Sheep Ireland
Euro-Star Indexs
& Traits 2023

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Contents

LambPlus Euro-Star Index

The Euro-Star Index is a breeding index designed to aid sheep farmers in the selection of more profitable breeding animals. Euro-Star Indexes quantify the genetic component of an animal's performance across all traits of importance for Irish sheep farmers.

Two Overall Indexes in Sheep

There are two Euro-Star Indexes;

- Replacement Index
- Terminal Index.

This is to facilitate the use of Euro-Star Indexes to maximise the use of the correct genetics for the right purpose. Some farmers may breed their replacements, in which case the Replacement Index is most relevant. Other farmers may sell all of their progeny at weaning or take them through to slaughter, in which case the Terminal Index is most relevant.

Replacement

If a farmer desires an animal to breed both replacement females and factory lambs, then they should select a ram based on this index. The bulk of this index is a combination of Lamb Survivability, Days to Slaughter, No. of lambs born & Daughter's milk. The € value beside the index represents the difference in profit that each lamb bred from this animal will have. This € value is an across-breed value, so different breeds can be compared to each other.

Terminal

If a farmer desires a ram to breed only factory lambs then they should select an animal based on this index. The bulk of this index is a combination of Lamb Survivability and Days to Slaughter and Carcass traits. The € value beside the index represents the difference in profit that each lamb bred from this animal will have. This € value is an across-breed value, so different breeds can be compared to each other.

Relative emphasis on the indexes

This is the 2023 Relative emphasis for each index (table 1).

Trait	Replacement 2023	Terminal 2023
Number of lambs born	18.68%	
Mature weight	6.93%	
Ewe Milk	9.22%	
Ewe barrenness	7.81%	
Lambing difficulty - maternal	0.21%	
Lamb survival - maternal	9.15%	
Lamb vigour - maternal	12.03%	
Lameness ewe	0.06%	
Lambing difficulty	0.43%	1.53%
Lamb survival	9.05%	31.91%
Ewe Mothering (new trait)	8.07%	
Lamb vigour	2.45%	8.66%
Days to slaughter	12.13%	44.24%
Carcase conformation	2.95%	10.76%
Carcase fat	0.38%	1.37%
Dag Score	0.42%	1.41%
Lameness lamb	0.03%	0.12%

Table 1. The relative emphasis on the indexes (Replacement - Terminal 2023)

Star Ratings

The star rating system (Table 2. *1-5 stars*) was incorporated into the Euro-Star Index to make it easier for farmers to interpret; *5 stars* being very good, *1 star* being poor. This is the same concept used to display beef cattle evaluations in Ireland. This concept has been largely successful in its adoption by the industry, but there are some important points to remember.

Within breed stars rank an animal only against other animals within its own breed, ranking each trait in 20% groupings. The higher the stars, the higher the predicted profitability from that animal within the breed in question.

★★★★★	5 Stars	Top 20% (Very Good)
★★★★	4 Stars	Top 61-80% (Good)
★★★	3 Stars	41-60% (Average)
★★	2 Stars	Bottom 21-40% (Below Average)
★	1 Star	Bottom 20% (Poor)

Table 2. Star rating system

Flock Recording

Breeders record information (Figure 1) about the ewe and lamb(s) at lambing, weighing, health recording, mating and pregnancy scanning, including creating parentage information and recording some performance traits on the ewe and the lamb(s).

Figure 1. The LambPlus recording Timeline highlights which data is recorded at each point of the year.

Flock DQI: Each flock receives a flock Data Quality Index (DQI) score. This rates each flock on the quality, quantity and timeliness of the data submitted to Sheep Ireland over the previous year. Farmers are provided with feedback specific to their flock on which areas they should focus on to improve their data quality.

Data:

1. **Sire ID.** Recording accurate sire IDs is critical to the evaluation. In the event of uncertainty as to the identity of a particular sire, the sire ID should be recorded as 'unknown'. Guessing Sire's identity will have dramatically negative effects on our evaluations and ultimately reduce any potential genetic gain.

2. **Dam ID.** Record the lambing ewes' official identification (tag number along with relevant check letter and pedigree ID if available). Recording both IDs at lambing will eliminate the need to read ewes tags at a later date. Sheep Ireland needs both ewe ids.

3. **Date of Birth.** Accurate dates of birth are crucial to the success of any breed improvement programme.

4. **Lambing Difficulty**. This is recorded on a per-ewe basis on a scale of 1 – 4 (Table 3). The key is to be consistent when scoring a group of sheep and for these sheep to have been run under similar conditions. The level of lambing difficulty can be defined based on the level of intervention required at lambing, and can be categorised into the following 4 discrete groups:

Lambing Score	Explanation
1. Unassisted	Ewe lambed down totally unassisted
2. Voluntary Assistance	The lamb was pulled for convenience purposes, if the lambs chances of survival were increased due to human intervention then this would be a score of 3 (Slight Assistance)
3. Slight Assistance	There was no adverse impact on the ewe or lamb but the lamb's chances of survival was increased due to human intervention (reverse presentation/leg back etc).
4. Significant Assist	A prolonged intervention by the farmer and/or vet, and/or noticeable subsequent impact on ewe and/or lamb performance. Without human intervention a dead ewe and/or lamb would have been the likely outcome.

Table 3. Lamb difficulty recording scale.

5. **Birth Weight**. Weight of the animal within 24hrs of birth. This should be recorded to enable the ADG (Average Daily Gain) of each lamb to be calculated. It is also important to record the birth weight of dead lambs.

6. **Number of Lambs born.** Number of lambs the ewe gives birth to, including dead lambs. When recording lambing events, a ewe must be given credit for producing multiple litters of lambs, even if one is dead, fostered or sold as a pet. When this ewe is being genetically evaluated for her maternal traits, the number of lambs she produced will affect her prolificacy, affecting her 'number of lambs born' sub-index, universally affecting her replacement index. Recording the 'number of lambs born' carries as much importance as recording maternal lamb survivability and ewe mature weight.

These traits along with other important traits structure a huge proportion of the replacement index of animals. To identify what bloodlines are producing the hardiest and most viable lambs at birth we must first identify which bloodlines are not as hardy and

viable at birth. We currently do this by recording lambs that are dead at birth (or die in the 48 hours post lambing). Any lamb that dies after 48 hours should be recorded alive at birth and then record the death date on the inventory (Web recorders), or on the lambing weighing sheets (Paper recorders).

7. **Lamb mortality.** Lambs that die within 48hrs after birth. To identify what bloodlines are producing the hardiest and most viable lambs at birth we must first identify which bloodlines are not as hardy and viable at birth. In order to identify these bloodlines, recording lambs that are dead at birth (or die in the 48 hours post lambing) is essential. Lambs that are born dead or die within 48 hours of birth must be recorded with a birth status of '*dead*'. A lamb ID (pedigree ID or NSIS) is not required however it is very important that the lamb's birth status is marked as '*dead*' from the dropdown menu. Dead lambs must have birth weights and sex recorded.

8. **Weights (40 Day, 100 Day, 150 Day, Mature Weight).** As part of the LambPlus programme breeders should record at least 3 weights for their lambs after lambing at 3 defined points (Table 4) in time as outlined below (Breeders are however free to record as many weights as they wish). Each of these weights will then work towards improving the flocks accuracy percentage (Acc %) and therefore making the evaluations reflect the performance of the animals on the ground more accurately.

Weighing	Possible Age Range
40 Days	Between 20 - 65 days of age
100 Days (Weaning weight)	Between 66 - 120 days of age
150 Days (Scanning Weight)	Between 121 - 180 days of age
Mature weight	200+ Days

Table 4. Weights recorded

9. **Rearing type/rearing rank.** Normal, fostered and bottle reared are all recorded. Many possible lamb rearing situations can occur on sheep farms. Highlight lambs that are fostered (FO) or bottle reared/bottle assisted (BO). Once this information is recorded in our system, the evaluations will adjust to reflect the various scenarios. For example, a ewe lambs down with a single lamb, and receives another foster lamb. The reduced performance of the original single lamb will not reflect negatively on its evaluation as it will be recorded as a single lamb reared as a twin lamb, the same applies to other possible situations.

10. **Ultrasound Muscle depth.** Ultrasound scanning information is used as a predictor of carcass conformation and fat which are important traits to the commercial farmer and

the €uro-Star evaluations. The more scanning information we collect from your flock and/or breed, the higher the accuracy of the evaluation for your sheep. It is recorded on the 13th lumbar vertebrae (Figure 2) when the animal is between 121 and 180 days of age by a Sheep Ireland technician. If all the animals in the flock are not M&F scanned, it is important that the animals are selected at random and includes males and females, the best and the poorer lambs. This trait is recorded in mm.
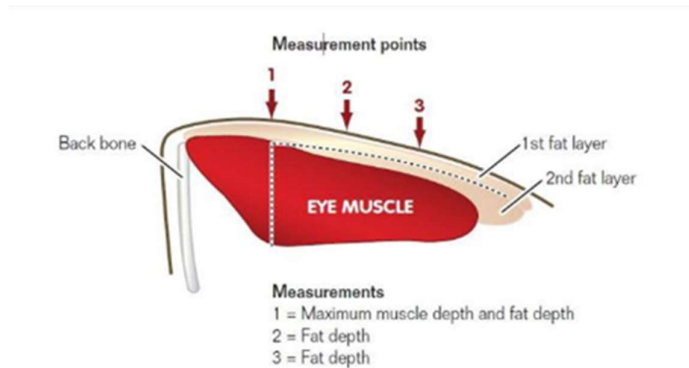

Figure 2: Ultrasound Muscle depth

11. **Ultrasound Fat Depth**. Ultrasound scanning information is used as a predictor of carcass conformation and fat which are important traits to the commercial farmer and the €uro-Star evaluations. The more scanning information we collect from a flock and/or breed, the higher the accuracy of the evaluation for the sheep. Lambs will be recorded on the 13th lumbar vertebrae (Figures 3 and 4) when the animal is between 121 and 180 days of age by a Sheep Ireland technician. Recorded in mm.

Figure 3. Scanning image.   Figure 4. Region to scan.

12. **Lameness.** Scored on a Yes/No basis. If an animal shows any degree of lameness on any foot it is recorded as a yes.

13. **Dag score.** There is a scale of 1-5 implemented to distinguish between the different extremes of each trait (Table 5):

Dag Score	1	2	3	4	5
Description	Very Dirty	Dirty	Small Dags	Clean	Very Clean

Table 5. Scale 1-5 for dag score.

14. **Management Groups.** Extremely important to the €uro-Star evaluation. Breeders need to highlight if there are different management groups on the farm. Animals that are managed under different conditions to other animals in the same flocks can record management groups, so they can be fairly accessed in the evaluation. For example, if half the twin bearing ewes were lambed outdoors and the other half lambed indoors, this is likely to have an effect on ewe lambing performance and therefore needs to be accounted for by highlighting that these animals are in different management groups. If all sheep on the farm are being managed similarly, then management group recording can be ignored.

15. **Days to slaughter.** Based on the date the slaughter weight is collected. Sheep Ireland receives slaughter data daily from Dawn, Irish Country Meats, and Kepak. Flocks that have their lambs processed elsewhere should record this data via the website.

16. **Carcase cold weight.** Weight of the carcase.

17. **Carcase Conformation.** Based on the EUROP scale.

18. **Carcase Fat score.** Based on the EUROP scale.

19. **Mastitis**. Scored by palpating the udder post weaning and checking for lumps as well as any incidences that arise during the year. Even if the animal only has a very mild case of mastitis it should be recorded as a Yes.

20. **Prolapse**. Incidences of prolapse. Prolapse is recorded on a Yes/No basis. Any ewe that requires a harness/stitch to ensure they do not prolapse should be recorded as a yes. This is to try to identify bloodlines that are the most resistant to prolapsing.

21. **Pregnancy scanning results.** Number of embryos counted by ultrasound scanning. Pregnancy Scan recording is included in the overall DQI %. It's important to note that breeders will be scored on the completion of recording the pregnancy scans as well as the timeliness in recording the pregnancy scans.

22. **Body condition score.** Only to be recorded on females over 200 days of age. The condition score of an animal has been attributed to every aspect of its production cycle in some shape or from fertility, carcass conformation and lambing difficulties. The thinnest animals (poorest conformation) in the flock should be scored 1 and the fattest animals (best conformation) in the flock should be scored 5 (Table 6). This score should be collected by feeling the animal's back and using the diagrams below to assign the scores. The key is to be consistent and to record some variation. If all ewes are scored as the same condition then the data has limited value in the evaluation. During the genetic evaluation Sheep Ireland will remove the effects of differences between years and flocks.

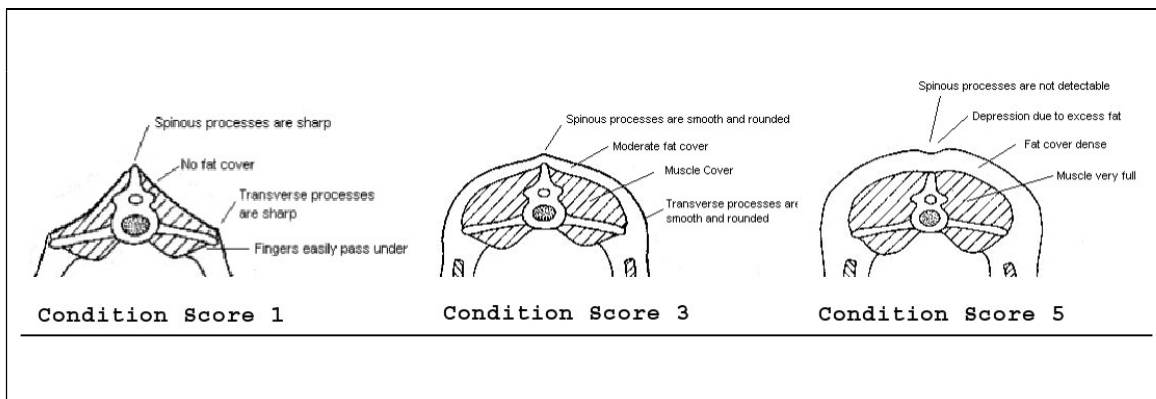| Body Condition Score	Description
1. Very Poor	Spinous processes are sharp, no fat cover and no muscle cover.
2. Poor	Little fat cover with spinous processes less sharp and light muscle cover.
3. Average	Spinous processes are smooth, moderate fat cover and muscle cover.
4. Good	Spinous processes are hard to detect, good fat cover, good muscle cover.
5. Very Good	Fat cover is dense, muscle very full and spinous processes are not detectable.

Table 6. Body condition score 1-5.

Figure 5. Body condition score 1-3-5.

23. **Lamb Quality score**. The LQS is a visual appreciation of the overall quality of the lamb (score 1 = poor quality to 5 = excellent, between 20 and 180 days of age) by the farmer and takes multiple traits into account including weight, size, conformation, condition, and length of the animal as well as overall lamb carcass quality.

24. **Ewe Milk.** Measuring how milky a ewe is at lambing time. This is scored (Table 7) during the first 24hrs after birth and giving the ewe sufficient time for her milk to drop.

Ewe milk supply	Description
1. Very poor	Ewe has no milk at lambing time
2. Poor	Ewe has very little milk and not a sufficient amount to feed her lambs adequately
3. Average	Ewe has just enough milk to feed her lambs at lambing
4. Good	Ewe has an adequate amount of milk to feed her lambs
5. Very good	Ewe has an abundance of milk, more than her lambs can consume

Table 7. Ewe milk score.

25. **Lamb Vigour.** Measuring how active a lamb is at birth and how quick the lamb is '*up to suck*' after lambing. All lambs should be scored (Table 8) individually using the scale below.

Lamb Vigour	Description
1. Very poor	Not standing after 60 minutes
2. Poor	Standing within 60 minutes
3. Average	Standing within 30 minutes
4. Good	Standing within 10 minutes
5. Very Good	Standing within 5 minutes

Table 8. Lamb vigour score.

26. **Ewe Mothering-Ability.** Mis-mothering can be a problem at lambing time and can waste a lot of time on sheep farms. Measuring how interested a ewe is in her lambs and how protective she is of her lambs after lambing (Table 9).

Mothering ability	Description
1. Very poor	Ewe has no interest in her lamb
2. Poor	Ewe stands well away and is slow to lick the lamb
3. Average	Ewe licks the lamb and follows the lamb to the lambing pen
4. Good	Ewe licks the lamb, is protective and follows closely to the lambing pen
5. Very good	Ewe is very protective, licks lamb immediately, follows lamb very close and bleats for her lamb

Table 9. Ewe Mothering-Ability score.

27. **Faecal egg count**. This trait is currently only captured on research flocks. It requires every animal to have an individual Faecal sample collected and analysed at a lab, before it is reported back to the Sheep Ireland database.

28. **Methane emissions.** Methane emissions of sheep are captured using portable accumulation chambers (PAC's). This data is captured by Teagasc and Sheep Ireland Technicians on a number of larger pedigree flocks each year as well as research flocks.

29. Data collection purposes.

No.	Data	Evaluation	DQI	Collected
1	Sire ID	✓		✓
2	Dam ID	✓		✓
3	Date of Birth	✓		✓
4	Lambing Difficulty	✓	✓	✓
5	Birth Weight	✓	✓	✓
6	Number of Lambs born	✓	✓	✓
7	Lamb mortality	✓	✓	✓
8	Weights	✓	✓	✓
9	Rearing type/rearing rank	✓		✓
10	Ultrasound Muscle depth	✓	✓	✓
11	Ultrasound Fat Depth	✓	✓	✓
12	Lameness	✓		✓
13	Dag score	✓		✓
14	Management Groups	✓		✓
15	Days to slaughter	✓		✓
16	Carcase cold weight	✓		✓
17	Carcase Conformation	✓		✓
18	Carcase Fat score	✓		✓
19	Mastitis			✓
20	Prolapse			✓
21	Pregnancy scanning results	✓	✓	✓
22	Body condition score	✓		✓
23	Lamb Quality score			✓
24	Ewe Milk Score			✓
25	Lamb Vigour	✓		✓
26	Ewe Mothering-Ability	✓		✓
27	Faecal egg count			✓
28	Methane emissions	✓		✓

Table 10. Data collection purposes (Evaluation – DQI – Collected)

Who gets breeding values?

	🐑(blue)	🐑(black)	🐑(purple)	🐑(grey)	🐑(yellow)	🐑(green)	🐑(yellow spotted)
Pedigree	☑	☑	☑		☑		
Records	☑	☑			☑	☑	
Genotypes	☑			☑	☑		
Model	☑	☑	☑	☑		☑	☑
Breeding value & accuracy?	✔	✔	✔	✔	✘	✘	✘

Table 11. Breeding values & accuracy chart.