



# MAXIMISE MUSCLE. EVERYTIME.

Breeding and farming sheep which are better at converting feed to produce a higher value carcass will improve the profitability of lamb producers. MyoMAX® is a DNA test for a gene which increases a lamb's carcass weight and muscle yield.

## WHY MYOMAX®

Traditionally New Zealand lamb producers have used fixed market signals when growing lamb. Weight and grade payment systems have meant that producers have focussed on raising lamb to a target weight, as quickly as possible. More recently market signals have changed with payments based on yield becoming more available. The opportunity exists to produce lamb that satisfies the requirements of an increasingly sophisticated supply chain.

Farmers can now identify genetics that are better at converting feed into better red meat, grown on the right part of the carcass, consistently and sustainably. This approach allows the production of higher value lamb therefore improving profitability.

## THE MYOMAX® GENE

The MyoMAX® gene consistently increases a lamb's carcass weight and muscle yield. The MyoMAX® gene is simple and additive meaning that the size of the MyoMAX® effect depends on how many copies of the gene it possesses. Lambs can inherit a maximum of two copies of the MyoMAX® gene, one from either parent. A parent can only pass on one copy of the MyoMAX® gene.

## THE MYOMAX® TEST

The MyoMAX® test determines the presence of one (MyoMAX®), two (MyoMAXGOLD®) or zero (Non-Carrier) copies of the gene that is believed to be the casual mutation of the MyoMAX® effect (see Clop et al. Nat Genet, 2006 38(7), pp 813-8 and Johnson et al., J Anim Sci, 2009, 87(6), pp. 1856-64).

## THE MYOMAX® EFFECT

Sheep identified with MyoMAX® have increased muscling in the leg and loin, less carcass fat and an improved carcass weight compared to non-MyoMAX® animals of the same live-weight and genetic background.

Single copy MyoMAX® lambs have 5% more muscling in the leg and loin and 7% less carcass fat.

MyoMAXGold® lambs have up to 10% more muscling and 14% less carcass fat.



First lamb (left) carries no copies of MyoMAX® and the second lamb has two copies. Both lambs were produced from the same sheep flock run under exactly the same conditions and slaughtered on the same day.

		CHANGE IN YIELD	
		Single Copy MyoMAX®	Double Copy MyoMAX <sup>GOLD</sup> ®
REGION	Muscle (Leg & Loin)	+5%	+10%
	Fat	-7%	-14%

EFFECTIVE NOVEMBER 1 2015 Version: 2 Issue: 1 | Authorised by: Technical Services

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## MYOMAX® STATUS

A lamb that inherits two copies of the MyoMAX® gene will have received one from its Dam and one from its Sire. This lamb has a status of MyoMAXGOLD®.

A lamb that inherits only one copy of the MyoMAX® gene, will have received it from either its Dam or its Sire. This lamb has a status of MyoMAX®. Various mating scenarios where MyoMAX® or MyoMAXGold® Sires and Dams are used, results in differing proportions of progeny also having, or not having, various MyoMAX® statuses.

MATING SCENARIO		MYOMAX® STATUS OF PROGENY		
SIRE	DAM	MyoMAXGOLD®	MyoMAX®	NON-CARRIER
MyoMAXGOLD®	Non-carrier	0%	100%	0%
	MyoMAX®	50%	50%	0%
	MyoMAXGOLD®	100%	0%	0%
MyoMAX®	Non-carrier	0%	50%	50%
	MyoMAX®	25%	50%	25%
	MyoMAXGOLD®	50%	50%	0%
Non-carrier	Non-carrier	0%	0%	0%
	MyoMAX®	0%	50%	50%
	MyoMAXGOLD®	0%	100%	0%

## MYOMAX® IN THE TERMINAL SYSTEM

Cost-benefit modelling has shown that the use of a MyoMAXGOLD® terminal ram over commercial ewes not carrying the MyoMAX® effect can produce \$3.02 more meat value per lamb<sup>1</sup> directly to the commercial farmer. If the commercial ewes also carry the MyoMAX® effect then the increased meat value per lamb caused directly by the MyoMAX® effect is doubled to \$6.04<sup>1</sup>.

Assumptions: <sup>1</sup> Modelled on a 18kg carcass, based on a NZ\$6.00 per kilogram schedule.

## MYOMAX® IN THE MATERNAL SYSTEM

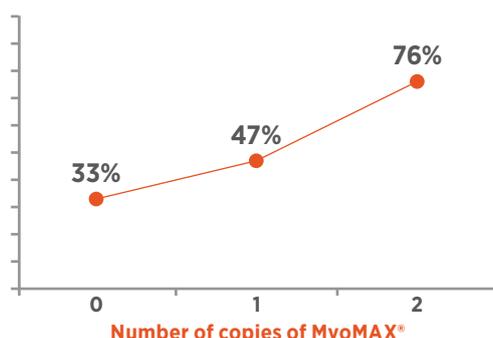
Cost-benefit modelling has shown that the use of MyoMAX® in a maternal program where MyoMAXGOLD® rams are mated to 40% of ewes who have three lambings over their lifetime and tail at 140% can add \$6.65<sup>2</sup> per ewe.

Assumptions: <sup>2</sup> Maternal model discounted at 10% over 10 years.

## VALIDATION OF MYOMAX®

Large-scale industry trials have confirmed and validated the MyoMAX® effect in a number of industry populations of different genetic backgrounds and production systems. These trials have confirmed that MyoMAX® has no negative effects on other traits including meat quality, lamb survival and growth rate.

Where Lamb producers are reimbursed under a Yield based payment system MyoMAX® has been shown to lift an animal's ability to meet specification by 14% for a single copy of MyoMAX and 43% for two copies of MyoMAX® from a base of 33% of animals meeting specification.



## QUESTIONS AND ANSWERS

**Q: Can MyoMAX® be tested at the same time as other Zoetis Genetics' tests?**

**A:** Yes, breeders who use Zoetis Genetics' Shepherd Plus® DNA parentage system or Sheep5K can have their sheep tested for MyoMAX® at the same time.

**Q: What breeds is MyoMAX® present in?**

**A:** MyoMAX® has been identified within Texel and composite breeds containing Texel genetics. MyoMAX® is being actively introgressed into other both terminal and maternal breeds e.g. Romney, Perendale and Coopworth.

