of data for weanling docility score were the same as those mentioned previously for weanling quality score with the exception of the variation required on the recording date. The criteria imposed for variation in docility scores on the day of recording were a minimum of two different scores for a herd recording date with less than fifteen animals and a minimum of three scores for herd recording dates with fifteen or more animals.

100000446

Optional Cow Survey

Herd owner: JOE BLOGGS
Herd No: IE1234567
Print Date: 21/01/2011

Please give your best estimate of your cows as they were in the period from 'Calving to 3 months calved' for docility/temperament and from 'Calving to 3 months calved' for the milk score.

Cow Jumbo	Tag number	Date of Birth	Breed	Cow Docility score VG = Very Good G = Good A = Average P = Poor/Nervous VP = Very Poor/ Aggressive (Ensure a value is circled)	Cow Milk score VG = Very Good G = Good A = Average P = Poor VP = Very Poor (Ensure a value is circled)
032	IE123456750032	10/03/2000	HE (44%),HO (41%)	VG G A P VP	VG G A P VP
51	IE123456770051	10/07/2007	LM (44%),HE (22%)	VG G A P VP	VG G A P VP
069	IE123456770069	15/03/2004	LM (66%),HE (13%)	VG G A P VP	VG G A P VP
092	IE123456760092	27/12/2006	BB (50%),SI (22%)	VG G A P VP	VG G A P VP
095	IE123456790095	05/06/2007	LM (69%),SI (25%)	VG G A P VP	VG G A P VP

Figure 3. An example of the voluntary recording sheet submitted by farmers when scoring cow docility and milkability scores.

Table 4 shows the description of each trait, numbers of records in the current docility genetic evaluation and percentage representation of each score for the three docility traits recorded. In all three traits the second quietest/docile category is the most frequent score

Table 4. Scoring patterns for the three types of docility scores routinely collected and evaluated in the multi-trait docility evaluation.

Farmer scored Weanling docility			Technician scored Weanling docility			Farmer scored cow docility		
Score	Animals	% of Total	Score	Animals	% of Total	Score	Animals	% of Total
Very Quiet (1)	66,144	12.2	Docile (9 & 10)	15,287	13.9	Very Good (VG)	37,502	28.9
Quiet (2)	219,502	40.5	Restless (7 & 8)	73,835	67.3	Good (G)	55,151	42.6
Average (3)	226,709	41.8	Nervous (5 & 6)	18,880	17.2	Average (A)	29,687	22.9
Difficult (4)	28,337	5.2	Flighty/Wild (3 & 4)	1,503	1.4	Poor/Nervous (P)	5,884	4.5
Very Difficult (5)	1,553	0.3	Agressive (1 & 2)	144	0.1	Poor/Aggressive (VP)	1,370	1.1

Figure 4 shows a stock chart of the average and spread in genetic merit for docility for each breed where higher PTA indicate better docility. Belgian Blue, Hereford and Shorthorn have the highest breed average weanling docility PTA with the Blonde D'Aquitane, Limousine and Saler having the lowest breed average docility. However there is significant variation in genetic merit across all of the breeds evaluated.

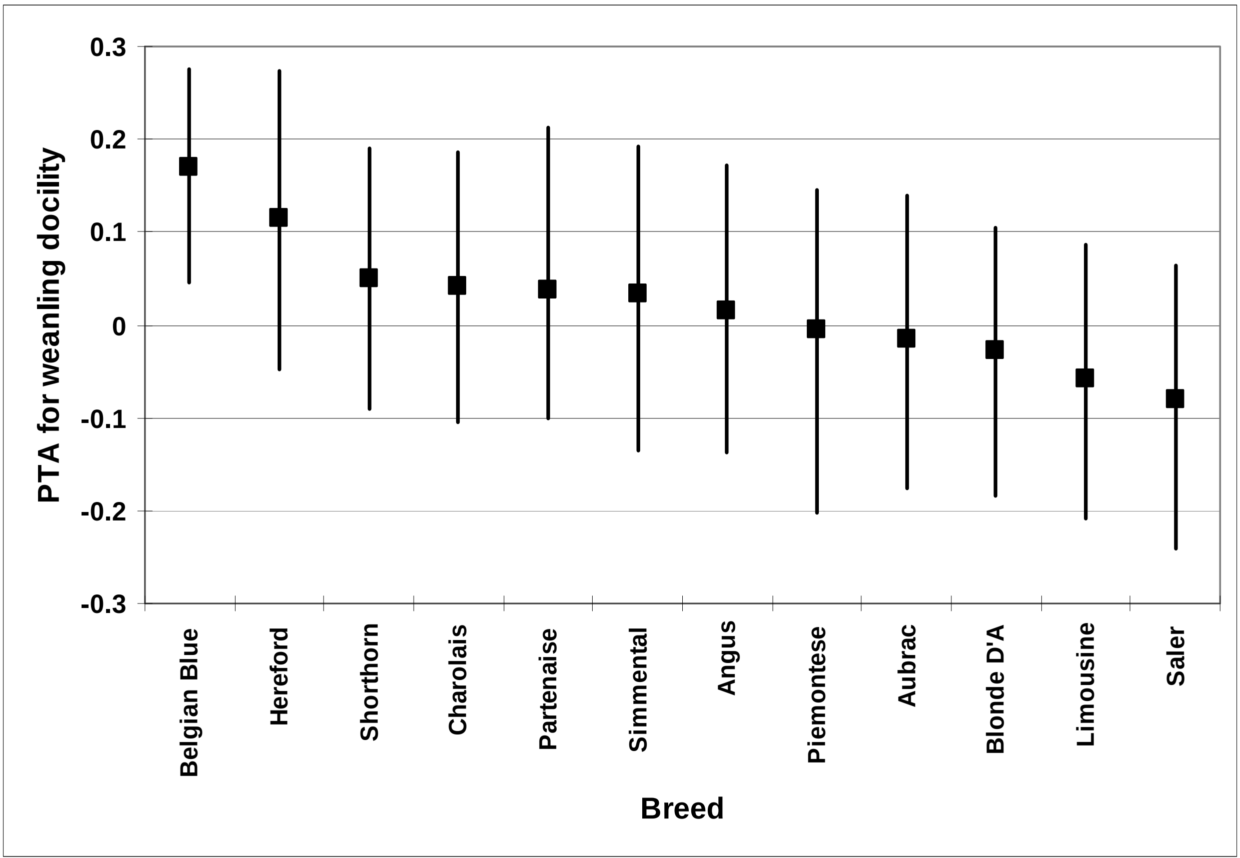


Figure 4. Stock chart showing the breed average, top 5 percentile and Bottom 5 percentile of PTA for pedigree animals for weanling docility based on animals in each breed born since 2007.

Farmer cow milk score

Milkability is defined as the measure of a beef cow's ability to rear her calf through the production of milk. Sire ancestry recording in the suckler cow population is low at about 35%. Table 5 shows the level of sire recording in the calves born but also in the dams of the calves born from 2003 to 2011. The AWRBS scheme resulted in a significant increase in sire ancestry recording in the calf crop from 30.6% in 2007 to 81.1% in 2008. This level has dropped slightly since 2008 but nonetheless remains high. The knock on effect of the AWRBS scheme on the cow population has been a lot less dramatic moving from 18.4% in 2007 to 35.4% in 2011. The low level of sire ancestry recording in the cow population coupled with a lack of weight recording in commercial suckler herds has unfavourable implications for the genetic evaluation of maternal weaning weight. Table 5 shows that only 3.3% of the 2010 calf crop have weaning weights in the genetic evaluation where the sire and the maternal grand-sire in known. The cow milkability score was circulated to farmers to see if farmers could score their cows for milkability and provide a heritable predictor trait to augment the low level of weaning weight recording. The resulting scores were analysed and a heritability of 0.4 was found with a genetic correlation of 0.7 to150-250 day maternal weaning weight. This correlation dropped to 0.35 with an older age category of 250-350 days. This milkability score has now been included a predictor trait in the evaluation of maternal weaning weight for which the age category has been revised downward to 150 to 250 days of age. Currently there are 128,637 milkability scores from 2011 included. It is hoped that through education and extension that both the level of recording of both weaning weights and milkability scores will improve in the coming years.

Table 5. Yearly trends in levels of sire recording and weaning weight records

Calving year	Beef cows calved in year	% Calves with sire known	% Dams with sire known	1st parity dams with sire known as % of dams with sire known	Weaning weights with sire & dam's sire known	weaning weights with sire & dam's sire as a % of cows calved
2003	578,385	19.4%	12.1%	24.2%	2,808	0.5%
2004	873,785	24.7%	11.8%	25.1%	2,622	0.3%
2005	1,007,339	27.0%	13.2%	25.6%	4,231	0.4%
2006	1,012,743	30.1%	15.7%	27.3%	5,909	0.6%
2007	1,011,011	30.6%	18.4%	27.7%	7,408	0.7%
2008	1,083,907	81.1%	21.8%	28.7%	20,071	1.9%
2009	958,517	78.8%	24.4%	23.2%	21,669	2.3%
2010	900,155	78.8%	29.6%	27.9%	30,009	3.3%
2011	842,115	74.5%	35.4%	32.3%	36,484	4.3%

New farmer scored traits in research phase

The increase in genetic merit for growth rate and muscularity in the beef population has come at the cost of increased incidence of calving difficulty at birth. The Irish beef industry and ICBF are keen to explore the recording of birth weight by farmers as an additional measure to calving difficulty score in order to arrest the trend of increased incidence of calving difficulty on farm. As recording of actual birth weight can be cumbersome and often not practical some predictive measures are being investigated. A pilot birth weight project commenced in Autumn 2011 on 50 commercial farms where the farmers were asked to measure both actual birth weight using a weighing scales and some tape measures with the aim of establishing the predictive ability of these tape measures to predict birth weight. The four measures collected were chest circumference, height at shoulder, canon circumference, and length of back. Records on 855 calves were collected to date; the main breeds represented in the sample of calf born were Limousin (31%), Charolais (24%), Belgian blue (11%), Simmental (9%), and Hereford (8%). Most of the calf measured were crossbred animals (75%) thus reflecting the dominance of crossbred animals in the national database. Table 6 shows the phenotypic correlations between recorded birth weight and each of the tape measure traits for 855 animals recorded to date. Chest circumference (0.80) and height at the shoulder (0.69) have a strong correlation with birth weight while the correlation with cannon bone circumference is moderate (0.49) and length of back is weak (0.34). Height at shoulder and chest circumference have the strongest correlation between the predictor traits. Results of this pilot scheme will be used to determine the best traits to recommend to beef farmers to record in order to produce genetic merit predictions for birth weight.

Table 6. Phenotypic correlations between birth weight and linear farmer recorded tape measures.

Trait	Trait details		Phenotypic correlations			
	Average	sd	Birth weight	Chest circumference	Cannon bone circumference	Height at shoulder
Birth weight (kgs)	46.27	7.95				
Chest circumference (cm)	80.77	5.31	0.80			
Cannon bone circumference (cm)	17.93	1.66	0.49	0.53		
Height at shoulder (cm)	75.29	4.29	0.69	0.62	0.46	
Length of back (cm)	42.08	5.83	0.34	0.33	0.37	0.33

Summary

Farmer recorded traits play an integral part in the genetic improvement of the Irish Suckler herd. The routine collection of these traits has helped to fill the void in data for traits where the ICBF industry integrated database is deficient in knowledge such as calving, docility and milkability. The heritability of these traits and their genetic associations with other economically important traits are of a sufficient nature to warrant industry encouragement for their ongoing recording and use from a genetic improvement perspective. Knowledge transfer through education and communication to herd owners on the importance of recording these traits is vital to maintain ongoing levels of recording and usefulness of data received.

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