Beef growth rate studies: Wokalup Research Station

Maurice C. Cullity

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Acknowledgment is made of the assistance of Mr. K. W. Simes, Manager, and the members of the staff of the research station.
**Beef Growth Rate Studies...**

**Wokalup Research Station**

*Project 6*

Comparison of Growth Rates on Irrigated and Unirrigated Pastures of Two Year Old and Yearling Beef Dairy Crosses and of Yearling Jersey Steers.

By M. CULLITY, B.Sc. (Agric.), Superintendent of Dairying

PERIOD

February 7 to May 2, 1957.

STOCK

Steers bred on the research station were used. They included Hereford crosses from dairy cows, and Jersey steers.

Groups 1 and 2 each contained 17 Hereford dairy steers, born in the autumn of 1955.

Groups 3 and 4 contained respectively 25 and 26 Hereford dairy steers all born in the autumn of 1956.

Groups 5 and 6 had 13 and 12 Jersey steers respectively all born in the autumn of 1956.

Groups 1 and 2 had been weighed as from May 31, 1956, while Groups 3, 4, 5 and 6 were weighed first on January 21, 1957. Some of the beef crosses and all of the Jerseys were got by artificial insemination.

PROCEDURE

Groups 1, 3 and 5 were grazed together on irrigated pastures and Groups 2, 4 and 6 were grazed together on dry pasture.

Yarding and weighing of the cattle were as described in the previous reports upon work at this station.

PASTURE

The general type of pasturage was as described in the previous report. Cattle in the groups on irrigated pastures were

<table>
<thead>
<tr>
<th>Date of Weighing</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
<th>Group 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry Pasture</td>
<td>Irrigated Pasture</td>
<td>Dry Pasture</td>
<td>Irrigated Pasture</td>
<td>Dry Pasture</td>
<td>Irrigated Pasture</td>
</tr>
<tr>
<td>13/12/56</td>
<td>1,069 lb.</td>
<td>1,054 lb.</td>
<td>552 lb.</td>
<td>533 lb.</td>
<td>354 lb.</td>
<td>320 lb.</td>
</tr>
<tr>
<td>21/1/57</td>
<td>....</td>
<td>....</td>
<td>....</td>
<td>....</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>7/2/57</td>
<td>1,076 lb.</td>
<td>1,128 lb.</td>
<td>588 lb.</td>
<td>575 lb.</td>
<td>383 lb.</td>
<td>333 lb.</td>
</tr>
<tr>
<td>7/3/57</td>
<td>1,076 lb.</td>
<td>1,193 lb.</td>
<td>598 lb.</td>
<td>644 lb.</td>
<td>411 lb.</td>
<td>430 lb.</td>
</tr>
<tr>
<td>4/4/57</td>
<td>1,028 lb.</td>
<td>1,201 lb.</td>
<td>582 lb.</td>
<td>664 lb.</td>
<td>396 lb.</td>
<td>456 lb.</td>
</tr>
<tr>
<td>2/5/57</td>
<td>1,011 lb.</td>
<td>1,227 lb.</td>
<td>578 lb.</td>
<td>707 lb.</td>
<td>400 lb.</td>
<td>514 lb.</td>
</tr>
</tbody>
</table>
WOKALUP RESEARCH STATION
BEEF PROJECT

GROUP 1
- GROUP 3
- GROUP 5

1,100
1,000
500

600
600
400

500
500
300

DRYLAND PASTURE

GROUP 1 HEREFORD CROSS 17 STEERS BORN 1955
GROUP 3 HEREFORD CROSS 25 STEERS BORN 1956
GROUP 5 JERSEY 13 STEERS BORN 1956

IRRIGATED PASTURE

GROUP 2 HEREFORD CROSS 17 STEERS BORN 1955
GROUP 4 HEREFORD CROSS 26 STEERS BORN 1956
GROUP 6 JERSEY 12 STEERS BORN 1956

DATE WEIGHED

GROUP 2 HEREFORD CROSS 17 STEERS BORN 1955
GROUP 4 HEREFORD CROSS 26 STEERS BORN 1956
GROUP 6 JERSEY 12 STEERS BORN 1956

Fig. 1
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Journal of Agriculture Vol 1 No 12 1960
removed only for short periods to enable watering to be carried out. Those on dry pasture throughout the trial were on relatively innutritious grass with dry sub clover.

**COMMENTS**

By the Manager, Mr. K. W. Simes, and Technician, R. G. Elliott under dates of various weighings are as follows:

- **January 10**
  - Rainfall December 13 to January 10—9 points.
  - Unirrigated groups—good dry feed, clover and grass.
  - Cattle are not as loose as those on irrigation.
  - Irrigated pastures excellent, comprising paspalum, ryegrass, and white clover—cattle inclined to be loose.

- **February 7**
  - Rainfall January 10 to February 7—14 points.
  - Unirrigated groups grazing on hill paddocks.
  - Groups 3 and 5 have increased in weight while Group 1 has lost weight.
  - Irrigated groups—increase in weight is consistent.
  - Group 2, 1955, drop look particularly well.

- **March 7**
  - Rainfall February 7 to March 7—9 points.
  - The unirrigated pasture groups are now slowing up. The 1956 drop animals have increased in weight but are a complete contrast in appearance to their parallel groups on irrigation. The dry pasture seems sufficient for maintenance only.
  - The irrigation groups have made excellent progress and all look very well.

- **April 4**
  - Rainfall March 7 to April 4—79 points.
  - The unirrigated pasture groups all show decreases—the loss in Group 1 being particularly heavy. Dry feed is not sufficient in quantity and quality. Stock are healthy.
  - The irrigated pasture groups are still making progress but not so rapidly as previously. The younger animals look well.

- **May 2**
  - Rainfall April 4 to May 2—247 points.
  - The unirrigated pasture groups are not doing well and are falling further behind the comparable group on irrigation. Rain has fallen and annual winter pastures are germinating. The young animals are showing a natural growth increase but are only in fair condition—all are healthy.
  - The irrigated pasture groups are still growing but pasture obviously has not been as good as in the previous month—watering has ceased but good rain has fallen and temperatures are mild. Group 2 are now well over 1,200 lb.; excellent growth for two-year-olds. The younger groups look very well and have gained 200 lb. per head since weaning in January.

**RESULTS**

The results of this trial are summarised in the Tables 1 and 2. Growth curves for each group are shown in Figure 1 which
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gives a comparison for irrigated and unirrigated pasture and in Figure 2 where the curves are arranged to permit a direct comparison of growth for the various stock classes in the two sections irrigated and unirrigated.

**DISCUSSION**

This trial has enabled a comparison to be made between the growth rate of the three different types of cattle, i.e., two-year-old Hereford cross, yearling Hereford cross and Jersey steers on irrigated and on unirrigated pasture.

For the purpose of the main comparison, the period February 7 to May 2 is used.

Data however, is presented in the tables for weighing of Groups 1 and 2 from December 13, 1956, and for Groups 3, 4, 5, and 6 from January 21.

A February weighing as a base was adopted as previous projects have shown that steers on dry pasture usually continue to gain weight up to the January weighing.

**VALUE OF IRRIGATION**

In each of the cattle sections, i.e., the two-year-old beef crosses, the yearling beef crosses, and the Jersey steers, the growth rates on irrigated pasture was much superior to that on unirrigated pastures. The difference in the two-year-old animals was 164 lb., those on irrigated

<table>
<thead>
<tr>
<th>Date of Weighing</th>
<th>Group 1 (Dry Pasture)</th>
<th>Group 1 (Irrigated Pasture)</th>
<th>Group 3 (Dry Pasture)</th>
<th>Group 3 (Irrigated Pasture)</th>
<th>Group 5 (Dry Pasture)</th>
<th>Group 5 (Irrigated Pasture)</th>
<th>Group 6 (Dry Pasture)</th>
<th>Group 6 (Irrigated Pasture)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb. 7-May 2</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
</tr>
<tr>
<td>Per day</td>
<td>-65</td>
<td>66</td>
<td>-10</td>
<td>132</td>
<td>17</td>
<td>101</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Per day</td>
<td>-0.77</td>
<td>-0.12</td>
<td>-1.57</td>
<td>0.20</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 21-May 2</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
</tr>
<tr>
<td>Per day</td>
<td>-0.41</td>
<td>0.25</td>
<td>1.72</td>
<td>-0.45</td>
<td>1.92</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2**

**SUMMARY OF WEIGHT GAIN**

**Table 3**

**Differences in Growth**

<table>
<thead>
<tr>
<th>Groups I. (Irrigated Pasture)</th>
<th>(D. — Dry Pasture)</th>
<th>Period</th>
<th>Days</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 2 (I) Over Group 1 (D.)</td>
<td></td>
<td>Dec. 13-May 2</td>
<td>139</td>
<td>232</td>
</tr>
<tr>
<td>Two-year-old Hereford Cross</td>
<td></td>
<td>Jan. 21-May 2</td>
<td>101</td>
<td>164</td>
</tr>
<tr>
<td>Group 4 (I) Over Group 3 (D.)</td>
<td></td>
<td>Jan. 21-May 2</td>
<td>101</td>
<td>148</td>
</tr>
<tr>
<td>Yearling Hereford Cross</td>
<td></td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>142</td>
</tr>
<tr>
<td>Group 6 (I) Over Group 5 (D.)</td>
<td></td>
<td>Jan. 21-May 2</td>
<td>101</td>
<td>148</td>
</tr>
<tr>
<td>Yearling Jersey</td>
<td></td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>144</td>
</tr>
<tr>
<td>Hereford Crosses—Yearlings (Grp. 3) over 2-year-olds (Grp. 1) both on Dry pasture</td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>50</td>
<td>0.6</td>
</tr>
<tr>
<td>Hereford Crosses—Yearlings (Grp. 4) over 2-year-olds (Grp. 2) both on Irrigated pasture</td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>33</td>
<td>0.4</td>
</tr>
<tr>
<td>Yearlings—Jerseys (Grp. 6) over Hereford Crosses (Grp. 4) both on Irrigated pasture</td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>29</td>
<td>0.34</td>
</tr>
<tr>
<td>Yearlings—Jerseys (Grp. 5) over Hereford Crosses (Grp. 3) both on Dry pasture</td>
<td>Feb. 7-May 2</td>
<td>84</td>
<td>27</td>
<td>0.32</td>
</tr>
</tbody>
</table>
PROJECT 6
GROWTH TRENDS
IRRIGATED & DRY PASTURE
DECEMBER 12th 1956 TO MAY 2nd 1957

DIFFERENCE IN FAVOUR IRRIGATION
DEC. 13-MAY 2 232 LB.

DIFFERENCE IN FAVOUR IRRIGATION
JAN. 21-MAY 2 148 LB.

DIFFERENCE IN FAVOUR IRRIGATION
JAN. 21-MAY 2 148 LB.

Fig. 2
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pastures (Group 2) having gained 99 lb. whilst those on dry pasture (Group 1) lost 65 lb. Group 4 gained 142 lb. more than Group 3. Their actual weight gain was 132 lb. while those on unirrigated pasture lost 10 lb. In the same way the Jersey steers in Group 6 put on 144 lb. more than faster, putting on 33 lb. more than their two-year-old companions, the respective gains being 132 and 99 lb. On unirrigated pasture both groups lost weight but the yearlings losing 10 lb. only did not fare as badly as the others which declined by 65 lb.

Two Year Old Versus Yearling Hereford Steers.

The two groups on irrigated pasture both gained weight but the yearlings grew those in Group 5 which were on unirrigated pasture. The respective growth rates of these two groups was 161 lb. and 17 lb.

This result clearly shows the value of irrigated pasture for fattening cattle during the summer months. Assuming a dressing percentage of 56 per cent. and a value of 2s. per lb. the increased value of the animals in Group 2 above those in Group 1 would be £9 4s. whilst the increased value of Groups 4 and 6 over 3 and 5 was £8 1s. On an average, the irrigated pastures carried two beasts to the acre and therefore the increased value of the pasture could be assessed approximately at £18 8s. for the larger animals and £16 2s. for the smaller. This is a conservative estimate as those animals on irrigated pasture were ready for sale at the conclusion of the trial while those which had been on dry pasture were in store condition only, and their values would be much lower than those assumed above.

Beef Cross Versus Jersey Steers.

On irrigated pasture both groups grew satisfactorily with the Jerseys recording the greatest gain—161 lb. to 132 lb. of the Hereford crosses. The Jerseys were much lighter at the commencement of the period—256 lb.—than the beef cross group—582 lb., the more rapid response being due probably to the lower maintenance requirement of the smaller cattle relative to the quantity of herbage eaten.

On unirrigated pasture the Jersey steers also were recorded to have done better, gaining 17 lb. while the Hereford crosses lost 10 lb., the difference being 27 lb.

Fig. 1 gives a visual comparison of the relative rate of growth of the various groups, while Fig. 2 is designed to show the similarity in trend of growth of the various classes of cattle when on similar feed.

ACKNOWLEDGMENT

Acknowledgment is made of the assistance of Mr. K. W. Simes, Manager, and the members of the staff of the research station.
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