

New national survey of sheep roundworm drench resistance reveals staggering levels of resistance to market leading drench actives

Urgent need for sheep producers to incorporate new drench actives

29 August 2013, Sydney, Australia: The first national drench resistance study in nearly 20 years has revealed unexpectedly high levels of resistance to commonly used sheep drench actives, including to the market leading active *moxidectin*. The results of this study identifies the ever growing prevalence and severity of resistance to the 'old' drench classes as a serious concern, and supports urgent calls for sheep producers to incorporate 'new' drench technology into their strategic drenching programmes now.

The results of this national study found¹:

- 54% prevalence of drench resistance across Australia to *moxidectin*, the market leading sheep drench active
- 96% prevalence of drench resistance across Australia to *benzimidazoles* and *levamisole*, the oldest drench classes
- 0% prevalence of drench resistance across Australia to the newest drench active *monepantel*

Severe drench resistance has become an unavoidable problem on the majority of Australian farms due to an over-reliance on sheep drenches, *macrocyclic lactone* drenches in particular², and unsustainable control programs.

The newly revealed levels of national drench resistance have direct and immediate consequences for all sheep producers. While some sheep producers have long been aware of the need to manage drench resistance, the results of this study has revealed that no sheep producer can afford to ignore roundworm drench resistance and all must address the issue quickly to guarantee the health of their flock and business. Sheep producers need to consider how best to incorporate 'new' drench actives, such as *monepantel*, now to manage growing drench resistance to all older actives and ensure the vitality of their flock.

Intestinal roundworms such as black scour worm, small brown stomach worm and barber's pole worm are a constant threat to the health, welfare and productivity of sheep; causing anaemia, diarrhoea, as well as reduced liveweight gain, reproductive rates and wool growth. They also predispose sheep to breech soiling and flystrike.

Intestinal worms cost Australian sheep producers more in lost productivity than any other animal health problem – a situation made worse with drench resistance widespread and increasing in severity throughout all sheep farming regions. The combined cost of lost production and control measures associated with such internal parasites was last estimated, in 2006, as costing Australian sheep producers as much as \$A369M per year³.

The national survey used parasitology laboratory data from 390 faecal egg count reduction tests[#] conducted on sheep farms from across all Australian states. The aim of the survey was to evaluate the current prevalence and severity of sheep roundworm drench resistance.

¹ Playford, MC; Smith, AN; Love, S; Besier, RB; Kluver, P and Bailey, JN; *Prevalence of anthelmintic resistance in sheep nematodes in Australia 2009-2012* International Sheep Veterinarians Conference, Rotorua, New Zealand Feb 2013.

² AVCARE Data, 2013 – 'Macrocylic lactone drenches accounted for 75% of sheep drench doses in 2012'

³ Sackett D, Holmes P, Abbott K, Jephcott S & Barber M: *Assessing the economic cost of endemic disease on the profitability of Australian beef cattle and sheep producers*. MLA report AHW.087; 2006. Meat and Livestock Australia Limited

[#] Otherwise known as 'drench resistance tests'



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“As well as finding a disturbingly high level of resistance by worms to *moxidectin* – the most potent of the 'mectins' and a relatively modern drench active compared to others – we also found an incredibly high percentage of farms with drench resistance to older drench actives (*benzimidazoles* 96%; *levamisole* 96%; *abamectin* 77% of farms tested respectively) and one combination drench (*benzimidazole+levamisole* 81% of farms). These results reveal the number of viable drench options sheep farmers have available is becoming very limited, very quickly.” said survey co-author Stephen Love, NSW DPI and State Worm Control Coordinator.

“When trying to manage worm resistance, a common mistake we are currently seeing is sheep producers rotating *brands* rather than *active ingredients*; as they assume the chemical groups change between brand names and manufacturers.” said Novartis Animal Health Veterinarian Dr Ben Brown, “There is currently an over-reliance on *macrocyclic lactone* (ML) drenches. Many sheep producers don't realise many different brands contain this same active. Using new actives such as *monepantel* now, as part of a drench rotation program, will help to prolong the life of older drench actives by removing worms from treated sheep already resistant to these older drenches.”

“The results of this survey show that half of the farms tested have resistance to *moxidectin* in one or more worm species,” said Novartis Animal Health Veterinarian Dr Ben Brown, “So there is an urgent need *now* to introduce new drench technology, such as *monepantel*, into strategic and tactical drenching programmes. Sheep producers need to be proactive in managing drench resistance, as the invisible costs of drench resistance are too damaging to ignore.”

Novartis Animal Health recommends sheep producers refer to and incorporate advice outlined in the *Drench Decision Guidelines*, available through the Sheep CRC's WormBoss programme, when reviewing their worm control strategies. A copy of these guidelines is available at www.wormboss.com.au



To find out the drench resistance status of your farm, please contact your animal health advisor or local Novartis Animal Health representative for recommendations specific to your farm and region.

Research results drawn from: - Playford, MC; Smith, AN; Love, S; Besier, RB; Kluver, P and Bailey, JN; *Prevalence of anthelmintic resistance in sheep nematodes in Australia 2009-2012*. World Parasitology Congress, Perth, August 2013.

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Survey results found:

Prevalence

Drench Active(s)	% Properties with resistance			
	Brown stomach	Black scour	Barbers pole	Any Parasite*
BZ	88	87	75	96
LEV	82	86	30	96
NAP	72	79	15	86
ABA	49	25	83	77
MOX	38	14	52	54
MPL	0	0	0	0
BZ/LEV	79	48	19	81
BZ/LEV/ABA	22	6	14	28

*Any parasite refers to *Teladorsagia*, *Trichostrongylus* or *Haemonchus* spp.

Severity: The severity of resistance was found by calculating the average efficacy (%) of each active against black scour worm, brown stomach worm and barber's pole worm across all of the farms on which it was used. Results revealed average efficacies of *levamisole* 61%; *naphthalophos* 72%; *abamectin* 73% and *moxidectin* 86%.

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About Zolvix

The ZOLVIX revolution starts now

Healthy sheep are profitable sheep – that's why when it comes to worm control you need to be confident that the drenches you use deliver powerful efficacy. The results of an Australian study assessing the production loss associated with drench resistance found the cost of drench resistance in sheep due to lost productivity was (by 2010 prices) approximately \$16 per head⁴. Per head losses could be even higher in regions of higher rainfall where more frequent drenching is required. Furthermore, this study found losses occurred even when drench efficacy was only slightly reduced at 85% efficacy, compared to a drench working at 99.9%.

ZOLVIX delivers unparalleled levels of worm control and certainty

ZOLVIX is from the first new class of sheep drench since the 1980's. Next generation ZOLVIX is highly effective and minimises the development of drench resistance to all other actives⁵. With its unique mode of action, ZOLVIX kills >99.9% of worms⁶, with zero resistance⁷. It protects and promotes animal health while boosting productivity⁸. ZOLVIX also has an impressive safety profile with no detrimental effects on sheep, people or the environment⁹.

ZOLVIX delivers the confidence of an effective broad-spectrum worm kill

- Kills even multi-resistant strains of worm.^{10,11,12}
- Highly effective against the major production limiting roundworm species of sheep.
- The only drench able to provide certainty of worm control when the drench resistance status is unknown.
- Is the ideal quarantine drench.
- Convenient low volume drench that's easy to use.
- Accompanied by the revolutionary OPTIMUM™ drenching system – The integrated Optivix® backpack and Optiline® drencher.

Leading parasitologists recommend using ZOLVIX now as part of an integrated worm control program¹³ including drench resistance testing, worm monitoring, grazing management and the use of optimised genetics and nutrition. Contact your animal health advisor or local Novartis Animal Health representative for recommendations specific to your farm and region.

For more information about ZOLVIX, please visit <http://www.ZOLVIX.com.au/>

About Novartis Animal Health

Novartis Animal Health is dedicated to livestock health. We offer a broad range of products to protect sheep and cattle against the numerous external and internal parasites that threaten their wellbeing and productivity. For more information about Novartis

⁴ Besier et al. Drench; resistance – a large economic cost WA J Ag 1996. 8. Sackett et al. *Assessing the economic cost of endemic disease*, MLA, 2006.

⁵ Hosking, B.C. & Dobson, R.J. (2010) *The amino-acetonitrile derivatives, a new anthelmintic class in Australia: efficacy and options for use*. In proceedings of the 3rd AVA/NZVA Pan Pacific Veterinary Conference. Brisbane. 1–9

⁶ 'Kills >99.9% of barbers pole, small brown stomach and black scour worms'. A pooled analysis of the efficacy of monepantel, an amino-acetonitrile derivative against gastrointestinal nematodes of sheep. Hosking et al., *Parasitol Res* (2010), 106: 529-532

⁷ Zero Resistance – no monepantel resistant nematode populations exist in Australia.

⁸ *The production costs of anthelmintic resistance in sheep managed within a monthly preventive drench programme*, Sutherland, I.A., Bailey, J. and Shaw, R.S. AgResearch Ltd., The Hopkirk Research Institute and Novartis Animal Health Australasia.

⁹ When used according to the label instructions.

¹⁰ Baker, K.E., George, S.D., Stein, P.A., Seewald, W., Rolfe, P.F. & Hosking, B.C. (2012) *Efficacy of monepantel and anthelmintic combinations against multiple-resistant Haemonchus contortus in sheep, including characterisation of the nematode isolate*. *Veterinary Parasitology* 186:513–517.

¹¹ George, S.D., George, A.J., Stein, P.A., Rolfe, P.F., Hosking, B.C. & Seewald, W. (2012) *The comparative efficacy of abamectin, monepantel and an abamectin/derquantel combination against fourth-stage larvae of macrocyclic lactone-resistant Teladorsagia spp. infecting sheep*. *Veterinary Parasitology* 188:190–193.

¹² Kaminsky, R., Ducray, P., Jung, M., Clover, R., Rufener, L., Bouvier, J., Schorderet Weber, S., Wenger, A., Wieland-Berghausen, S., Goebel, T., Gauvry, N., Pautrat, F., Skripsky, T., Froelich, O., Komoin-Oka, C., Westlund, B., Sluder, A. & Mäser, P. (2008) *A new class of anthelmintics effective against drug-resistant nematodes*. *Nature* 452, 176–180.

¹³ Dobson, R.J., Hosking, B.C., Besier, R.B., Love, S., Larsen, J.W.A., Rolfe, P.F. & Bailey, J.N. (2011) *Minimising the development of anthelmintic resistance, and optimising the use of the novel anthelmintic monepantel, for the sustainable control of nematode parasites in Australian sheep grazing systems*. *Australian Veterinary Journal* 89:160–166



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Animal Health and its range of livestock products, please visit
http://ah.novartis.com.au/products/most_popular_livestock_products.html

For product enquiries, please contact Novartis Animal Health Australasia Pty Ltd, Associate Brand Manager Terri Barden on +61 2 8815 6277 or terri.barden@novartis.com

ZOLVIX contains 25 g/L monepantel, a member of the Amino-Acetonitrile Derivative (AAD) class of anthelmintics.
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