

2018 BREECH FLYSTRIKE RD&E TECHNICAL UPDATE

Sheep Ectoparasite Insecticide
Resistance Update

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❖ *The Project*



Australian Sheep Blowfly - *Lucilia cuprina*



Sheep Biting Louse – *Bovicola ovis*

❖ *The Problem*

Breech Strike.

Associated Challenges:

- Breech confirmation.
- Soiling from urine and faeces.
 - Moisture
 - Odour
 - Protein source for flies and larvae.



❖ *The Estimated Cost*



Clip wool and apply chemical \$5.05/sheep (mostly labour - 10 minutes/sheep @ \$30/hour)

(MLA (2015) Final Report B>AHE.0010 "Priority list of endemic diseases for the red meat industries")

❖ *The Problem*



Lousy sheep – Rubbed and chewed areas can also facilitate strike usually seen as body strike

❖ **2012-2014 Cyromazine Resistance - Levot, Langfield and Aiken**



Insecticide	Blowfly
Cyromazine	✓
Dicyclanil	✓
Ivermectin	

❖ 2012-2014 Cyromazine Survey

State of Origin	Number of Populations with Low Level Cyromazine R
NSW	28 / 28
WA	5 / 17
Vic	1 / 6
SA	1 / 2
TAS	0 / 5
QLD	0 / 0
Total	36 / 58
Percentage	62%

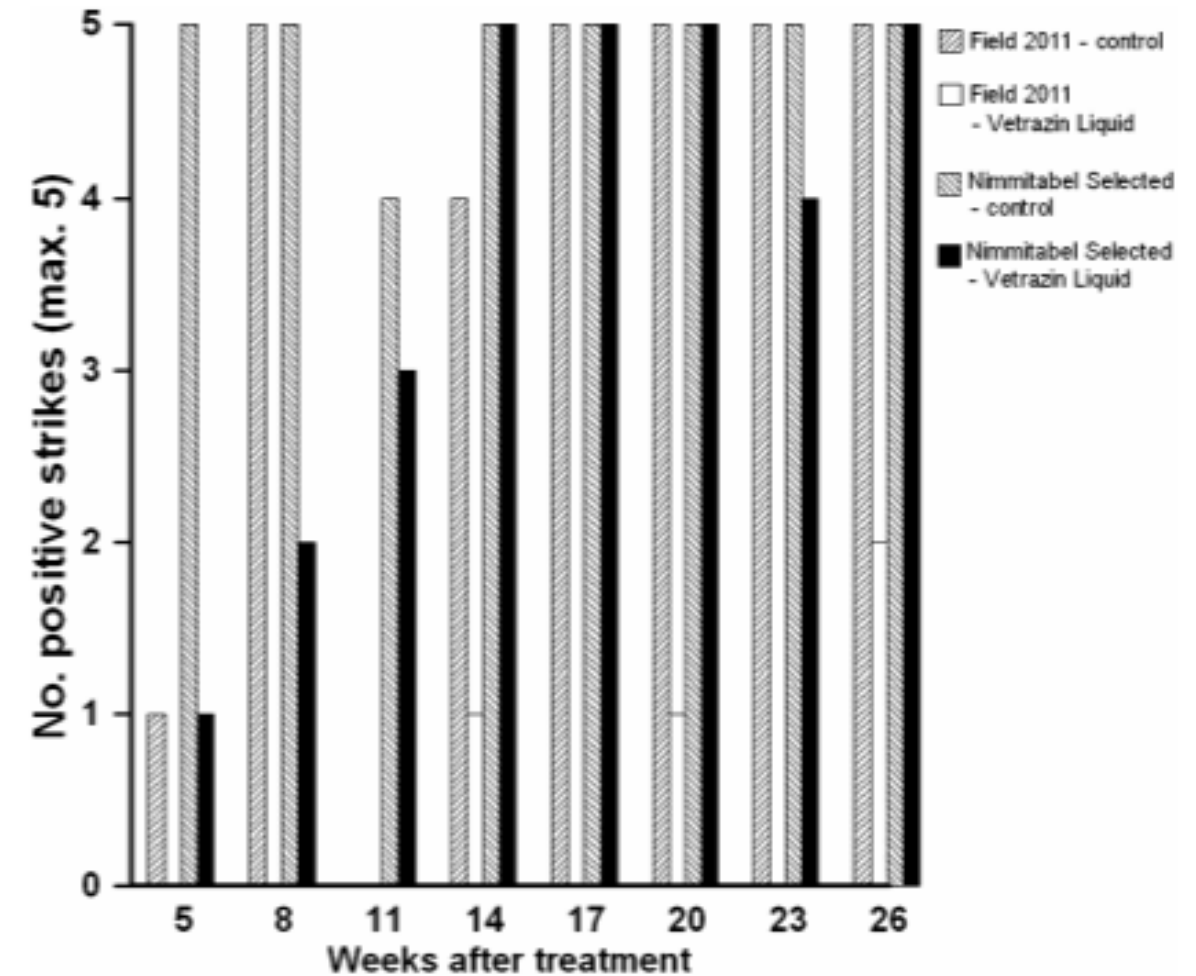
Summary

- Highest frequency of Cyromazine resistant individuals in a population was 40%.
- Populations unable to survive 8 fold the Cyromazine Susceptible Discriminating Concentration (SDC).
- Populations with survivors in the Dicyclanil SDC = 8 / 36 (22%) .
- All populations with Dicyclanil survivors were from NSW

❖ 2012-2014 Implant Trial

Summary - Sheep treated with Cyromazine jetting Fluid

Positive implants Nimmitabel Selected Strain	Weeks Post-Treatment
1 / 5	5
2 / 5	8
3 / 5	11
5 / 5	14



❖ Levot et. al. (2014) "Survival advantage of Cyromazine-resistant sheep blowfly larvae on Dicyclanil and Cyromazine treated Merinos." AVJ 92:11 421-426.

❖ ***2012-2014 Implant Trial***

Conclusions - Cyromazine and Dicyclanil treated sheep.

- **Cyromazine susceptible strain – Achieved registered protection periods.**
- **Cyromazine resistant strain (100% RR) – Zero product failures.**
- **Cyromazine resistant strain – Decreased protection periods.**
- **Recommended the adoption of management practices which minimise selection pressure.**

❖ Current Survey



State of Origin	Number of Populations
Kits Requested	71
Dead or not <i>L. cuprina</i>	3
NSW	10
Vic	4
SA	3
WA	1
TAS	0
QLD	0

❖ *The Insecticides*

Insecticide	Blowfly	Lice
Spinosad	✓	✓
Imidacloprid	✓	✓
Ivermectin	✓	
Abamectin		✓
Cyromazine	✓	
Dicyclanil	✓	
Diazinon	✓	✓
Diflubenzuron	✓	✓
Cypermethrin		✓
Total	7	6

❖ *Laboratory Techniques*



❖ *Initial Data*

Insecticide	Resistance Factors (RF)			
	Current Project Field Ranges (n= 15)	Previous Field Ranges	Year Published	Number of Strains (n=)
Spinosad	1.2 – 4.2	0.2 - 2.6	2002	41
Diazinon	17.8 – 42.9	7.0 - 28.2	1990	33
		4.7 - 37.1	1991	48
Ivermectin	2.2 – 8.5	0.6 - 2.7	2002	74
		1.1 - 4.7	2014	56
Imidacloprid	5.7 – 32.7	To Be Determined from this Project		
Diflubenzuron	7.9 - 93.5% Survival at Maximum Concentration (512 mg/L)			

❖ Laboratory Techniques



❖ Initial Data



Cyromazine	Populations with Survivors
SDD screen	9 / 15
8 fold SDD screen	0 / 15
R frequency (SDD bioassay)	4% to 90%

❖ **Thank You**



Questions?

❖ *Request for Larvae Samples; Required From All States*

State of Origin	Number of Populations
NSW	10
Vic	4
SA	3
WA	1
TAS	0
QLD	0

Please Contact

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This publication is based on information presented at the Australian Wool Innovation Limited (AWI) National Wool Research and Development Technical Update on Breech Flystrike Prevention held on 17th July 2018. Some information in this publication has been contributed by one or more third parties and licenced to AWI, and AWI has not verified whether this information is correct. This publication should only be used as a general aid and is not a substitute for specific advice. Any reliance on the information contained in this publication is done at your own risk and to the extent permitted by law, AWI and any third party contributors exclude all liability for loss or damage arising from the use of the information in this publication. Except to the extent permitted under Copyright Law no part of this publication may be reproduced by any process, electronic or otherwise without the specific written permission of AWI. Neither may information be stored electronically in any form whatsoever without such permission. AWI gratefully acknowledges the funds provided by the Australian government to support research, development and marketing of Australian wool. GD2792