

DNA technology use



Presentation to Nithdale Field day
Monday, 4 July 2011



Pfizer Animal Health
Animal Genetics

Pfizer Animal Genetics

- Who are we?
 - Pfizer = Global
 - Dunedin (NZ), Brisbane (Au), Kalamazoo (USA), South America
- What do we do?
 - Develop and Commercialise DNA solutions
 - Sheep(Ovita[®]) Beef, Goats, Dairy, etc
- Who uses us?
 - Traditionally, Breeders and Niche producers, but changing

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Tools in the Breeders Toolbox

Performance Records

DNA
Snp Chp's

Soundness & Constitution

Accuracy & Scale

e.g. **ShepHerd**[®]

Run on commercial country

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Products / Technologies

Product	Sheep	<small>Nithdale Genetics</small> <small>ROMNEY'S SUPPLIES</small>	Beef
Gene marker tests	LoinM[★]X[®]	✓	GeneST[★]R[®]
	MyoM[★]X[®]	✓	MVP
	WormST[★]R[®]	✓	
	Inver[★]ie[®]		
*genetic conditions	I-SCAN[®]		* NH,AM,CA
DNA Parentage + data analysis	ShepHerd[®]	✓	SireTRACE[®]
DNA-based Traceability			✓ SureTRAK[®]
SNP Chips ...	Sheep50K[®]	✓	HD 50K

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Today's Focus



MyoMax[®]
Sheep50K

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50K technology – SNP Chips Sheep50K

- What do they do?
 - Use 000's DNA markets at once
 - Predict Breeding Values
- Best suited to:
 - Young animals
 - Hard traits
 - Costly
 - Expressed late
 - Sex linked
 - Low heritability

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What are the traits Sheep50K



Sheep50K

- Novel (difficult-to-measure):
 - Number of Lambs Born; NLB
 - Faecal Egg Count; FEC
- Core (accuracy enhancing):
 - Weaning Weight; WWT
 - Carcass Weight; CWT



beef+lamb new zealand Ovita agresearch

This technology is a result of New Zealand farmer investment in Beef + Lamb NZ and Ovita Ltd

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How does it effect you Sheep50K

- It doesn't, unless you want it to...

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Sheep50K

Value

- Why use this?
 - Significantly improved Accuracy, especially on young animals
- For the breeder?
 - Early identification of superior genetics
 - Increase genetic gain
- For the commercial buyer?
 - Reduces risk of purchasing decision

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Sheep50K

Sire Test Total Industry Value

Leading Breeder	Romney	Coopworth*	Perendale*
Total future ram sales from breeding program	\$ 16,000	\$ 26,000	\$ 8,500
Immediate value of selling superior rams	\$ 4,000	\$ 6,500	\$ 2,000
Total industry value	\$ 20,000	\$ 32,500	\$ 10,500
Test costs (\$800 ea)	\$ 8,000	\$ 8,000	\$ 8,000
Net Industry Value	\$ 12,000	\$ 24,500	\$ 2,500

•No NLB in C/P


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MyoM[★]X[®]

- Single DNA marker of 'massive' effect

1. Increase Carcase weight
2. Increase Muscle Yield

Growth	No effect or +ve
Lamb Survival	No effect
Ph/Colour	No effect
Tenderness	No effect



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MyoM[★]X[®]

- Can be implemented in Maternal or Terminal systems

	Single Copy	Double Copy
Muscle (Leg and Loin)	+5%	+10%
Fat	-7%	-14%

- Two types of test
 - Sire test, absolute
 - Screening test, probability

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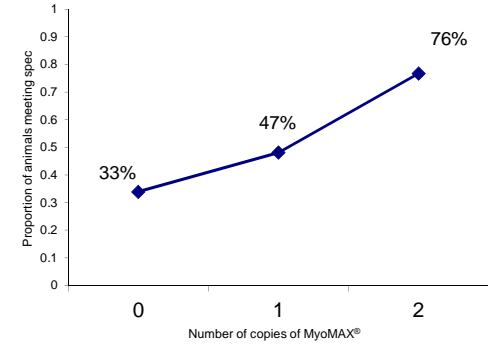
- Alliance Trial data; Effect of adding MyoMAX

Region	Average % Yield
Leg	21.2
Loin	13.8
Shoulder	16.7
Total	51.7

- % Meeting Spec = 33%.



- Alliance Trial data, Effect of adding MyoMAX



- What does that mean in the 'back pocket'?
- 2006 Value proposition
 - Terminal Sire system using MyoMAX Gold sire over standard ewes
 - 16.5kg carcasse
 - \$3.50 / kg
 - Commercial farmer benefit = \$1.90 per lamb



- What does that mean in the 'back pocket'?
- 2011 Value proposition
 - Terminal Sire system using MyoMAX Gold sire over standard ewes
 - 18.0kg carcasse
 - \$6.00 / kg
 - Commercial farmer benefit = \$3.02 per lamb ; 160% inc.
 - Value per sire \$1,118 (mated to 110 ewes over 3 seasons)

Summary

- DNA tests available that can assist in achieving breeding objective
- Benefits to breeder
- Significant value for the commercial producer
- MyoMAX and Sheep50K being used at Nithdale

This technology is a result of New Zealand farmer investment in Beef + Lamb NZ and Ovita Ltd