Management of Annual Pastures for Wool Production: Pasture Dynamics

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Annual Pastures for Wool Production

- annual pastures, associated with:
  - climatic regions, characterised by hot, dry summers and mild, wet winters:
    - not suitable for sustaining perennial pastures (in general)
    - Mediterranean climates (dominant influence in WA)
    - proportion of annuals decreases as rainfall increases and as proportion of summer rainfall increases
  - associated with the cropping zone, where crops and pastures used in rotation:
    - major use of pasture is for benefit of crop yields:
      - disease breaks for subsequent crops
      - soil fertility
    - pasture management may not be directed towards improving animal productivity, i.e. wool production may be of secondary importance
Annual Pasture Species

**Annual legumes:**
- sown
- naturalised
- Sub clover
- Medics

**Annual grasses:**
- sown
- volunteer
- Annual ryegrass
- Barley grass, Brome grass, Vulpia spp.

**Broadleaf species**
- Erodium, Capeweed, Brassicas, Rolypoly, vines

References: Wilson and Simpson (1994); Doyle et al. (1994)
## Surveys of pasture composition in annual crop zone pastures

<table>
<thead>
<tr>
<th>Location</th>
<th>Major findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern NSW (marginal cropping zone)</td>
<td>often no replanting of pastures main annual species (e.g. barley grass) with poor carrying capacity over summer</td>
</tr>
<tr>
<td>North W. Victoria</td>
<td>50% of area could be classified as “unimproved” based on low annual medic content 60% annual grasses: barley grass, brome grass, annual ryegrass and vulpia 10% annual legume</td>
</tr>
<tr>
<td>Adelaide Plains, SA</td>
<td>33% annual legumes and 29% annual grasses with high rainfall pastures considered poor, with bare ground cover of 27% and low medic content</td>
</tr>
<tr>
<td>South W. WA</td>
<td>less than 20% legume high proportion of capeweed (38%)</td>
</tr>
</tbody>
</table>

Seasonal pattern of pasture availability for grazed pastures in a Mediterranean environment

Herbage availability

- Summer: Dry
- Autumn: Dry
- Winter: Green
- Spring: Dry

Source: Allden (1980)
Feeding values of various annual pasture plants relative to sub clover

Source: Doyle et al. (1994)
Monthly wool growth rate expressed as a percentage of the highest value
# Within-year amplitude of clean wool growth rate

<table>
<thead>
<tr>
<th>State</th>
<th>Location</th>
<th>Amplitude (%)</th>
<th>Measures per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>Kojonup</td>
<td>70</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mt. Barker</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bakers Hill</td>
<td>100</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Northam</td>
<td>146</td>
<td>12</td>
</tr>
<tr>
<td>SA</td>
<td>Kybybolite</td>
<td>69</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>142</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Roseworthy</td>
<td>229</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Turretfield</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>Vic</td>
<td>Werribee</td>
<td>114</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>125</td>
<td>10</td>
</tr>
<tr>
<td>NSW</td>
<td>Wagga Wagga</td>
<td>49</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Cowra</td>
<td>90</td>
<td>7</td>
</tr>
</tbody>
</table>

*Source: Robards (1979)*
Variability in pasture growth between years

High
1990
1980
1970

Medium
1990
1980
1970

Low
1990
1980
1970

Source: Cornish (1985)
Between-year variation in sub clover content in pastures at 3 sites at Kojonup.

Each value is the mean of 3 within-year estimates based on dry weight. All sites set-stocked at 5 wethers/ha.

Source: Doyle et al. (1994)