Sheep Ireland using Central Progeny Test Data to validate Irish Genetic Indexes (S.Randles)

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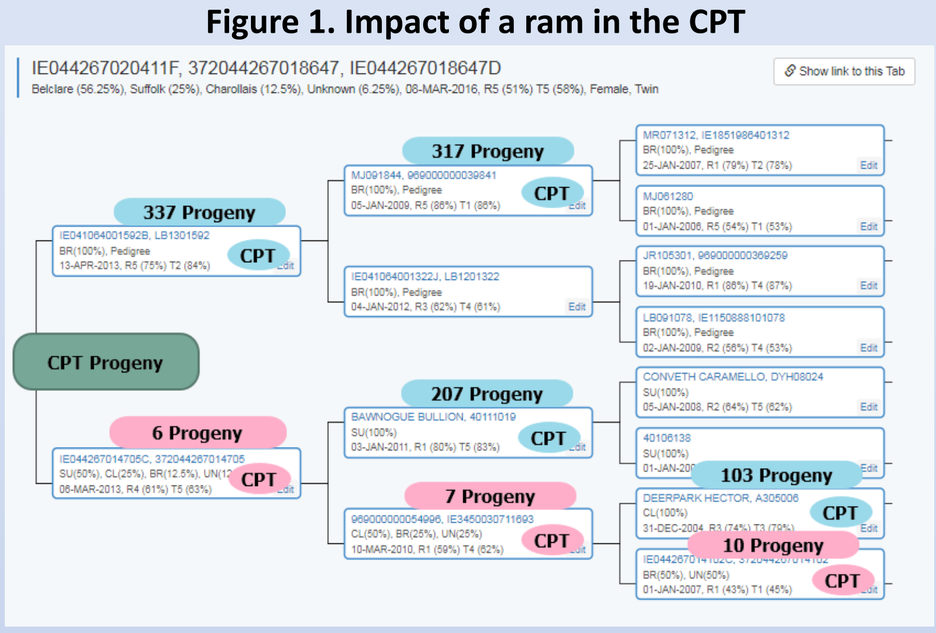
What's involved in the Central Progeny Test (CPT)?

- 4 commercial farms ~ **2,100 to 2,500 ewes** recorded every year since the start of the Irish CPT in 2010.
- **All Ewes are A.I.'d** to 30 different pedigree rams across various breeds selected on their **Replacement Index**.
- Pedigree breeders stock rams are the source of all CPT rams. All CPT rams are **sourced from performance recording flocks**, maximising the impact of phenotypes collected.
- All records are **independently collected by Sheep Ireland** technicians.
- CPT results have a **direct impact on sheep breeding** in Ireland.

What's the purpose of the CPT?

- **Recording all information available** on ewes and lambs.
- Creating and maintaining **genetic linkage** across Irelands performance recording flocks.
- CPT flocks select replacement females from tested rams in order to i) **collect maternal records**, and ii) increase the impact the bloodline has in the breeding program (Figure 1).
- Using rams from different breeds to investigate how each breed performs in similar environments; this will help Sheep Ireland generate **across breed genetic evaluations**.
- To **research new traits** Sheep Ireland use the CPT to investigate what would be the best way to record the trait before opening the recording to all sheep breeders.

Figure 1. Impact of a ram in the CPT



Phenotypic results

- Figure 2 shows the **significant number of rams** put through the CPT programme. The breeds tested in the CPT are selected based on the potential contribution to existing performance recording flocks.
- From its creation in 2010, there has been **a significant number of phenotypes** collected in the CPT across multiple traits (Figure3). Over the past few years the number of phenotypes has doubled due to the recording of new traits.
- Phenotypes have been collected on over **22,000 commercial lambs** with full parentage since the beginning of the Irish CPT.

Figure 2. Number of CPT Sires per Breed

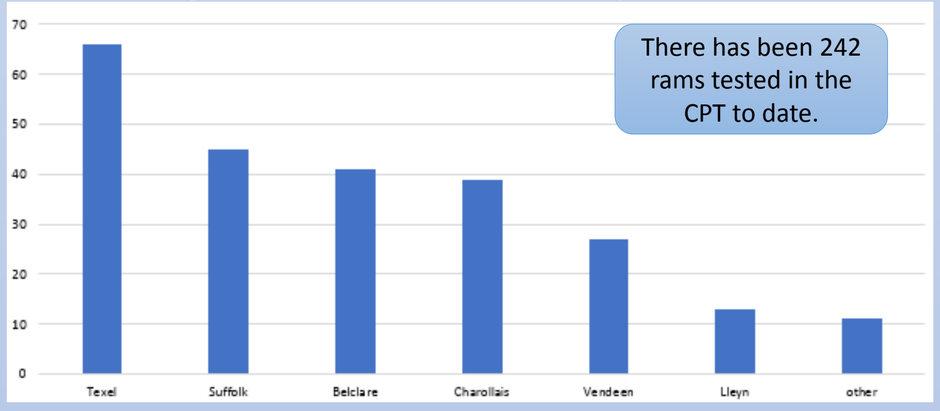
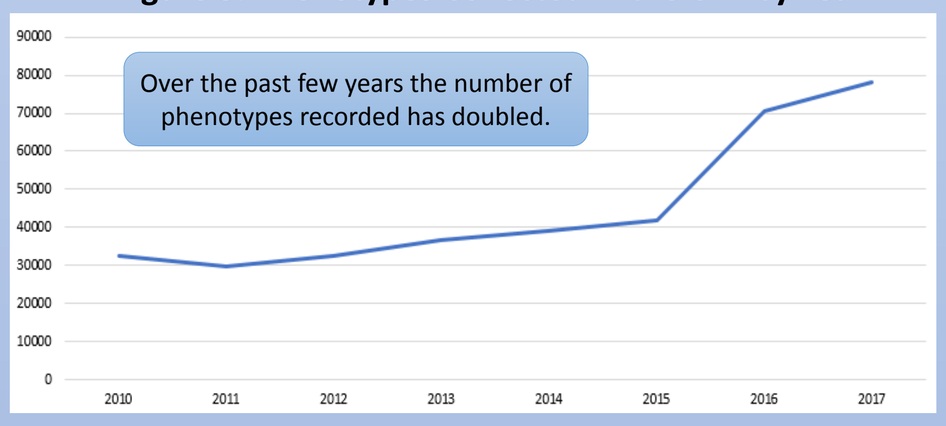


Figure 3. Phenotypes Collected in the CPT by Year



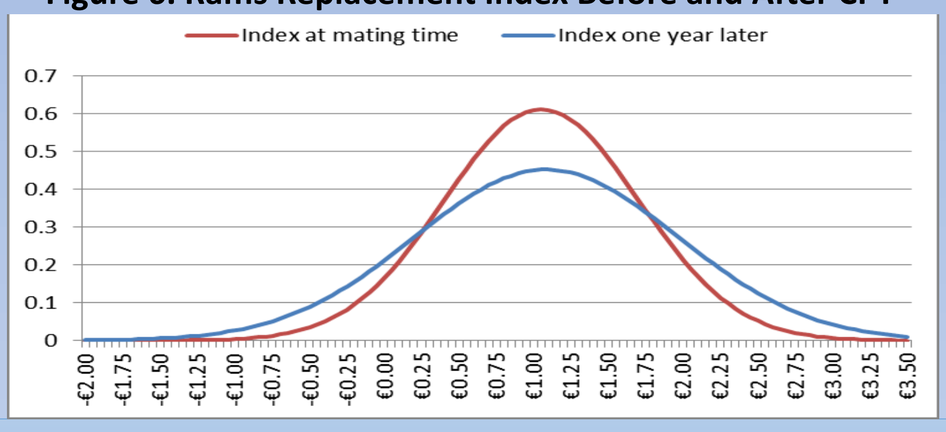
Genetic Results

- **Validation studies** are conducted using CPT data (Figure 5) : to show that the best rams (5 stars = top 20% of the trait) have better progeny performances than the worst rams (1 star = bottom 20% of the trait).
- **No bias and more genetic variation** (Figure 6) : Breeders can only gain from a ram being tested in the CPT.

Figure 5. Results of CPT 1 star vs 5 star validation

Index	Trait	★	★★★★★
Replacement Index	Lamb Mortality (%)	16.64%	9.60%
	Number of lambs born	1.68	1.81
	Ewe mature weight (kg)	73.40	69.22
Terminal Index	Lambing Difficulty	34.4%	21.36%
	40 day weight (kg)	18.98	19.52
	Weaning weight (kg)	31.94	33.02

Figure 6. Rams Replacement Index Before and After CPT



Our mission Statement is:
To achieve the greatest possible improvement, from genetic and other factors in the profitability of the national sheep flock for the benefit of Irish farmers and the Sheep Industry