



Which breeds may
contribute to a
dairy sheep hybrid
for New Zealand?

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March 2020

Our Breeding goal is the conversion of pasture into profit in a NZ seasonal system

- Primary selection traits
 - Milk solids production
 - Udder traits (especially teat placement)
 - Somatic Cell Count
- Secondary selection traits
 - Temperament
 - Feet
 - Lamb meat
 - Longevity
 - Liveweight
 - Parasite resistance
 - Etc

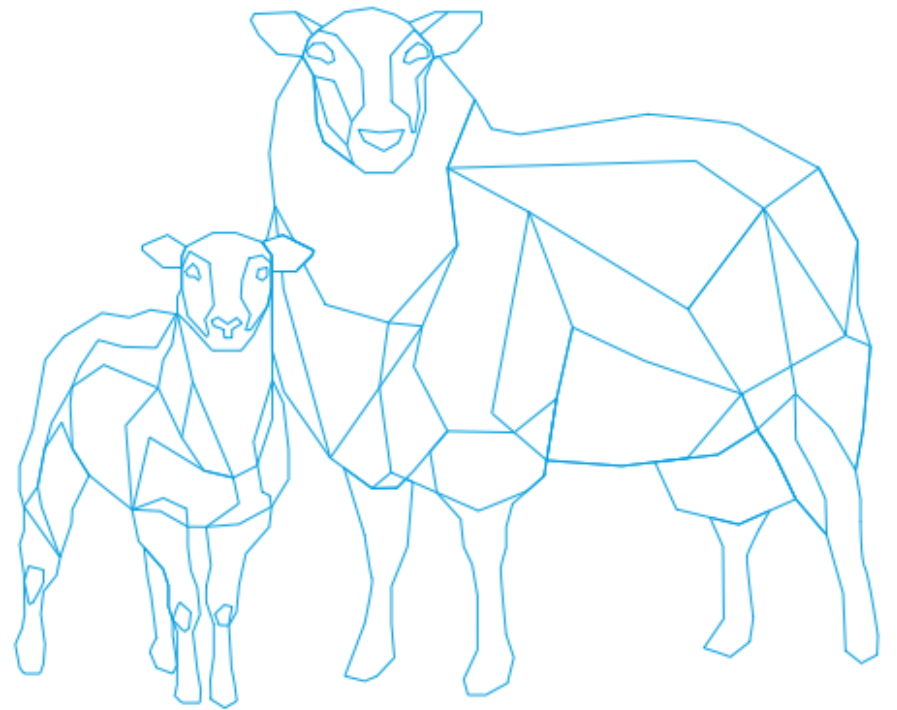


Sources of genetics

	Positive traits	Negative traits
New Zealand Traditional breeds	Bred for a NZ grazing system	No selection for milk traits
Overseas Dairy breeds	Selected for milk traits	Not bred for a NZ grazing system

New Zealand traditional breeds

- Coopworth
- Poll Dorset
- Romney and others



Coopworth

- The Coopworth is the breed of choice for Southern Cross™, the breeding program for Maui Milk
- The preference for the Coopworth is based on the following:
 - Temperament
 - Medium size (65-75kg)
 - Excellent mothering ability
 - Availability of FE resilient ewes
 - Reputation as a successful cross with East Friesians



(Poll) Dorset

- Commonly used around the world for upgrading local breeds to dairy sheep
- The Dorset is the base for British milking sheep
- The Dorset is the base for the Spooner Research herd in Wisconsin
- The Antara Ag herd in Southland has also made extensive use of the Dorset (in combination with East Friesian)
- The Poll Dorset traits:
 - large sheep (80-90 kg)
 - good meat production traits
 - out of season breeders
 - temperamental



Other NZ breeds

- It is important to consider that the NZ breeds will contribute only a small proportion of genes to the hybrid
- Therefore the NZ breed choice is not critical for successfully breeding the sheep of the future
- Romney, Highlander, Kelso, and many other breeds have a role to play in providing a base for multiplying dairy genes



The greatest contribution to genetic merit and ongoing genetic improvement will come from the choice of sires

This is also the case also in dairy cattle and dairy goats.

The reason is that most females are required to contribute progeny to the pool of replacements.

High selection intensity is only possible in the selection of sires.

Overseas dairy sheep breeds

- The breeds deserving consideration based on breeding programme or proven performance include the following:
 - Lacaune
 - East Friesian
 - Assaf



Lacaune – key features

- Large population of animals
- Scientific breeding programme
- Alignment of breeding goal



Lacaune - Overview

- A population of 800,000 dairy sheep in the South of France
- 550,000 ewes are bred AI with semen from progeny tested sires
- The breeding nucleus produces 100,000 ram lambs per year
- 3000 lambs are selected based on ancestry records and conformation
- After genomic selection the best 700 are progeny tested
- The best 40% are used as “Premier Sires” to breed all the replacements
- Primary selection focus is on Milksolids and Udder traits (incl SCC)
- Adding new traits: feet, OAD, parasite resistance, longevity



Lacaune – breed characteristics

- Lacaune is a medium size sheep (70-80 kg)
- Short wool, no wool on face and belly
- Lambing % MA ewes: 160% (twins, few triplets)
- Average production 170.00 sheep on 350 nucleus farms in France:
 - 326 litres in 164 days after raising lambs
- Replacement rate: 28%
- Farm income: 30% meat, 70% milk (hence some focus on carcass conformation in the breeding goal)

East Friesian – Overview

- Long established in Germany and the Netherlands
- “The poor man’s dairy cow”
- For centuries held in very small flocks (2-5) as part of the family
- Small numbers of dairy farms with relatively small herd size (<200)
- Breeding programmes are within-herd, fragmented and small
- No linkage between herds or countries
- Data collection limited or non-existent, with no relevant breeding values calculated

East Friesian – breed characteristics

- East Friesians are capable of sustaining milk production over extended lactations
- Fecundity is ~220% (many triplets)
- High growth rate
- Large animals (80-90 kg ewes)
- Generally not suited to outdoor environments due to history of being kept in small herds indoors
- Sensitivity to sunburn and pneumonia are observed in NZ
- Not selected to thrive in large flocks
- Lacking genetic selection for udder morphology lowers milking efficiency

Assaf - Overview

- The Assaf was created from crossbreeding Awassi ewes with East Friesian rams (5/8 and 3/8 respectively)
- Popular in Spain
- Very high production (500 litres/ewe/yr) on large farms (2000+)
- Often lambed 3x in two years
- Animals are housed indoors and fed TMR (Total Mixed Ration)
- Many farms have sophisticated milk-recording equipment
- Centralised genetic programme
- 126 farms did 36,000 inseminations from 160 rams in 2017

Assaf – breed characteristics

- The Assaf is a medium to large sheep (75-85 kg)
- Poor udder conformation compromises milking efficiency
- The genetic programme has begun to address the problem of udder morphology
- Gaining access to semen from progeny tested rams from the Ovigen breeding programme would require a health protocol between NZ and Spain

Observations

- No existing breed offers a complete solution for the NZ industry
- All of the listed breeds potentially have something to offer
- Genetic diversity and hybrid vigour will be important
- Based on the breed characteristics, existing genetic programme, and the current breeding goal, we believe the Lacaune will be the major contributor to the “KiwiCross” milking sheep of the future



