Bioclip - A wool biology success story

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Biological wool harvesting

- Performance vs. Effort
  - Community Sheds (1930s)
  - Higham (1868)
  - Wolseley (1877)
  - Shed Design (1970s)
  - Possibilities (1936-68)
  - Development (1968-80)
  - Innovations
  - Bioclip (1980-90)

Anthony Schlink
Wool harvesting:

From this.... to this.......

Manual shearing

Bioclip

Anthony Schlink
Advantages of biological wool harvesting

• no second cuts
• eliminates skin wounds and some bruising
• reduction in external parasites
• reduction in shearing equipment requirements
• use of unskilled labour
Proposed fully automatic chemical defleeing system using multiple head applicator stations

Source: MUSHEEP


Source: Cameron (1985)
Disadvantages of biological wool harvesting

- cost of the drug
- fleece retention
- sun-burn and cold exposure problems
- use of coats
- use of drugs
# Wool Harvesting Drugs

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose Rate</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPA</td>
<td>20-30mg/kg</td>
<td>Various</td>
</tr>
<tr>
<td>Mimosine</td>
<td>80mg/kg</td>
<td>IV 1.5-2 days</td>
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<tr>
<td></td>
<td>400-600mg/kg</td>
<td>Oral</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>8.5mg/kg$^{0.75}$</td>
<td>I.S. 8 days</td>
</tr>
<tr>
<td>Flumethasone</td>
<td>1.3mg/kg$^{0.75}$</td>
<td>I.S. 8 days</td>
</tr>
<tr>
<td>PAP</td>
<td>400mg/kg</td>
<td>Oral</td>
</tr>
<tr>
<td>EGF</td>
<td>120-150µg/kg</td>
<td>S.C.</td>
</tr>
</tbody>
</table>
Epidermal Growth Factor development

- EGF activity discovered during late 1970’s

- Harvesting Options
  - weakened wool versus complete break

- Biological Hazards?
  - biological effects
  - rams
  - oestrous cycle
  - during pregnancy
Failure of weakened wool!

Percent

Staple Strength N/ktex

0 5 10 15 20 25

10 20 30 40
Wool Collection

- Coats
  - for wool holding
  - for fleece retention
- Non-coats
  - controlled breaks
Summary

• The wool industry is innovative
• Wool harvesting has improved with time
• Currently wool harvesting is entering a phase of discontinuity
• Progress from basic biology to market in this case was 20 years