

Developments in internal parasite and resistance management

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Topics

- Introduction
 - Prevalence
 - Cost
 - Testing
- Advances in management
 - The 3 principles
- New actives?
- Take home messages
- Cattle drenches

Drench resistance

National survey in 2004-5

	Sheep	Beef cattle
Tested	% failing	% failing
Ivermectin	25	92
Albendazole	41	76
Levamisole	24	8
Combination (A+L) (I+A)	7	74
Farms passing all groups	36	6

Almost certainly an under estimate

Resistance is now common

	% efficacy in FECRT			
	Farm 1		Farm 2	
	Ostertagia	Trichostrongylus	Ostertagia	Trichostrongylus
Levamisole	88	95	0	98
Albendazole	40	87	0	45
Lev+alb			-	-
Ivm	10	59	0	100
Aba			85	100

What does resistance cost?



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What does resistance cost?

- ~20% liveweight gain
- 2.8 kg Jan – May (14% loss of carcass value)
- 7.0 kg Mar – Aug (5% loss of carcass value)
- \$1,000 - \$3,000 / 2,000 ewes

Need to use more expensive products?



Most farmers don't test

“Resistance is a problem, but I don't have it because my stock look fine”



OVERCONFIDENCE

This is going to end in disaster, and you have no one to blame but yourself.

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Do we know how to manage drench resistance? Yes!

Drench resistance in sheep within Landcorp Farming

Tested 46 farms (2004-7)

Tested	% failing	
	Landcorp	Nationally
Ivermectin	2	25
Albendazole	13	41
Levamisole	4	24
Combination (Alb + Lev)	0	7

83 % of Landcorp farms passed all test groups cf 36% nationally

Principles for managing resistance

1. Identify and mitigate high risk practices
2. Preserve susceptibility ['Refugia']
3. Use combination drenches

High risk practices

High risk practices include;

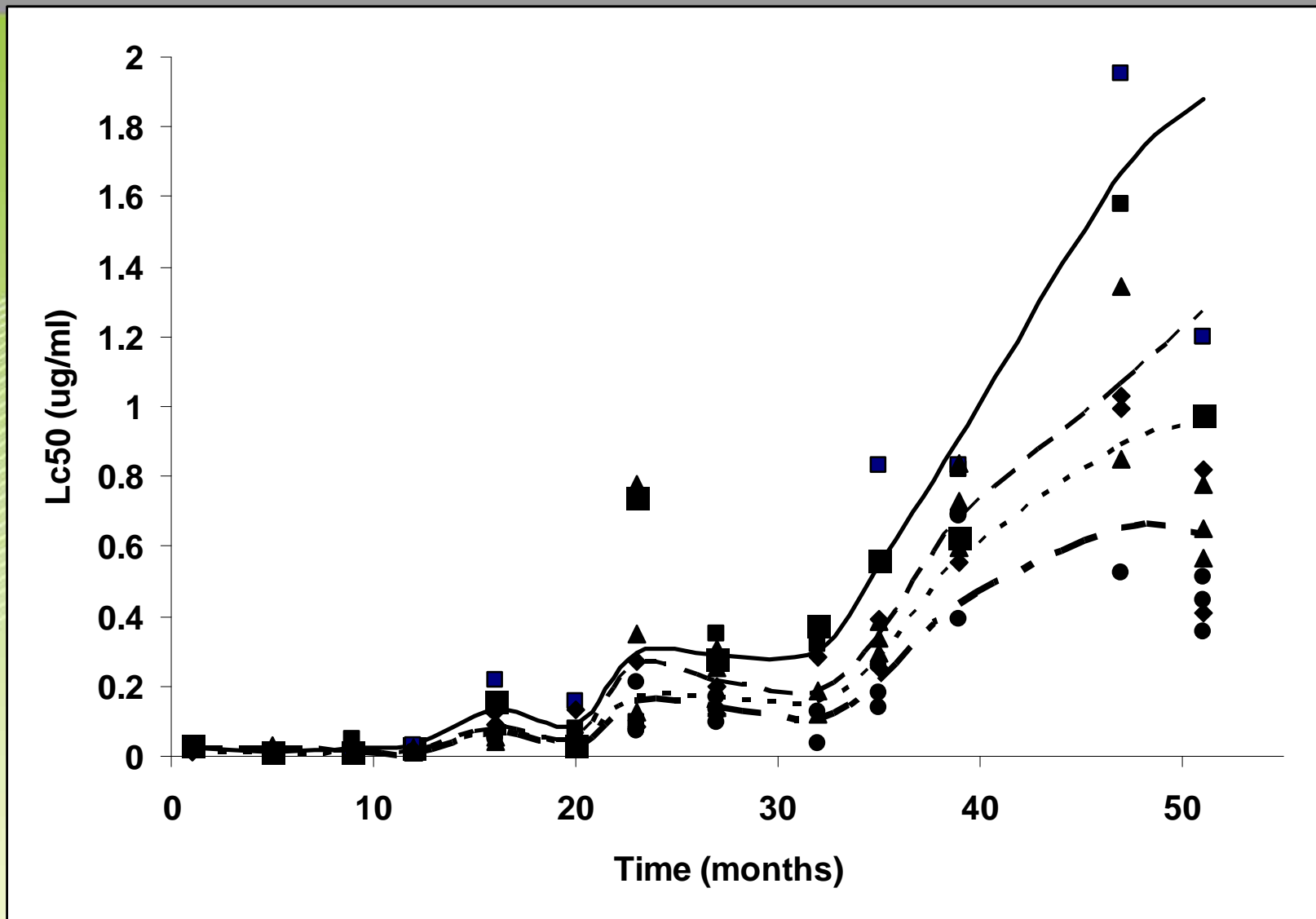
1. Use of long-acting products (capsules & injections)
 - And pour-ons
2. Treatment of ewes around lambing
3. Drenching onto low-contamination pasture
4. Monocultures of young stock (lamb/calf block)
5. Inadequate quarantine procedures

High risk practices

Ewe drenching

1. Ewes get capsule pre-lamb – lambs get 5 drenches
2. Ewes get a docking drench – lambs get 5 drenches
3. Ewes undrenched – lambs get 6 drenches
4. Ewes undrenched – lambs get 6 drenches with 15% heaviest untreated

LDAs - *Ostertagia*



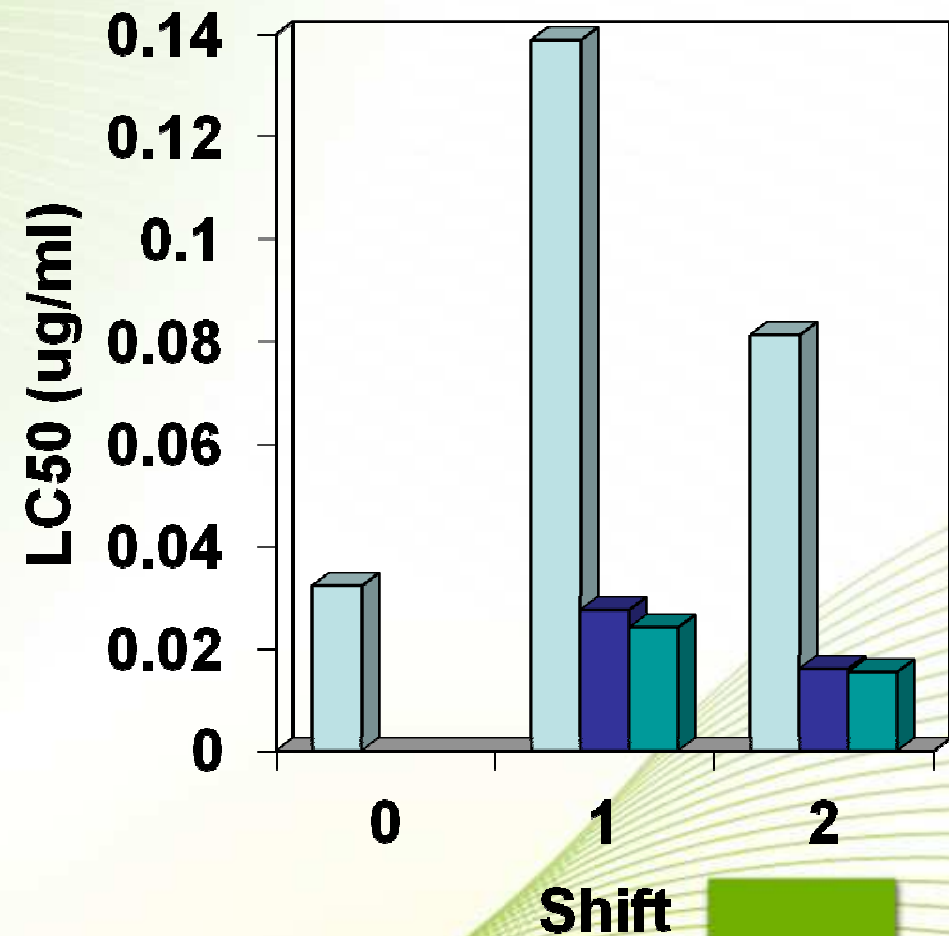
High risk practices

Drenching onto clean pasture

Drench lambs and shift to cattle pasture - leave either;

- 0 %
- 10 %
- 20 %
- heaviest untreated

After spelling, graze with tracer lambs, collect eggs and test

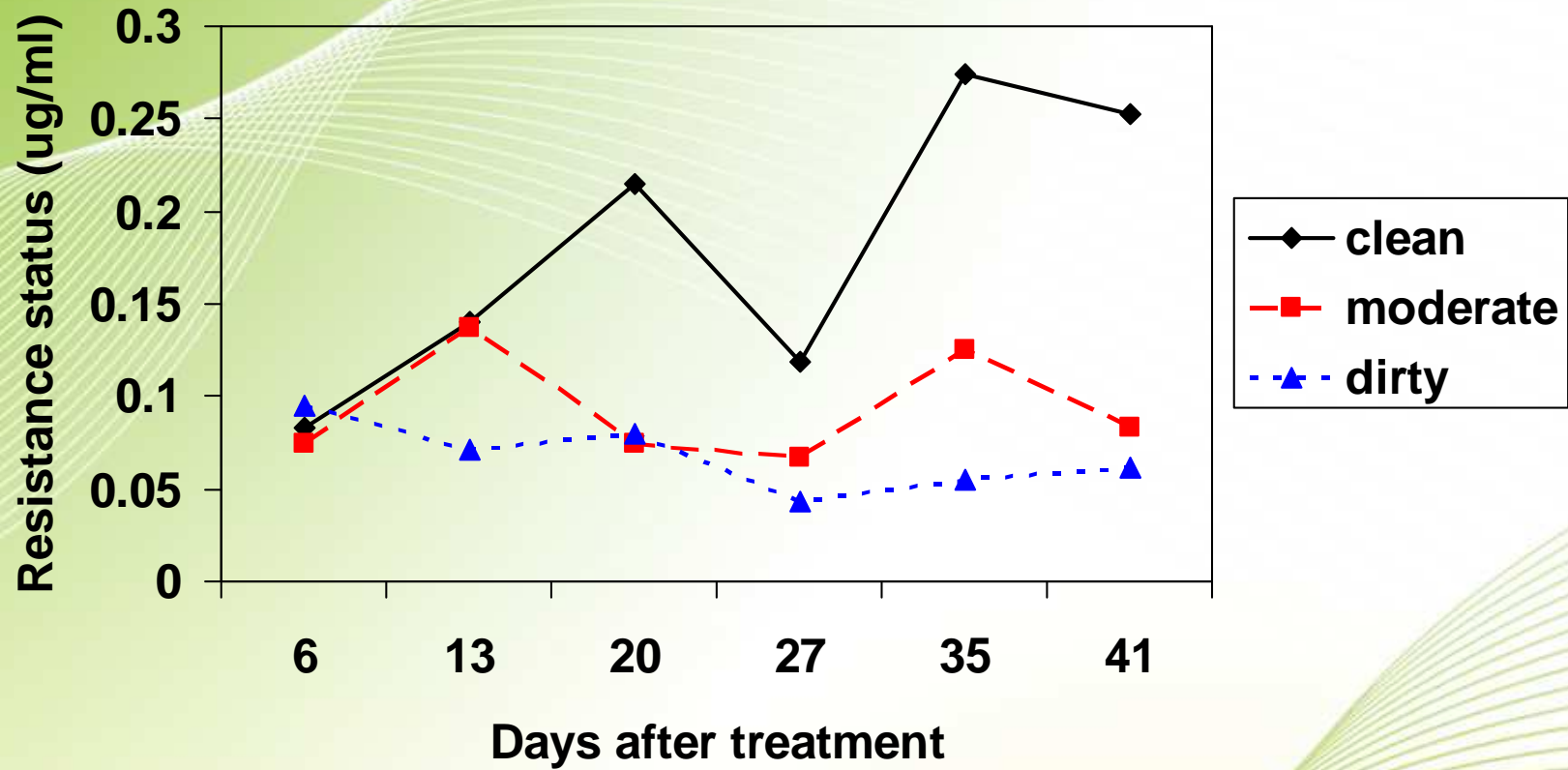


What is 'refugia'?

'Refugia' is about getting resistant genotypes (surviving treatment) to mate with susceptible genotypes

Its about mating and passing on genes

Does it work?



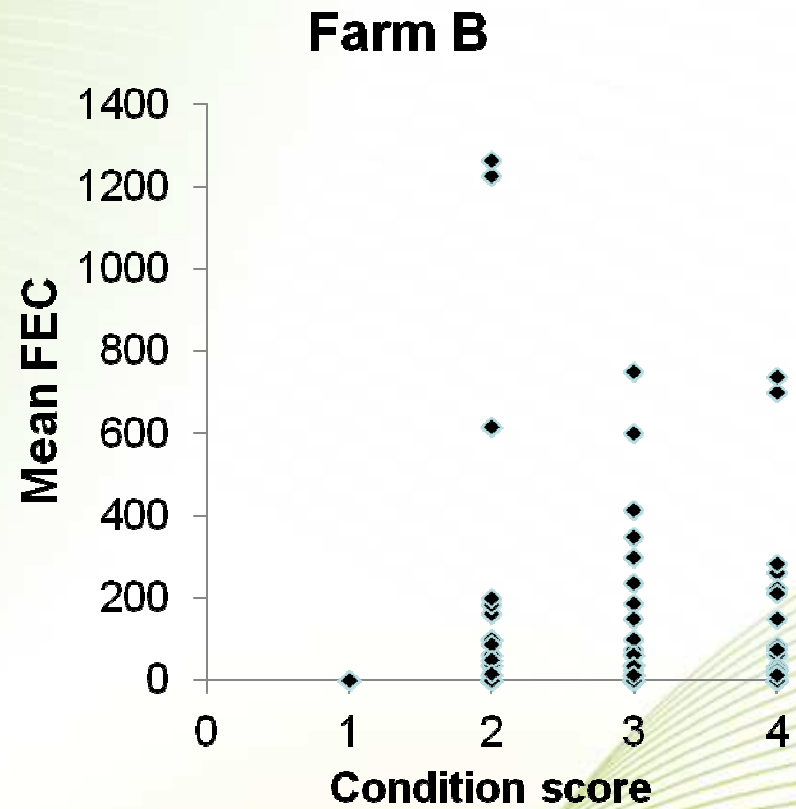
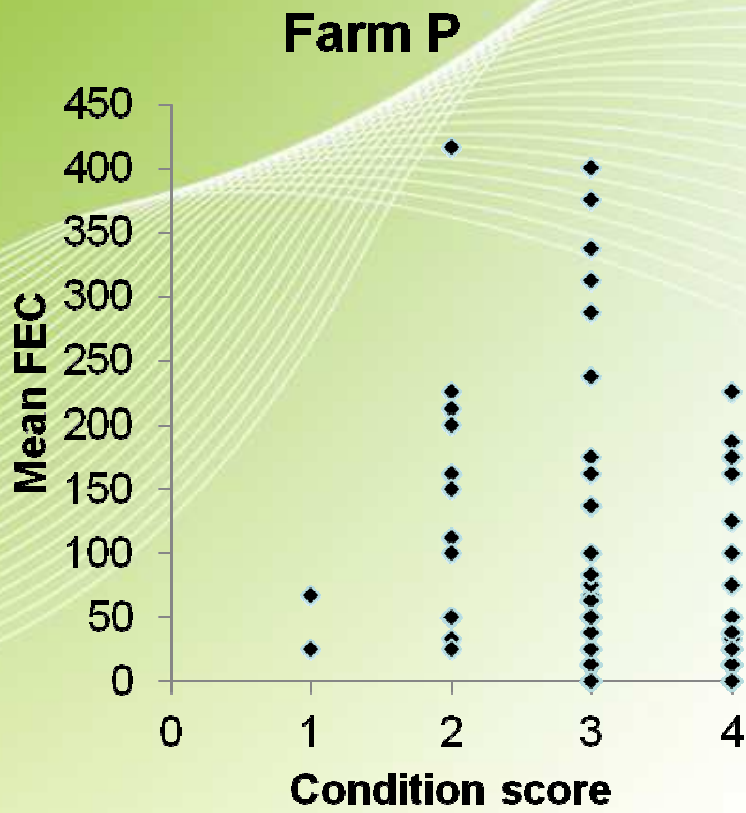
So, how do you get it?

Many possible ways

- Drench on demand (FEC, CS) – not in lambs?
- Interval between drenches
- Drench before or after a move
- Leave some animals untreated (adult ewes)
- Graze with undrenched ewes

Not all 'refugia' strategies are conducive to good worm control – but some are!

Partial flock treatment of ewes



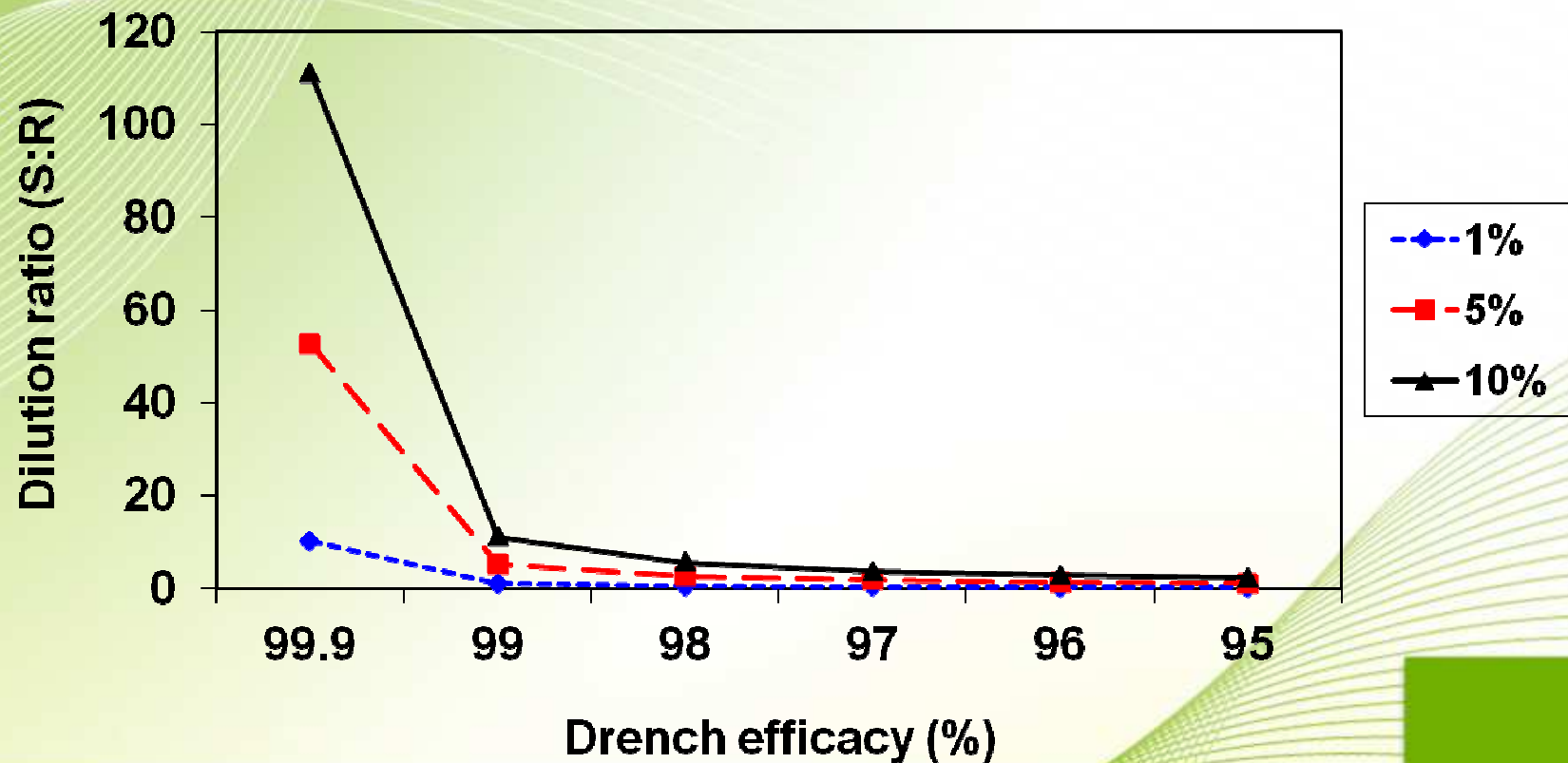
Undrenched ewes as a source of refugia

- Undrenched ewes
 - Passed most of the same parasite species as the lambs
 - Did not increase larval challenge to lambs
- Lambs grazed in rotation with ewes had;
 - Increased liveweight gain
 - Higher condition score
 - Heavier fleeces (2005)
 - Fewer dags

How much refugia?

To get a 10-fold dilution of R eggs

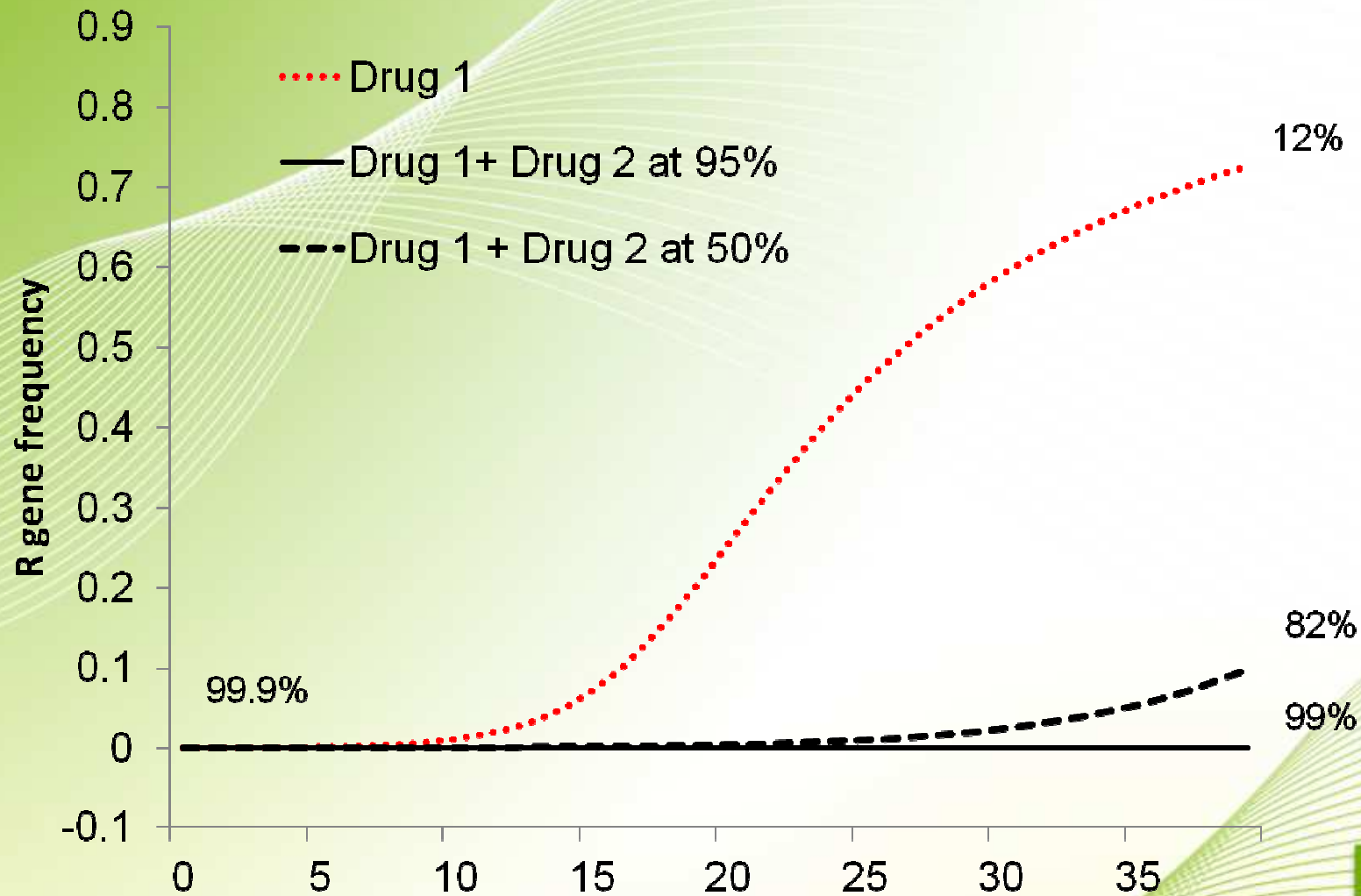
- If efficacy is 99.9% leave 1% untreated
- If efficacy is 95% leave 34% untreated



Why would you use combinations?

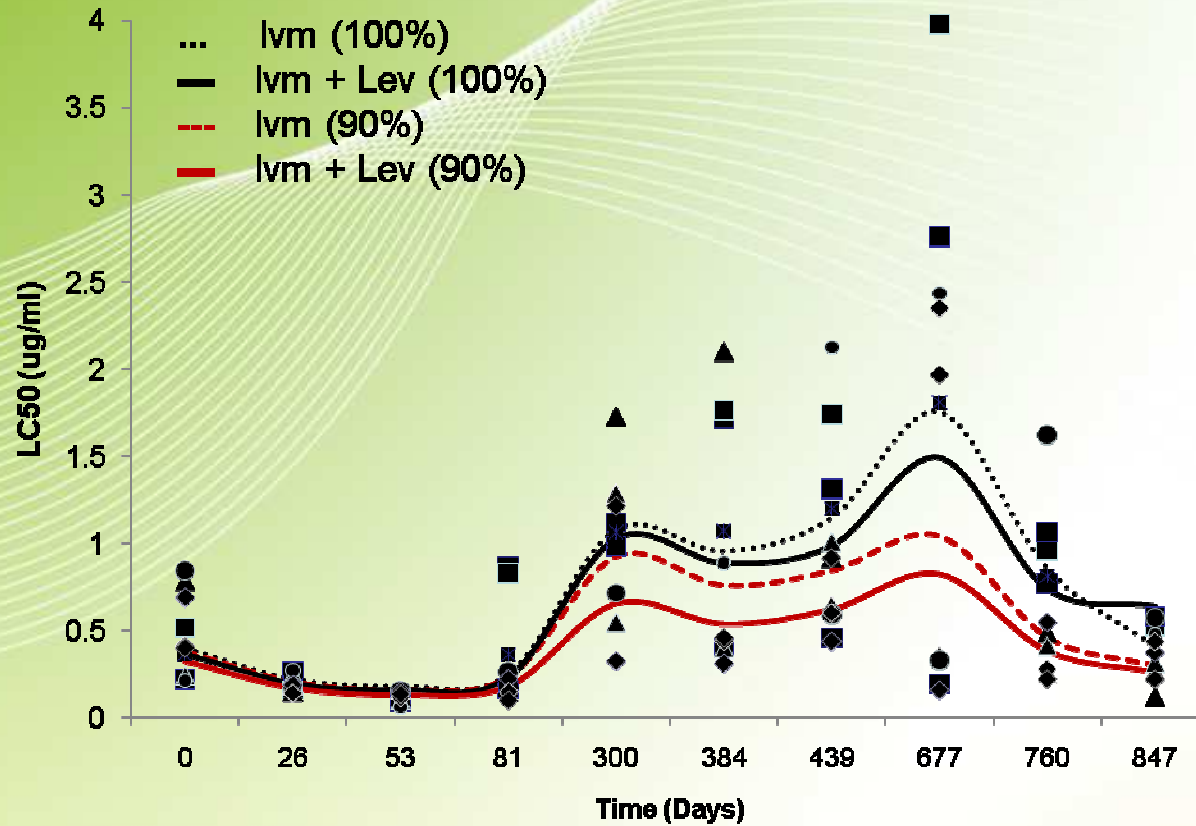
1. To maintain control in the face of multiple resistance
2. To slow the development of resistance

Modelling use of combinations

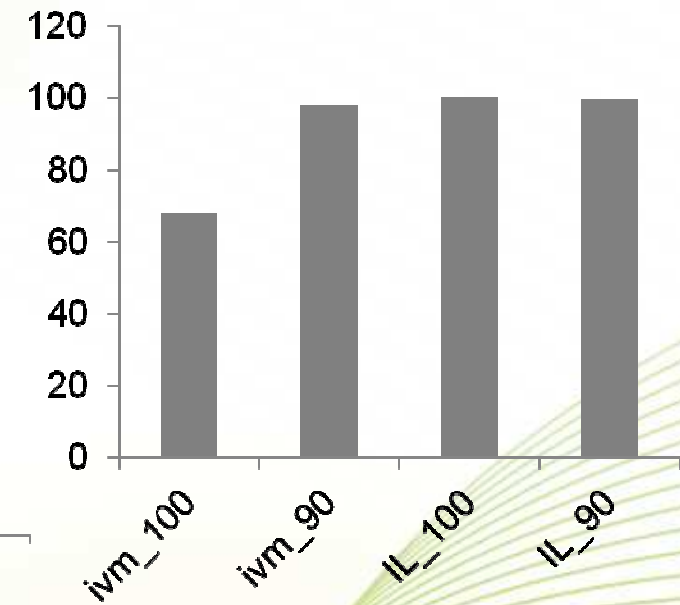


Field trial - *Trichostrongylus*

LDA vs ivermectin

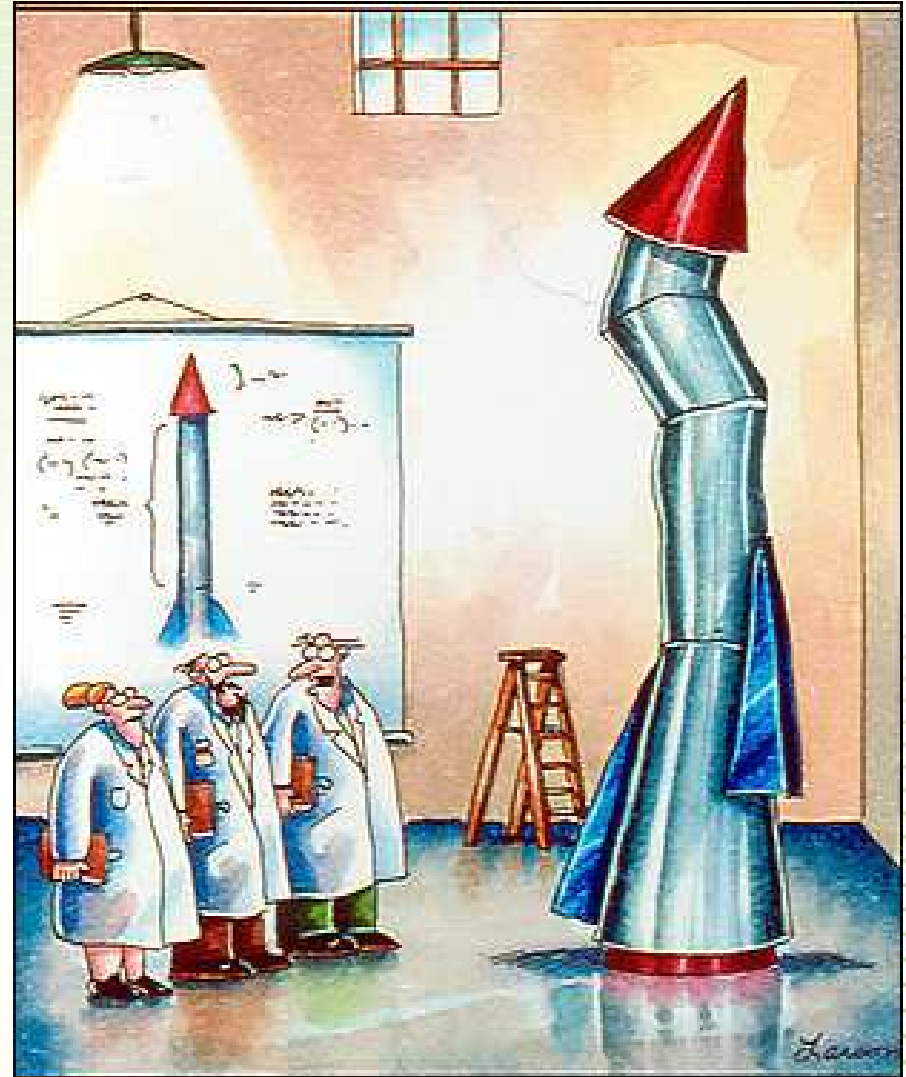


Efficacy of ivermectin



Inadequate quarantine procedures

Not Rocket Science
if the prevalence of AR in
the region is 70% and
you buy stock at sale,
then



"It's time we face reality, my friends...
We're not exactly rocket scientists."

Use of new actives?

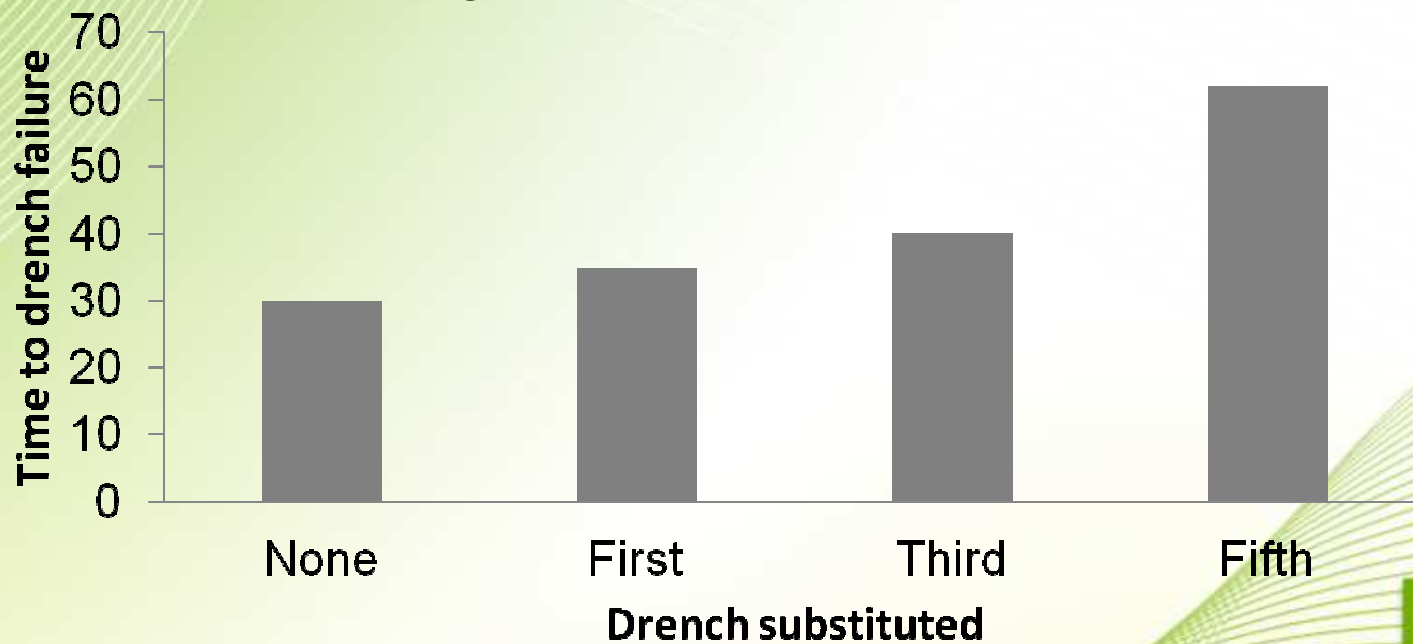
Have two new actives, but they are expensive

So, I won't use them until I have too.....**or**

Use them to protect older drenches

Use as the last in a programme of routine drenches to lambs (about March)

Modelling - replace 1 treatment in a lamb-drenching programme with new class



Use of new actives?

- Strategic (limited) use of new actives could double the useful life of the older (cheaper) drenches – hopefully without breaking the bank

Take home messages

- Resistance is everywhere and is costing farmers money
- You will not **see** a resistance issue developing – you **have** to test
- We do know how to deal with it
 - The 3 principles
- There is a lot of science based information freely available (paid for by farmers)



Discussion?

Funding from;
Govt through FRST
Farmers through Meat & Wool levies

Mentor group;
Dave Smith
Chris Ridland
James Falloon
Mark Gilmour
Tony Rhodes
Bill Pomroy
Dave West