

Terminal Sire Indexes

LAMBPLAN provides ram breeders and commercial producers with three indexes for terminal sire selection: the Carcase Plus Index, the Trade \$ Index and the Export \$ Index.

The Carcase Plus Index is a desired gains index, based on post-weaning weight, fat depth and eye muscle depth in a 60:20:20 ratio. Carcase plus rewards for high growth and muscle depth, while also rewarding for increased leanness without optimising this trait at a particular point.

The Trade \$ Index is designed to target production of 20kg carcass weight lambs and uses post-weaning age (7.5 months) ASBVs for growth, fat and eye muscle depth to produce the \$ Index value. The Trade \$ Index rewards animals with a post-weaning weight (PWT) ASBV of +6 or greater, optimises the post-weaning fat (PFAT) ASBV at -0.5 and rewards animals with more positive eye muscle depth (PEMD) ASBVs.

The production of trade weight lambs requires appropriate leanness; however, excessive leanness is undesirable due to potential difficulties in finishing lambs at this weight. For this reason the Trade \$ Index optimises the post-weaning fat (PFAT) ASBV at -0.5. The further an animal's PFAT ASBV is from -0.5 the less points are allocated. The index also rewards animals with more positive post-weaning eye muscle depth ASBVs, which is desirable for carcass conformation and yield. The more positive the PEMD ASBV the more points are awarded in the index.

The Export \$ Index is aimed at producing 24kg carcass weight lambs and like the Trade \$ Index uses post-weaning age (7.5 months) ASBVs for growth, fat and eye muscle depth to produce the \$ Index value. The Export \$ Index rewards animals with a post-weaning weight (PWT) ASBV of +10 or greater, optimises the post-weaning fat (PFAT) ASBV at -1.0 and rewards animals with more positive eye muscle depth (PEMD) ASBVs.

Both the Trade \$ and Export \$ Indexes are expressed as dollars/ewe joined/year. In estimating the dollar variation the index assumes a weaning rate of 100% and lamb at \$3.50/kg cwt.

Carcass Plus	Predicted 10 yr Response	Relative Response	Contribution to Economic Gain
PWT	2.0 kg	60%	70%
PFAT	-0.3 mm	20%	15%
PEMD	0.6mm	20%	15%

	Trade \$	Export \$
Carcass wt. target	20kg	24kg
PWT target	≥ +6	≥ +10
PFAT target	Optimised at -0.5	Optimised at -1.0
PEMD target	≥ 0	≥ 0

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LAMB2020



a **NEW DIRECTION** for the **AUSTRALIAN SHEEP INDUSTRY**

For two years, Sheep Genetics has been working to develop a new standard index that better reflects the future demands of the Australian lamb industry. This new index, called LAMB 2020, will be available to terminal sire breeders from 1 December 2008.

LAMB2020 has been developed with several features that require some explanation. The following information is a guide to how the index was developed, what changes are likely to occur as a result of the index and how breeders should consider using it.

FEATURES

The first feature of LAMB2020 is that it has been constructed as a dollar index rather than a desired gains index like Carcase Plus. This structure brings LAMB2020 into line with the Trade \$ and Export \$ indexes, the maternal \$ indexes and MERINOSELECT indexes which are all dollar indexes.

The initial focus of LAMB2020 was on the standard traits currently used in the Carcase Plus index. Dollar values for growth (carcase weight), fat and muscle have been calculated on an assumed carcase weight of 22kg. With more producers targeting earlier turn-off ages, the relative value for growth was split 40:60 between weaning weight (WWT) and post weaning weight (PWT).

In developing the LAMB2020 index extensive consultation with breeders and industry stakeholders was conducted, resulting in the inclusion of birth weight (BWT) and worm egg count (PWEC).

LAMB2020

- **Developed to meet the future challenges of the Australian sheep industry**
- **Designed to suit terminal sire breeders**
- **Concentrates on carcase and growth traits, while considering birth weight and internal parasites**
- **Presented as a dollar index**

In an attempt to limit further increases in birth weight a negative \$ emphasis has been placed on increasing birth weights - a result from directly selecting for growth (noting that there is a positive correlation between growth (WWT and PWT) and birth weight (BWT)).

The addition of PWEC to LAMB2020 was driven by the fact that internal parasites are one of the most significant costs to the Australian sheep industry (\$320M per annum; MLA 2006). In addition, resistance to anthelmintics by internal parasites is resulting in less effective chemical treatment options for worms. One of the strategies that producers can put in place to assist with worm management is to select animals that are more resistant to worms (lower PWEC ASBVs). Over the last two years, there have been a number of breeders who have measured PWEC.

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This information, combined with outcomes from the Sheep CRC information nucleus project, will provide breeders with access to sires with accurate ASBVs for PWEC.

The dollar value for PWEC has been calculated based on information that a range of PWEC of 100 units is worth approximately 10% of the value of improvement in growth.

WHAT DOES LAMB2020 DO?

In the following table the relative selection emphasis and predicted change over ten years have been calculated for LAMB2020.

Trait	Relative Emphasis	Change over 10 yrs
BWT (kg)	8%	0.10
WWT (kg)	24%	2.7
PWT (kg)	25%	3.5
PFAT (mm)	9%	0.2
PEMD (mm)	22%	1.3
PWEC (%)	12%	-30

From this table, there are several important points that need to be considered:

- Despite a negative emphasis on birth weight, birth weight still increases by 0.10kg over 10 years. This is due to the positive correlations that exist between growth and birth weight.
- Despite a negative emphasis on fat, it will increase slightly by 0.2 mm over 10 years. This is a direct result of the higher emphasis on muscle and selecting for internal parasite resistance.

The LAMB2020 index is designed to be a different index to Carcase Plus. However, it still has a high correlation or relationship with Carcase Plus (90%). This is due to the relatively high emphasis on growth, fat and muscle that are consistent between both indexes.

The index has been developed to suit terminal sire breeders with clients targeting a 22 kg lamb carcase, from either a Merino or first-cross ewe base where worms may be a significant challenge to lamb production.

If you require further information on the LAMB2020 index or selection indexes in general please contact the Sheep Genetics office.

DOLLAR INDEXES

As with the Trade and Export \$ indexes, a value in LAMB 2020 reflects the improvement in lamb dollar value.

For example, lambs from a sire with a LAMB 2020 index of \$113 will be worth \$3 more than lambs from a sire with a LAMB 2020 index of \$110.

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