

## Red Maternal Index (RedMATN)

The Red Maternal Index (RedMATN) is a key tool designed to select sires for venison production and to breed replacement females.

Breeding values have been grouped by trait e.g. Growth, Meat Yield, Reproduction and Hind Weight and multiplied by the value of an extra unit to a standardised deer production system.

As each sub-index is in \$ per fawn born, the sub-indexes can be combined to give an overall value summarising the merit of an animal for the traits. The sub-indexes also make it easier to see the strengths or weaknesses an individual has compared to assessing breeding values with different units.

Red Maternal Index (RedMATN) = Red Maternal Growth (RMG) + Red Maternal Meat (RMM) + Red Maternal Reproduction (RMR) + Red Maternal Hind Weight (RMHW)

### Index values are relative:

A sire with a REDMATN Index of \$100 is likely to produce progeny that will return \$12.50 more per fawn born, relative to a sire with a \$75 index (since the sire contributes 50% of the genetic merit).

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## Sub-Index Breakdown



### 1. Red Maternal Growth (RMG)



#### GROWTH

This sub-index summarises genetic merit for growth based on liveweight data.

$$\text{RMG} = \$0.95 \times \text{WWTbv} + \$0.96 \times \text{WWTMbv} + \$0.97 \times \text{PWGbv} + \$5.41 \times \text{CWLbv}$$

 Breeding Value (BV)	Abbrev	 Economic Weight
Weaning Weight	WWT	\$0.95
Weaning Weight maternal	WWTM	\$0.96
Post Weaning Gain	PWG	\$0.97
Carcass Weight predicted from liveweight data	CLW	\$5.41

Note: Post weaning gain is growth from weaning to 12 months. Basically W12 BV minus WWT BV = PWG BV

♦ **Key Insight** The majority of the economic value in growth comes from carcass weight predicted from liveweight data and is based on rolling schedule returns

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### 2. Red Maternal Meat Yield (RMM)



#### MEAT YIELD

This sub-index summarises genetic merit for meat yield merit based Ultra-Sound and CT data.

$$\text{RMM} = \$5.41 \times \text{CWY} + \$8.87 \times \text{LEANY}$$

 Breeding Value (BV)	Abbrev	 Economic Weight
Carcass Weight Yield	CWY	\$5.41
Lean Yield	LEANY	\$8.87

♦ **Key Insight** : This sub-index indicates whether an animal has more or less muscling for its size, based on ultrasound or CT data.

### 3. Red Maternal Reproduction (RMR)



#### REPRODUCTION

This sub-index summarises genetic merit for fertility and reproduction in females based on pregnancy scanning records.

$$\text{RMR} = -\$2.45 \times \text{CDbv} + \$96.05 \times \text{FERTbv} + \$155.75 \times \text{FERTMAbv}$$

 Breeding Value (BV)	Abbrev	 Economic Weight
Conception Date	CD	-\$2.45
Fertility at 2 years	FERT2	\$96.05
Fertility at Mixed Age	FERTMA	\$155.75

♦ **Key Insight** : Conception date rewards hinds that cycle earlier and Fertility traits are designed to prevent a decline in fertility when selecting for production traits like growth.



### 4. Red Maternal Hind Weight (RMHW)



#### ADULT SIZE

This sub-index summarises genetic merit for hind weight based on adult hind liveweight data or predicted from younger weight if no adult weights available.

$$\text{RMHW} = -\$0.04 \times \text{MWTbv}$$

 Breeding Value (BV)	Abbrev	 Economic Weight
Mature Weight(hinds)	MWT	-\$0.04

♦ **Key Insight**: The penalty on mature weight is low since there only a small penalty on venison from mature females relative to younger animals and the higher carcass weight offsets much of the cost of running larger hinds.



### 5. Red Maternal Carla (RMC)



#### PARASITE RESISTANCE

This sub-index summarises genetic merit for an animals immune response to internal parasites, based on saliva CARLA antigen levels.

$$\text{RMC} = \$0.08 \times \text{CARLAbv}$$

 Breeding Value (BV)	Abbrev	 Economic Weight
CARLA	CARLA	\$0.08

◇ **Key Insight:** A high CARLA sub-index indicates a larger immune response to parasites, decreasing the infection rate in the intestinal tract.

The Carla breeding value is reported separately or can be added to the Red Maternal Index, but it is not part of the core RedMATN.

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The sub-index approach allows quick identification of merit across the different traits. This allows buyers to more easily choose sires with the strengths they desire for their system than considering many BVs with different units and decimal places.

## Example of Merit for Potential Sires

The table below illustrates the REDMATN and its components for four young sires:

Stag	RMG (Growth)	RMM (Meat Yield)	RMHW (HindWt)	RMR (Repro)	REDMATN (Total)
1	\$54.19	\$7.29	-\$0.32	\$4.19	<b>\$65.35</b>
2	\$79.78	\$6.38	-\$0.50	\$15.93	<b>\$101.58</b>
3	\$103.41	\$24.51	-\$0.50	\$4.79	<b>\$132.21</b>
4	\$103.61	\$15.21	-\$0.56	\$12.47	<b>\$130.74</b>

### Key Observations:

- **Stags 1 & 2:** Have lower overall merit but may be suited for specific breeding needs, like velvet production or smaller animals.
- **Stags 3 & 4:** Have higher growth and meat merit, making them more suitable for venison production. Stag 4 is not quite as Meaty but as has a slight advantage in reproduction compared to Stag 3. These sires will leave fast growing progeny, that will require good feeding to reach their potential.

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## Conclusion

The Red Maternal Index (REDMATN) is a valuable tool for breeders aiming to optimize their venison production, while considering maternal traits of female offspring retained as replacements. The sub-indexes allow breeders to assess specific genetic traits and select sires that best match their breeding goals.