

SkinTraction®

R&D Technical Update

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The Challenge

Develop an animal welfare friendly method to:

- ◆ **Increase breech & tail bare area**
- ◆ **Remove breech and tail wrinkles**

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The Compound

❑ Selected Sodium Lauryl Sulphate (7% SLS)

- ◆ SLS used in toothpaste, shampoos (1-30%), cosmetics and food

❑ Formulation includes benzyl alcohol

- ◆ Short-term (15mins) anaesthetic and preservative

“SkinTraction[®]” Metabolism

□ **Unreacted SLS**

Metabolised by the liver

>95% is excreted in the urine within 12 hours of treatment.

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Mode of Action

- ❑ **SLS denatures protein**

- ❑ **Cause irreversible damage to:**
 - **Neural network**

 - **Blood vessels**

 - **Collagen structure**

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Delivery System – Pulse NeedleFree System



**Trigger held and
pressure of
tubes against
skin fires
applicator**



“SkinTraction[®]” Delivery System

□ SkinTracting

- Lambs at 2 to 12 weeks old and weaners
- Use standard lamb-marking cradles
- Pulse NeedleFree Systems manufactured in USA
- Air compressor powers Pulse NeedleFree applicator

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Pulse Applicator

□ **Applicator variables**

- **Volume per shot**
- **Volume per tube**
- **Number of tubes per head – 9 verse 16**
- **Pressure of tubes against skin surface (shroud)**
- **Liquid pressure**
- **Tube diameter**
 - **ID – interacts with liquid pressure**
 - **OD – interacts with fleece penetration and durability**

“SkinTraction[®]” Pulse Applicator

□ Tube Detail



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Pulse Applicator

❑ **Sheep variables**

- **Age of animal – lamb verse weaner**
- **Burr and dag**
- **Wool length**
- **Pattern of application**
- **Skin variables**

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Pulse Applicator

❑ Operator variable

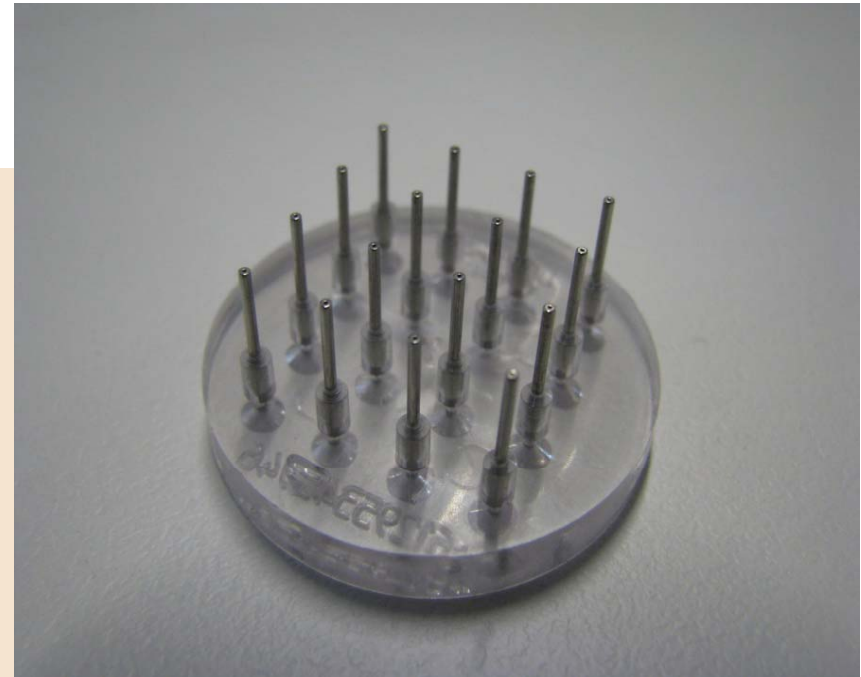
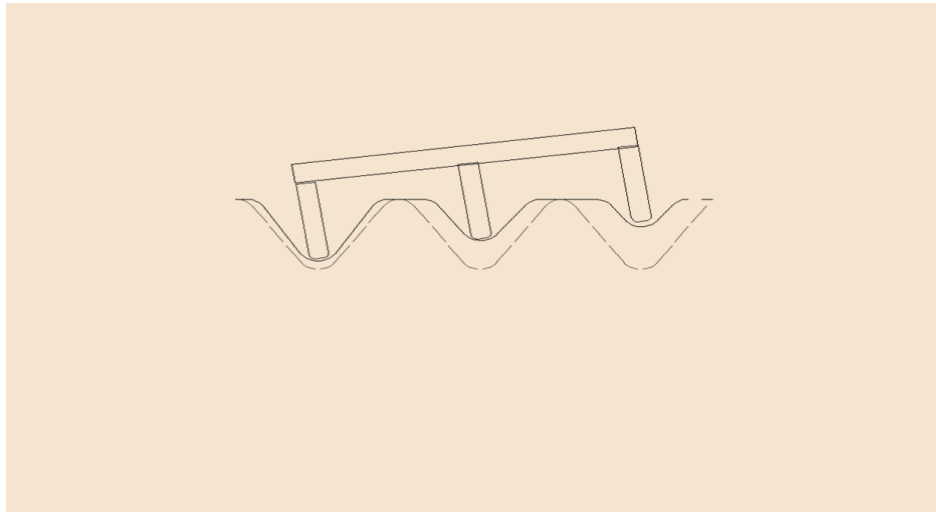
- Loading of tubes against skin surface
- Pattern of application
 - distance between applications
 - replicate pattern
- Training
 - Assessment
 - Auditing

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Pulse Applicator

□ Application technique

- Uniform pressure of tubes against skin surface



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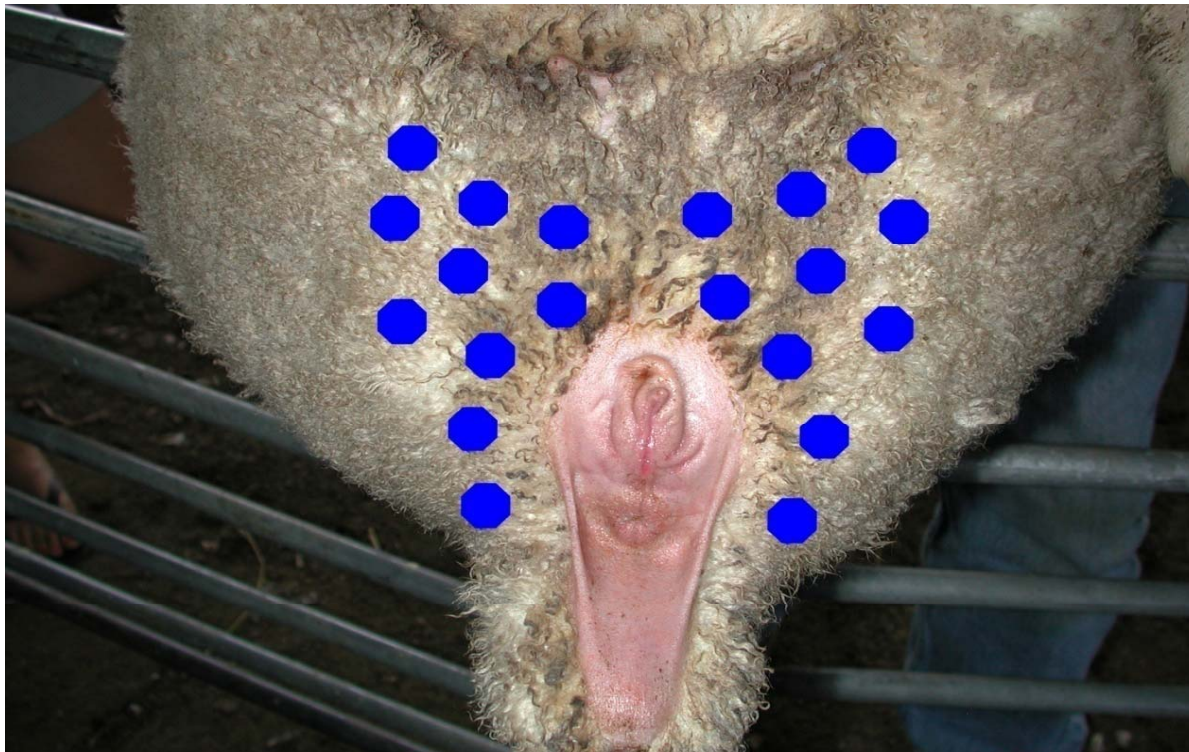
Operator variable

Tube ends must be evenly loaded against skin for uniform intradermal deposition



“SkinTraction[®]” Pulse Applicator

□ Pattern of application



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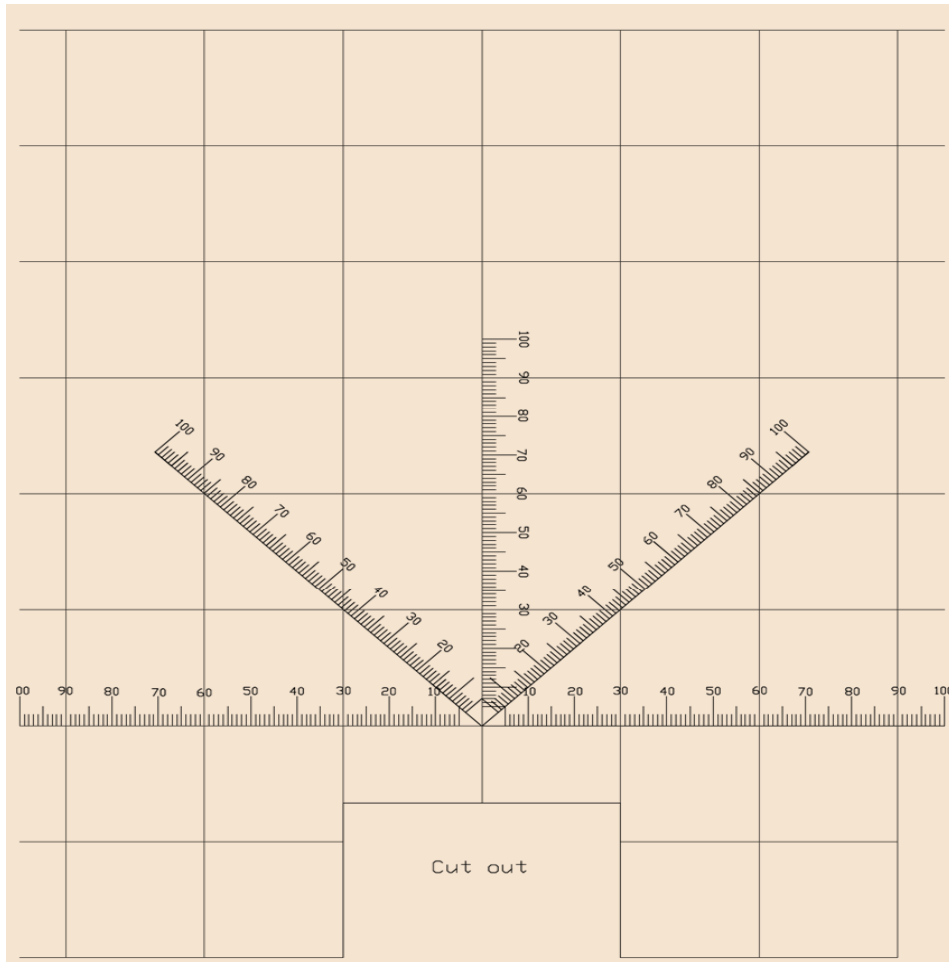
Animal Welfare

CSIRO (Dr Ian Colditz) paper has been submitted for publication

- **Animal behaviour of treated lambs similar to untreated lambs**
- **Physiological assessments (temperature, blood markers etc) midway between mulesed and untreated. Some markers are elevated for several days as healing process occurs**
- **Encouraging results – may need follow up assessment based on improved applicator settings.**
- **RSPCA have inspected trials during treatment on several occasions – favourable responses to date**

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Field Trials



- **Template allows small differences to be more accurately recorded compared to using 1-5 visual scores**
- **used to measure :**
 - **breech wrinkle**
 - **dags**
 - **stain**
 - **breech bare area**

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Field Trials

□ **AWI signed contract with Cobbett Technologies to fast track the R&D Stage 1 early 2008/09 and Stage 2 in 2009/10.**

- **9 Field Trial sites commenced 2008/9** **Stage 1**
- **CSIRO Welfare trial conducted late 2008** **Stage 1**
- **9 Field Trial sites commenced 2009/10** **Stage 2**
- **Confirmation & operator variables 2010 / 2011** **Stage 3**
(Pending AWI approval)
- **Encouraging responses from breeders at trial sites where optimal settings used**

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Early prototype

Shroud



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Field trial – Stage 1

These treatment settings had a good impact

Treatment: 70psi, 2.5ml, ID 0.38mm, shroud 2, tubes 9, pattern 2

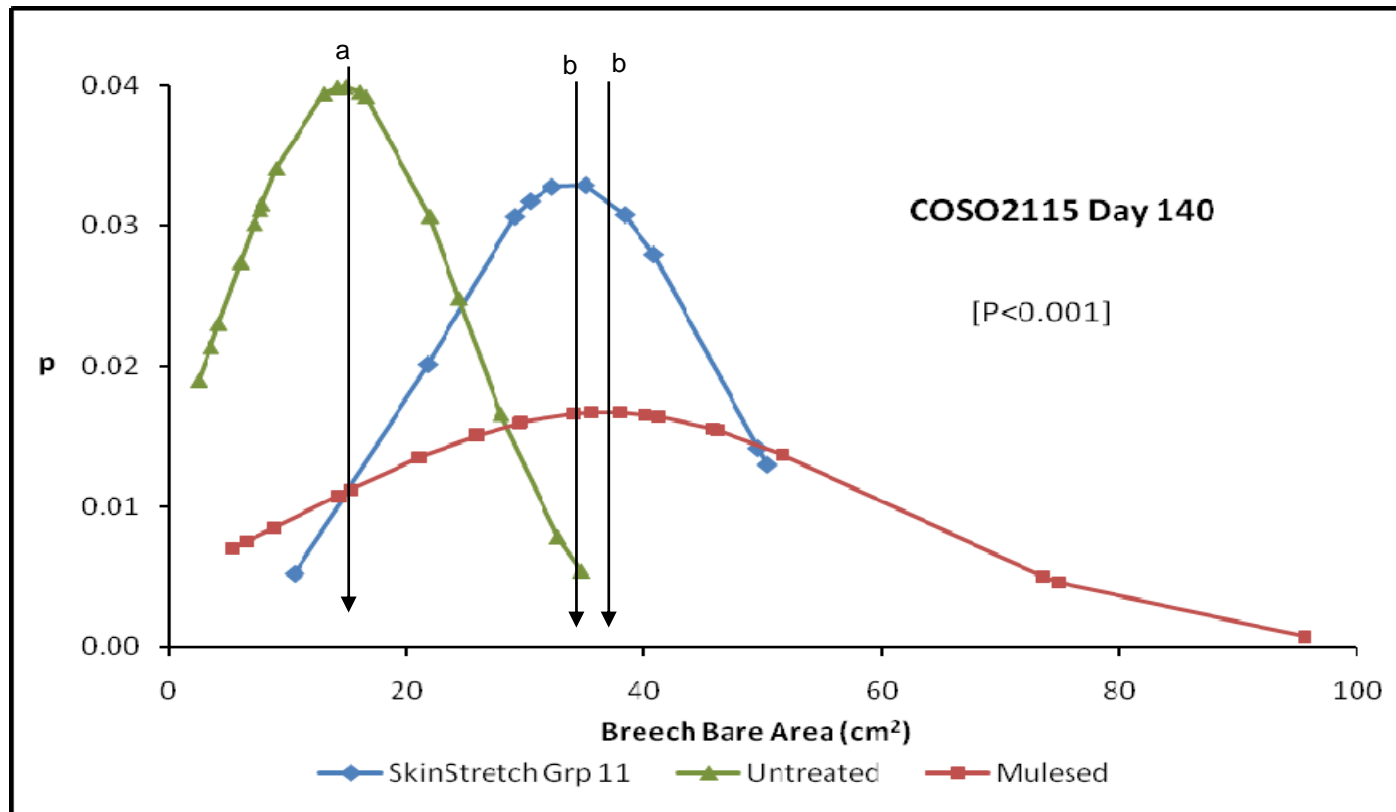


Figure 22 - COSO2115 Grp 11 - Day 140 Breech Bare Area

“SkinTraction[®]” Field Trial – Stage 1

These treatment settings had an intermediate impact

Treatment: 50psi, ID 0.32mm, shroud 2, 9 tubes, pattern 2

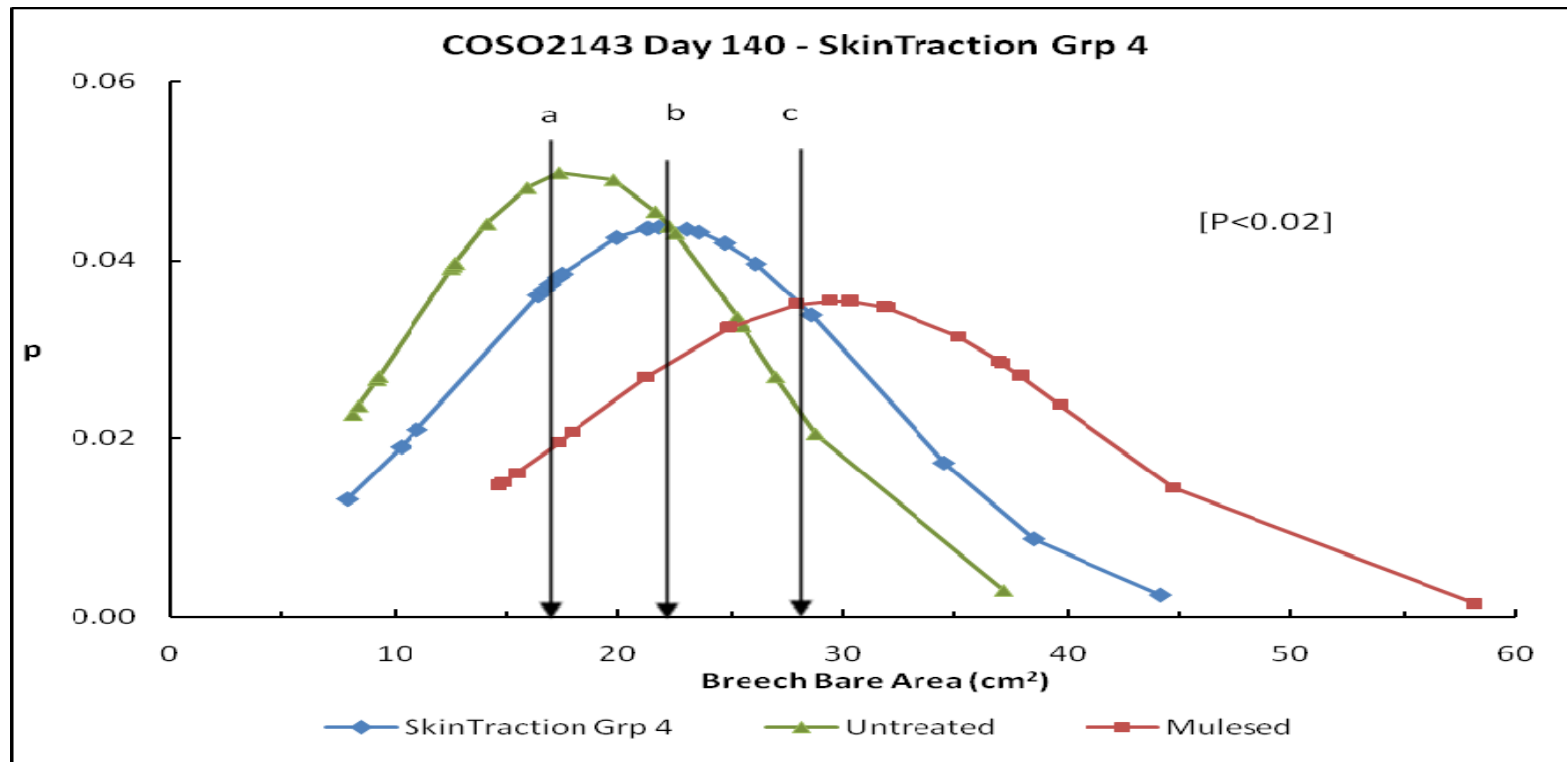


Figure 32 - COSO2143 Grp 4 - Day 140 Bare Area

“SkinTraction[®]” Field trial – Stage 1

These treatment settings had minimal impact

Treatment: 45psi, 2.5ml, ID 0.32mm, Shroud 2, 9 tubes, pattern 2

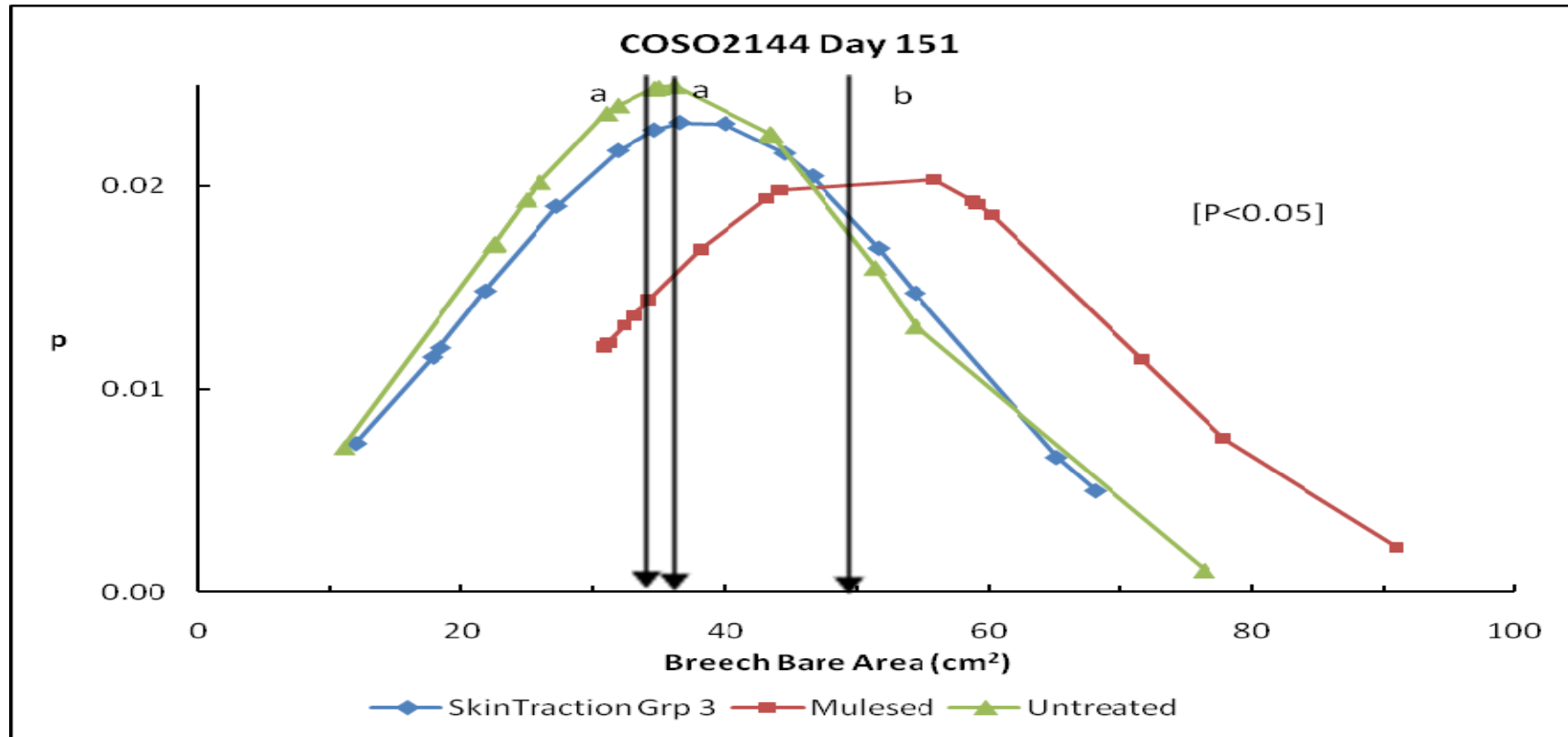


Figure 36 - COSO2144 Grp 3 Day 151 - Breach Bare Area

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Field Trials

Trial 6 2008 Day 240



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Field Trials - Stage 2

- **2009/10 trials -**
 - ◆ **Refine Pulse settings**
 - ◆ **Refine pattern of application**
 - ◆ **Use chlorhexidine for infection control**
 - ◆ **Results at 160 - 360 days due mid 2010**
 - ◆ **Registration submitted to Australian Pesticides and Veterinary Medicines Authority (APVMA)**

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A work in progress

□ APVMA submission

- Part 1 Application/overview
- Part 3 Toxicology
- Part 6 OH&S
- Part 7 Environment
- Part 2 Chemistry and Manufacture
- Part 8 Efficacy and Target Animal Safety
- APVMA Finalisation Period

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Getting it right!

- **Skintraction is still at the R & D trials stage . The following targets remain:**
 - ◆ **Trial results (bare area measurement) from 2009, 2010 early 2011 trials**
 - ◆ **APVMA registration**
 - ◆ **Improve speed** of treatment by 10% to match current practices
 - ◆ **Improve tail** wool cover results
 - ◆ **Further testing**
 - ◆ **Climate, sheep types and ages**
 - ◆ **Wool length, VM, Dags**
 - ◆ **Skin thickness and toughness**
 - ◆ **Integrity System** for unmulesed wool
 - ◆ **Peer review** of trials data with a view to publication in appropriate journals.
 - ◆ **Lifetime Efficacy** against flystrike

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Commercialisation

- General strategy – 3 year transition including:
 - Product awareness
 - Field days
 - Webinars
 - Media
 - Training of operators/contractors
 - Sell directly to wool growers - licence number

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A work in progress

Acknowledgements:

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Pulse NeedleFree Systems

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Dr Terry and Jim Rothwell



awi

Australian
Wool Innovation
Limited