

Mark Ferguson, DAFWA

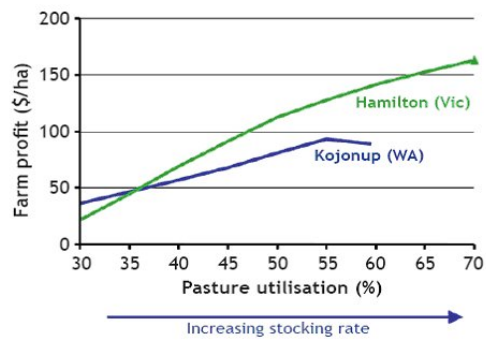
Biological efficiency in sheep



Biological efficiency

Profit through stocking rate

Pasture utilisation and its relationship to farm profit



Source: lifetimewool

Biological efficiency

Energy

Biological efficiency

Product



Biological efficiency

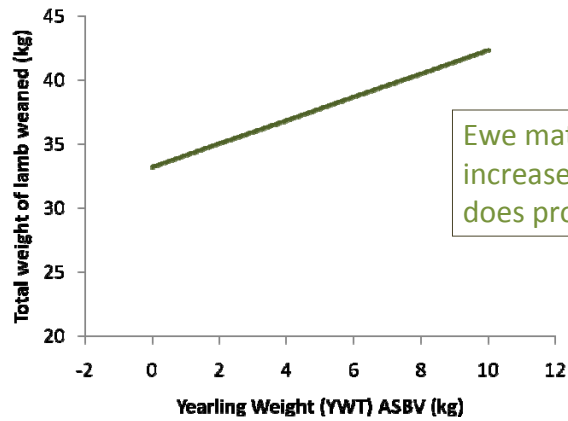
The options:

- Enhance reproductive output
- Mate ewes at 7 months of age
- Maternal efficiency
 - Kg lamb weaned per kg ewe joined
- Breed for ewes that do better over summer (resilient genotypes)
- Breed for ewes that eat less feed yet perform the same (efficiency of feed use)



Enhance reproductive output

Ewes that produce more



Enhance reproductive output

Ewes that produce more

- Select rams with high number of lambs weaned (NLW) ASBVs
- Breed toward ewes with high muscling ASBVs and enough fat.
- Remember wrinkly and wool blind sheep wean less lambs

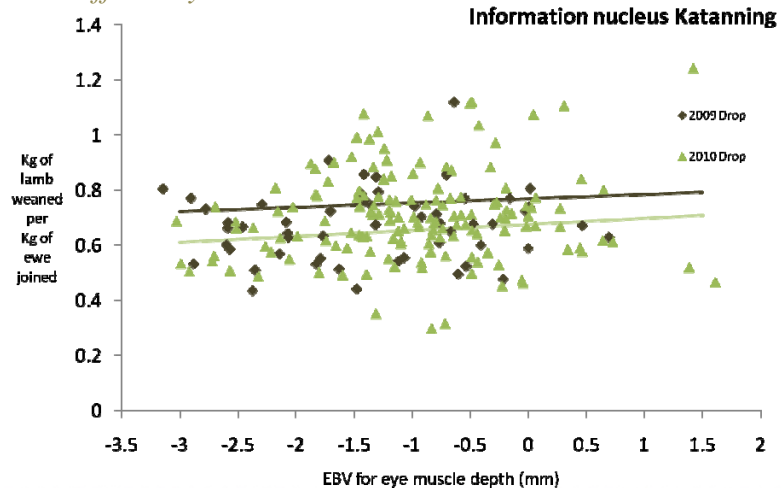
Biological efficiency

Maternal efficiency



- Mature ewe liveweight is a cost
- However, ewes of greater mature liveweight have:
 - More lambs
 - Lambs with a higher growth potential
 - Equals higher total weight of lamb weaned
- A trade off that must be balanced
- Kg lamb weaned per kg ewe joined a potential way forward

Maternal efficiency



Maternal efficiency



- Large variation in the trait
- Improves with muscling and fatness breeding values
- No effect of growth (WWT, YWT, HWT ASBVs)
 - Maternal efficiency is constant as ewes get bigger
- Ongoing work to understand further
- More data from information nucleus flock



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Biological efficiency

Mating ewes at 7 months

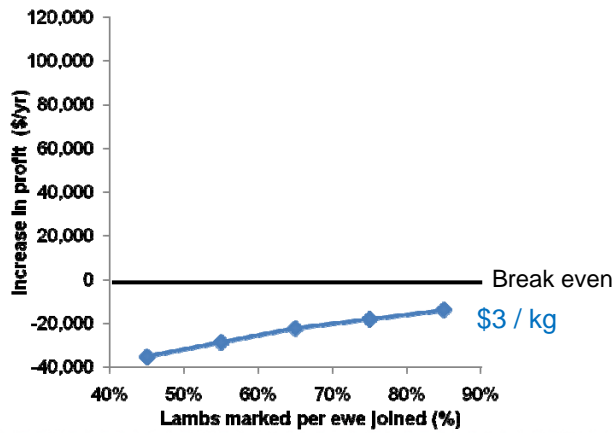
- Proven successful in first cross and composite ewes
- Also successful in new generation high growth merinos



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



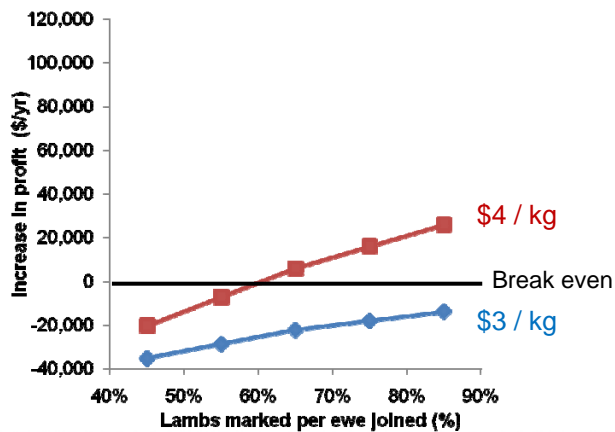
Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



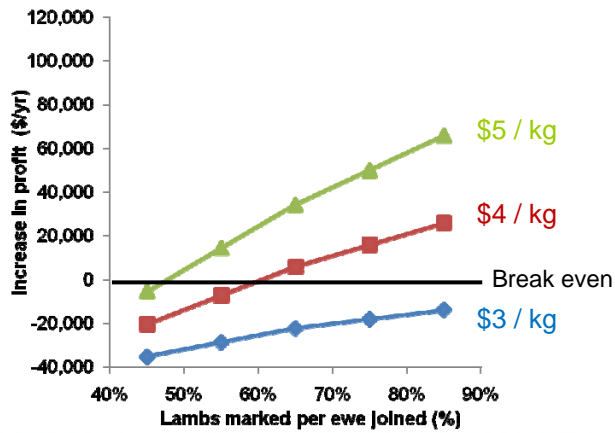
Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



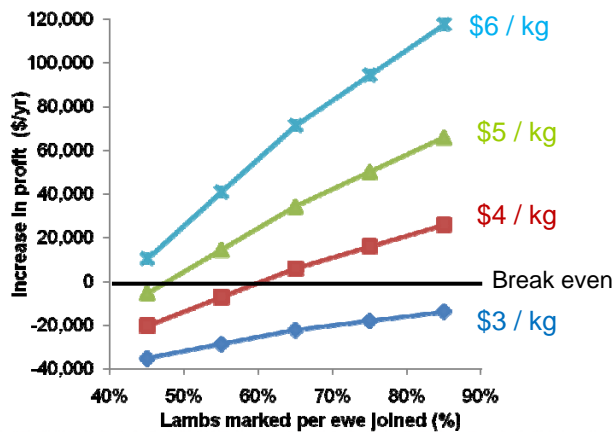
Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



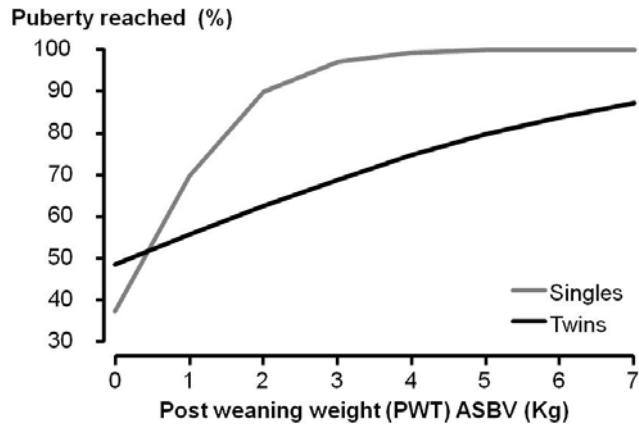
Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



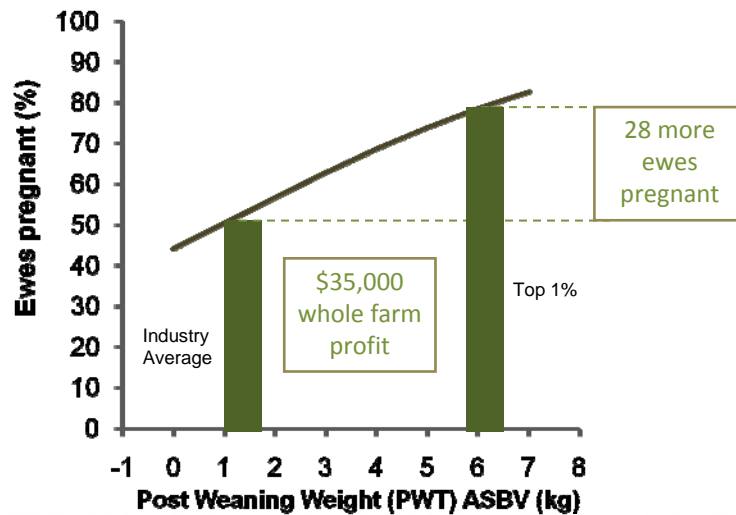
Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Mating ewes at 7 months old



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Biological efficiency

Mating ewes at 7 months

- Success linked to genetics – Post-weaning Weight ASBV
- 40kg minimum – 45kg is better
- Short joining period - 25 days
- Best when prices are high and season favourable
- Sell non-pregnant ewe lambs as prime lambs
- Good management a must



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Biological efficiency

Resilience to tough times

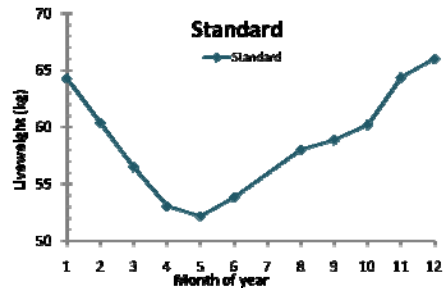
- Animals that lose less weight when times are tough
- Ewes that handle the annual drought better than others



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Resilience to tough times
\$ to be made



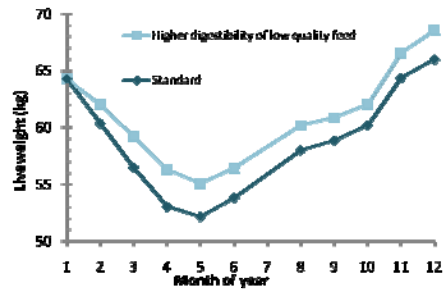
Potential profit from resilience	Wool enterprise \$/1000 ha farm	Prime Lamb enterprise \$/1000 ha farm
Standard genotype	92 000	165 000



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Resilience to tough times
\$ to be made



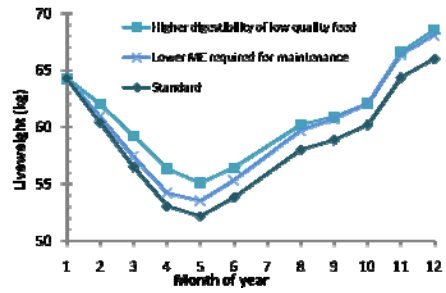
Potential profit from resilience	Wool enterprise \$/1000 ha farm	Prime Lamb enterprise \$/1000 ha farm
Standard genotype	92 000	165 000
Higher intake of low quality feed	+700	+17 000



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Resilience to tough times
\$ to be made



Potential profit from resilience	Wool enterprise \$/1000 ha farm	Prime Lamb enterprise \$/1000 ha farm
Standard genotype	92 000	165 000
Higher intake of low quality feed	+700	+17 000
7.5% less ME required for maintenance	+11 000	+23 000

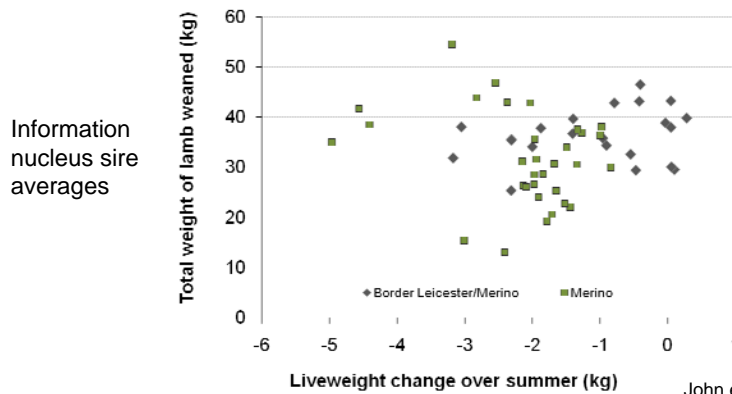
Young *et al.* 2011



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Resilience to tough times
Wide variation between sires



John *et al.* 2011



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Biological efficiency

Resilience to tough times

- Liveweight change over summer a measure of resilience
- Modelling shows there is money in it
- Less supplementary feeding & higher stocking rates
- Liveweight loss in summer is heritable (0.2 Rose *et al.*)
- Large variation between sires used in the information nucleus flock (John *et al.*)
- On-going work into the genetic and biological basis



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011



Biological efficiency

The wrap up



- There is scope to improve the efficiency of sheep production
- Potential for improving maternal efficiency
- Mating ewe lambs is a serious option when seasons and prices allow it
- Resilience to the annual droughts showing promise
- To make use of any of these developments good information and ASBVs will be required



R&D INSIGHTS FORUM
MONDAY 7TH & TUESDAY 8TH MARCH 2011

