

The logo for Zolvix Monepantel is located in the bottom right corner. It features a circular icon on the left composed of white, radiating lines of varying lengths, resembling a sunburst or a fan. To the right of this icon, the word "ZOLVIX" is written in a large, bold, white, sans-serif font. Below "ZOLVIX", the word "MONEPANTEL" is written in a smaller, white, sans-serif font. A registered trademark symbol (®) is positioned to the upper right of the "X" in "ZOLVIX".

ZOLVIX[®]
MONEPANTEL

ZOLVIX Lambex Agenda

- Introducing Novartis Animal Health
- Anthelmintics past and present
- Innovation delivered by ZOLVIX
 - *Unique mode of action*
 - *Unparalleled efficacy*
 - *Impressive safety profile*
- Where to use ZOLVIX
- Innovation delivered by ZOLVIX
 - *The ZOLVIX Optimum delivery system*



ZOLVIX is not yet registered in Australia



Novartis - Delivering innovation

Research & Development *from discovery to market*

Developing veterinary medicines can be like going through a maze

- Uncertainty and risk
- Opportunities



 **ZOLVIX**[™]
MONEPANTEL

Novartis Animal Health global R & D sites

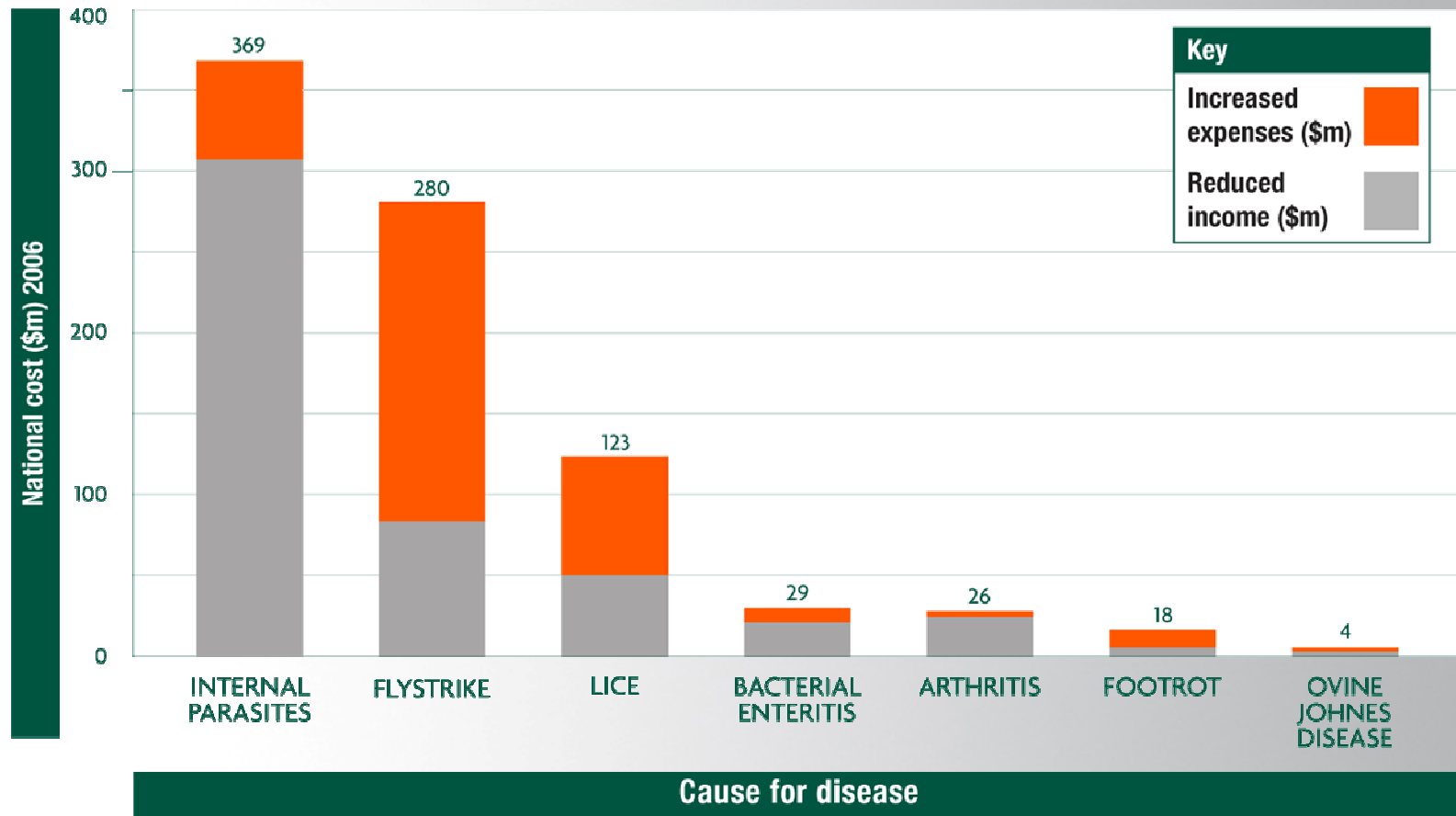


ZOLVIX
was
developed
and tested
largely in
Australia

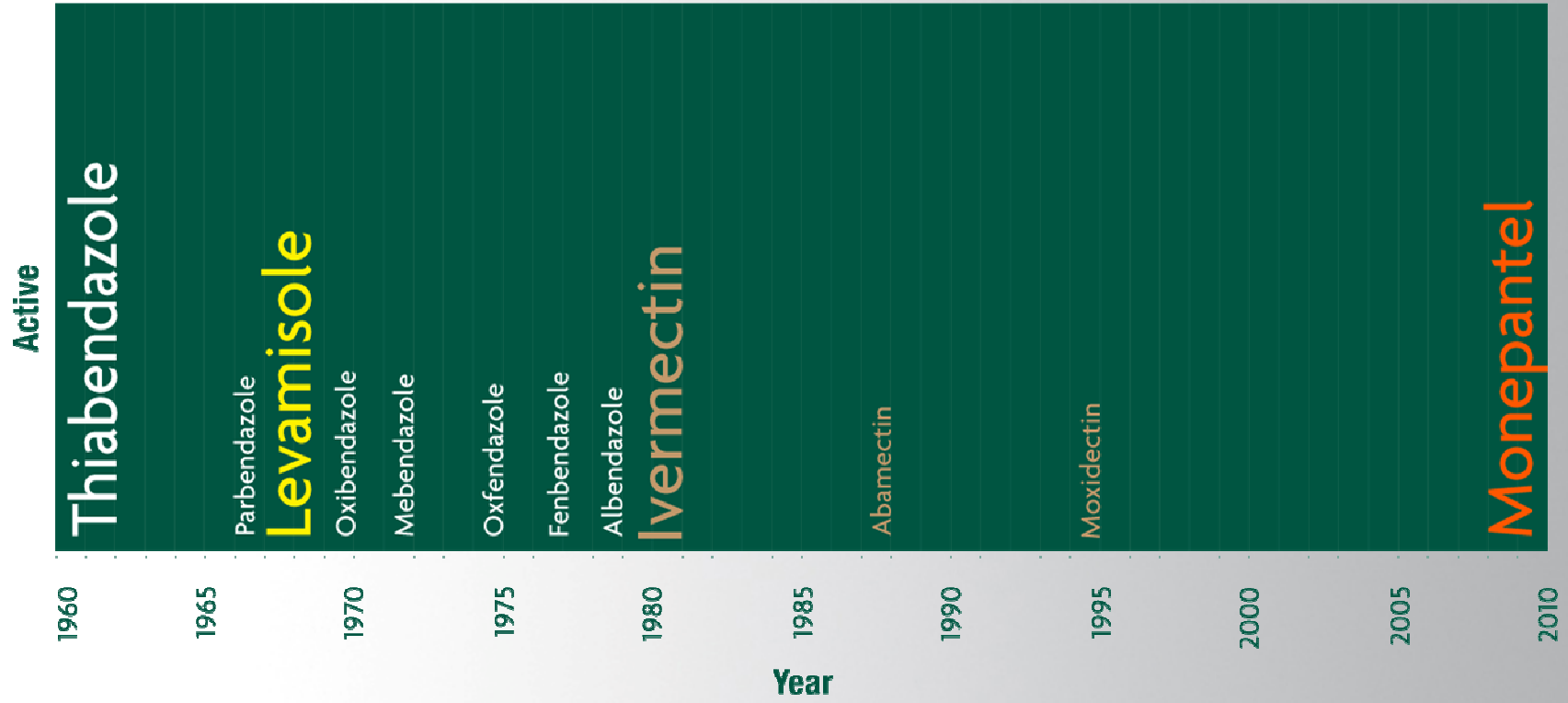


Anthelmintics past and present

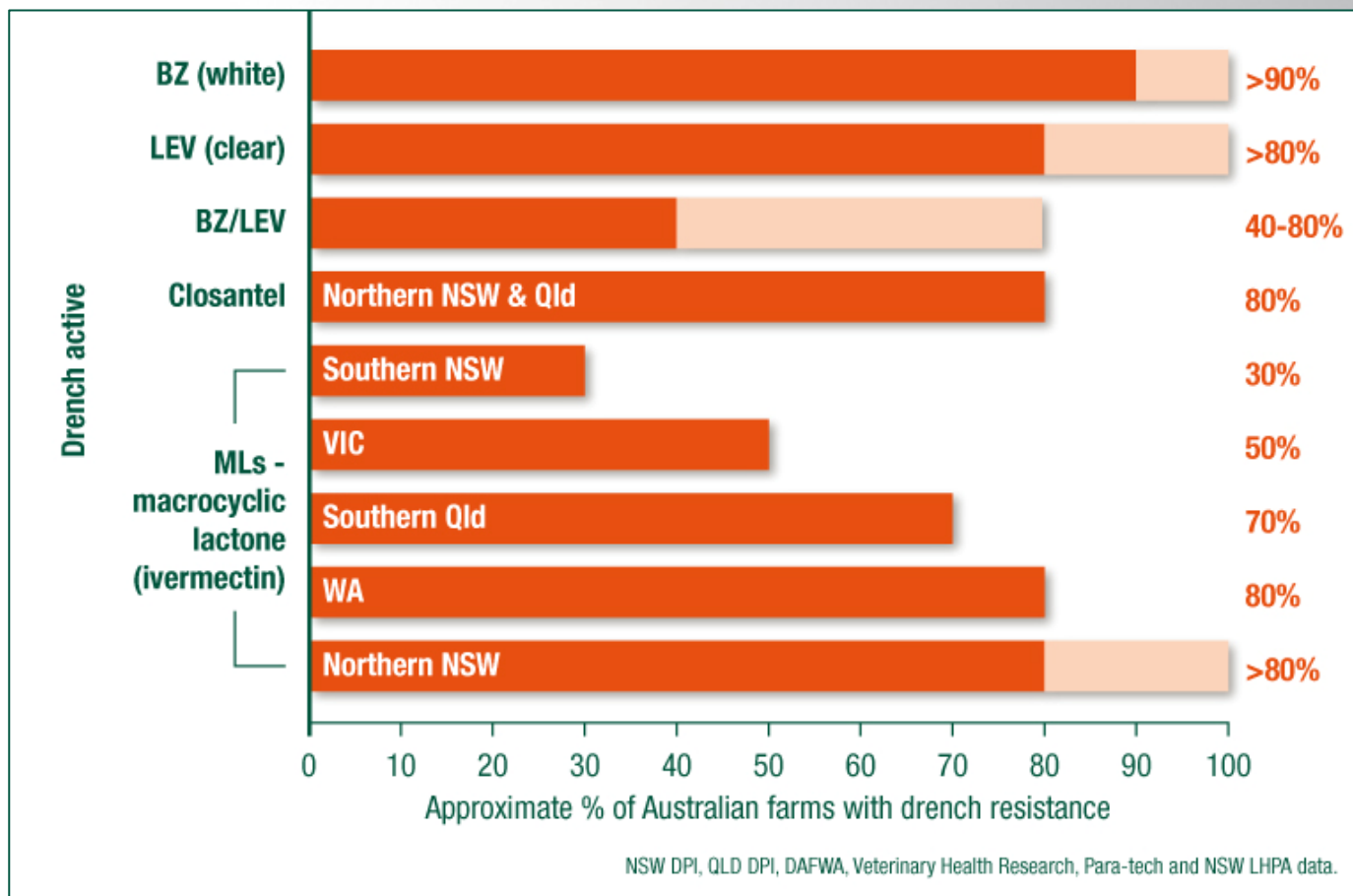
Highest cost diseases for sheep



The anthelmintic development timeline



Drench resistance in Australia





ZOLVIX - Delivering innovation

An introduction to ZOLVIX

1. Revolutionary oral drench for sheep

- *A new drug class with a unique mode of action*
- *First new livestock anthelmintic (drench) class since the 1980s*

2. Unparalleled efficacy

- *Worldwide trials with 99.9% efficacy*
- *Highly effective, even against worms resistant to all other actives*

3. Impressive safety profile

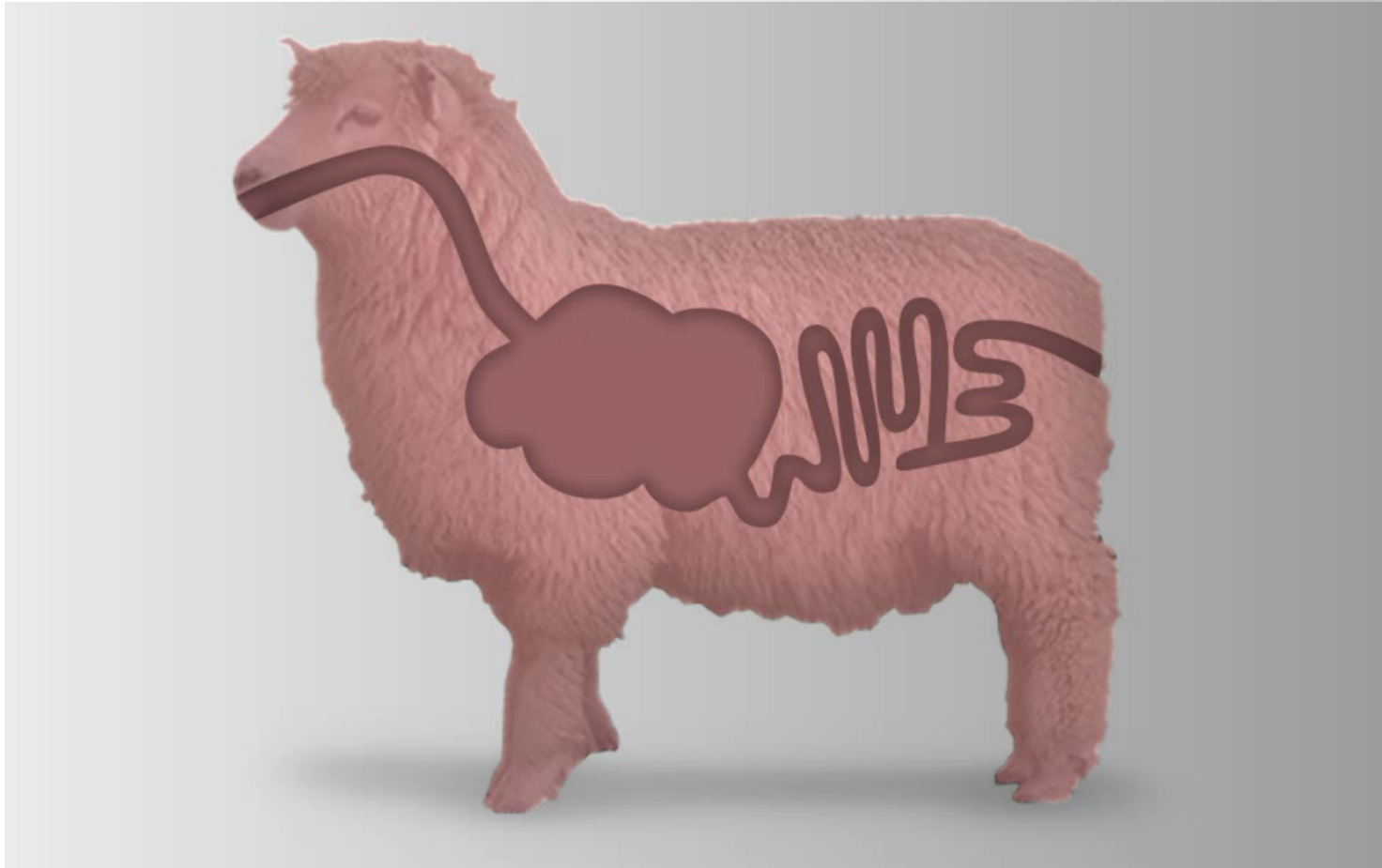
- *No detrimental effects on sheep, people or the environment*

4. Convenient and easy to use

- *Revolutionary OPTIMUM Drenching System*



Revolutionary oral drench for sheep – unique mode of action



Kaminsky *et al.* Discovery of the AADs. *Nature* 2008

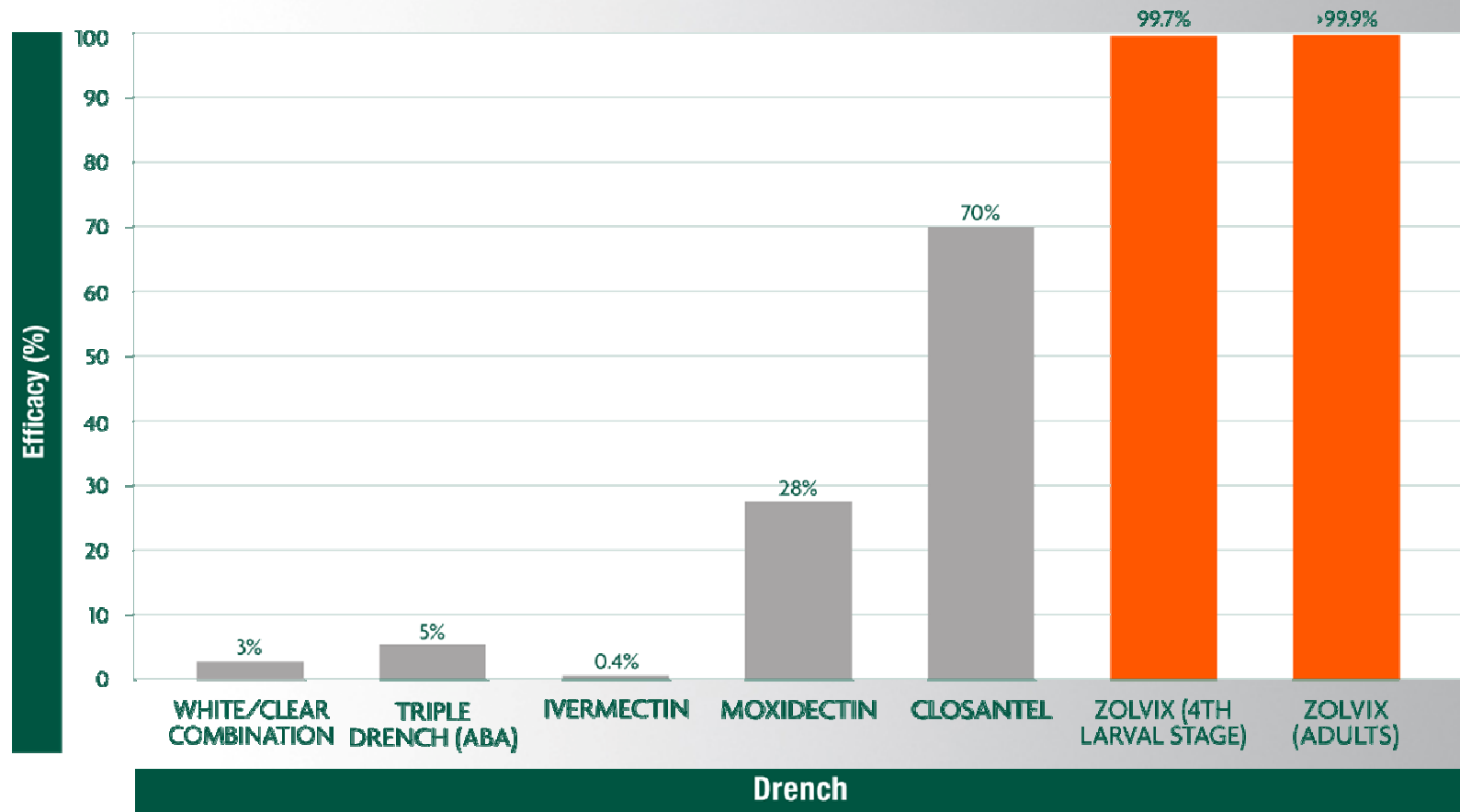
Ducray *et al.* Discovery of AADs – chemistry. *Bio and Med Chem Letters* 2008

Kaminsky *et al.* Identification of monepantel. *Para Res* 2008

Rufener *et al.* Mode of action. *PLOS* 2009



Revolutionary new oral drench for sheep – even kills resistant worms





Unparalleled efficacy

Unparalleled broad-spectrum efficacy

Common name	Latin name	Adult	Immature*
Barbers pole worm	<i>Haemonchus contortus</i>	>99.9 (102)	>99.9 (110)
Small brown stomach worm	<i>Teladorsagia circumcincta</i>	>99.9 (142)	>99.9 (94)
Black scour worm	<i>Trichostrongylus colubriformis</i>	>99.9 (87)	>99.9 (118)
Black scour worm	<i>Trichostrongylus vitrinus</i>	>99.9 (59)	99.8 (48)

* Fourth larval stage.

Sager *et al.* Dose confirmation adult stage infections. *Vet Para* 2009

Hosking *et al.* Dose confirmation L4 larvae. *Vet Para* 2009 Hosking *et al.*, *Parasitology Research* 2009

Hosking & Stein, *Veterinary Record* 2009 Bustamante *et al.*, *Parasitology Research* 2009



Dose confirmation studies – inhibited stages

Common name	Latin name	Inhibited L4 stages
Barbers pole worm	<i>Haemonchus contortus</i>	99.7 (10*)
Small brown stomach worm	<i>Teladorsagia circumcincta</i>	99.8 (10*)

* Comparable data has been generated in several European studies but not yet included in this analysis
Stein et al., Veterinary Parasitology in press

Unparalleled efficacy - Proven in-field

ZOLVIX has been tested on 12 flocks around Australia, against all major gastrointestinal worms, including strains resistant to other drenches.

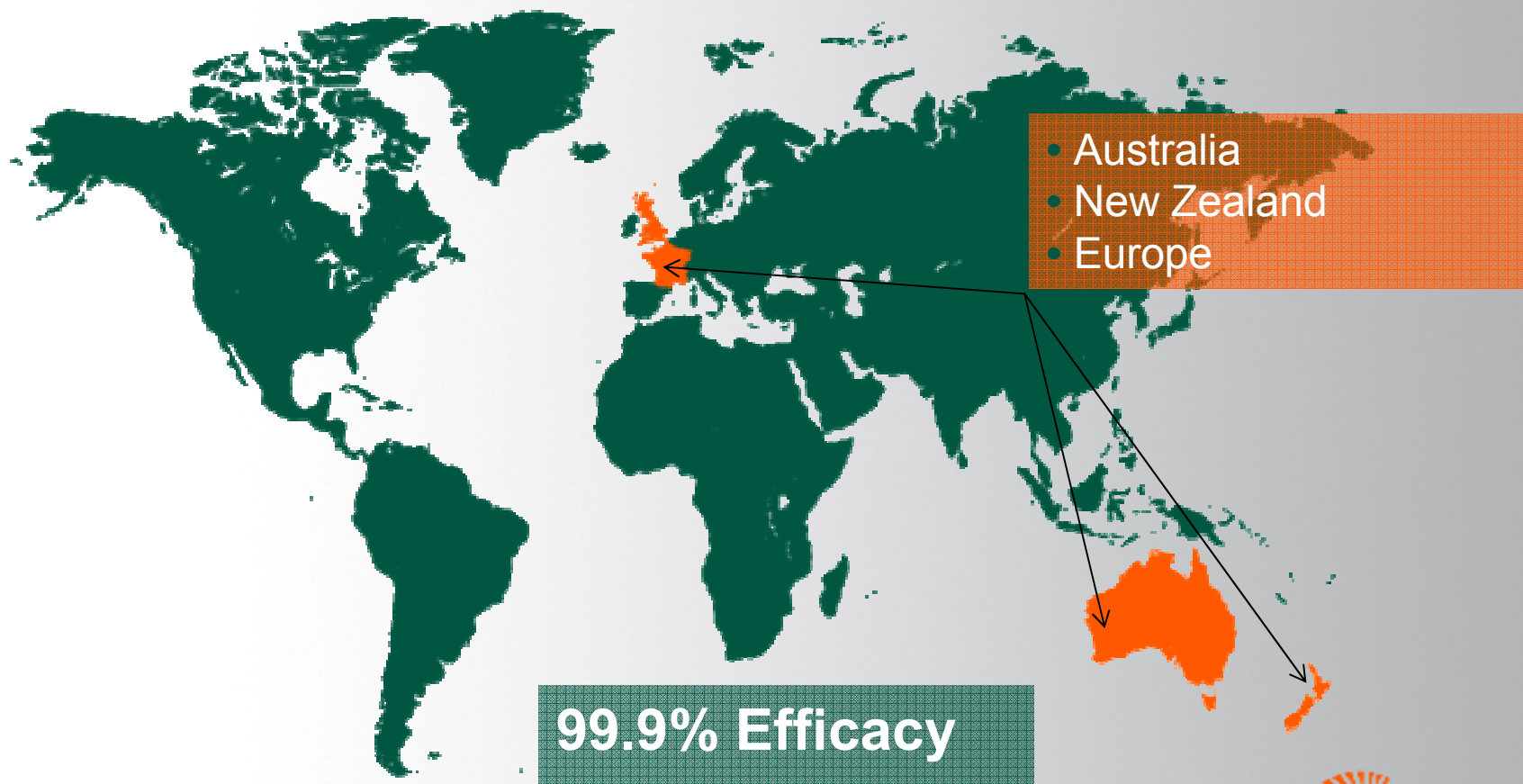


Hosking *et al.* Field efficacy in Australia. *Aus Vet J* 2009



Unparalleled efficacy – Proven in field

Tested on farms in Australia, New Zealand, England, France and Scotland



Hosking *et al.*, Analysis of pooled efficacy *Parasitol Res* 2009
Mason *et al.*, *New Zealand Veterinary Journal* 2009 Hosking *et al.*, *Australian Veterinary Journal* 2009



Unparalleled efficacy – provides greater productivity

Studies in Australia and NZ comparing use of ZOLVIX with a less than fully effective drench

Using ZOLVIX resulted in significant:

- Increases in weight gains
- Increases in condition scores
- Increases in carcass values

As well as...

- Decreases in faecal egg counts
- Decreases in dag scores
- Decreases in treatment frequency



The cost of an ineffective drench

- The WA study compared 3 treatments with either a fully effective or an ineffective drench (affected by resistance) over a 12 month period: Sheep treated with the fully effective drench grew 450gm more wool, were 6kg heavier and were 3 times less likely to scour or die (Besier *et al.* Drench resistance *WA J Ag* 1996).
- On current prices this equates to an increase of between \$12 and \$15 per head based on weight gain alone.





New standards in safety

Impressive safety profile

Target animal safety

- Impressive safety profile in breeding animals (ewes and rams)
- Impressive safety profile in lambs = 10 x safety margin

Environmental safety

- No concerns regarding dung beetles, earthworms, algae or soil microflora

Operator safety

Consumer safety

Highly targeted against nematodes



Malikides *et al.* Safety in weaned lambs. *NZ Vet J* 2009

Malikides *et al.* Safety in breeding rams. *NZ Vet J* 2009

Malikides *et al.* Safety in breeding ewes. *NZ Vet J* 2009



Where to use ZOLVIX

Modelling studies

- A multi-species model to predict concurrent infections with small brown stomach, black scour and barbers pole worm in sheep and on pasture under Australian grazing conditions
- Examined in four environments (regional climate averages)
- First model to incorporate both productivity and sustainability benefits
- WA (mediterranean): MPL/COM or MOX was the best option
- Integrate into IPM system using within season rotation

Integrating ZOLVIX in your drenching program

RESISTANCE STATUS

Unknown: ZOLVIX is the only drench you can use with complete confidence

Known: Within season rotation with ZOLVIX will help maintain the efficacy of existing drenches by removing resistant survivors

Integrated Parasite Management Principles:
Regular worm monitoring
Resistance testing
Pasture management
Nutrition
Genetics

Use now (when registered) to maximise benefits



Use ZOLVIX now as part of strategic in-season rotation

Productivity

- Weaning (lambs)
- Pre-lambing
- First summer drench - strategic treatment

Preservation

- Weaning (lambs and ewes)
- Tail cutter following long-acting drench

Protection

- Effective quarantine treatment



EVERY FLOCK, EVERY YEAR



Revolutionary delivery system

Current drenching practices



Repeated drenching, many problems...

- *Injury to forearm muscles and tendons around wrist*
- *Fatigue*
- *Incorrect administration*
- *Underdosing-major contributor to resistance development*
- *Injury to sheep*

Drench like you've never drenched before

- Self lubricating solution for ease of administration
- Low volume concentrated dose
- Revolutionary Optiline drencher



ZOLVIX – Worms don't stand a chance

New generation ZOLVIX is ready to deliver you with:

- Monepantel, a breakthrough molecule from the new AAD (orange) drench class
- Unique mode of action that targets a receptor found only in nematodes
- High-level broad-spectrum efficacy against sheep worms, regardless of existing drench resistance status
- Impressive safety profile for target animals, operators, consumers and the environment
- Revolutionary OPTIMUM Drenching System for easier, faster and more accurate drenching.

NEW GENERATION ZOLVIX.

WORMS DON'T STAND A CHANCE.

 **NOVARTIS**
ANIMAL HEALTH



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