RED MEAT UPDATES

TASMANIA

25 July 2025

Beating drench resistance

Bruce Jackson

Vet Consultant

How important is drench resistance?

- Sheep production on improved pastures probably not profitable without effective worm control
- E.g. 99% vs 50% effective drench, 5 months:
  - 4.7kg heavier carcase
  - 17 days less to finish
  - Less breech soiling
  - 20% higher fleece weight.

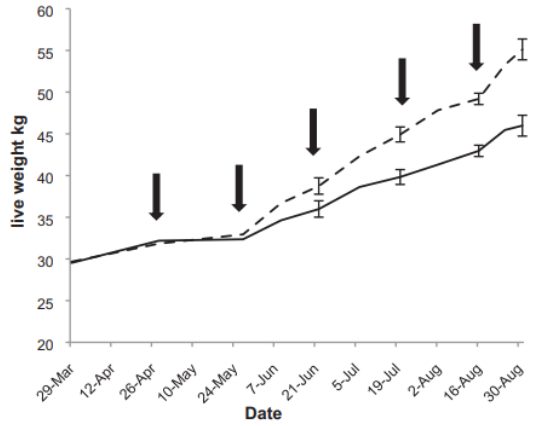

Fig. 3. Mean liveweights (±95% CI) of lambs treated with either DQL–ABA (—) or albendazole (– – –) over the period of the trial. Anthelmintic treatment points are indicated by arrows.

C.M. Miller et al. / Veterinary Parasitology 186 (2012) 376–381

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How bad is drench resistance in Tasmania?

- 7 of 9 flocks had drench resistance.

(Zoetis and Virbac data)

				%	worm	egg	reduction					
Flock	**DENCH FAMILY**	**BZ**	**LEV**	**Duocare**	**ABA**	**MOX**	**Triple**	**Tridectin**	**Q-Dr**	**STAR**	**ZOL +**	**CLOS**
1	Brown stomach worm	87	99		100	99			100	100		
1	Black scour worm	94	96		100	100			100	100		
1	Barber's pole worm	92	100		85	84			100	100		100
1	Large bowel worm	100	100		100	100			100	100		
2	Brown stomach worm	72	94		38	46			99	94		
2	Black scour worm	100	100		100	100			100	100		
3	Br St Wrm	94	95		90	96			100	99		
3	Black scour worm	99	99		100	100			100	100		
4	Brown stomach worm	100	100		100	91	100		95	95		
4	Black scour worm	100	100		100	100	100		100	100		
4	Large bowel worm	100	100		100	100	100		100	100		
5	Barber's pole worm	30	100		0	4			100	99		66
5	Brown stomach worm	31	84		100	9			19	99		
5	Black scour worm	45	87		100	100			100	100		
6	Brown stomach worm	97	100		97	98			97	100		
6	Black scour worm	100	100		100	100			100	100		
7	Brown stomach worm	57	87		83	86		100		100	100	
7	Black scour worm	57	87		75	93		100		100	100	
7	Large bowel worm	100	100		100	100		100		100	100	
8	Brown stomach worm	91	97	74	56	100	99	100		100	100	
8	Black scour worm	91	97	74	74	100	99	100		100	100	
8	Large bowel worm	91	97	74	98	100	99	100		100	100	
9	Black scour worm	97	95		97	99				99		

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How bad is drench resistance in Tasmania?

- Resistance to BZ, LEV and ML is common in 3 main worms.

Flock	WORMS	BZ	LEV	% Duocare	worm ABA	egg MOX	reduction Triple	Tridectin	Q-Dr	STAR	ZOLVIX +	CLOS
1	Black scour worm	94	96		100	100			100	100		
2		100	100		100	100			100	100		
3		99	99		100	100			100	100		
4		100	100		100	100	100		100	100		
5		45	87		100	100			100	100		
6		100	100		100	100			100	100		
7		57	87		75	93		100		100	100	
8		91	97	74	74	100	99	100		100	100	
9		97	95		97	99				99		
1	Barber's pole worm	92	100		85	84			100	100		100
5		30	100		0	4			100	99		66
1	Brown stomach worm	87	99		100	99			100	100		
2		72	94		38	46			99	94		
3		94	95		90	96			100	99		
4		100	100		100	91	100		95	95		
5		31	84		100	9			19	99		
6		97	100		97	98			97	100		
7		57	87		83	86		100		100	100	
8		91	97	74	56	100	99	100		100	100	
1	Large bowel worm	100	100		100	100			100	100		
4		100	100		100	100	100		100	100		
7		100	100		100	100		100		100	100	
8		91	97	74	98	100	99	100		100	100	

6 of 9 black scour worm

7 of 8 brown stomach worm

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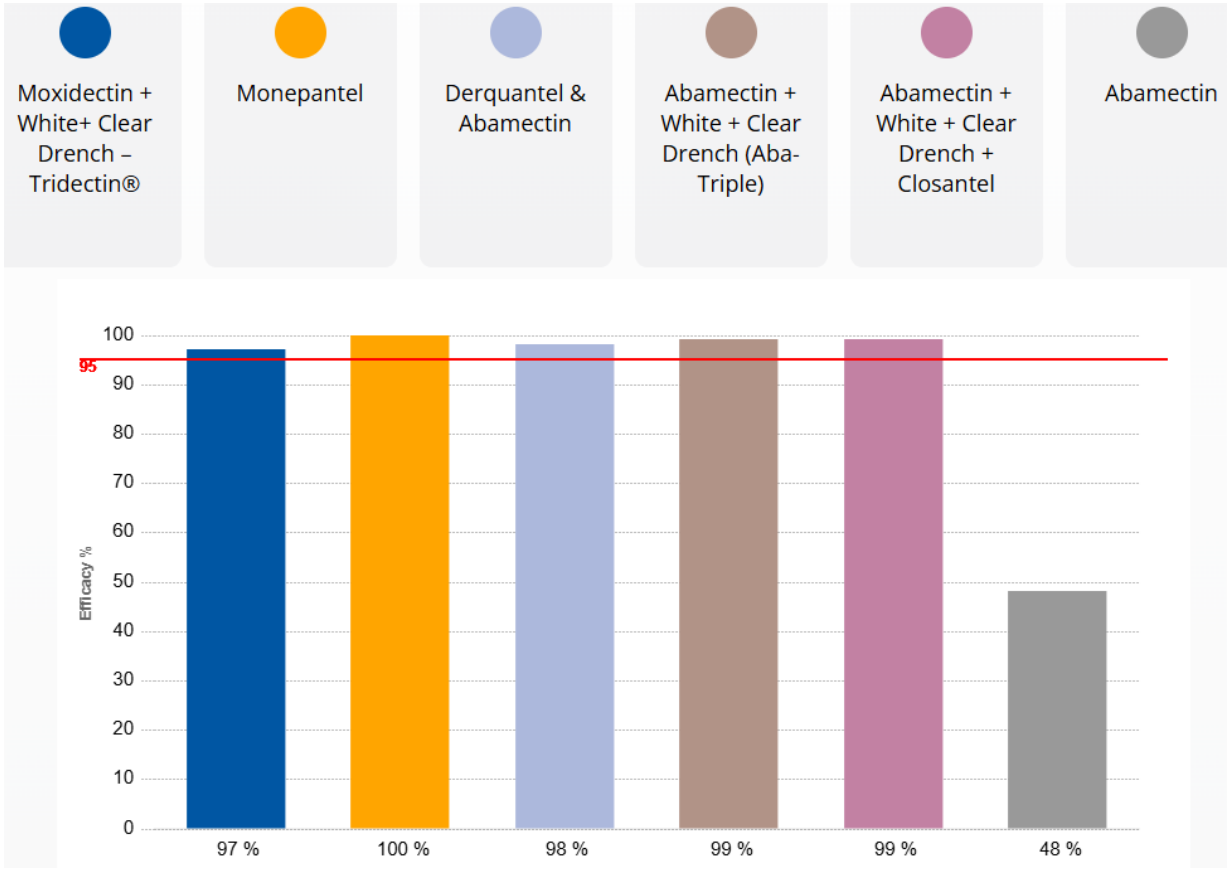
How bad is drench resistance in Tasmania?

- Overall efficiency data – Tasmania (Virbac)



//portal.tridectin.com.au

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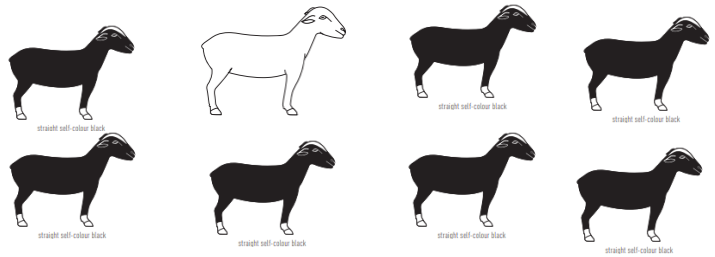
How does resistance develop?

- Male and female worms mate and have offspring
- Inheritance of resistance is **like** black sheep
- All white ‘flock’ but a ‘black’ turns up (usually cull).
- But if you **kept** every black sheep **entire**…

…and **sent** only white sheep to the **abattoir**…

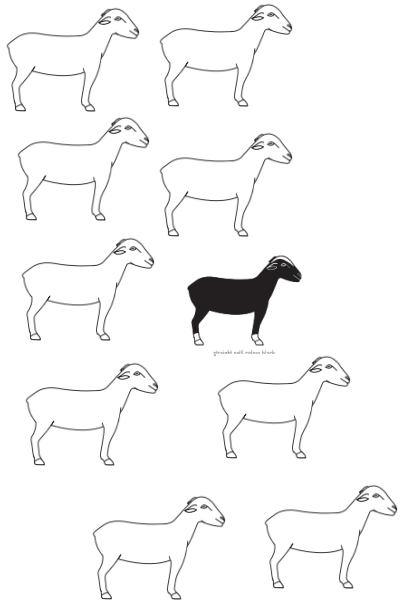
…you would eventually have a mainly black flock



…every time you drench…

…you slaughter ‘white’ worms…

…and keep ‘black’ ones.



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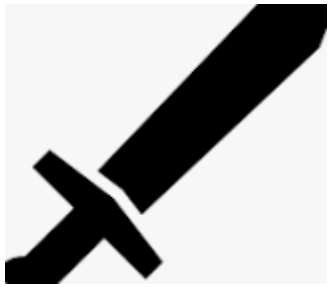
How does drench resistance work?

- The drench uses a certain ‘weapon’ to kill the worms


x

= 0

- The worm develops a defence and passes that on to offspring.


x

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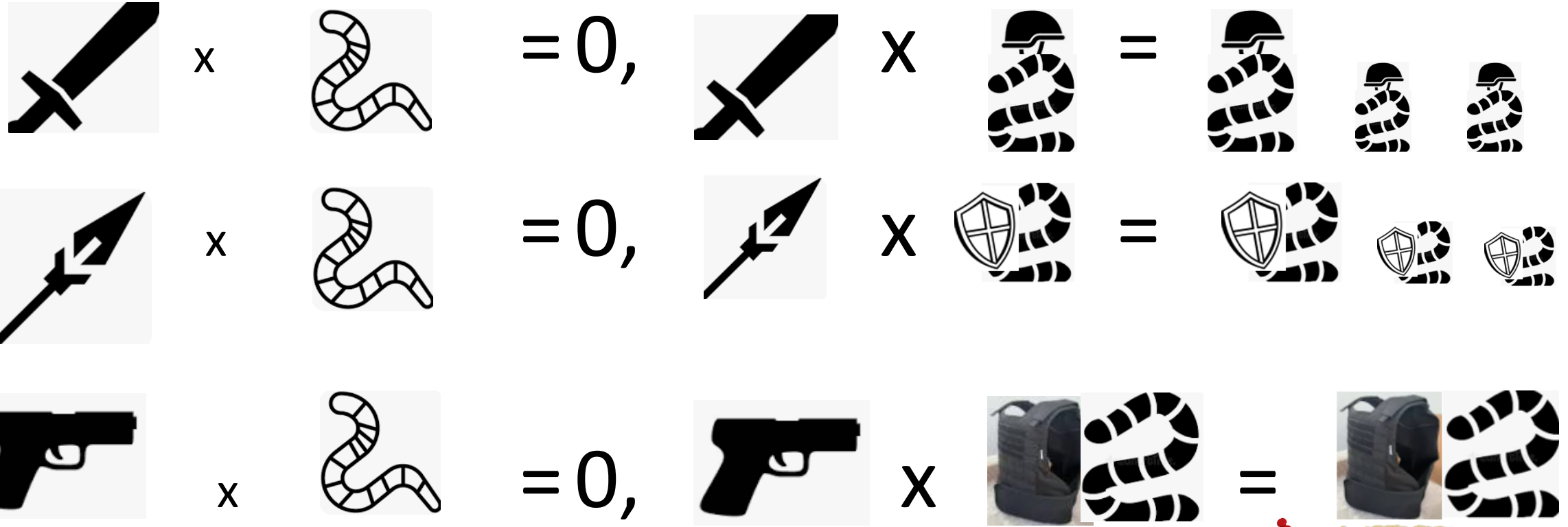
Why are drench families different??

- Each drench family uses a different ‘weapon’ to kill the worms, and the worms develop a different defence for each ‘weapon’.



Drench family vs brand name

- Worms develop resistance to drench families.
- The **main** drench families are:
  - BZ (White) eg Panacur, Valbazen, Oxfen
  - LEV (Levamisole), eg Nilverm, Levamisole Gold
  - ML (Macrocyclic lactones, 'Mectins") eg Ivomec, Vetmec, Cydectin
  - STAR (Derquantel) only one is Startect, combined with abamectin
  - ZOL (Monepantel) e.g. Zolvix Plus, combined with abamectin.

Rotating to Oxfen when Valbazen fails will not help.

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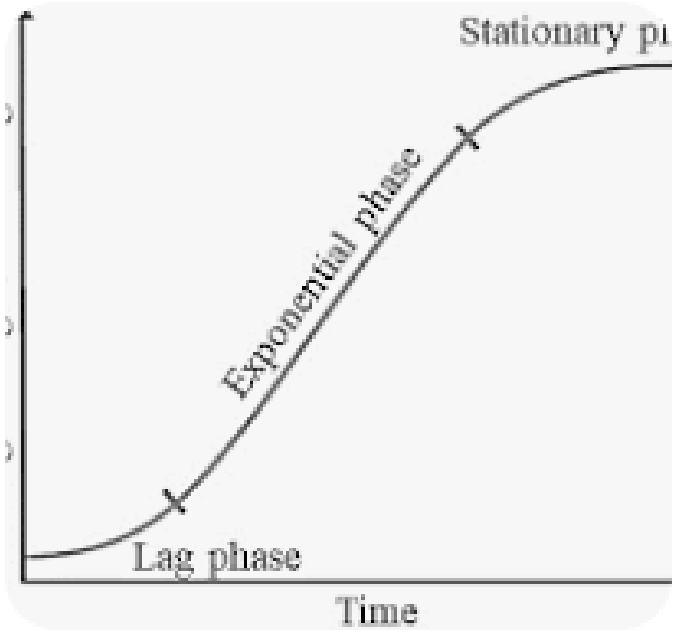
Why is there a 95% cut-off?

- The 95% cut-off is a bit arbitrary
- The development of resistance speeds up after worm kill drops below 95%
- Production losses increase faster as well.

Resistance & production loss



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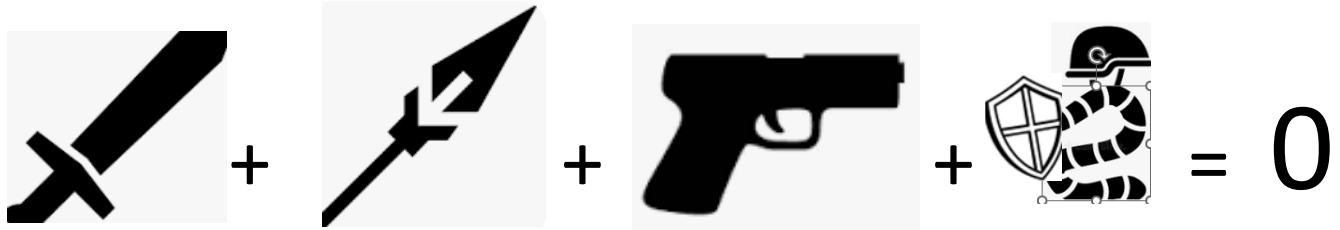
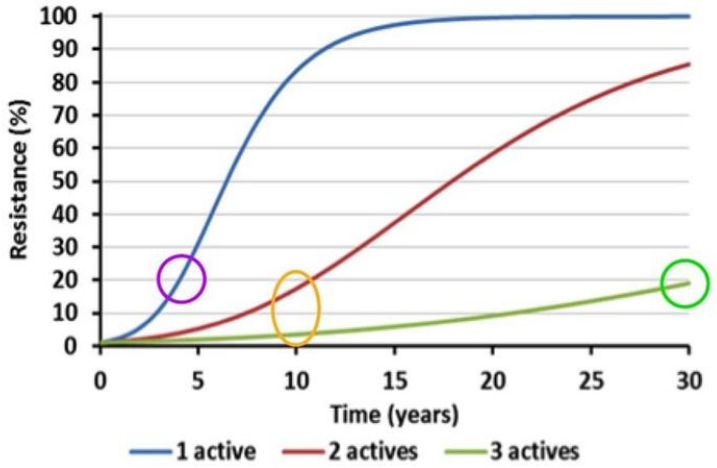
Why do combination drenches work better?

- The combination drench uses multiple ‘weapons’ at the same time and **each** worm needs **all** the defences to survive.





Warning signs of drench resistance

- When sheep or lambs fail to respond to drenching:
  - Sample some scouring individuals for egg count, coccidia, bacto
  - 10-14 days after drench
- When a DrenchCheck shows a significant egg count:
  - Did all animals in the mob get a full dose? Individual counts
  - Is only one species of worm involved? Larval ID
  - Repeat later with carefully dosed, identified individuals.

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DrenchCheck

- Worm test indicates drench is worthwhile
- Another WEC 14 days after drench
- Google “WORMBOSS DrenchCheck” for ideal method
  - Individual egg counts on 10 samples of faeces
  - Larval ID
- Alternatively, a ‘bulk’ WEC 10-14 days after a drench and then do a follow-up if significant egg counts are found
- Keep records: drench name, dates, lab reports

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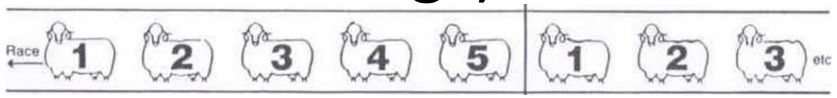
“Quick & dirty” DrenchCheck has risks

- Drench resistance is on a worm species basis
- Worm species dominate at different times of the year
  - E.g. black scour worm in winter, DrenchCheck result OK
  - But a resistant brown stomach worm can then cause problems in summer with the same drench
- Repeat DrenchCheck in both summer and winter
- Larval ID on pre-drench Worm test.

DrenchTest

- Trying to ID all effective drench families in one go
- Need egg counts over 200epg for each worm species
- Google “WORMBOSS DrenchTest” for ideal method.
  - ‘Systematic’ randomised groups (use spare visual NLIS tags)
  - Drafting
  - Careful drenching and rectal faecal sampling (no cross-contamination)
  - Individual egg counts
  - Larval ID
  - Can calculate likely efficiency of combination drenches.



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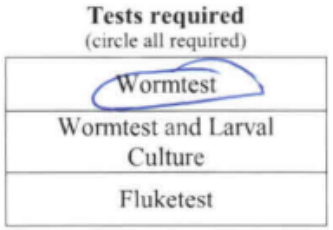
Interpreting worm (faecal) egg counts (WEC, FEC)

- ‘Strongylid’ worms include black scour worm, brown stomach worm, barber’s pole worm nd large bowel worms
- ‘Nematodirus’ is the thin-necked intestinal worm (distinctive egg)

Worm species	WEC result
Strongylid sp.	3330 Eggs per gram (EPG)
Nematodirus sp.	45 Eggs per gram (EPG)

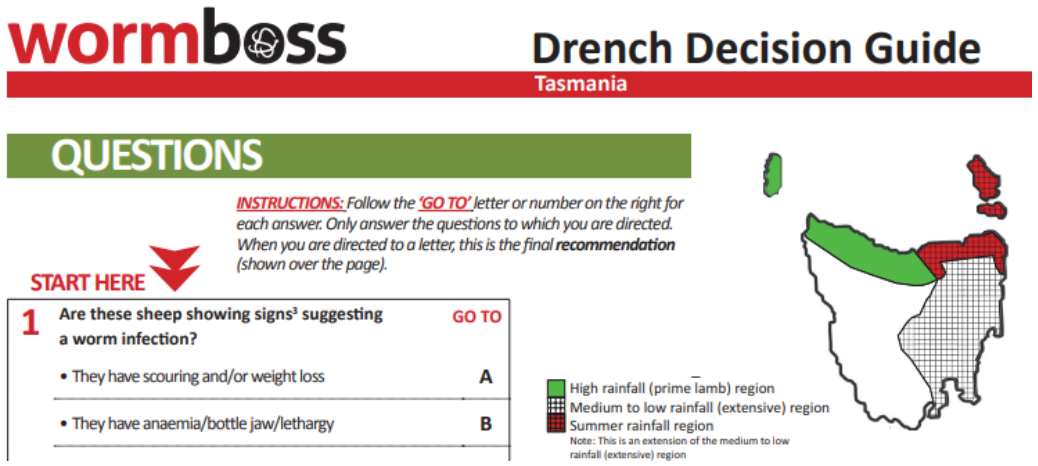
- Different types of tests for liver fluke, lungworm and coccidia.

  Peanut lecithin test for barber’s pole worm – next day



What is the WEC treat/don't treat cut-off?

- There is no single cut-off
- Age, pregnancy status, time of year, where they go after drenching and other factors are important
- Wormboss has a guide. Google "Wormboss drench decision guides sheep"



wormboss

Drench Decision Guide

Tasmania

QUESTIONS

*INSTRUCTIONS: Follow the 'GO TO' letter or number on the right for each answer. Only answer the questions to which you are directed. When you are directed to a letter, this is the final **recommendation** (shown over the page).*

START HERE

1	Are these sheep showing signs[3] suggesting a worm infection?	GO TO
	• They have scouring and/or weight loss	A
	• They have anaemia/bottle jaw/lethargy	B

High rainfall (prime lamb) region
Medium to low rainfall (extensive) region
Summer rainfall region
Note: This is an extension of the medium to low rainfall (extensive) region

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What is the WEC treat/don't treat cut-off?

- Zero Worm test does not always mean no worms –
  - growth rates and nutrition levels also tell a story

Table 1 Mean worm egg counts (eggs/g faeces) on farm and at slaughter for 66 prime lambs in relation to increasing total Scourworm count

No. of lambs	16	19	14	11	6
Total worm count	<2500	2500-5000	5000-10000	10000-25000	>25000
Field WEC (range)	64 (0-250)	180 (0-625)	220 (0-675)	425 (100-975)	1119 (650-1550)

Carmichael, SA irrigated vs dryland lamb parasitology

When to swap your drench family

1. When the reduction in WEC is **proven** less than 95% 10-14 days after a drench
2. After using a long-acting product (“tail-cutter”/“exit drench”)
3. Quarantine drench – use a 4-way combination incl. ZOL or STAR
4. Every time you drench in rotational grazing systems (small benefit).

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Slow the development of resistance – grazing management

- Worm population includes the worms in sheep and larvae on grass.
- Tempting to use ‘clean’ paddocks to reduce drench frequency but…
- The drench will kill the ‘white’ worms and…
  - the next generation will be mainly ‘black’ if they go straight onto ‘clean’ paddocks…but…
  - usually a small proportion of the total flock…and best to…
  - use a 98%+ effective drench (a dead worm has a very low repro rate!)
- ‘Clean’ paddocks in Tasmania are usually paddocks that are:
  - cropped, spelled (e.g. shut up for hay/silage) between August and December.
  - or grazed with adult cattle between August and December.
- ‘Smart’ grazing may not work in Tasmania.

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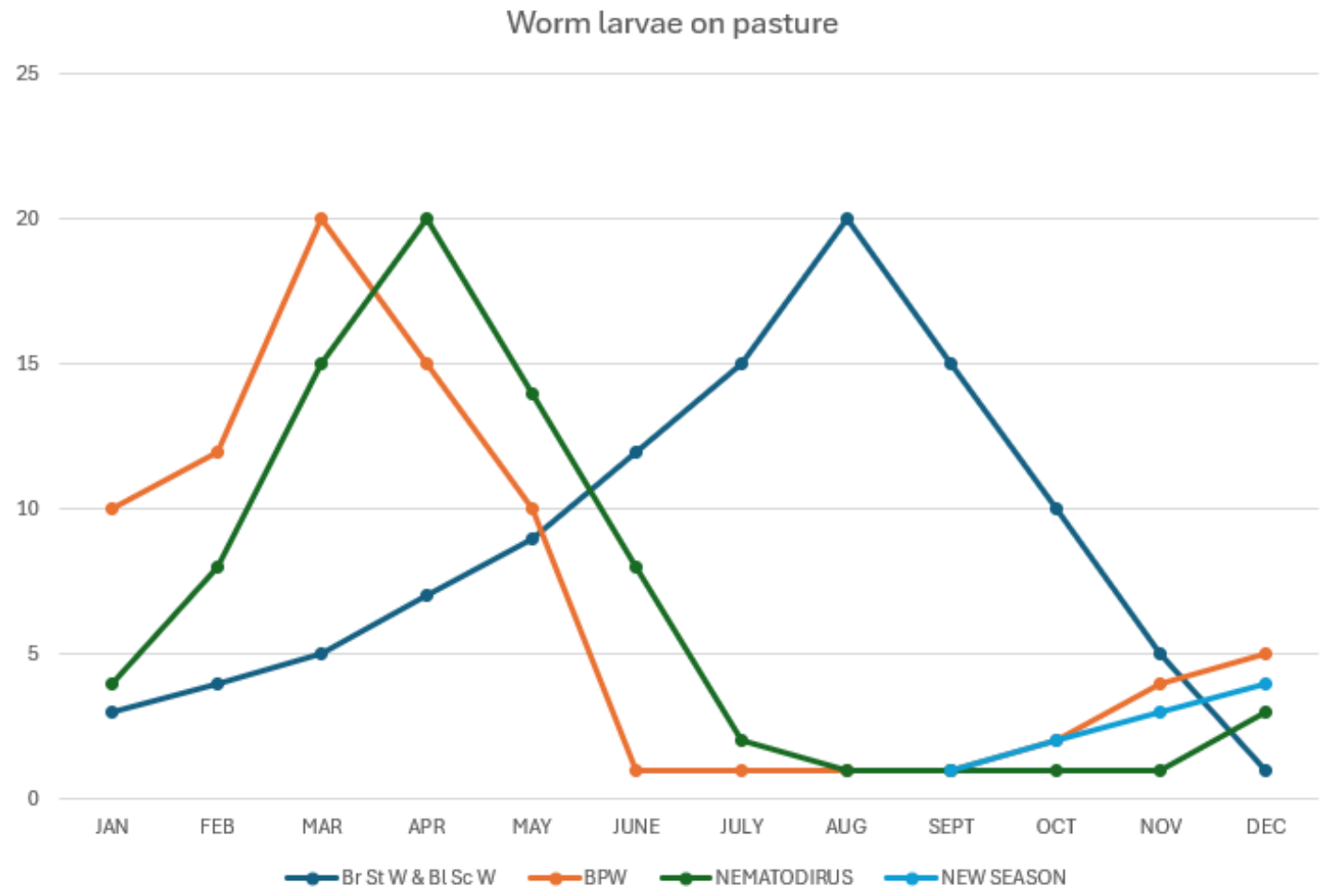
Slow the development of resistance – strategic drenches such as summer drenches?



A ‘first summer’ drench in Oct/Nov can reduce ‘new season’ black scour and brown stomach worms, and slow down worm build-up next year.

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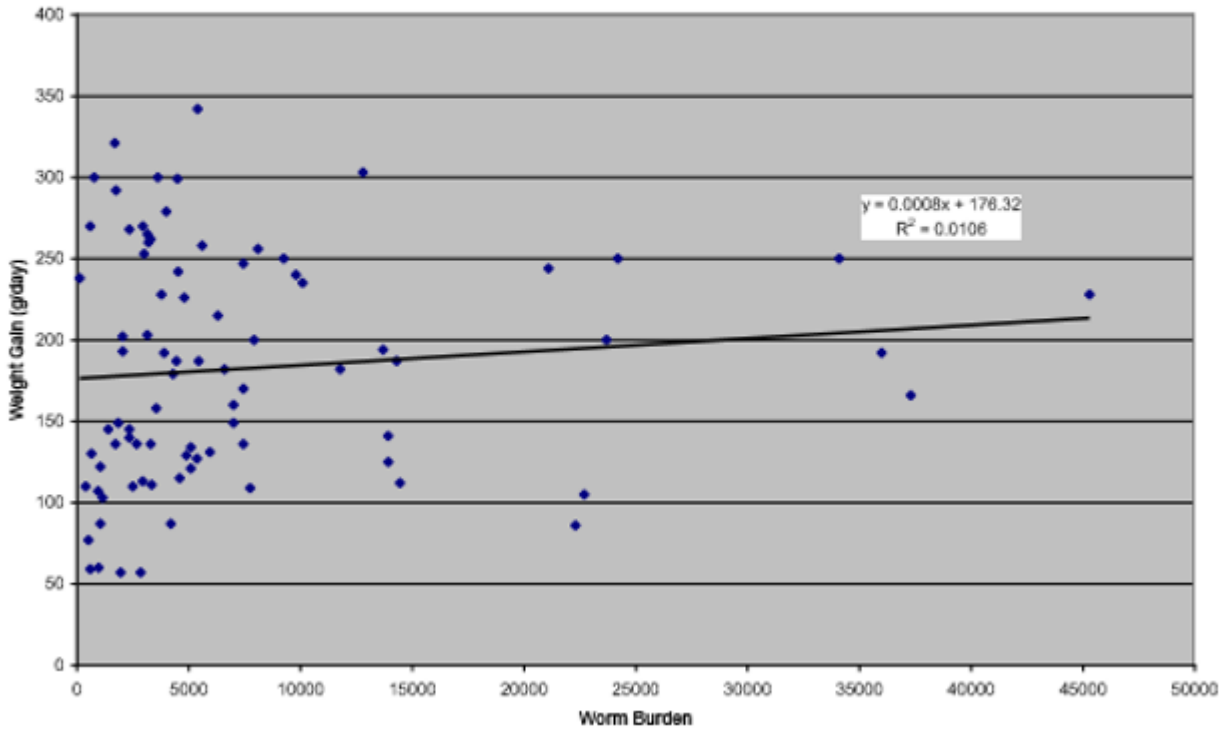
Slow the development of resistance – selective drenching

Fig 1 Plot of weight gain (g/day) versus scourworm burden at slaughter for 82 prime lambs



Carmichael, South Australia

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Slow the development of resistance priorities

- Only use effective drenches - DrenchCheck or DrenchTest
- Use combination drenches
- Minimise persistent products - ‘primer’ and ‘exit” drench if you do
- Minimise drenching – WEC first, worm resistance genetics, nutrition
- Consider not treating clean-breech animals in good condition going back to contaminated paddock
- Correct dose – read the label, shake the drum, check gun delivery
- Dose to heaviest, give more if they spit some out.
- Quarantine drench – use a 4-way combination including ZOL or STAR.

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Make the most of your eID tags and scales

- eID can be used to minimise drench use.
- The fastest growing lambs in a mob usually have very few worms, (80% of the WEC is contributed by the bottom 20%) so consider not drenching fastest-growing lambs going back to contaminated paddocks.
- Autodraft on weight and drench to highest body weight in each group.
- Keep a record of treatments through eID so you will know which lambs are still within ESI (export slaughter interval).

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Top three take home messages

1. Know what drench families are effective in your flock – use DrenchCheck or DrenchTest (available on the Wormboss website).
2. Use combination drenches.
3. Minimise drenching frequency.

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Tools, resources & training

Wormboss

wormboss.com.au

Wormboss advisor training

https://unep.edu.au/short-course/paraboss-certificate-in-sheep-parasite-management/

Paraboss combination drench efficacy calculator

https://tools.wormboss.com.au/sheep-goats/tests-tools/management-tools/drenches/combination-drench-efficacy-calculator.php

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Beating drench resistance

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