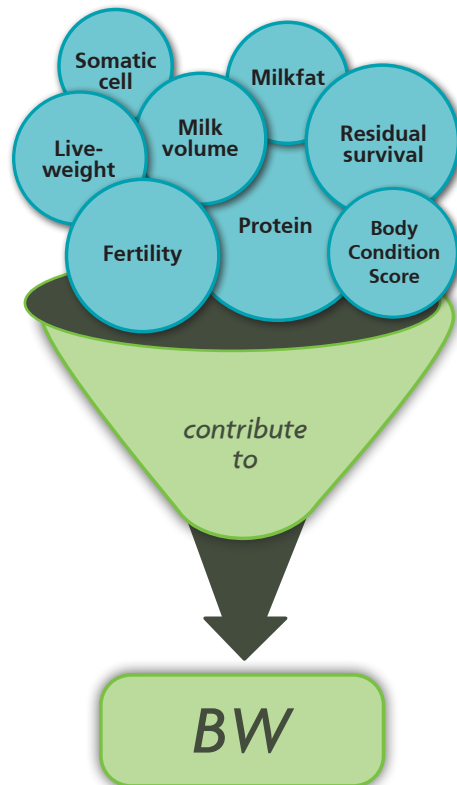


Breeding Worth explained

This guide is brought to you by New Zealand Animal Evaluation Ltd (NZAE), a wholly owned subsidiary of DairyNZ, which is owned by you, the New Zealand dairy farmer. NZAE sets the National Breeding Objective and determines the traits included in Breeding Worth.

Eight traits of a highly efficient cow



How to use Breeding Worth, Production Worth and Lactation Worth

	BW	PW	LW
Meaning	Genetic ability for breeding replacements	Lifetime performance	Current season performance
Use for	Selecting bulls and replacements and purchasing heifers	Culling and purchasing cows	Culling
\$ terms	+68 = expected to breed daughters that are \$34 more profitable than daughters of a 0 BW cow	+78 = expected to generate \$78 more profit, in each of her lactations, than a cow with a PW of 0	+98 = expected to generate \$98 more profit, in the current season, than a cow with a LW of 0
Traits	Milkfat, protein, milk volume, liveweight, fertility, somatic cell, residual survival and body condition score	Milkfat, protein, milk volume, liveweight, SCC	Milkfat, protein, milk volume, liveweight

For the best bulls consult the RAS list.

dairynz.co.nz/nzael



National breeding objective (BW):

"Animals whose progeny will be the most efficient converters of feed into farmer profit."

- **The Breeding Worth** ranks male and female animals for their genetic ability for breeding replacements
- **The Production Worth** ranks female animals for their lifetime performance.
- **The Lactation Worth** ranks female animals for their current season performance.

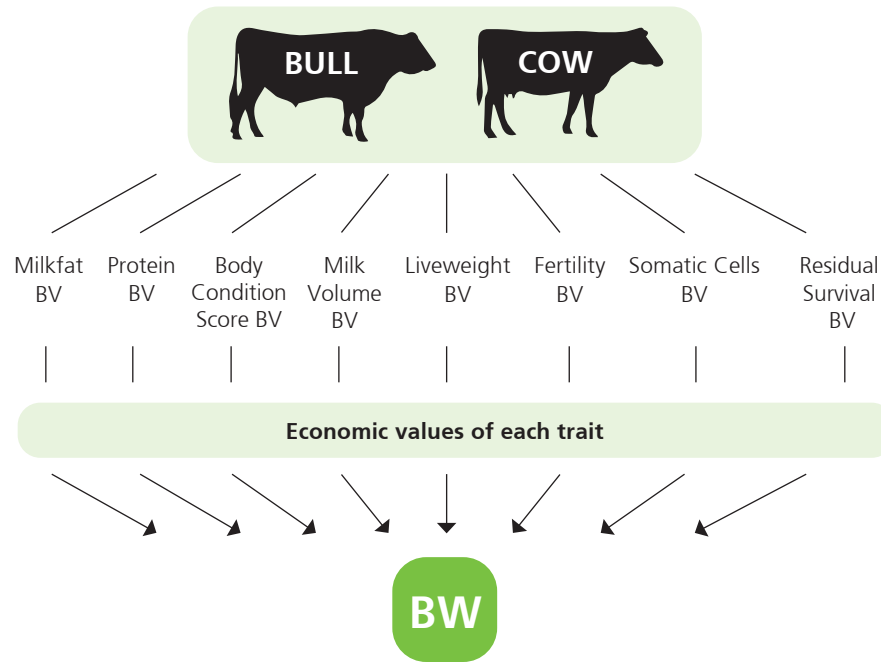
Genetic gain contributes \$45 million annually to the national economy which compounds over time.

Calculating breeding worth

Expressed as: \$ net farm income/5 tonne of dry matter

BW ranks bulls and cows on their expected ability to breed profitable and efficient replacements as it includes the economically important traits.

How profitable are they for breeding replacements?



Animals can be compared across breed, herds, ages

Genetic base

The genetic base, also referred to as the Base Cow, is the average of a group of animals whose evaluation is set at zero for all traits to form a reference point for comparison.

The base cow is currently the average of 2005 born cows.

For more info: dairynz.co.nz/geneticbasecow



Introducing the example bull – Sample Sam

How to read breeding values

RANKING OF ACTIVE SIREs

EVALUATION DATE 15/06/2018
CROSSBRED

Bull name	BW/Rel	Breeding values							
		Protein (kg)	Milkfat (kg)	Milk (l)	Lwt (kg)	Fert (%)	SC (score)	Resid Surv (days)	BCS
Sample Sam	\$178	20	20	500	10	4	-0.2	100	0.2

Breeding values (BVs)

Breeding values are the genetic merit of an animal for the individual traits relative to the Base Cow.

Protein (kg) – indicates that Sample Sam is expected to produce daughters on average that will produce 10 kg (half of 20 kg) more protein per lactation than the Base Cow.

Likewise for **Milkfat (kg)** and **Milk Volume (litres)** where half of Sample Sam's genetic merit, on average, is expressed in his daughters.

Liveweight (kg) – indicates that Sample Sam on average will produce daughters that are 5 kg (half of 10 kg) heavier than the Base Cow.

Fertility (%) – indicates that 2% (half of 4%) more of Sample Sam's daughters will calve in the first 42 days of the herds calving period compared to the Base Cow.

Somatic Cell (score) – indicates that Sample Sam on average, will produce daughters with a lower Somatic Cell score of -0.1 (half of -0.2) than the Base Cow. The lower the Somatic Cell BV the better.

Residual Survival (days) – indicates that Sample Sam is expected to produce daughters that will last on average in the herd 50 days longer (half of 100) than the Base Cow after separately accounting for the genetic effects of production, fertility, liveweight and somatic cell score on longevity.

Body Condition Score (score) – Indicates that the daughters of Sample Sam will have a BCS which 0.1 (Half of 0.2) higher than the base animal (60 days into their lactation)

There are 24 additional breeding values for you to explore such as; Gestation Length, Calving Difficulty, Udder Overall, Milking Speed, Capacity and Overall Opinion. These additional BVs can be used to further narrow down farmer's selections of high BW bulls.

Economic values (EVs)

Economic values are calculated using farm economic models which take into account milk production, historical, current and forecast milk prices, income from culls, surplus cows and bobbies, cost of generating replacements and dairy farm expenses.

These are updated in February every year.

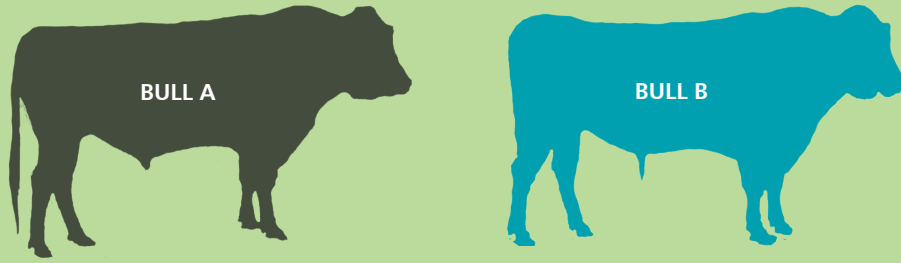
EVs as at Feb 2018:

Protein (\$/kg)	Milkfat (\$/kg)	Milk volume (\$/kg)	Liveweight (\$/kg)	Fertility (\$/%)	SCS (\$/unit SCS)	Residual survival (\$/days)	Body Condition Score (\$/BCS point)
6.06	2.85	-0.088	-1.30	6.55	-38.33	0.124	100.60

Delving deeper — no two bulls are the same

Two bulls can have exactly the same BW but will have reached that through very different strengths.

Which bull is best?



BV Traits	BULL A			BULL B		
	BV	EV	BW \$130/75	BV	EV	BW \$123/75
Milkfat (\$/kg)	31	x 2.85	\$56	43	x 2.85	\$147
Milk Protein (\$/kg)	14	x 6.06		30	x 6.06	
Milk Volume (\$/L)	770	x -0.088		1387	x -0.088	
Liveweight (\$/kg)	38	x -1.30		27	x -1.30	
Fertility (\$/%)	5.8	x 6.55	\$74	-4.1	x 6.55	-\$24
Somatic Cell Score (\$/SCS)	-0.41	x -38.33		0.11	x -38.33	
Residual Survival (\$/days)	5	x 0.124		140	x 0.124	
BCS (\$/BCS point)	0.2	x 100.60		-0.1	x 100.60	

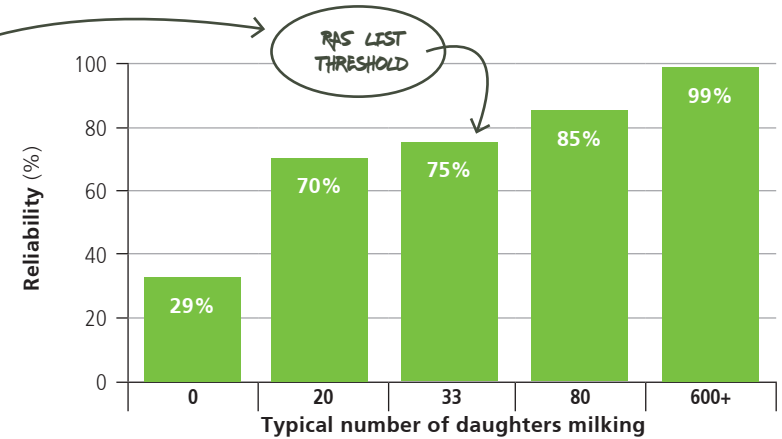
• Bull A has superior Somatic Cell and Fertility traits.

• Bull B has superior Production traits.

The best bull is the bull that fits your herd breeding objective.

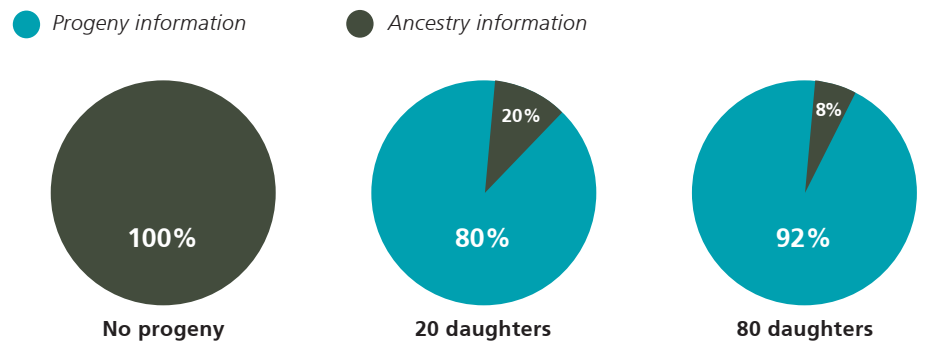
Reliability, which is shown on a scale of 0 to 100, measures how much information has contributed to the trait evaluation for the animal. It indicates confidence that the BV is a good indication of the animal's true genetic merit.

Reliability explained



Expected maximum shift in BW (+/-)	100	71	59	46	12
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How is ancestry/progeny information weighted in a bull's BW?



Keep up-to-date with the ranking of active sires (RAS)

RAS lists are ranked on BW and updated every animal evaluation run with the latest information added to the bulls proof. List criteria are:

- Sire enrolled by marketer
- Minimum reliability of 75% from progeny and parentage information sources
- At least 10 herds with two-year-old herd tested daughters included in the bull's proof
- Have at least 500 doses of semen available in the following mating season.

Top 30 All Breeds		BREEDING VALUE (BV)						BV CONTINUED	TOP MANAGEMENT	TOP CONFORMATION	
BW Rank	BULL NAME Bull Code Breed	BW(\$)	Prot(kg)	Fat(kg)	Milk(l)	Lwt(kg)	Fert(%)	SC (Score)	Resid Surv (days)	BCS	Marketer
RAS AVERAGE (TOP 30 ALL BREEDS)		210 / 87	15.4	20.2	72	-24.9	3.1	-0.24	21	0.12	
1	CARSONS MECCA PULSE S1F 112035 FRI	253 / 98	27.5	9.5	679	-34.4	4.7	-0.37	112	0.10	LIC REMOVE
2	SAN RAY FM BEAMER- ET S2F 111037 FRI	229 / 92	37.0	39.8	800	37.4	3.5	0.00	-1	0.05	LIC REMOVE
3	LINAN INTEGRITY WINSTON 314022 JER	219 / 87	11.3	29.2	-30	-75.5	-1.1	0.21	46	-0.05	LIC REMOVE

visit dairynz.co.nz/ras

The NZAEL RAS list is updated every 3-4 weeks.



Rule of thumb...

Reduce cow numbers by one cow per 300 each year to fully exploit genetic gains

OR

Increase feed supply by 5 t DM per 300 cows per year.

BULL TEAM BUILDER

Choosing the right bulls for your herd just got easier!

Visit our website to build a team and see how it stacks up against the national benchmark.

dairynz.co.nz/bullteam