www.3dgenetics.com.au

3D GENETICS

DISCIPLINED DATA-DRIVEN

2025

About 3D Genetics

3D Genetics was founded in 1997 with the purchase of some of the first fullblood Wagyu cattle imported into Australia. It has grown into an Industry leading Wagyu Nucleus.

'Pukawidgi' and 'Harwood' located 40km north of Inverell, NSW host the 3DG Breeding Nucleus herd which presently numbers 2,000 breeders including 600 Angus ET recipient cows.

3D Genetics provides Fullblood Wagyu Bulls to commercial producers in one of the larger structured progeny test currently run in Australia

Pukawidgi & Harwood

- “Phenotype Capture Facility”
- 2,100 hectares (Ha)
- 150 paddocks (average 14 Ha)
- Summer & Winter Grazing Species
- Silage (Corn & Barley)
- Calves weaned at 5-6 months of age onto TMR

Bukkulla Long-Term Averages

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Max (°C)	31.3	30.6	29.0	25.5	21.6	18.0	17.2	19.0	22.3	25.4	27.6	30.3	**24.8**
Mean Min (°C)	17.6	17.2	14.7	10.7	6.7	3.2	1.9	2.8	6.3	10.3	13.5	16.1	**10.0**
Mean Rain (mm)	90.8	75.7	65.0	46.1	41.4	37.5	40.6	36.8	45.6	62.2	84.8	88.5	**733.6**
Mean Rain Days	9.1	7.6	6.7	5.0	5.9	6.3	7.1	6.1	6.2	7.8	9.0	9.4	**87.5**

Wagyu Carcase (HSCW) Grid Pricing July 2025

AUSMEAT Marble Score	$ / KG HSCW
0 – 3	$7.50/kg
4	$8.00/kg
5	$8.50/kg
6	$10.50/kg
7	$11.50/kg
8	$12.50/kg
9	$13.00/kg
9+	$14.25/kg

AUS-MEAT 6, 450kg
Carcase = $4,725

AUS-MEAT 9+, 450kg
Carcase = $6,412

Breeding objectives

Breeding objectives

- Rapid Growth
  - Increasing lifetime average daily gain
- High Marbling/Carcase quality
  - Wagyu get paid a premium for high marbling
- High value carcase
  - Increasing the high value cuts such as the Rib Eye
- Calving Ease
  - Ensuring there are no calving difficulties

Overall,

- Increasing lifetime average daily gain from 0.8kg to 1.0kg to achieve a high marbling 450kg carcase at a slaughter age of 800 days

- How do we aim to do this? What traits are we going to measure?

Traits Measured at 3D Genetics

We run an intensive system with lots of traits being recorded. These include,

- Gestation Length
- Weight traits
  - Birth, branding weaning, 400-day, 600-day and mature cow weight
- Yearling Ultrasound carcase traits
  - Rib and rump fat, IMF and EMA
- Feed trial traits
  - Average feed intake, average daily gain and residual feed intake
- Scrotal Circumference
  - Measured at 10, 11, 12, 13 ,14 ,15 months of age
- Pelvic measurement
- MIJ Camera carcase traits
  - Digital Marble Score, EMA, marbling fineness
- AUS-MEAT carcase traits
  - Carcase weight, AUS-MEAT Marble score, AUS-MEAT Rump fat

Traits: Birth Weight, Gestation Length

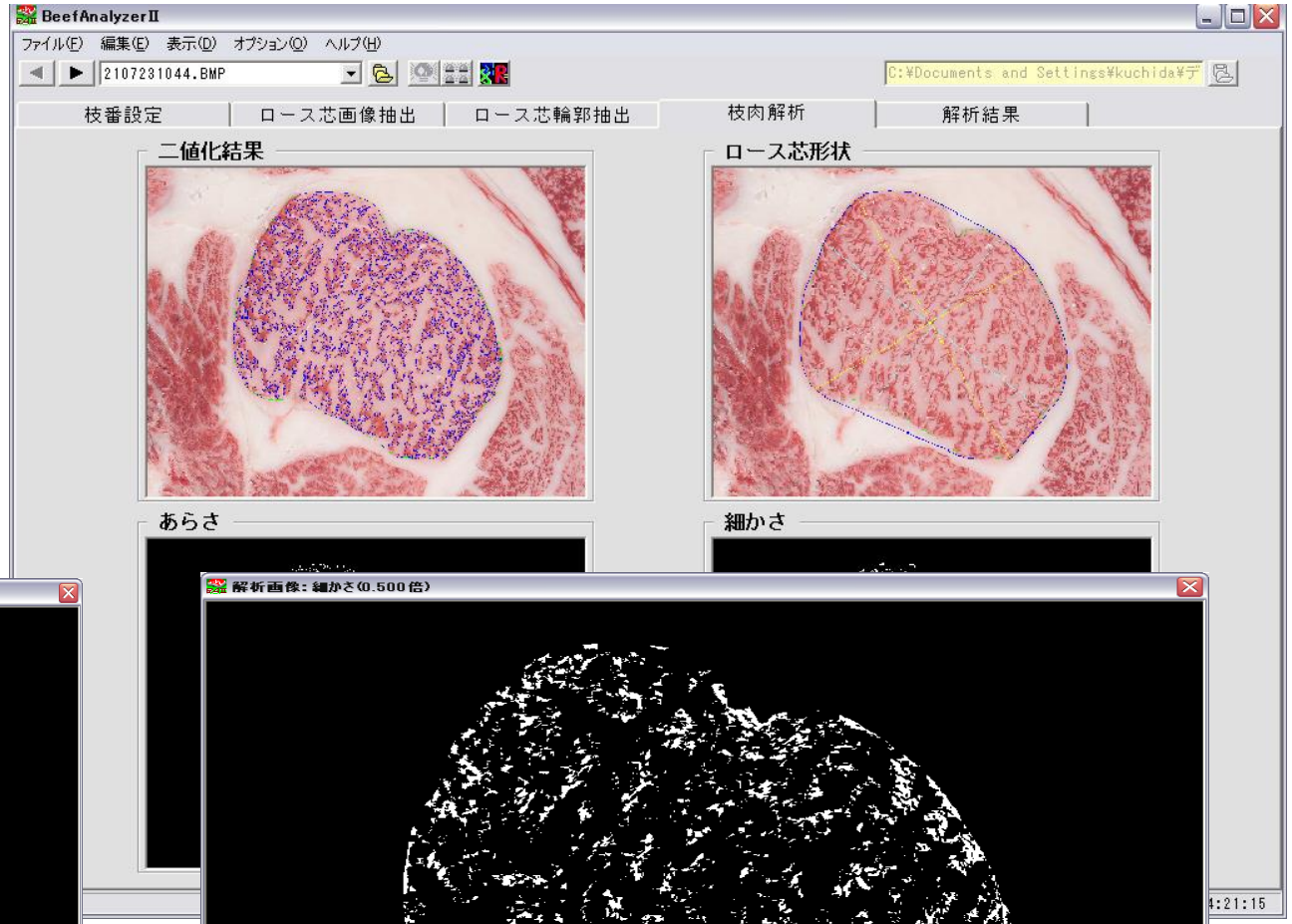
- Extreme birth weights both small and large affect calf survival and performance in Wagyu
- Dystocia in Holstein cows producing F1 progeny in Japan is now a common problem due to heavy selection for increased carcase weight
- Unborn calves grow at approximately 0.3kg per day for the last few weeks of pregnancy
- Wagyu cattle have very long gestation lengths compared with other beef breeds

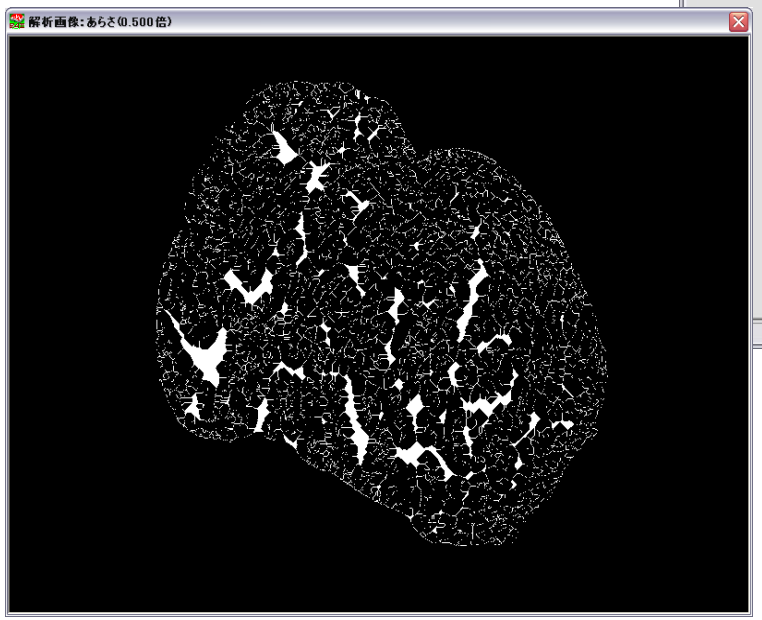
Objective Assessment of Marbling

MIJ Image analysis yields significantly more accurate marbling results when compared with AUSMEAT Chiller assessment

MIJ Imaging

The MIJ Imaging system automatically extracts the outline of the eye muscle (l.dorsi) then accurately analyses more than 10 traits including eye muscle area, total marbling, marbling particle fineness, meat colour and fat colour

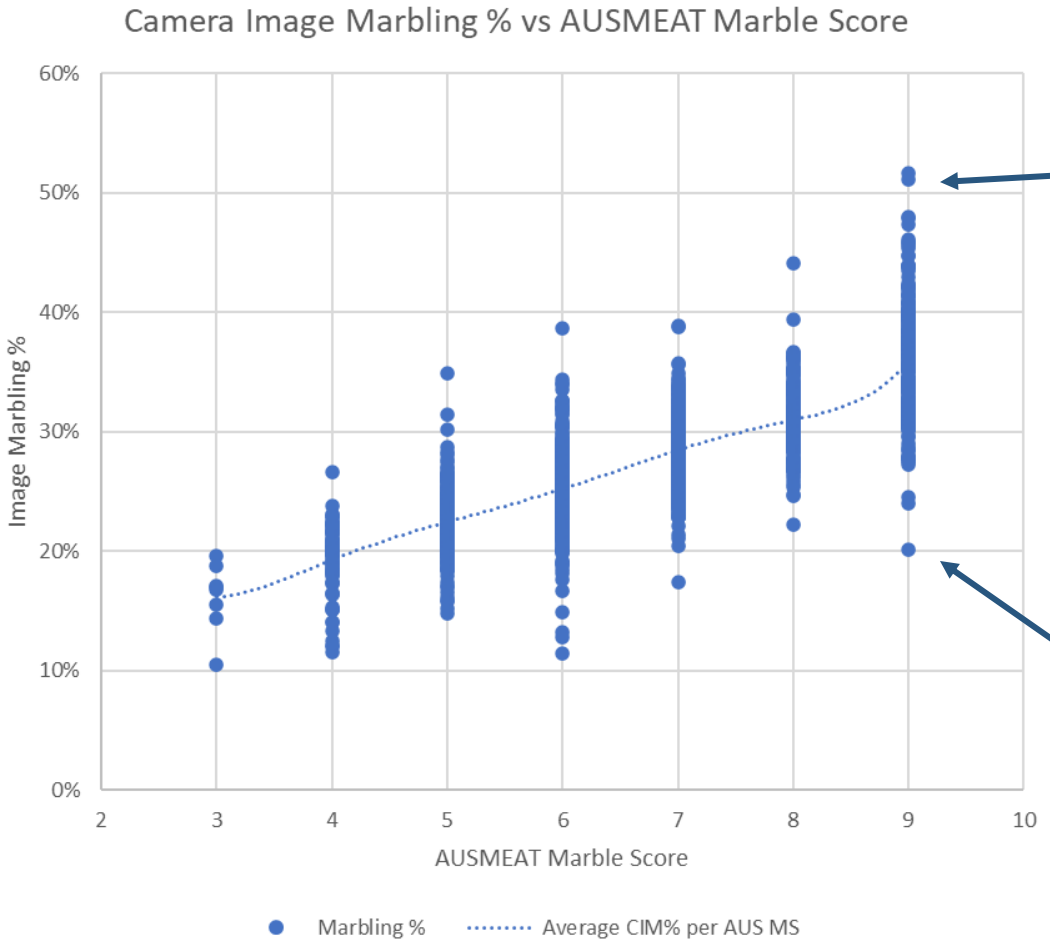




Coarseness of marbling

Fineness of marbling

AUSMEAT 9 – What does it look like?



Selecting for bigger loins – Top 3 cuts
Example: AUSMEAT MS 9 – 450kg HSCW

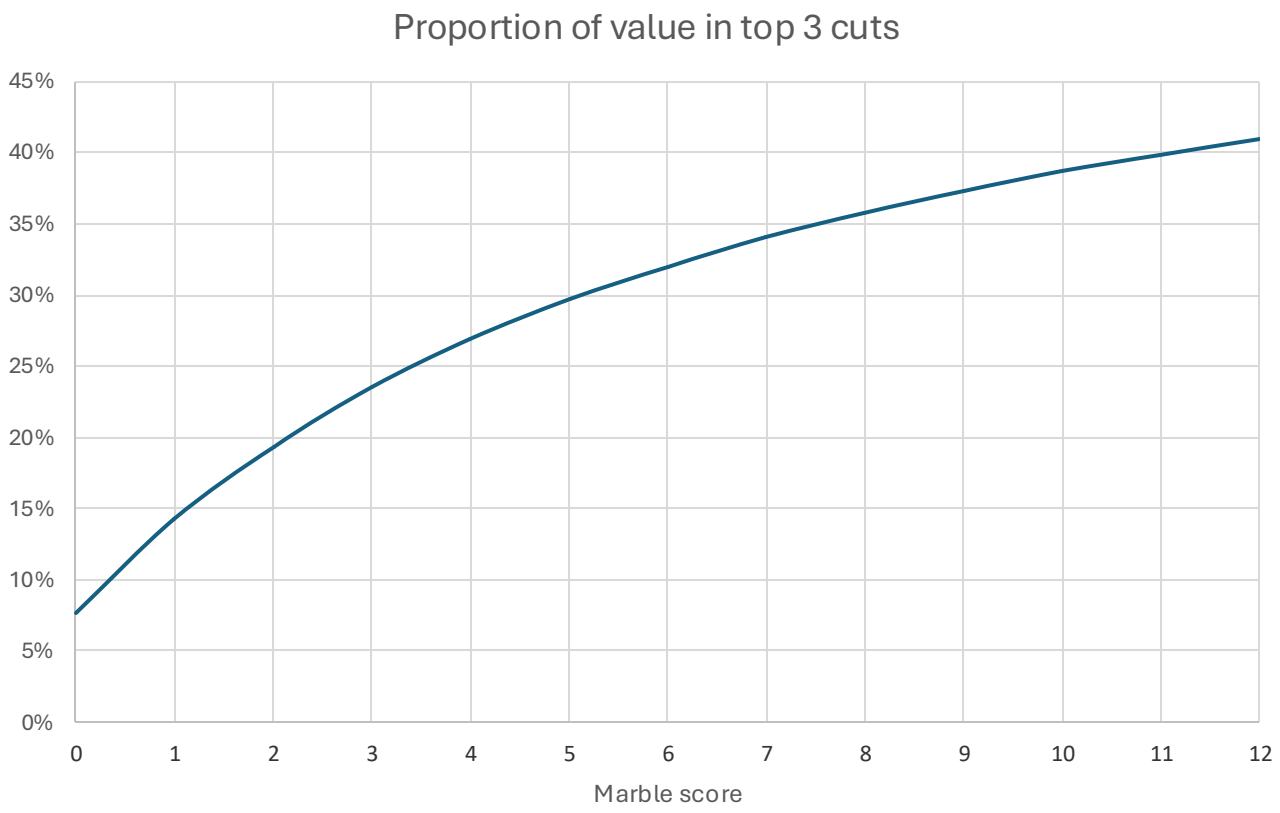
PRODUCT	% of HOT CCS. WT.	WT. IN KG.	PRICE AUD/KG	VALUE AUD
TOPSIDE	5.070%	22.8	$24.600	$561.25
OUTSIDE FLAT	3.170%	14.3	$24.600	$350.92
EYE ROUND	1.270%	5.7	$24.600	$140.59
FLAP MEAT	0.970%	4.4	$24.600	$107.38
INSIDE SKIRT	0.620%	2.8	$24.600	$68.63
NECK ROLL	1.240%	5.6	$24.600	$137.27
CHUCK TENDER	0.740%	3.3	$24.600	$81.92
INTERCOSTALS	0.930%	4.2	$24.600	$102.95
DECKLE	0.140%	0.6	$24.600	$15.50
KARUBI PLATE	1.880%	8.5	$24.600	$208.12
CHUCK ROLL SHORT	3.920%	17.6	$24.600	$433.94
PE BRISKET	3.500%	15.8	$24.600	$387.45
KNUCKLE	3.130%	14.1	$24.600	$346.49
FLANK STEAK	0.540%	2.4	$24.600	$59.78
CHUCK TAIL FLAP	0.360%	1.6	$24.600	$39.85
TRI TIP	0.560%	2.5	$24.600	$61.99
BOLAR BLADE	2.640%	11.9	$24.600	$292.25
OYSTER BLADE	1.440%	6.5	$24.600	$159.41
SHORT RIB MEAT	0.640%	2.9	$24.600	$70.85
CHUCK RIB MEAT	0.690%	3.1	$24.600	$76.38
RIB EYE CAP	0.260%	1.2	$24.600	$28.78
TENDERLOIN SS/OFF	1.340%	6.0	$100.000	$603.00
CUBE ROLL	3.020%	13.6	$100.000	$1,359.00
STRIPLOIN	3.230%	14.5	$96.000	$1,395.36
D RUMP	3.600%	16.2	$30.000	$486.00
RIB ENDS	1.950%	8.8	$5.600	$49.14
SHIN SHANK	4.940%	22.2	$24.600	$546.86
Japanese FCL	51.790%	233.06		$8,171.06

Top 3 Cuts:

- Tenderloin
- Cube Roll
- Striploin

7.6% of carcase weight

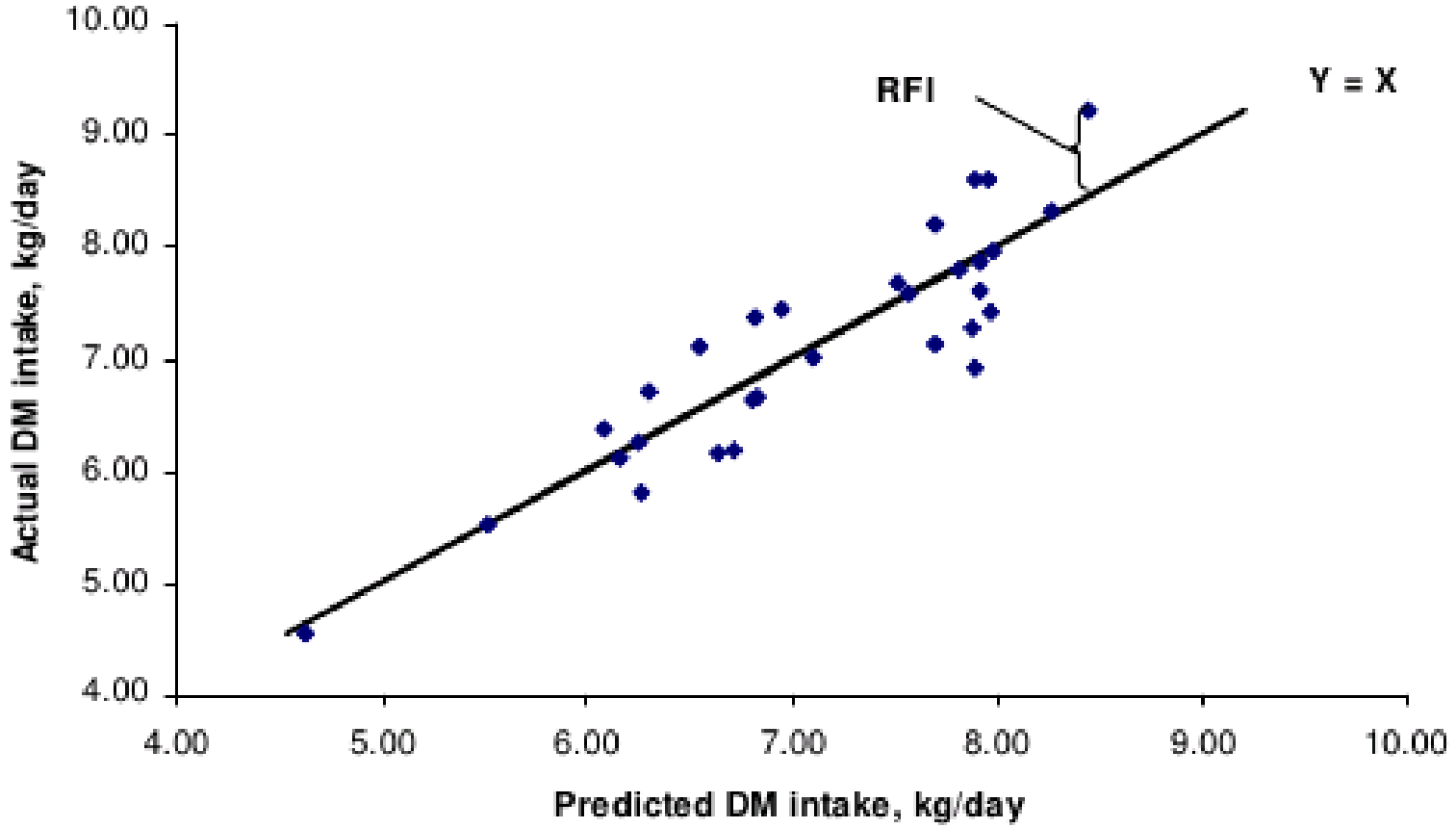
Economic Impact – Relative Value of top 3 cuts



As marble score increases, the proportion of wholesale commercial value of the top 3 cuts is significant. Genetic selection for increasing both marbling and loin yield is fundamental in shifting profitability.

Feed Efficiency:
Residual Feed Intake (RFI)

The difference between actual and predicted Dry Matter Intakes for a particular Liveweight and rate of weight gain



Feed Efficient Cattle produce lower GHG emissions

RFI – Heritability in Japanese Black Wagyu is 0.49 +/- 0.09
Journal of Animal Science 2009, 87:99-106.

F1– typical feed period 350 days @ $6.00/day = $2,100/head average

Selection on RFI – 10%-15% reduction in feed intake for same weight gain.

Pukawidgi – Vytelle SENSE Facility

Daily email Feed Supply Report 6:30 AM

Feed Supply Report 2025-05-06

GR

GrowSafe Report <growsafe@itevolvedsupport.com>

To Adam Lloyd; Joe Grose; Dave Keyte; Livestock; Ben Green

Feed Supply Summary_2025-05-06.csv 747 bytes

Please find attached the Feed Supply Summary Report.

Residual Date: 2025-05-06
Supply Date: 2025-05-05

Pen 1:
Sum Weight (kg): 1061.92
Av. Weight (kg): 44.25
Av. Delivered (kg): 11.80
Animals: 90
Sheet Allocation: 12.09
Variance: -0.29
ResidFeed (kg): 10.39
Suggested Feed (kg): 12.2

Pen 2:
Sum Weight (kg): 1070.49
Av. Weight (kg): 44.60
Av. Delivered (kg): 11.89
Animals: 90
Sheet Allocation: 11.94
Variance: -0.04
ResidFeed (kg): 43.09
Suggested Feed (kg): 12.0

Targeting 0.5kg of residual ration per animal at 6:30 AM.

Feed out commences 8:30 AM with aim of ad-libitum access to feed 23 hours per day.

FRESH FEED EVERY DAY!!

Wagyu Cattle exhibit a large amount of phenotypic variation during feed intake trials

ID	Breed	Pen	Start Wt.	End Wt.	ADG	Avg Intake	Raw F:G (As fed)	Adj F:G (As fed)	Adj F:G (DM)
3DWF23U0215	Wagyu	Pen 1	317.02	376.8	1.22	12.45	10.2	9.23	6.00
3DWF23U0216	Wagyu	Pen 1	292.81	363.37	1.44	12.17	8.43	7.96	5.17
3DWF23U0221	Wagyu	Pen 1	310.71	387.64	1.57	12.36	7.86	7.08	4.60
3DWF23U0232	Wagyu	Pen 1	331.14	409.54	1.6	14.81	9.26	7.99	5.19
3DWF23U0253	Wagyu	Pen 1	307.89	368.65	1.24	13.29	10.73	9.91	6.44
3DWF23U0304	Wagyu	Pen 1	281.65	337.02	1.13	10.77	9.51	9.39	6.10
3DWF23U0305	Wagyu	Pen 1	328.25	398.81	1.44	14.47	10.06	8.8	5.72
3DWF23U0344	Wagyu	Pen 1	331.92	405.92	1.51	13.87	9.19	7.95	5.17
3DWF23U0349	Wagyu	Pen 1	292.97	352.26	1.21	11.84	9.81	9.39	6.10
3DWF23U0360	Wagyu	Pen 1	285.54	338.46	1.08	12.24	11.31	11.09	7.21
3DWF23U0370	Wagyu	Pen 1	263.26	335.29	1.47	12.38	8.39	8.49	5.52
3DWF23U0385	Wagyu	Pen 1	316.33	359.45	0.88	12.42	14.12	13.04	8.48
3DWF23U0401	Wagyu	Pen 1	290.58	351.34	1.24	11.82	9.49	9.11	5.92
3DWF23U0422	Wagyu	Pen 1	319.92	374.8	1.12	12.14	10.84	9.81	6.38
3DWF23U0451	Wagyu	Pen 1	303.44	354.89	1.05	12.44	11.79	11.11	7.22
3DWF23U0493	Wagyu	Pen 1	313.57	392.95	1.62	13.38	8.28	7.4	4.81

RFI =-0.53

RFI = 0.41

Angus Australia Sire Benchmarking Program – Reference Population

TRAIT*	N	MEAN	SD	h2
YEARLING WEIGHT (KG)	70,203	402.43	73.93	0.30
AVERAGE DAILY GAIN (KG/DAY)	5,267	1.62	0.35	0.21
DAILY FEED INTAKE (KG/DAY)	5,267	14.50	2.27	0.32
CARCASE WEIGHT (KG)	6,979	428.40	55.05	0.40
EYE MUSCLE AREA (CM^2)	4,742	90.06	10.71	0.44
RIB FAT (MM)	4,388	17.02	6.06	0.31
MSA MARBLING SCORE	4,818	502.36	127.92	
AUS-MEAT MARBLING SCORE	2,124	3.64	1.33	0.35
OSSIFICATION SCORE	4,787	147.31	18.3	0.32
IMMUNEDEX (INDEX)	5,319	-0.003	1.139	0.30

*Most feedlot, carcase and resilience data listed have been obtained from Angus Sire Benchmarking Program reference population. However, Angus Australia wishes to acknowledge the contribution of 2,124 carcase weights and AUS-MEAT marbling score records that were obtained from several feedlots and beef brand owners during the Angus SteerSELECT validation process.

Table 2. Summary of the Angus Australia Reference population that underpins Angus SteerSELECT.

3D Genetics has measured its **5,000th** Feed Intake phenotype in 2025

Body Composition – Fat vs Lean Skeletal tissue

Fat-free organic matter in cattle tissue contains 23.1 MJ/kg energy

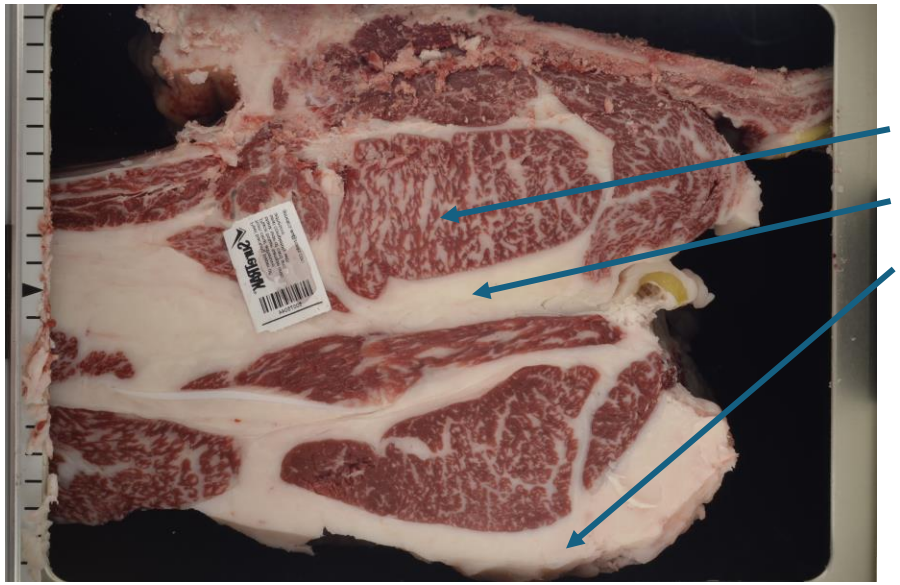
Adipose tissue in cattle contains 39.3 MJ/kg energy

(ARC, 1984).

Fat Depots

1. Visceral Fat – Internal Abdominal and Thoracic

2. Intramuscular Fat - Marbling
3. Intermuscular Fat
4. Subcutaneous Fat



2. Intramuscular Fat - Marbling
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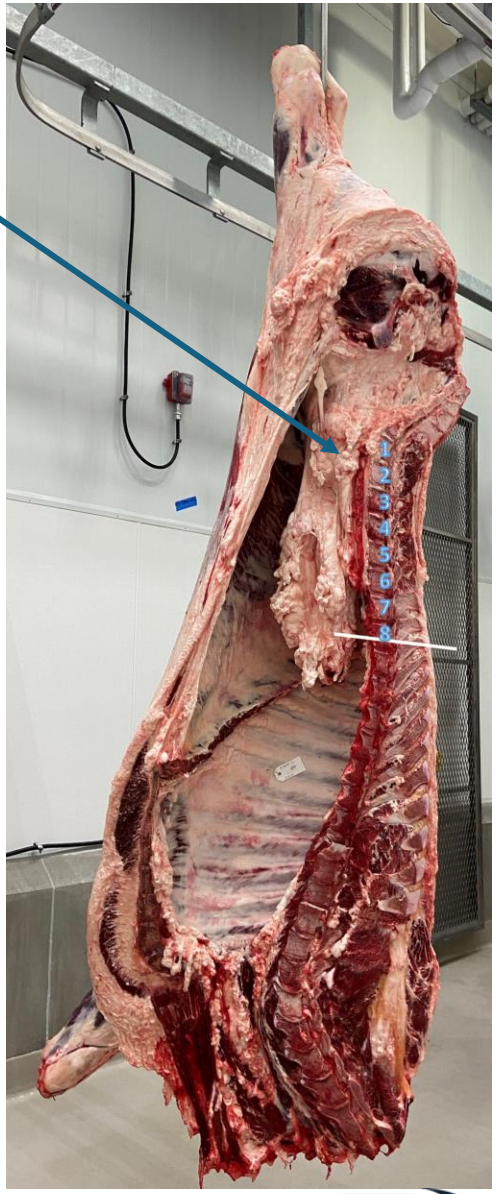


3DG Genetic Analysis: Correlation Matrix

- Above the diagonal: Phenotypic correlations between traits
- Diagonal: heritability of individual traits
- Below the diagonal: Genetic correlations between traits

Trait	HSCW	A_P8	A_Marb	DMP	DMA5	DM_COARSE	DMP2	NFI2	WT_Birth	WT_Branding	WT_Weaning	WT_400	WT_600	U_EMA	U_P8	U_Rib	U_IMF	FT_AFI_DM	FT_ADG	Gestation_Length	MCW	RFI
HSCW	**0.58**	0.19	0.16	0.07	0.33	0.10	0.05	-0.10	0.40	0.36	0.49	0.49	0.48	0.18	-0.05	-0.02	0.04	0.40	0.16	-0.06	0.06	0.05
A_P8	0.24	**0.25**	0.00	0.01	-0.01	0.05	0.02	-0.07	0.01	0.09	0.13	0.12	0.07	0.07	0.10	-0.11	0.16	0.08	0.03	-0.06	-0.01	0.04
A_Marb	0.07	0.01	**0.44**	0.53	0.28	0.44	0.66	0.27	-0.05	-0.07	0.01	0.02	0.04	-0.10	0.04	-0.02	0.23	0.10	0.02	-0.02	-0.01	0.11
DMP	-0.04	-0.12	0.90	**0.66**	0.19	0.56	0.97	0.58	-0.05	-0.05	0.01	-0.02	0.01	-0.08	0.34	0.24	0.45	0.07	0.01	-0.09	-0.03	0.04
DMA5	0.33	0.01	0.32	0.20	**0.38**	0.39	0.17	-0.09	0.12	0.10	0.11	0.12	0.16	0.15	-0.10	-0.12	-0.12	0.17	0.07	0.06	0.02	0.05
DM_COARSE	0.10	0.02	0.57	0.64	0.30	**0.52**	0.46	0.17	-0.01	0.14	0.11	0.08	0.08	0.03	0.19	0.14	0.20	0.12	0.03	-0.03	-0.01	0.06
DMP2	-0.05	-0.07	0.90	1.00	0.20	0.60	**0.64**	0.49	-0.05	-0.08	-0.01	-0.04	0.00	-0.09	0.34	0.22	0.46	0.06	-0.01	-0.09	-0.03	0.04
NFI2	0.19	0.27	0.45	0.59	0.10	0.03	0.60	**0.49**	-0.01	0.08	0.02	0.10	0.05	0.07	0.26	0.19	0.42	0.12	0.02	0.01	-0.01	-0.06
WT_Birth	0.52	0.04	0.16	-0.16	0.14	-0.11	-0.18	0.03	**0.44**	0.36	0.43	0.48	0.52	0.17	-0.14	-0.08	0.02	0.31	0.11	0.25	0.50	-0.05
WT_Branding	0.64	0.13	0.21	-0.12	0.32	0.08	-0.14	0.01	0.83	**0.66**	0.81	0.45	0.45	**0.44**	0.11	0.07	0.11	0.31	0.07	0.11	0.33	-0.08
WT_Weaning	0.62	0.05	0.08	-0.08	0.20	0.08	-0.11	-0.05	0.82	0.86	**0.79**	0.71	0.57	0.54	0.16	0.18	0.09	0.42	0.07	-0.11	0.49	-0.03
WT_400	0.64	0.11	0.03	-0.07	0.20	0.02	-0.08	0.14	0.86	0.74	0.96	**0.35**	0.80	0.60	0.19	0.13	0.10	0.49	0.13	-0.15	0.61	0.01
WT_600	0.60	0.10	0.02	-0.06	0.20	0.02	-0.08	0.12	0.87	0.74	0.96	1.00	**0.46**	0.46	0.08	0.10	0.07	0.40	0.13	-0.01	0.68	-0.02
U_EMA	0.47	0.03	-0.09	-0.10	0.38	0.18	-0.12	-0.01	0.65	0.53	0.62	0.52	0.51	**0.01**	0.32	0.35	0.29	0.49	0.14	-0.03	0.19	0.03
U_P8	-0.05	0.61	0.02	0.06	-0.10	0.16	0.06	0.08	-0.35	-0.18	-0.16	-0.17	-0.15	-0.23	**0.07**	0.49	0.49	0.10	0.02	0.02	-0.01	0.09
U_Rib	0.08	0.45	0.07	0.09	-0.13	0.18	0.07	0.07	-0.34	-0.18	-0.18	-0.13	-0.13	-0.25	0.86	**0.19**	0.41	0.17	0.06	0.03	0.00	0.12
U_IMF	-0.02	0.04	0.28	0.38	0.06	0.38	0.36	0.37	-0.19	0.04	-0.06	-0.17	-0.16	0.18	0.48	0.43	**0.16**	0.23	0.04	-0.09	-0.03	0.01
FT_AFI_DM	0.60	0.18	0.11	0.06	0.29	0.20	0.05	0.28	0.52	0.40	0.59	0.69	0.67	0.31	-0.07	-0.02	0.06	**0.34**	0.25	0.02	0.33	0.54
FT_ADG	0.63	0.10	0.00	0.06	0.33	0.10	0.06	0.19	0.70	0.65	0.75	0.74	0.74	0.56	0.01	0.03	0.07	0.76	**0.02**	0.03	0.14	-0.04
Gestation_Length	-0.25	-0.07	-0.12	-0.13	-0.06	-0.03	-0.15	0.02	0.14	-0.10	-0.17	-0.15	-0.18	-0.02	0.09	0.11	0.05	-0.10	0.03	**0.39**	0.05	0.04
MCW	0.10	0.08	-0.02	-0.04	0.04	-0.02	-0.05	0.01	0.75	0.50	0.80	0.82	0.85	0.34	-0.20	-0.22	0.18	0.44	0.61	0.05	**0.62**	-0.11
RFI	0.07	0.21	0.30	0.06	0.11	0.19	0.05	0.23	-0.31	-0.41	-0.26	-0.10	-0.13	-0.07	0.08	0.16	0.08	0.48	0.08	0.03	-0.22	**0.29**

Angus: Genetic relationships between retail beef yield, live animal and carcase traits

Table 14. Genetic correlations (SE) between carcase and production traits

Trait[a]	CWT	CEMA	CRIB	CP8	CIMF	RBY
BWT	0.16 (0.17)	0.37 (0.17)	-0.64 (0.23)	-0.34 (0.19)	-0.29 (0.16)	-0.04 (0.22)
GL	-0.09 (0.20)	-0.04 (0.23)	-0.33 (0.36)	-0.70 (0.24)	0.19 (0.19)	0.34 (0.27)
WWT_d	0.48 (0.15)	0.39 (0.19)	-0.58 (0.32)	-0.55 (0.22)	0.15 (0.19)	-0.03 (0.25)
YWT	0.88 (0.05)	0.21 (0.17)	-0.25 (0.27)	-0.21 (0.19)	0.17 (0.16)	0.25 (0.20)
FWT	0.96 (0.02)	0.10 (0.16)	-0.03 (0.24)	-0.06 (0.18)	0.07 (0.15)	0.14 (0.19)
SRIB	0.13 (0.16)	-0.19 (0.17)	0.63 (0.15)	0.57 (0.14)	0.36 (0.14)	-0.06 (0.21)
SP8	0.45 (0.15)	-0.11 (0.18)	0.41 (0.23)	0.68 (0.12)	0.36 (0.15)	0.11 (0.22)
SEMA	0.46 (0.13)	0.72 (0.12)	-0.49 (0.25)	-0.22 (0.19)	0.17 (0.16)	0.57 (0.17)
SIMF	0.45 (0.15)	0.10 (0.18)	0.12 (0.25)	0.20 (0.19)	0.66 (0.11)	0.31 (0.21)
MS	0.38 (0.13)	0.41 (0.14)	-0.14 (0.23)	-0.19 (0.16)	-0.20 (0.14)	0.58 (0.14)

MLA: P.PSH.0942 (2021)

New MateSel Run

Pause Run | Stop Run

Data Source: MateSelClassicDemo.csv

New Matings Requested: 108

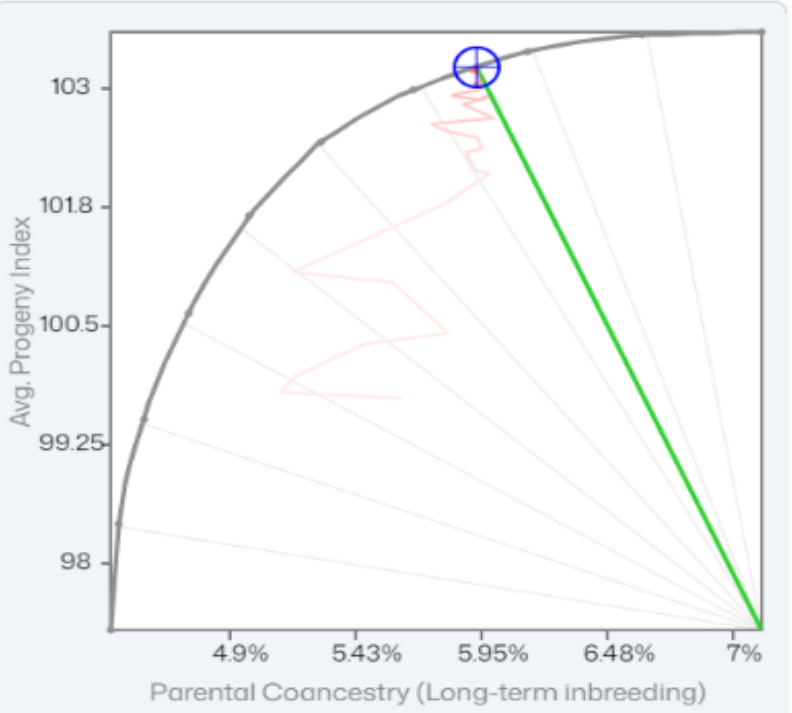
Candidates: 40 Male / 108 Female

Mating Solution Summary

Learn More

Percent complete	Avg Progeny Index	Avg Progeny Inbreeding
99.99%	103.22	1.83%

Sires Used	Targets Applied	Avg Parental Coan
14	0	5.93%

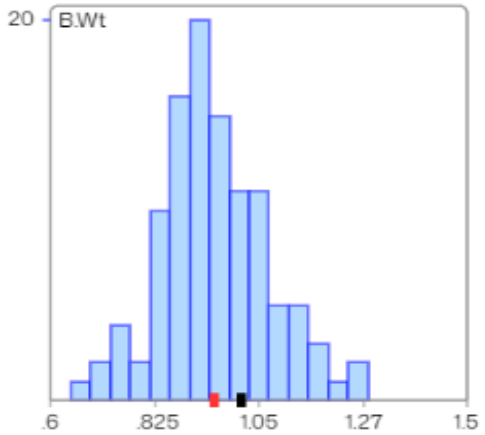


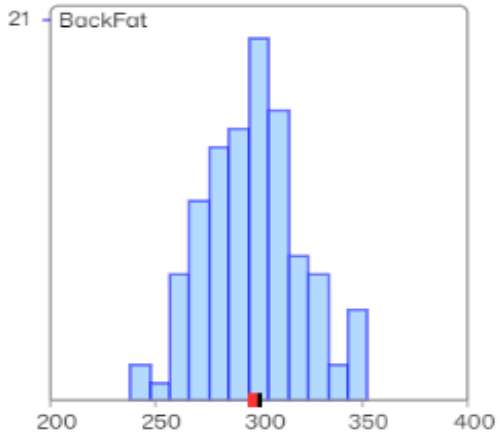
Diversity — Gain

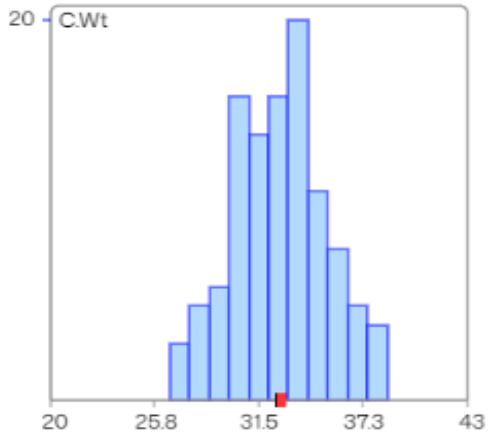
Target degrees: 25 | Update Target

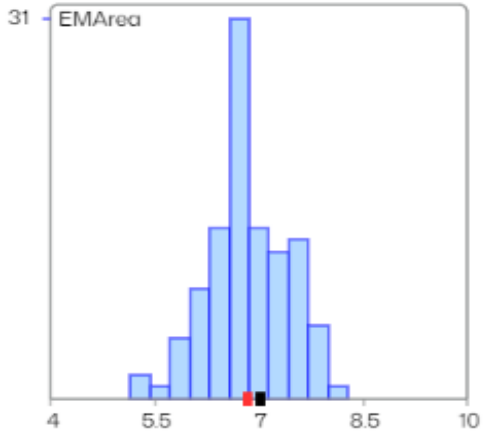
Traits | Markers | Inbreeding | Matings | Inputs | Console

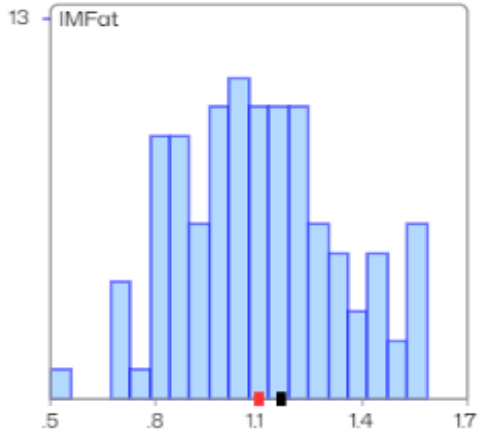
Below are the predicted trait outcomes for the progeny. Click a trait histogram below to set a target. Learn More

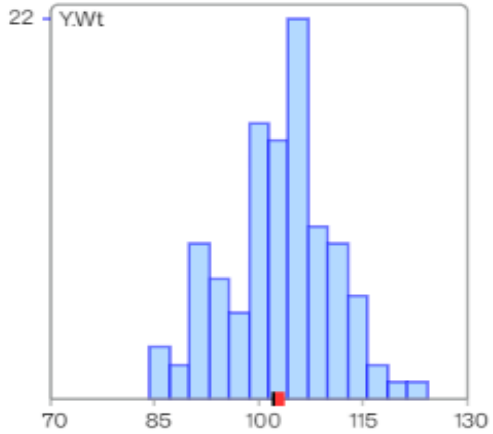










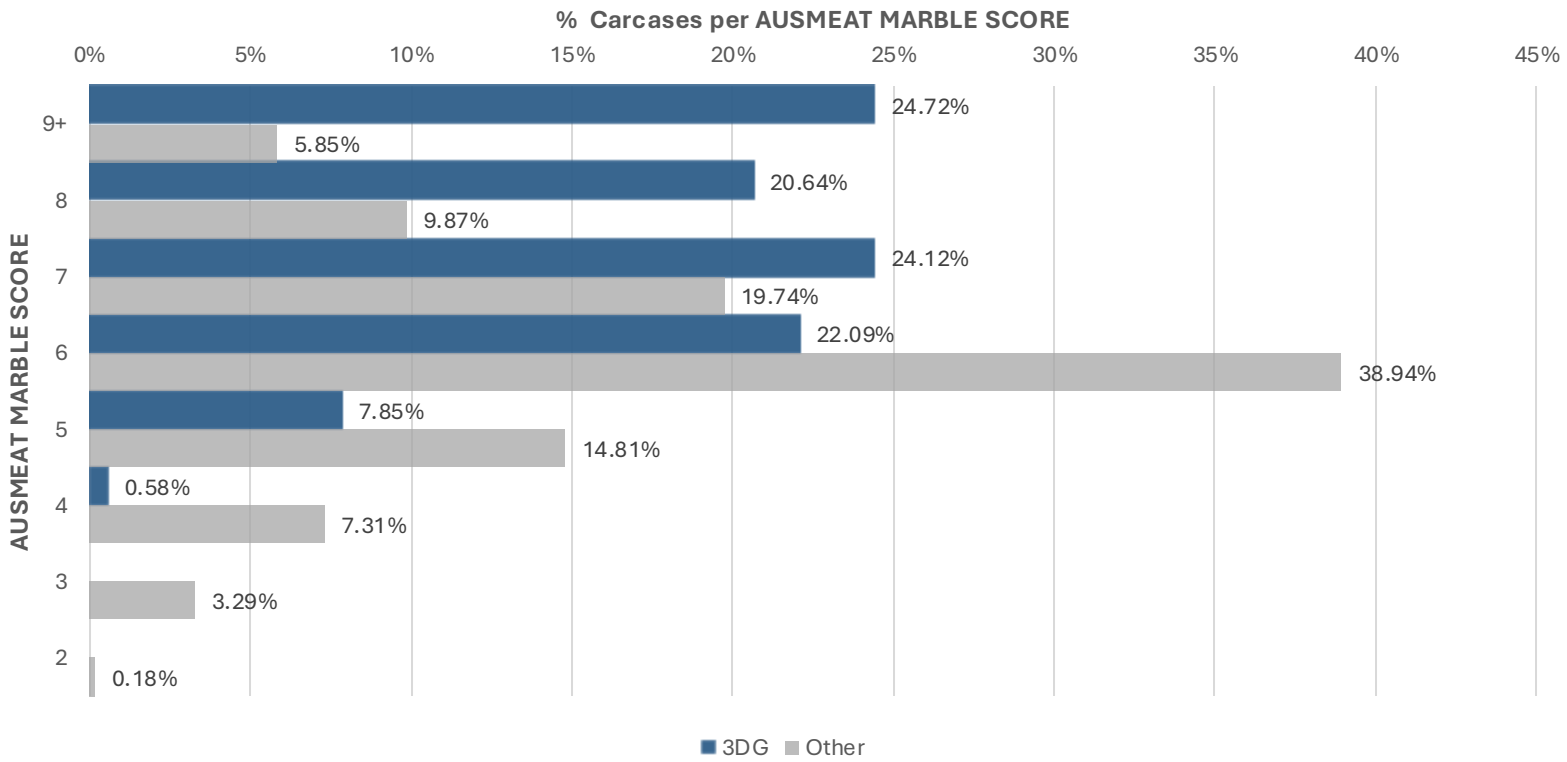


MateSel

Trait Name	Avg. Candidates	Avg. Progeny	Response	Avg. Male Parents	Avg. Female Parents
BW_Control	15.3263	21.6646	6.3383	-379.4707	422.7999
DMA	5.0633	5.6822	0.6189	6.3400	5.0244
DM_AUS_MARB	3.0967	3.5362	0.4395	3.9402	3.1322
FT_AFI_DM	0.4178	0.3919	-0.0259	0.3477	0.4361
GL	-0.3384	-0.8737	-0.5353	-1.3436	-0.4038
HSCW	41.8924	52.0096	10.1172	61.2924	42.7269
MCW	25.8218	27.0912	1.2695	28.9787	25.2038
MILK	4.7008	8.3599	3.6591	12.0437	4.6762
NFI	0.5494	0.6581	0.1087	0.7564	0.5598
WT_400	22.9621	28.8160	5.8539	34.2383	23.3937
WT_600	24.0104	29.4387	5.4283	35.7236	23.1539
WT_Birth	1.2420	1.0307	-0.2113	0.8157	1.2458
WT_Wean	12.2190	18.2667	6.0477	23.3618	13.1716

MateSel

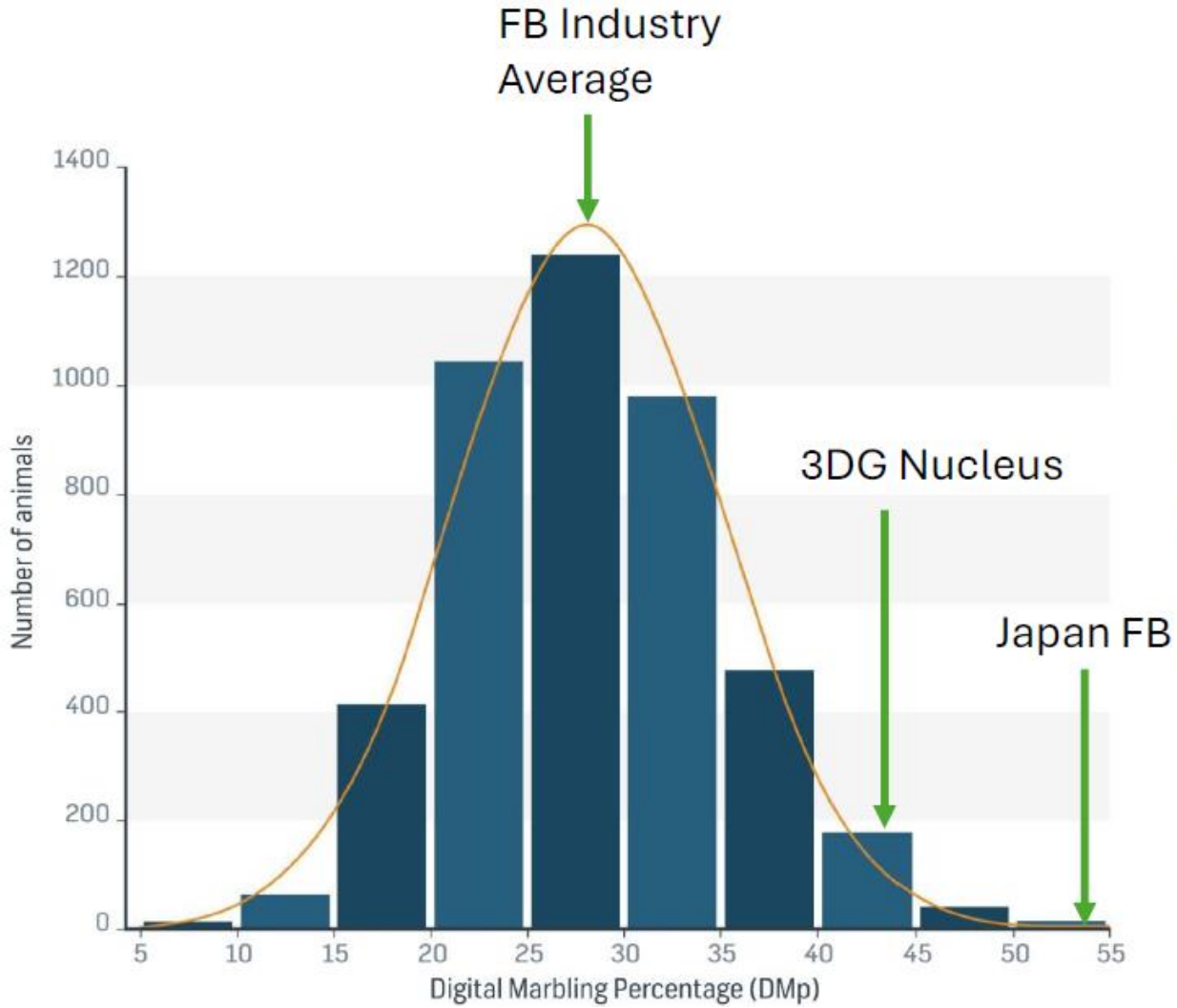
3DG Sired Carcases increased value = $610 AUD per head



3DG Sired F1: average value
$14.33 AUD/kg HSCW

Other Breeders F1: average value
$12.91 AUD/kg HSCW

MEAN Carcase Marbling Performance
Where does 3DG sit relative to Industry Benchmarks



3DW Production January 2025

Genetic Change – Realised Gains

	Average of RFI	Average of FT_AFI_DM	Average of WT_400	Average of HSCW	Average of DM_AUS_MARB
2016	-0.01	0.36	13.70	19.70	1.35
2017	-0.02	0.36	12.12	19.20	2.01
2018	0.02	0.46	11.72	22.87	2.43
2019	-0.01	0.45	16.27	28.82	2.67
2020	-0.04	0.39	15.24	27.75	2.77
2021	-0.03	0.36	13.46	26.69	2.99
2022	-0.05	0.37	16.53	31.42	3.03
2023	-0.03	0.41	20.09	36.96	2.97
2024	-0.03	0.50	25.62	46.38	3.17

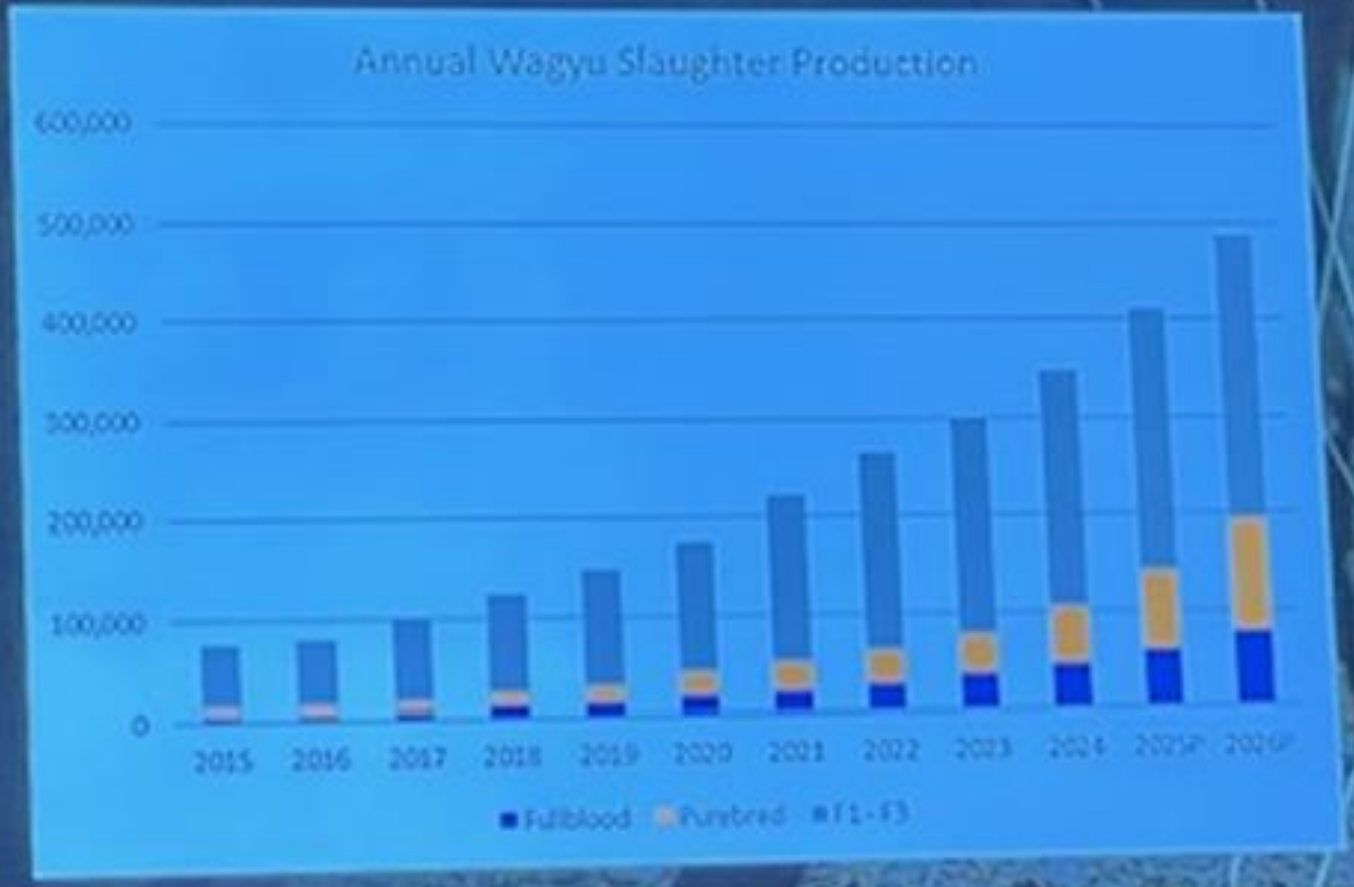
Current breed average

Top 1% of breed

Top 10% of breed

Production trends

1. Average increase 17% YoY
2. Increase in F1's slowing
3. Increase in FB/PB accelerating



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The Modern Australian F1 Wagyu

Growth that matches Angus x Angus (with a little help from heterosis)

- Typical Industry F1 Wagyu Bulls progeny produce 80-85% of the kilograms of feeder cattle when compared with Angus x Angus system
- F1 Feeder pricing need to have a 17% premium above an Angus to provide similar farmgate returns

Marbling & Maturity patterns

- Decreased Feeding periods and genetic selection for animals that will exhibit high levels of fine marbling earlier in life

The Modern Australian F1 Wagyu

- **Shorter Feeding Periods**
- **Marbling & Maturity patterns**

TRIAL MOB 2		
11 FEMALE 87 MALE 407.29 HSCW		
MB score	Head	%
0	0	
1	0	
2	0	0%
3	1	1%
4	6	6%
5	25	26%
6	34	35%
7	19	19%
8	5	5%
9	8	8%
Total	**98**	
Average	**6.13**	

27.10.2025

250 day finishing program vs Industry average of 350-380 days

"The average (50th percentile) of the 3D Genetics' 2024 drop bulls are as good as the top 1% and multiple young bulls are better than the best bull reported in the public analysis"

- Professor Wayne Pitchford
Director of Davies Research Institute
School of Animal and Veterinary Sciences