CIEL at Work

The EWEBenefit Project

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In (no more than) 15 minutes

BEEF & LAMB

New approaches to genetic evaluations

Signet have relaunched all of our evaluations over the last 6-8 years

AHDB have invested in new, mixed breed approaches which

- Enable the production of monthly genetic evaluations
- Produce EBVs for crossbreds and the use of commercial data (e.g. RamCompare)
- Enable some breed comparison
- Makes it easier to move research into the industry

Terminal Sire Evaluation
Launched in 2018

Hill Sheep Evaluation
Launched in 2020

Maternal Sheep Evaluation
Launched in 2022

Opportunities for Abattoir data

Saturday: 16.40
Abbygail Wells and Andrew Walton

Genomic breeding values for hill sheep

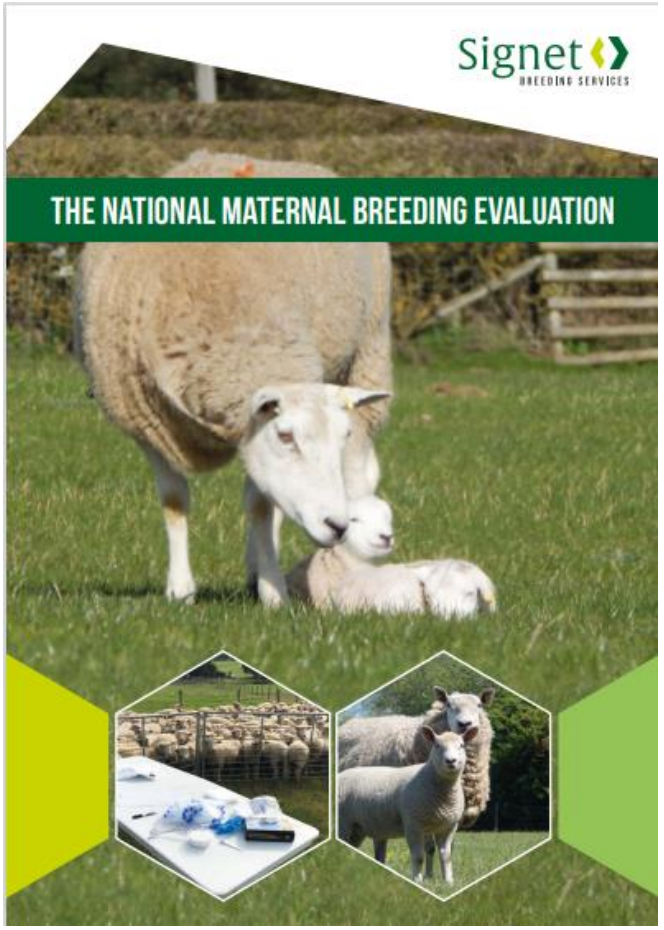
Saturday: 15.50
Janet Roden

The New Maternal Evaluation

Friday: Now
Samuel Boon

A New Approach for Maternal Breeds

1. A multi-breed evaluation
   - Can handle crossbred and commercial data
2. Monthly analyses
3. Old EBVs updated
   - Move carcase traits to a weight adjusted basis
4. New EBVs introduced
   - Ewe Mature Size, Body Condition Score
   - Ewe Longevity and Lamb Survival
   - Abattoir traits
5. New Breeding Indexes



Updating the Maternal Evaluation







Breeding values	Impact
Birth Weight Lambing Ease Lamb Survival Litter Size Born Litter Size Reared Maternal Ability	Influencing the number of lambs successfully reared by the ewe
Eight Week Weight Scan Weight Muscle Depth & Fat Depth Abattoir traits	Weight and quality of lambs sold
FEC - Strongyles FEC - Nematodirus IgA - Blood Serum	Parasite resistance
Shearling Ewe Weight Ewe Mature Weight (Mating) Body Condition Score (Mating) Age at First Lambing Ewe Longevity	Lifetime productivity and efficiency of the ewe

Ewe weights and body condition score

Why is mature size important?

- Ewe mature size will increase when selecting for lamb growth rates
- Ewe mature size influences flock efficiency both in economic and environmental terms

Initial work

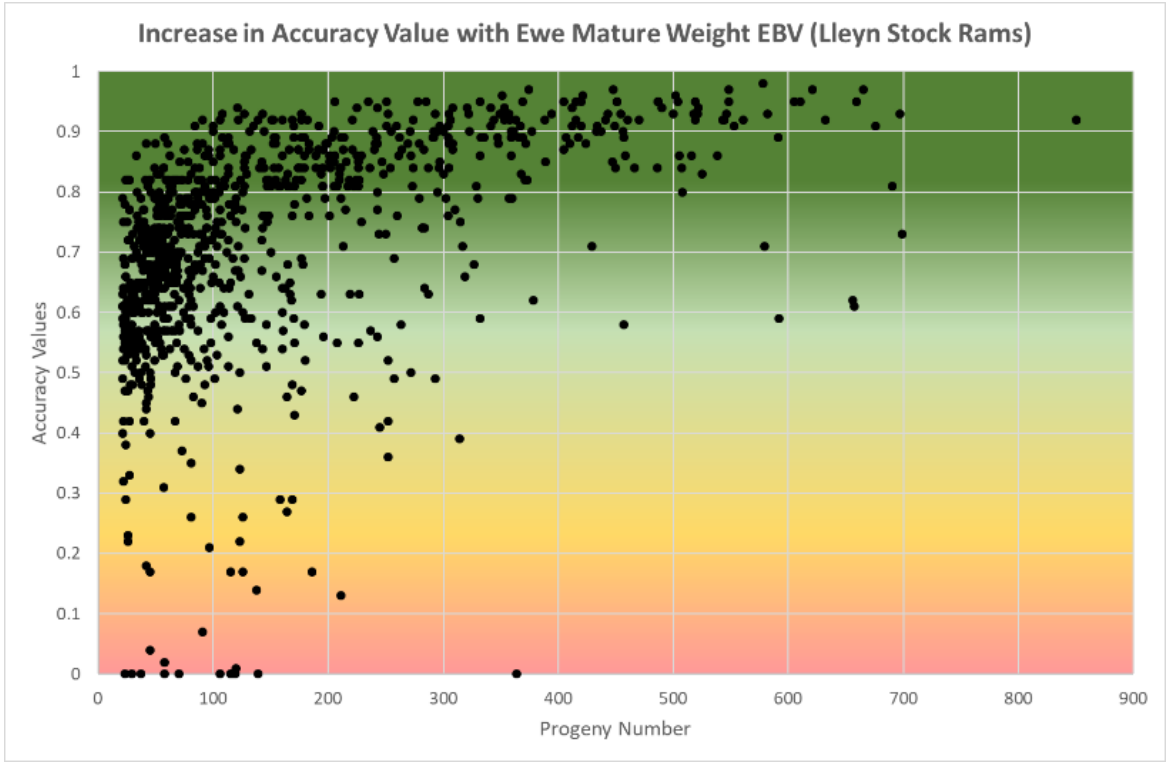
- AHDB, HCC & QMS funded Abacus report
  "Optimising Mature Weight for Farm Efficiency and Profitability"
- AHDB funded PhD looking at growth curves in livestock with Emma Mutch at SRUC

Ewe weights and body condition score

We found three windows of weighing…..

- Pre-mating
  - 140-175 days pre-lambing
- At 8 week weighing time
  - 49-84 days post lambing
- Weaning time
  - 85-133 days post lambing

Ewe body condition scores can be collected at the same time



Two published EBVs

- Pre-mating ewe mature weight
- Pre-mating body condition score

Lamb Survival and Ewe Longevity

- Traits derived from “data mining”
  - We know when an animal is born
    - We know if it was weighed again, thus “survived”
    - We know the last lambing event, thus “longevity” or “lifespan”

- Lots of edits, just some examples
    - Lamb Survival
      - >95% and <50% survival in contemporary group
    - Longevity
      - Unknown parents
      - Strange age at first lambing etc

Abattoir traits – adapted from RamCompare

Early stage breeding values for

- Carcase weight
- Carcase conformation
- Fat class
- Days to slaughter

Some large flocks are sending in large dataset of current and historic data

Breeding for Worm Resistance

What are our options?

Counts of stomach contents for Strongyles and Nematodirus

Pro's: Gold standard for true level of parasitism
Con's: Very expensive, not an accessible phenotype for breeding programmes

Dag Score

Pro's: Cheap and easy

Con's: Subjective, not a reliable indicator of infection. Damaging to animal health and not analysed in the UK

Faecal Egg Count (FEC) Strongyles
Faecal Egg Count (FEC) Nematodirus

Pro's: FEC is still the gold standard for on-farm measures of parasite burden

Con's: Relatively expensive. Lambs must be under a high worm burden to get meaningful results

Serum IgA

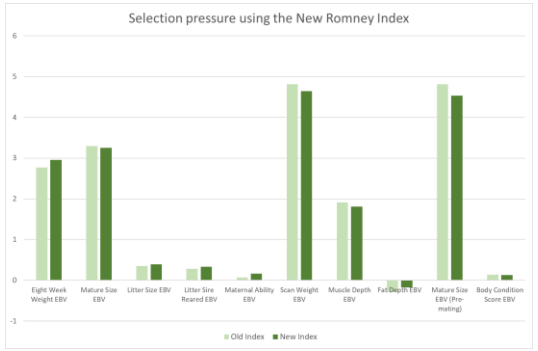
Test developed by Glasgow University to detect lambs immune response. Specific to Teladorsagia Circumcincta

Pro's: Research shows tremendous promise.
Does not require high worm burden.
Heritability of ~30%

Con's: More challenging to get samples as it is a blood test. Not currently cheap, but valuable if informative

It is harder to have it all

New breeding indexes



- Linear weightings
  - Early growth rates
  - Litter size born & reared
  - Maternal ability
  - Muscle depth
  - Fat depth (small positive weighting)

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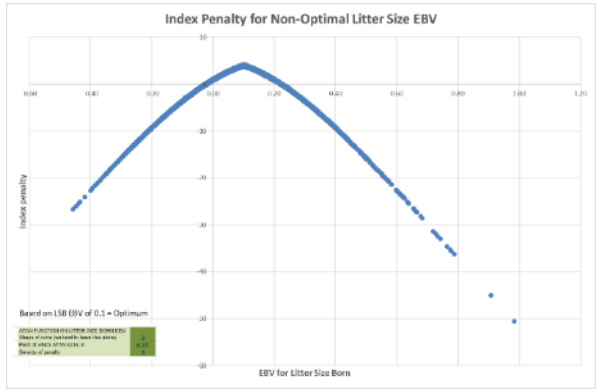

- Non-linear penalty
  - Penalty for non-optimum prolificacy
  - Penalising those producing a high proportion of singles / triplets

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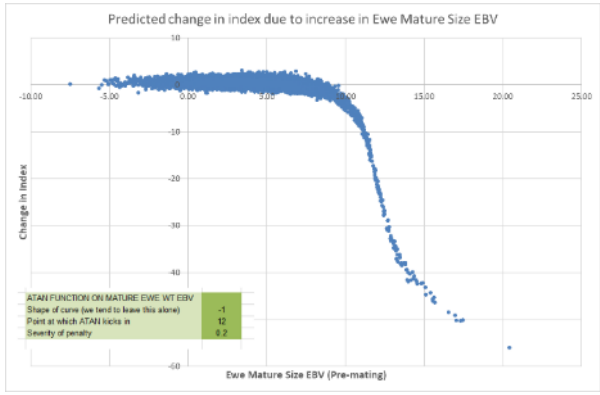
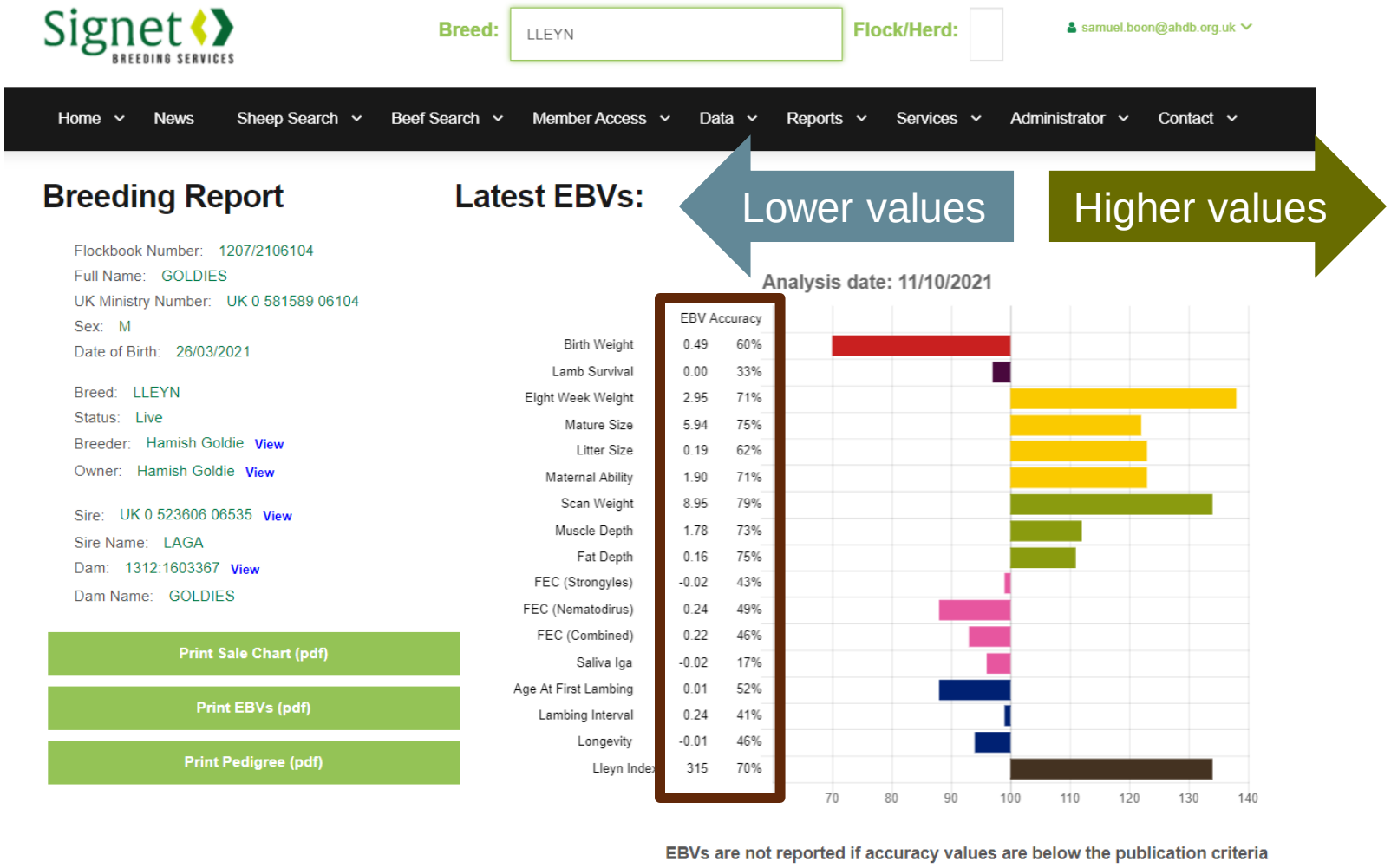


- Non-linear penalty
  - Penalty for high ewe mature size EBVs
  - Typically impact the ~ Top 10% of ewes

Where can I find more information?



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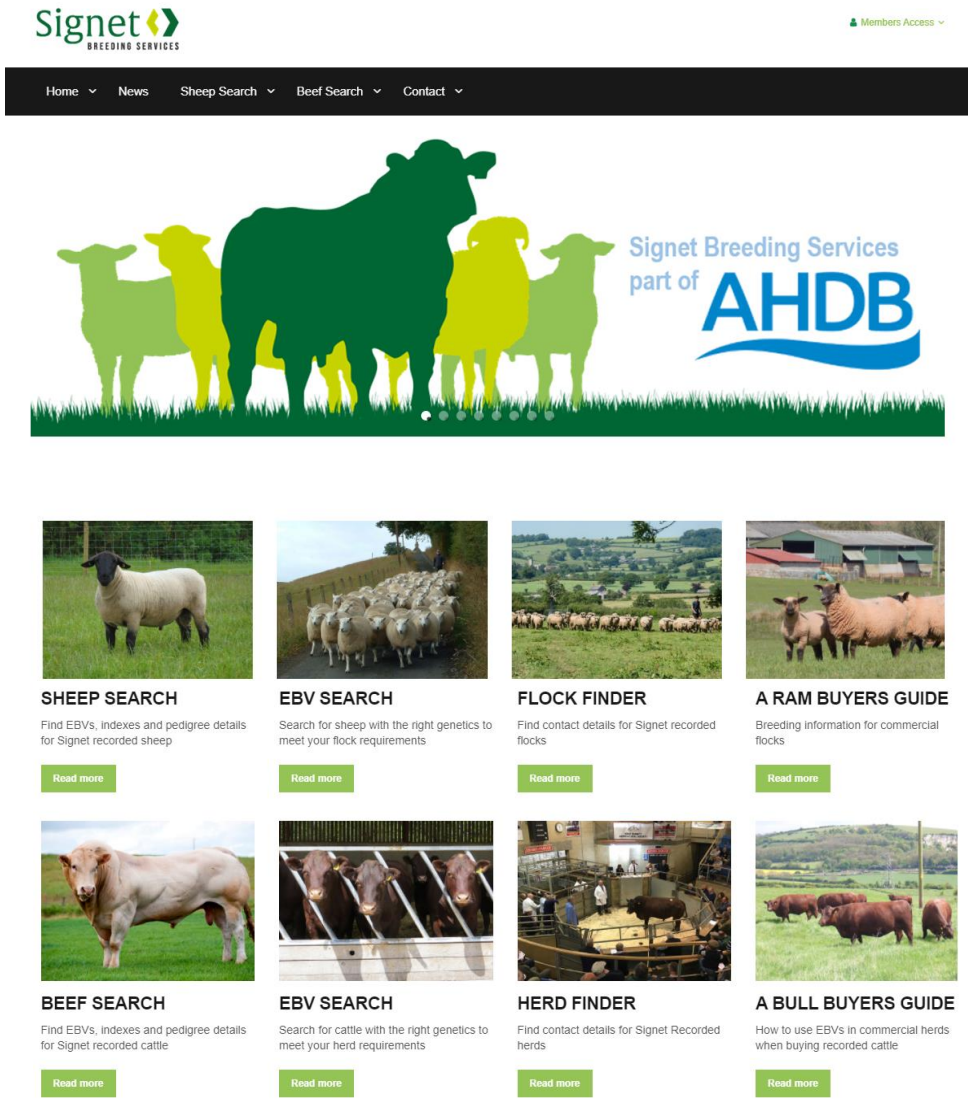
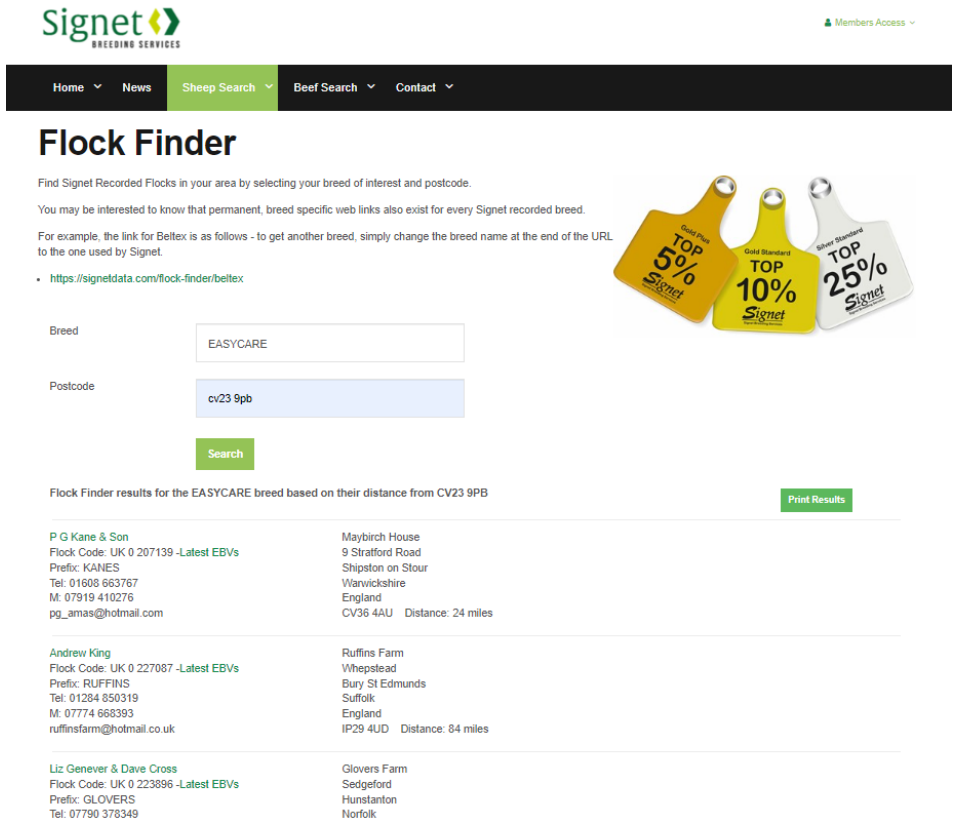
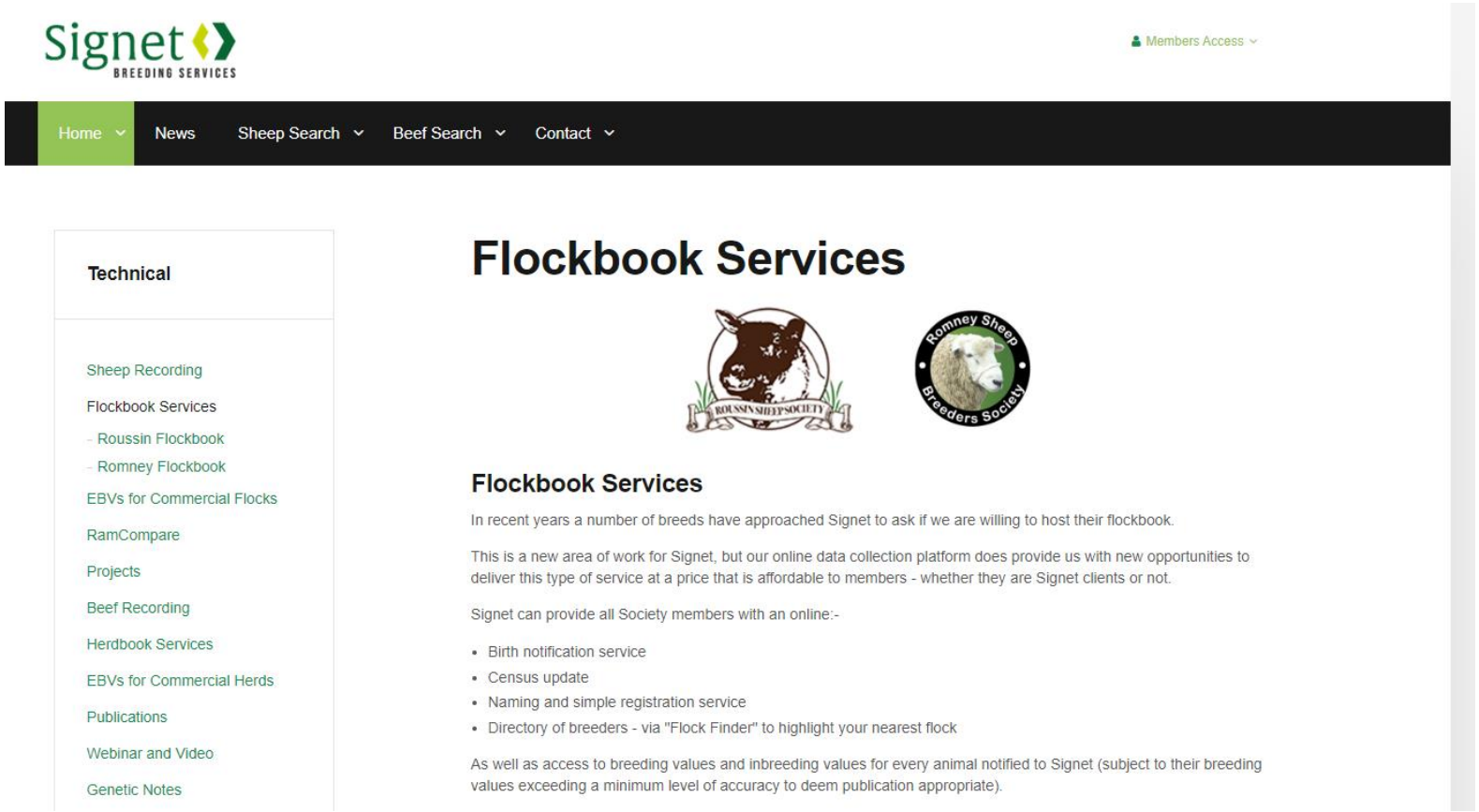




Adding value through flockbook services



We haven’t quite finished….

- Samir at SRUC has been reviewing a number of current procedures and recommended
  - We update the MIX software, which in test runs has been shown to enhance the way we assess Maternal Ability.
  - Update the way repeatability traits like litter size, mature size and body condition score are evaluated
  - Updating the way we calculate accuracy values for maternal traits; but this won’t influence the EBVs

- We know constant changes aren’t always helpful; but we felt these were important enough to merit an update in December ahead of the new season.

Summary

- We have come a long way in the last 20 years
  - Three monthly, multibreed evaluations launched and being used
    - Moved from 7 EBVs to over 50 EBVs
  - Thinking about environmental traits, abattoir traits and genomics