Correlated Responses in Staple Strength

Produced for the CRC for Premium Quality Wool undergraduate program by;
Dr. Brad Crook, The University of New England.
## Phenotypic relationships between wool traits, including staple strength

<table>
<thead>
<tr>
<th>Trait</th>
<th>FD</th>
<th>CVFD (midside)</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFW</td>
<td>0.26, 0.32</td>
<td>-0.06, -0.02</td>
<td>0.03, 0.11</td>
</tr>
<tr>
<td>FD</td>
<td>-0.23, -0.11</td>
<td>-0.50, -0.42</td>
<td></td>
</tr>
<tr>
<td>CVFD (midside)</td>
<td></td>
<td>-0.50, -0.42</td>
<td></td>
</tr>
</tbody>
</table>
### Genetic relationships between wool traits, including staple strength

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<th>Trait</th>
<th>FD</th>
<th>CVFD (midside)</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFW</td>
<td>0.16, 0.63</td>
<td>-0.21, 0.38</td>
<td>-0.14, 0.42</td>
</tr>
<tr>
<td>FD</td>
<td></td>
<td>-0.20, 0.05</td>
<td>-0.07, 0.45</td>
</tr>
<tr>
<td>CVFD (midside)</td>
<td></td>
<td>-0.86, -0.62</td>
<td></td>
</tr>
</tbody>
</table>
What happens to staple strength if selection based on clean fleece weight and fibre diameter only?

Increasing emphasis to reduce fibre diameter

Maximise CFW, maintain FD

Response over 10 years

Source: Greeff (1996)
What happens to staple strength if selection based on clean fleece weight and fibre diameter only?

Maximise CFW, reduce FD by 0.5 µm

Increasing emphasis to reduce fibre diameter

Response over 10 years

Source: Greeff (1996)
What happens to staple strength if selection based on clean fleece weight and fibre diameter only?

Maximise CFW, reduce FD by 1.0 \( \mu \text{m} \)

Response over 10 years

Increasing emphasis to reduce fibre diameter

Brad Crook

Source: Greeff (1996)
What happens to staple strength if selection based on clean fleece weight and fibre diameter only?

Maximise CFW, reduce FD by 1.5 µm

Increasing emphasis to reduce fibre diameter

Response over 10 years

Source: Greeff (1996)
What happens to staple strength if selection based on clean fleece weight and fibre diameter only?

Maximise CFW, reduce FD by 2 µm

Response over 10 years

Increasing emphasis to reduce fibre diameter

Source: Greeff (1996)
What happens to staple strength if selection is based on clean fleece weight, fibre diameter and CVFD?

Response over 10 years

Increasing emphasis to reduce fibre diameter

Response over 10 years

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Source: Greeff (1996)
Penalties in CFW and benefits in CVFD by increasing SS by 2N/ktex for different reductions in FD in 10 years

Increasing emphasis to reduce fibre diameter

Source: Greeff (1996)