Adult merino ewes can be bred for live weight change to be more tolerant to climate change

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Objective

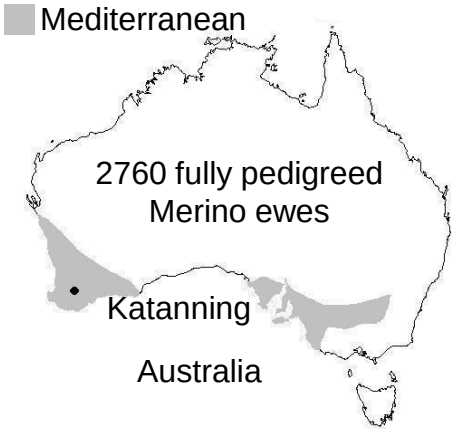
To investigate **genetic variation** in **live weight change** in environments with **variable feed supply** during the year to identify **sheep** that are more **resilient**

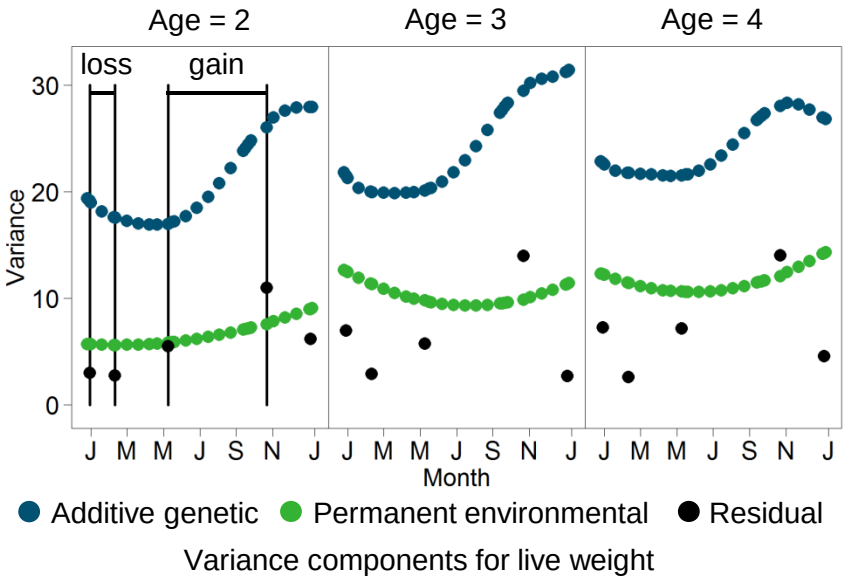
Random regression of live weight over days in the year

live weight ~ fixed effects + random effects

year	additive genetic (3rd order)
lambs born	permanent environmental (1st order)
lambs reared	heterogeneous residual variance

4th order fixed curve for time within year





Variance components for live weight

Heritability of weight loss and weight gain and the genetic correlations with standard errors

	h^2 loss	h^2 gain	Genetic correlation
Age = 2	0.08 (0.02)	0.28 (0.03)	-0.81 (0.06)
Age = 3	0.09 (0.02)	0.26 (0.04)	-0.86 (0.07)
Age = 4	0.07 (0.03)	0.23 (0.04)	-0.89 (0.11)

Conclusions

- Sheep can be bred to lose less weight on poor feed or gain more weight on good feed
- The variance components of live weight depend on the time of measurement

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