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**CANBERRA CREEPING LUCERNE OUTYIELDS HUNTER RIVER IN DENMARK TRIAL**

By F. E. RYAN, B.Sc. (Agric.), Agrostologist

LUCERNE is successfully grown as a fodder crop in high rainfall areas in Western Australia without irrigation and there is scope for expansion. Establishment problems can be largely overcome by choice of a well drained site, spring planting to avoid weeds and pests, an application of 1 ton of limestone to the surface 5 to 6 inches of soil before sowing, and sowing of inoculated and pelleted seed.

However, persistence under grazing is poor and this has imposed some limits on the expansion of the area sown. A creeping rooted lucerne developed by Mr. H. Daday, of CSIRO, Canberra, may provide more persistence under grazing. It was compared for yield with Hunter River, African, Du Puits and Canberra Hay in a trial at Denmark Research Station during 1963/66.

**Experimental design**

The five cultivars were replicated six times in a randomised block design with plots 25 feet by 25 feet. One ton of limestone was applied per acre and cultivated into the top 5 inches of soil before sowing by hand on October 7, 1963. At the time of sowing the area was fertilised at the rate of 3 cwt. per acre with a mixture consisting of superphosphate, muriate of potash and sulphate of ammonia in the proportions 4:1:1. The lucerne was sown at the rate of 3 lb. per acre.

**Establishment and density**

A germination count taken on November 21, 1963 showed that best germination was obtained from Hunter River and this was confirmed when an establishment count was made on February 4, 1964. Following the initial establishment the relative density of the stand remained fairly constant as shown by a density count on March 27, 1966.

Yield samples were cut from the experimental area during 1964, 1965 and 1966. The mean yields in cwt. per acre of dry matter are shown in the table below.

**Discussion**

The normal seeding rate for lucerne in the Denmark area is 6 to 8 lb. per acre, so for commercial production a denser stand would be expected than that obtained in the experimental plots, where the seeding rate was only 3 lb. per acre.

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Germination 21/11/63</th>
<th>Establishment 4/2/64</th>
<th>Density 17/3/66</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunter River</td>
<td>83</td>
<td>50</td>
<td>31</td>
</tr>
<tr>
<td>African</td>
<td>37</td>
<td>26</td>
<td>17</td>
</tr>
<tr>
<td>Canberra Creeping</td>
<td>54</td>
<td>34</td>
<td>21</td>
</tr>
<tr>
<td>Canberra Hay</td>
<td>47</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Du Puits</td>
<td>44</td>
<td>28</td>
<td>13</td>
</tr>
</tbody>
</table>
This experiment was not subjected to grazing and no indication of the persistence of varieties under grazing was attempted.

The yields indicate that Canberra Creeping is a more productive variety than Hunter River, producing about 17 per cent. more dry matter than Hunter River. This superiority in yield over Hunter River was consistent throughout the season. African was no better than Hunter River in yield and Canberra Hay was considered inferior to Hunter River whilst Du Puit was consistently lower in yield than all other cultivars. The new cultivar Canberra Creeping is obviously worthy of further trials in comparison with Hunter River.

<table>
<thead>
<tr>
<th></th>
<th>Hunter River</th>
<th>African</th>
<th>Canberra Creeping</th>
<th>Canberra Hay</th>
<th>Du Puit</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/4/64</td>
<td>5.56</td>
<td>6.76</td>
<td>6.39</td>
<td>5.14</td>
<td>3.96</td>
</tr>
<tr>
<td>6/7/64</td>
<td>1.57</td>
<td>2.52</td>
<td>2.83</td>
<td>1.67</td>
<td>0.43</td>
</tr>
<tr>
<td>23/9/64</td>
<td>6.56</td>
<td>6.74</td>
<td>7.60</td>
<td>4.25</td>
<td>2.81</td>
</tr>
<tr>
<td>8/12/64</td>
<td>23.12</td>
<td>23.74</td>
<td>30.02</td>
<td>19.40</td>
<td>20.92</td>
</tr>
<tr>
<td>8/2/65</td>
<td>16.00</td>
<td>15.05</td>
<td>18.30</td>
<td>15.75</td>
<td>15.60</td>
</tr>
<tr>
<td>29/3/65</td>
<td>8.14</td>
<td>9.79</td>
<td>7.77</td>
<td>7.04</td>
<td>6.57</td>
</tr>
<tr>
<td>3/5/65</td>
<td>6.79</td>
<td>7.18</td>
<td>7.64</td>
<td>7.54</td>
<td>5.93</td>
</tr>
<tr>
<td>29/7/65</td>
<td>5.77</td>
<td>5.95</td>
<td>7.53</td>
<td>5.37</td>
<td>2.30</td>
</tr>
<tr>
<td>27/1/66</td>
<td>15.83</td>
<td>13.34</td>
<td>16.15</td>
<td>15.47</td>
<td>12.04</td>
</tr>
<tr>
<td>25/2/66</td>
<td>6.72</td>
<td>7.81</td>
<td>9.41</td>
<td>7.29</td>
<td>7.41</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96.06</td>
<td>98.88</td>
<td>113.64</td>
<td>88.92</td>
<td>77.97</td>
</tr>
</tbody>
</table>

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