

GET YOUR CATTLE PERFORMANCE READY WITH MULTIMIN



IMPROVING FERTILITY IN BEEF CATTLE

Virbac

Shaping the future of animal health

IMPACT OF CALVING PATTERN UPON PROFITABILITY

Heifers and cows cycle every 21 days. This means all breeding females have four opportunities to conceive during a 90-day joining program. Unfortunately, the calving pattern in many Australian herds is spread out over several months.

Increasing the percentage of heifers and cows that conceive early in the breeding season will have a significant and lasting beneficial impact on the fertility and productivity of your herd. A tighter calving pattern also condenses labour requirements and reduces the amount of handling required.

Calves born earlier will have heavier weaning weights. In turn, these weaners will have more time – up to 42 days – to reach critical mating and target market weights. Heifers that conceive and calve earlier will have more time to regain condition before the next joining, improving their opportunity to conceive and calve earlier the following season.

In one Australian study, calves from early-calving heifers [i.e. those that conceived in their first and second cycle] were, on average, 13 kg heavier at weaning than calves from heifers that conceived in their third and fourth cycle.¹ The early-calving heifers recorded a pregnancy rate of 91% at the next joining, 20% higher than later-calving heifers.¹

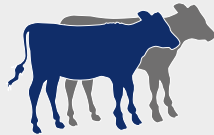
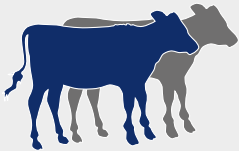
Likewise, steers will have more time to reach market specifications, meaning you will have larger and more consistent lines of saleable cattle. Economic modelling shows that reducing the calving pattern from 16 weeks to 8 weeks can improve economic returns by 11.9%.¹

Reproductive efficiency – the ability to cycle and conceive earlier, return to oestrus and maintain a 365-day calving interval – is determined by:

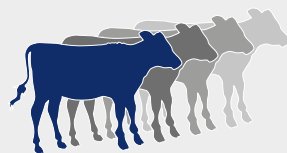
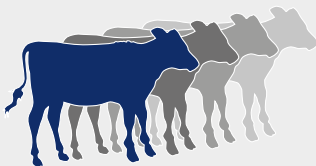
- **Good nutrition to ensure heifers attain critical mating weights, are in optimum condition at calving and regain condition after calving**
- **Implementing a thorough animal health program**
- **Trace mineral supplementation**
- **Maximising early conception**
- **Reducing embryo loss**



300 breeder herd with 16 week joining period = \$135,290¹



300 breeder herd with 8 week joining period = \$151,355¹



+\$16,065

WEEK 4

WEEK 8

WEEK 12

WEEK 16

Assumptions: 50% dressing percentage, 510 c/kg dressed weight, three year average to 2017, MLA.

MULTIMIN GETS YOUR CATTLE PERFORMANCE READY

One of the easiest ways to tighten the calving interval is to ensure replacement heifers and cows have adequate access to trace minerals required for optimum growth, development, fertility and general health.

Often, milk or pastures do not provide sufficient levels of these essential minerals during periods of 'high demand', such as weaning, joining and calving. Furthermore, oral supplements can take months to increase trace mineral status.

Multimin is a unique trace mineral injection that makes your herd 'performance ready' by improving fertility and immunity. Administered before 'high demand' periods, at weaning or four weeks before joining or calving, this unique four-in-one mineral top up is scientifically-proven to improve conception rates, embryo survival, immunity and sperm quality.

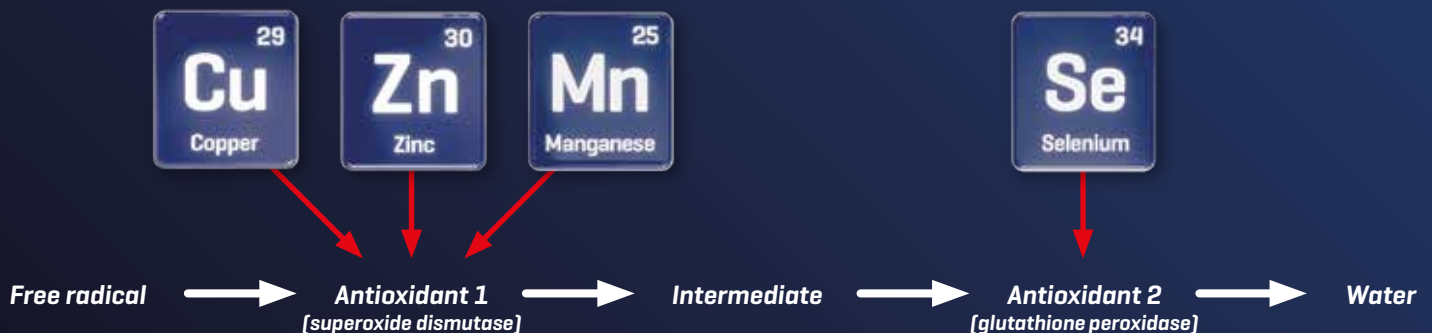
- **Tops up essential trace minerals in 'high demand' periods**
- **Absorbed into the blood within 8 hours and the liver within 24 hours²**
- **Prolonged antioxidant action for months³**
- **Balanced, chelated and tissue-friendly formulation⁴**
- **Nil milk and meat WHP and ESI**
- **Can be used up to nine months after opening**

4 ESSENTIAL TRACE MINERALS TO INCREASE ANTIOXIDANT LEVELS



Normal bodily processes, such as energy metabolism, ovulation, pregnancy or fighting disease, produce 'free radicals'. These unbalanced molecules cause chemical reactions that may damage cells. Antioxidants are substances that neutralise free radicals. A rapidly absorbed top up of the four trace minerals found in Multimin can

quickly synthesise the two antioxidants needed to protect the body's reproductive and immune systems. These four trace minerals also provide essential nutrients for the same systems. Multimin is absorbed into the bloodstream within eight hours and the liver by 24 hours, and provides prolonged antioxidant action for several months.^{2,3}

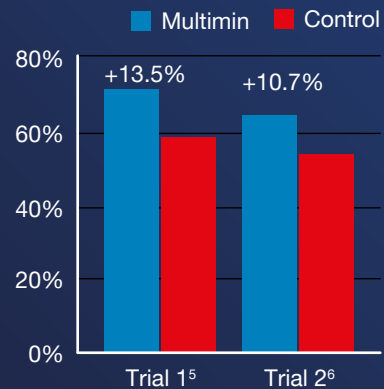


Trace minerals in Multimin are needed for the synthesis of antioxidants that neutralise harmful free radicals into harmless water.

MAXIMISES EARLY CONCEPTION RATES

Improving the number of heifers and cows that conceive in the first or second cycles can dramatically tighten the calving pattern. Ideally, about 65 to 70% of cows should conceive during the first cycle, 20% in the second cycle and 10% in the third cycle to ensure the majority of calves are born within nine weeks to coincide with seasonal pasture availability. Applied a month before breeding, Multimin has been shown to improve the number of conceptions in the first cycle by 10 to 13.5%.^{5,6} There is evidence to suggest that this effect is even greater in younger breeders, particularly second calvers.⁶

Effect of Multimin on conception at first cycle^{5,6}



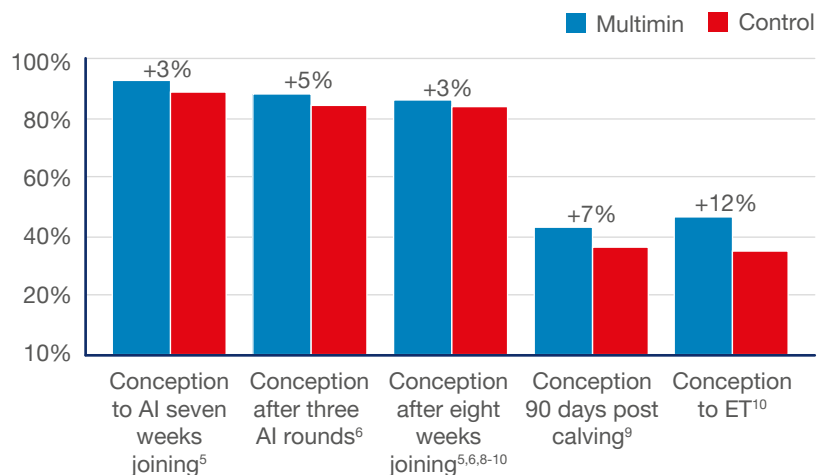
MULTIMIN

FOR OPTIMAL

IMPROVES EMBRYO SURVIVAL

Many cows lose their embryo in early development. While these cows may conceive again later in the season, they will calve later and lengthen the calving pattern. If they fail to conceive, they will remain empty, resulting in reduced pregnancy rates. Embryo loss is caused by range of factors, but all relate to the health of the embryo itself and/or the stress placed on it by free radicals. The damaging role of free radicals on the fertility of many species, including humans, has been documented.⁷ Multimin improves embryo survival by providing the four trace minerals required by the antioxidant systems to fight 'free radicals'. Scientific and field trials have shown that the pregnancy rates in breeding females treated with Multimin are 3 to 12% higher than untreated females, depending on the length of the breeding season and breeding method.^{5,6,8-10}

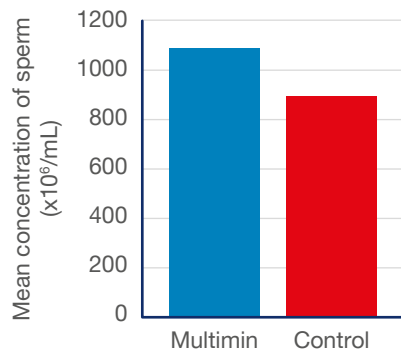
Effect of Multimin on conception rates^{5,6,8-10}



IMPROVES SPERM QUALITY

Multimin makes bulls 'performance ready' by optimising sperm quality. A trial using both *Bos indicus* and *Bos taurus* bulls showed that bulls treated with Multimin 90 days before joining had 22% higher sperm concentration and significantly more motile sperm 6 to 12 weeks after treatment.¹¹ Make sure bulls are vaccinated and drenched routinely, and examined by a veterinarian to determine breeding soundness.

Effect of Multimin upon sperm concentration¹¹



FERTILITY, IMMUNITY AND PRODUCTIVITY

IMPROVES IMMUNE FUNCTION

In combination with good animal husbandry, including vaccination and nutrition, Multimin makes your herd 'performance ready' by boosting all three parts of the immune system [physical barriers, non-specific immune response and specific immune response].

Multimin has been scientifically proven to reduce the incidence or severity of many economically-significant diseases in cattle, including calf scours, pneumonia and mastitis. Maintaining health has a direct impact on survivability, growth rates and fertility.

Australian and international studies have shown that administration of Multimin at the time of vaccination can improve an animal's response to most classes of vaccines. In effect, Multimin can increase the level of protection beyond that provided by the vaccine and reduce the need for treatment.

Multimin can pay for itself with only a small improvement in survival rate across the herd.

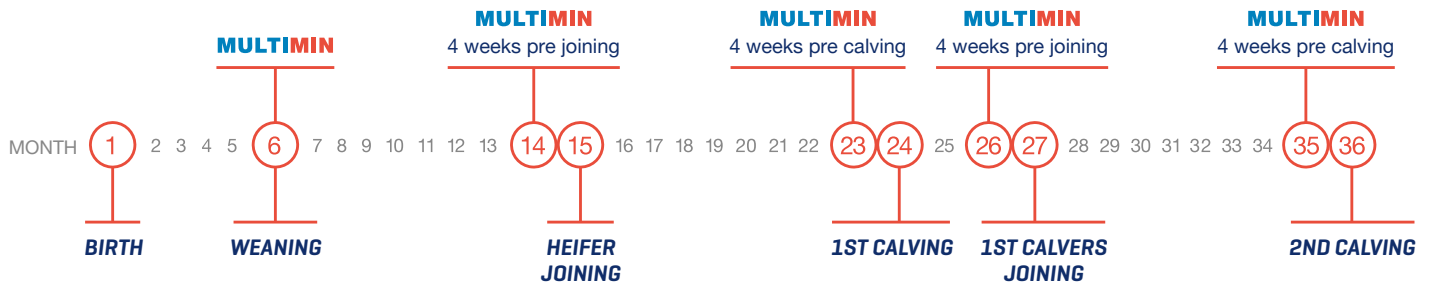
DOSAGE

Multimin is administered as a subcutaneous injection at 1 mL / 50 kg in young cattle (up to 12 months) and 1 mL / 75 kg in yearlings (1–2 years) and 1 mL / 100 kg in adult cattle (>2 years).

Age	Liveweight (kg)	Dose (mL)	Doses per pack (500 mL)
Up to 1 year	50	1	500
	75	1.5	333
	100	2	250
	125	2.5	200
	150	3	167
	175	3.5	143
	200	4	125
	225	4.5	111
	250	5	100
	275	5.5	91
	300	6	83
	325	6.5	77
	350	7	71
	375	7.5	67
	400	8	63
1–2 years <i>[Round down to the nearest 0.5 mL].</i>	190	2.5	200
	225	3	167
	265	3.5	143
	300	4	125
	340	4.5	111
	375	5	100
	415	5.5	91
	450	6	83
From 2 years	400	4	125
	500	5	100
	600	6	83
	700	7	71
	800	8	63
	900	9	56
	1000	10	50

WHEN TO ADMINISTER MULTIMIN

Multimin should be administered before 'high demand' periods, at weaning or four weeks before joining or calving, to allow antioxidant levels to peak. Multimin should be administered to all breeding females four weeks before joining and calving and to bulls 12 weeks before joining. For best results, Multimin should be administered every year, regardless of seasonal conditions, and as part of an integrated nutrition and animal health program. Multimin can be administered in combination with other animal health products, including vaccines [e.g. Websters 5 in 1 B12] and parasite control products [e.g. Cydectin Injection].*



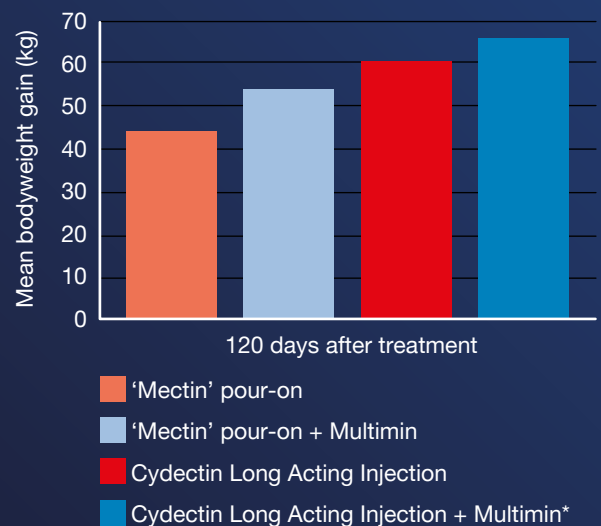
WITHHOLDING PERIODS

Milk Withholding Period:	NIL
Meat Withholding Period:	NIL
Export Slaughter Interval:	NIL

TEAM UP WITH CYDECTIN[®] LONG ACTING INJECTION!

Parasite burdens can have a significant impact on fertility in heifers and first-calf cows by suppressing appetite and competing for nutrients. An MLA-funded study showed that heifers treated with an effective drench were 60 kg heavier than untreated animals over a 12-month period.¹² This study also found heifers treated with a long-acting moxidectin injection [e.g. Cydectin LA] were 22 kg heavier six months after treatment than the cattle treated with a short-acting 'mectin' pour-on.¹² Another Australian study found the administration of Multimin and Cydectin Long Acting Injection increased weight gain by 51% [23 kg] 120 days after treatment compared to Angus heifers treated with a 'mectin' pour-on treatment only.¹³ Cydectin Long Acting Injection for Cattle provides persistent, broad spectrum control of internal parasites in cattle, including *Ostertagia*, *Cooperia* and *Trichostrongylus*. It also has persistent activity against a range of external parasites, including cattle tick and lice.

Effect of Multimin in combination with Cydectin Long Acting Injection upon growth rates¹³



(16 per group. Mean starting weight 259 kg).

*When used concurrently, Multimin should always be administered at a different injection site to other injectables.

GET YOUR CATTLE PERFORMANCE READY WITH MULTIMIN



- **Multimin is a unique trace mineral injection that makes your herd 'performance ready' by improving fertility and immunity.^{4,5}**
- **Multimin enhances antioxidant systems to improve the health and performance of livestock.³**
- **Multimin increases the number of calves born earlier in the season, giving them an extra 20 to 40 days to perform to the best of their genetic potential.⁵**
- **Multimin is rapidly-absorbed, readily-utilised and provides prolonged antioxidant action to cover 'high demand' periods.^{2,3}**
- **Multimin is scientifically-proven to improve health and performance of livestock.**

For more information about how Multimin can improve the health and performance of your cattle, contact Virbac Customer Support 1800 242 100.

au.virbac.com

References: 1. Based on concepts contained in *Weaner throughput (Module 5), More Beef from Pastures: The producer's manual*. Meat & Livestock Australia, 2013. 2. Hansen (2007), Iowa State University, Department of Animal Science.* 3. Machado, V., et al. (2014). The effect of injectable trace minerals (selenium, copper, zinc, and manganese) on peripheral blood leucocyte activity and serum superoxide dismutase activity of lactating Holstein cows. *Vet J.*, 200:299-304.* 4. Arthington, J. & Havenga, L. (2012). Effect of injectable trace minerals on the humoral immune response to multivalent vaccine administration in beef calves. *J. Anim. Sci.* 90:1966-1971. 5. Mundell, L. et al. (2012). Effects of prepartum and postpartum bolus injections of trace minerals on performance of beef cows and calves grazing native range. *The Professional Animal Scientist*, 28:82-88.* 6. Virbac trial protocol No. 578/15. 7. Agarwal, A. & Gupta, S. (2006). The role of free radicals and antioxidants in female infertility and assisted reproduction. *US Genito-Urinary Disease*, pp60-65. 8. Hawkins D. (2007). The effect of injectable trace elements (Multimin) on health and reproduction parameters in NZ dairy herds. *New Zealand Dairy Cattle Veterinarians Newsletter*, 24(3):12-16. 9. Mitchell, K. et al. (2008). Injectable trace elements increase reproduction efficiency in dairy cows, in *Trace elements in animal production Systems*, 296-299. 10. Sales, J. et al. (2011). Effect of injectable copper, selenium, zinc and manganese on the pregnancy rate of crossbred heifers (*Bos indicus* x *Bos taurus*) synchronised for timed embryo transfer. *Livestock Science*, 142:59-62.* 11. Ferreira et al. (2016). WBC. Dublin. 12. Eppleston, J. et al. (2016). Post-weaning growth of beef heifers drenched with long- or short-acting anthelmintics. *Aust. Vet. J.*, 94(9):341-6. 13. Virbac trial protocol No. 572/10. *The Multimin formulation in this study contained different levels of minerals compared to the registered formulation in Australia.

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