Climate change impacts (2030) at Cootamundra

Phil Graham Livestock Officer, Yass

Introduction
GrassGro simulated herbage production for Landgrove, 10 km east of Cootamundra using an annual pasture/phalaris. The 2030 projections for four GCM’s were compared to the base period (1971 – 2000)

Average total annual pasture growth kg DM/ha

<table>
<thead>
<tr>
<th>Locality</th>
<th>Base</th>
<th>CCSM</th>
<th>HadGEM</th>
<th>ECHAM</th>
<th>GFDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landgrove</td>
<td>8947</td>
<td>8665</td>
<td>9440</td>
<td>7671</td>
<td>8147</td>
</tr>
</tbody>
</table>

The average across the 4 GCMs is 8480 kg or 95% of base production.

Monthly growth
The major features of the monthly growth rate data is higher growth from all models in the June to Aug period followed by lower spring growth. The autumn is split between the models, 2 the same and 2 down. The combination of the lower spring, with no strong summer increase and a slower autumn means that ground cover will come under more pressure in late summer/autumn.

Profit/ha
For this site a self replacing merino flock was run using 5 year average prices and costs (2005-09) for all runs. It also includes $100/ha for overhead costs. The stocking rates above were used.

Stocking Rates
The stocking rates for all years are set such that the ground cover is maintained above a minimum of 70% for 7 in 10 years. This equals 92% of weeks above 70%. Combining the reduced pasture production and the increased ground cover pressure results in reduced stocking rates for all GCMs.

Profit/ha

<table>
<thead>
<tr>
<th>Locality</th>
<th>Base</th>
<th>CCSM</th>
<th>HadGEM</th>
<th>ECHAM</th>
<th>GFDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landgrove</td>
<td>12.2</td>
<td>10.2</td>
<td>13.0</td>
<td>7.7</td>
<td>9.4</td>
</tr>
</tbody>
</table>

The average stocking rate over the 4 GCMs is 10.1 dse/ha or 83% of the base.

Profit/ha

<table>
<thead>
<tr>
<th>Locality</th>
<th>Base</th>
<th>CCSM</th>
<th>HadGEM</th>
<th>ECHAM</th>
<th>GFDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landgrove</td>
<td>$189/ha</td>
<td>$145/ha</td>
<td>$218/ha</td>
<td>$64/ha</td>
<td>$114/ha</td>
</tr>
</tbody>
</table>

This gives an average of $135/ha or 72% of the base profit

This provides us with an indication of the potential impact on profits of the climate in 2030 where no changes have been made to the production systems.

Because the stocking rates have been based on a ground cover rule we are applying equal pressure across the runs on the pasture system and avoiding issues such as soil and pasture loss.

© State of New South Wales through NSW Department of Primary Industries 2010. You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute NSW Department of Primary Industries as the owner.

ISSN 1832-6668

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (July 2010). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of NSW Department of Primary Industries or the user’s independent adviser.

June 2011