Australian Wool Innovation Limited

2018 BREECH FLYSTRIKE RD&E

TECHNICAL UPDATE

Breech Flystrike Risk Factors, a Review

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Background

TIMELINE OF SIGNIFICANT EVENTS IN BREECH FLYSTRIKE R, D & E

2005
- **AWI Breech Flystrike R&D Program** established
- Inaugural quarterly AVA audit of **AWI Breech Flystrike R&D Program** undertaken
- Visual Score Guide for **Breech Flystrike Indicators** released

- **National Mulesing Accreditation Program** released (Kondinin Group)

2006
- **Tri-solfen®** registered for mulesing (Bayer Australia)

2007
- **FlyBoss** launched
- Partial **Blowfly DNA gene** sequence published
- Inaugural six monthly review of genetic progress in **Breech Flystrike** resistance undertaken

2008
- Categories for Non-Mulesed, Ceased Mulesed and Pain Relief included in the **National Wool Declaration**
- Inaugural **Biennial Breech Flystrike RD&E** Update held

2009
- **Anti-flystrike clips** commercialised (Leader Products)

- Australian **Sheep Breeding Values** for key breech flystrike traits released

- Annual **AWI Animal Welfare** Forum established

2010
- AVA audits of **AWI Breech Flystrike R&D Program** undertaken every six months

2011
- Reviews of genetic progress in **Breech Flystrike** resistance undertaken annually

2012
- **Sheep parasite ecdysone receptor** - based screen identified potential new blowfly drug targets

2013
- **ParaBoss** launched

- **Visual Score Guide** including Breech Flystrike Indicators updated and re-released

2014
- 73% of mulesed Merino receive pain relief

2015
- Australian Qualifications Framework endorse **National Mulesing Accreditation Program** training
- **SkinTraction** registered through APVMA
- Complete **Blowfly DNA gene** sequence published

2016
- 10% of whole wool clip reported as Not Mulesed
- **Metacam®** registered for Pain and Inflammation (Boehringer-Ingelheim)

2017
- **Buccalgesic®** registered for mulesing (Troy Laboratories)

- **Managing Breech Flystrike Manual** updated and released

2018
- Planning for a **Non-Mulesed Merino Enterprise Manual** released

Key outcomes and advances in areas including pain relief, breeding for resistance, sequencing the fly genome, web based decision support systems

Emergence of flystrike as a problem – early 1900's

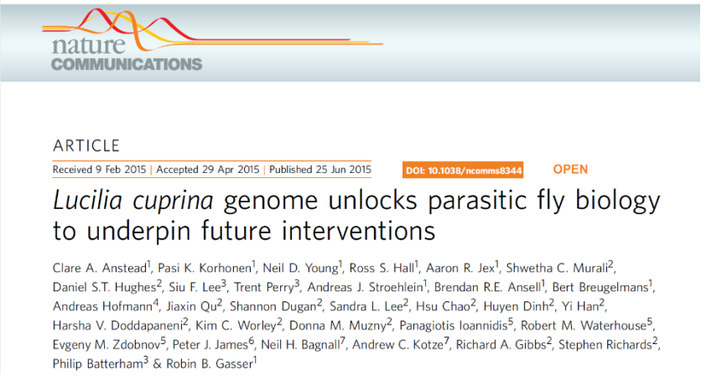
Significant body of past research.

- Fly biology
- Flystrike pathogenesis
- Control methods - Breeding, fly trapping, biocontrol, mulesing, chemicals
- Improved management
- Targeting flies directly – traps, biocontrol, sterile male/compound chromosome

New tools

- Genetic technologies - pests and livestock
- Blowfly genome
- Formulation technologies
- Odour technologies, pheromones; kairomones

Stocktake – where are we up to, what are the opportunities?



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ARTICLE

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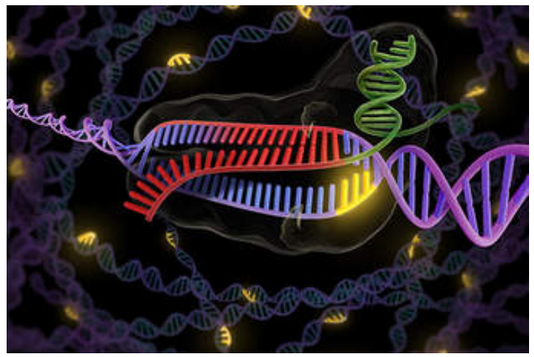
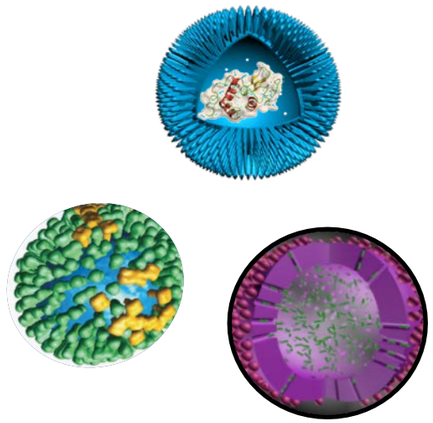
Lucilia cuprina genome unlocks parasitic fly biology to underpin future interventions

Clare A. Anstead[1], Pasi K. Korhonen[1], Neil D. Young[1], Ross S. Hall[1], Aaron R. Jex[1], Shwetha C. Murali[2], Daniel S.T. Hughes[2], Siu F. Lee[3], Trent Perry[3], Andreas J. Stroehlein[1], Brendan R.E. Ansell[1], Bert Breugelmans[1], Andreas Hofmann[4], Jiaxin Qu[2], Shannon Dugan[2], Sandra L. Lee[2], Hsu Chao[2], Huyen Dinh[2], Yi Han[2], Harsha V. Doddapaneni[2], Kim C. Worley[2], Donna M. Muzny[2], Panagiotis Ioannidis[5], Robert M. Waterhouse[5], Evgeny M. Zdobnov[5], Peter J. James[6], Neil H. Bagnall[7], Andrew C. Kotze[7], Richard A. Gibbs[2], Stephen Richards[2], Philip Batterham[3] & Robin B. Gasser[1]





“A significant portion of the overall variability between sheep in susceptibility to breech strike remains unexplained”

(Greeff et al. 2011)

Susceptible ↑

Resistant ↓

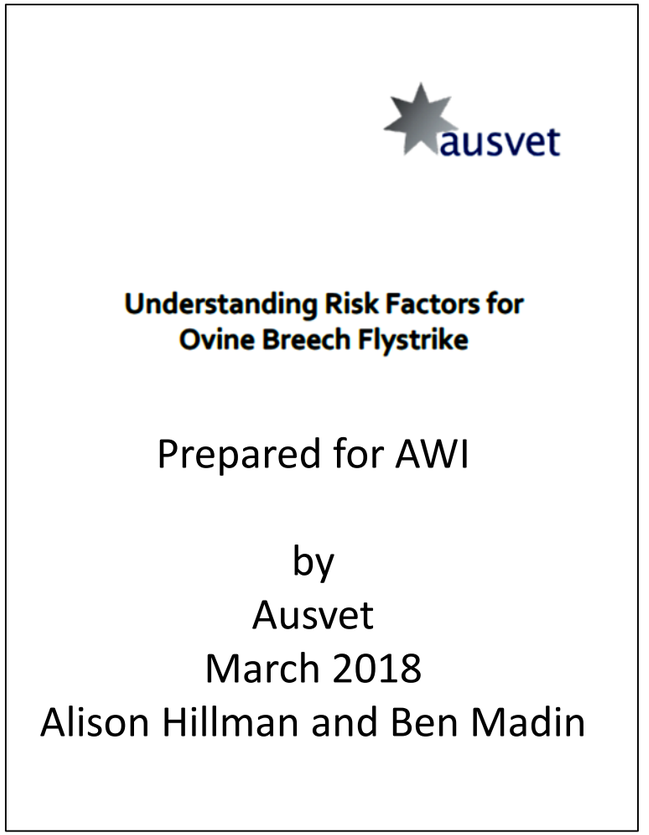
(*Greeff et al. 2011*)

Trained dogs were able to differentiate between wool from resistant and susceptible lines.

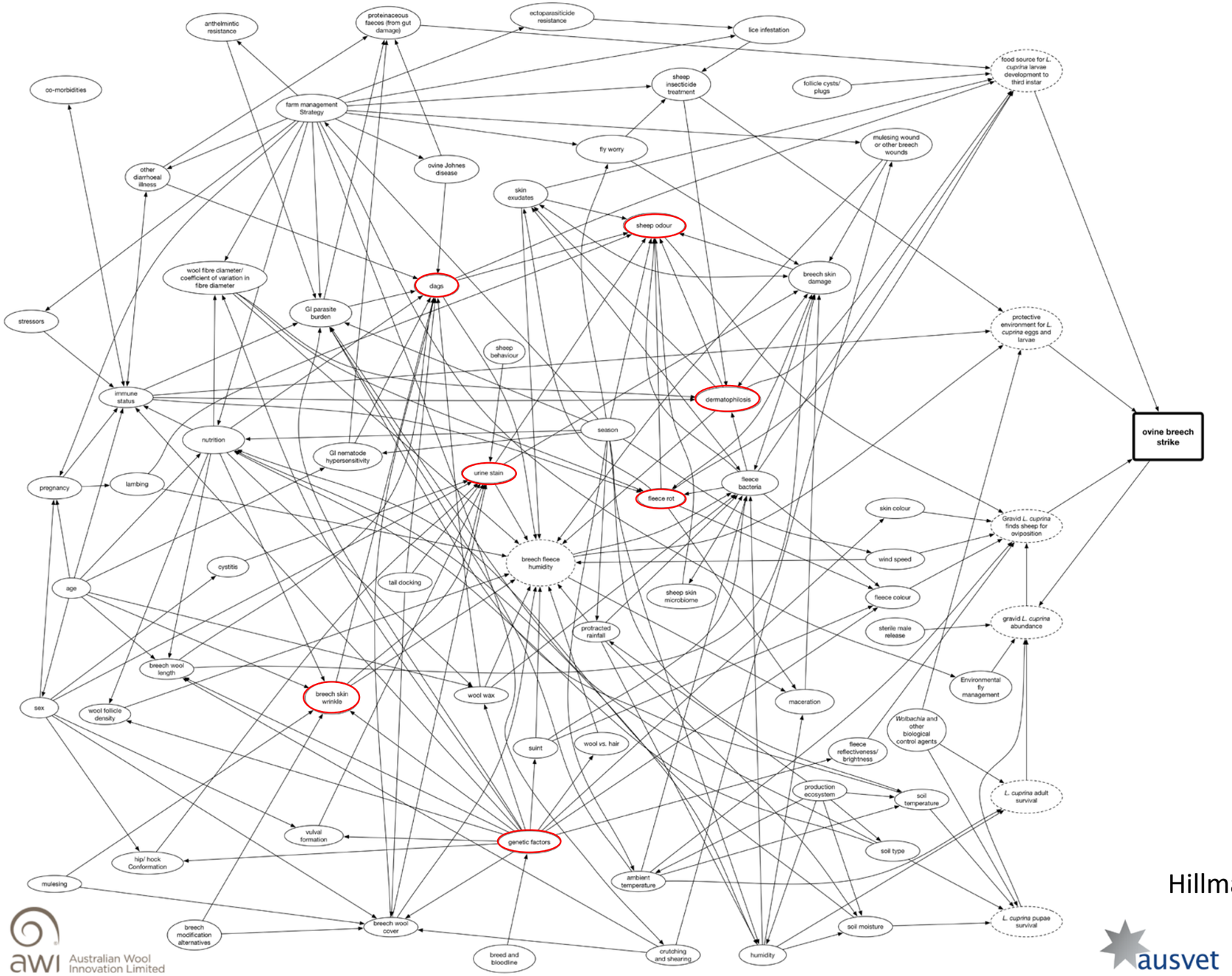
Understanding risk factors ovine breech flystrike

One day workshop run by Ausvet Pty Lt with parasitologists, animal production experts, geneticists and research program leaders to review risk factors for breech flystrike in Australian sheep flocks and develop a causal web for breech strike

- Catalogue risk factors
- Indicate known or biologically plausible interactions and interrelationships between risk factors
- Suggest areas of knowledge gap
- Assist the identification and prioritization of existing and potential intervention strategies
- Help inform research directions



Causal web for flystrike



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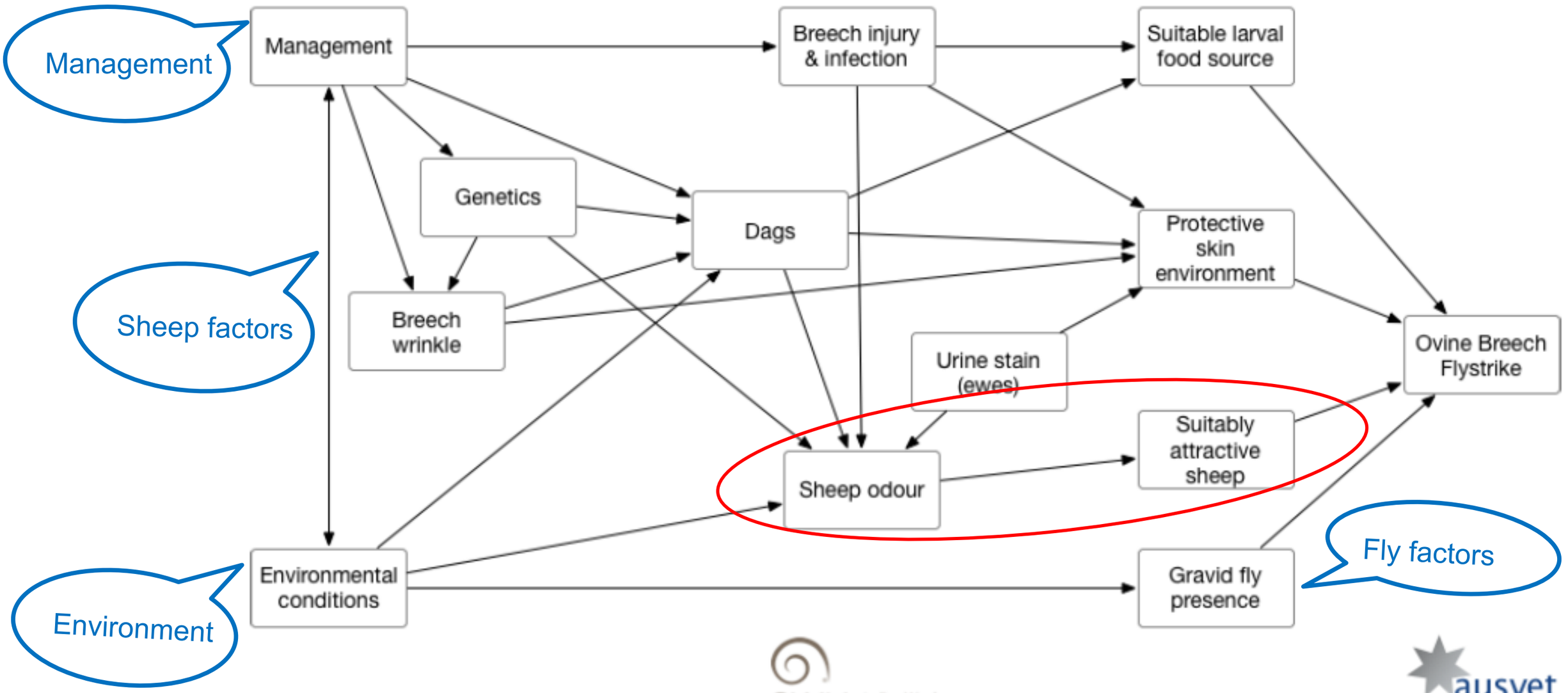

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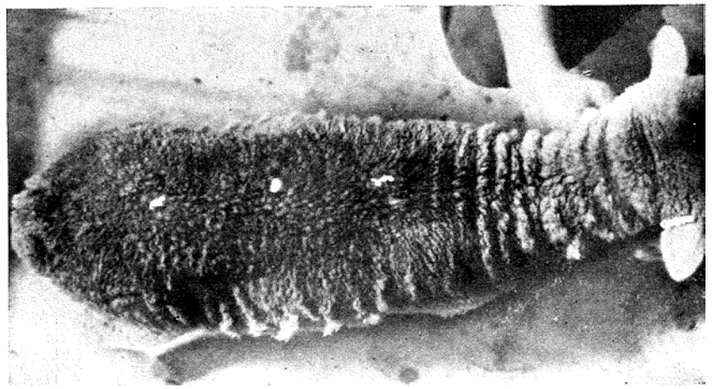
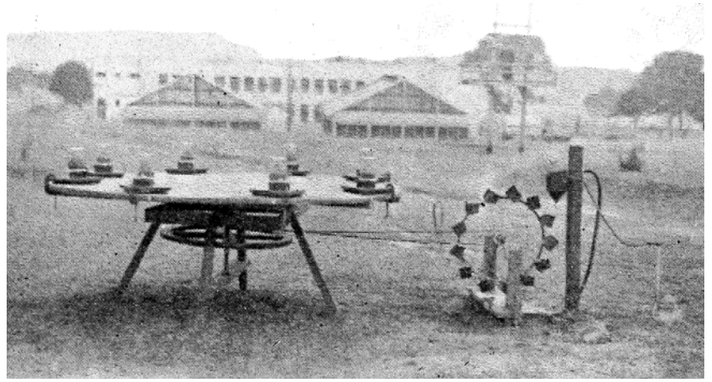
Project ON-00510: Review of flystrike risk factors with a view to new or improved means of control



Objectives

1. Review the Ausvet causal web to identify areas of knowledge deficit in risk factors for breech strike development.
2. Review current and past information on the importance of identified risk factors
3. Assess potential for utilising odour and other cues for the development of new controls
4. Recommend key areas of research towards more effective flystrike control.



"What do we know, and where are the opportunities"?

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