Summer feeding of oat grain to weaner beef steers.

N. Davenport
BEEF breeders commonly market their cattle as weaners and up to a year old between November and February and thus avoid carrying them over the late summer and autumn period when weight losses usually occur on normal paddock grazing. The effect of this concerted selling is a pronounced downward trend in price levels which are not normally regained until the following May-June period, by which time the pressure of supply has eased considerably.

The pattern of market price levels and trends and typical of the last few years, is shown in graph form.

In order to avoid these lower prices the breeder may decide to hold the weaners over the summer for marketing later. In such cases he has to decide whether he should supplement the grazing to ensure that the animals continue to gain in weight even if at only a comparatively low rate, or allow them to lose weight in the normal sequence and depend on the new season’s pasture to bring them to marketable condition in time to sell at more favourable values.

A fact-finding trial designed to provide information on this matter was carried out during the summer of 1955-56* at "Cranmore Park," and repeated the following summer, 1956-57. This property is one of the three centres at which the Department of Agriculture is carrying out investigations dealing with the production and management of beef cattle in the agricultural areas. At each centre weighing facilities have been provided by the Australian Meat Board.

DESCRIPTION OF PROPERTY

"Cranmore Park" is the well-developed stud sheep property of the Boolardy Pastoral Company on which a commercial herd of beef cattle is carried in association with the sheep, primarily in order to improve pasture management and utilisation. It is situated about nine miles north-east of Walebing in the Moora district and has an average annual rainfall of 17

inches. The growing season extends from May to October when 14 inches of this total is recorded. The remaining summer period of six months constitutes the recognised "annual summer drought."

The country is undulating with ample tree shelter for stock. The natural tree cover is principally Salmon Gum (Eucalyptus salmonophloia), Gimlet (Eucalyptus salubris), and York Gum (Eucalyptus loxophleba), and is in association with grey and red-brown clay loams and loams. Jam (Acacia acuminata) and scrub species were carried on the lighter sandy loam soil types.

Subterranean clover (Dwalganup) has been well established on the medium and lighter country and is in association with the common annual volunteer species (principally barley grass, brome grasses, erodium, capeweed, and the so-called native clovers). Pastures on the heavier soils consist of Wimmera ryegrass and the above volunteer annual species, together with burr trefoil (Medicago denticulata) and some subterranean clover.

**PARTICULARS OF EXPERIMENTS**

For the purpose of the experiment 30 crossbred weaner beef steers were used on both occasions. They were of March-April drop, sired by Shorthorn, Hereford and Aberdeen-Angus bulls. Most of them were out of grade Aberdeen-Angus cows and the remainder had first cross A.A. Shorthorn mothers. The steers were weaned in December of each year and the supplementary feeding was commenced early in January on both occasions. For this purpose they were divided into two groups of 15 each with equal numbers of the same breeding in each. Identification was by numbered fire-brands. The steers were weighed regularly at four-weekly intervals throughout both experiments.

The three common cereal grains, oats, wheat and barley are all used to supplement paddock grazing during the dry period. As the number of animals and the amount of practical detail involved in the investigation precluded more than one fodder being tested, oat grain was selected as it is probably the most commonly-used over the major part of the beef producing areas. It was fed whole.

**1956 EXPERIMENT**

**Summer Feeding Period.**

From January 3 to May 8, the fed group received 5 lb. oaten grain per day except that 2½ lb. was fed per day for the first fortnight. It was put out daily in feeders with ample room for all steers to feed at the one time. The control group had paddock grazing only. The groups were rotated between paddocks to ensure similar grazing conditions for both throughout the experimental feeding period.

Grain feeding was terminated at the commencement of the winter rains.

The previous growing season (1955) had been above average and therefore summer paddock grazing was ample and of good quality. Sheep were grazed with the control cattle but not with the fed group.

The experimental areas were mainly topdressed pasture consisting of subterranean clover, burr trefoil and the usual volunteer species. Also included was an oat crop which had been mown at the very early flowering stage and left as cut. Some 30 acres of the pasture area had been mown at the hay stage and left for grazing.

Temperatures were generally slightly above normal until mid-April, and January was very hot. The rainfall was below average. During the feeding period rain fell on one day only (50 points on March 4) until April 11. Two inches were recorded during the next four weeks (139 points on May 6 and 7.)

**Winter Period.**

At the end of the oat-feeding period both groups were joined as one herd and had normal paddock grazing until sold towards the end of September, 1956.

They were held after the expiration of the feeding period in May, as it was decided to determine whether the group which received the grain supplement would continue to do better than the "grazing only" group under normal winter grazing conditions.

Average weights of the two groups at the beginning and end of the feeding period and at slaughter are shown later.
1957 EXPERIMENT  

Summer Feeding Period. 

This year the feeding of the oat ration was commenced on January 3 at 2½ lb. per day for the first four weeks and then raised to 5 lb. for the remainder of the period. Because of the late opening of the winter season, feeding was continued until June 7. 

With the exception of 40 wethers with the fed group for the last fortnight of April, each group grazed alone until the last five weeks of the feeding period when 60 ewes and lambs were run with both herds. The sheep feeders did not permit access by the cattle of the control group and the converse was true for the fed group. 

Following upon an adverse growing season, paddock grazing was noticeably inferior to that of the previous summer. The groups were alternated each fortnight between two areas. One consisted of 60 acres of a light oat crop which had been mown at early flowering and left together with 90 acres of a predominantly brome grass—barley grass pasture with a small proportion of subterranean clover. Since drying off, these areas had been grazed appreciably prior to the introduction of the cattle. 

During the experimental feeding period, temperatures were normal except that most of January was above average. Again there was very little rain. Only one inch (on 6 days) fell before May during which month 141 points were recorded. 

Winter Period. 

The cattle were again held over the winter months to compare liveweight trends of both treatments subsequent to the experimental feeding period. They were slaughtered in mid-September. 

RESULTS 

Liveweight trends and other pertinent data are shown in the following table:— 

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**Beef Cattle Investigations—Cranmore Park** 

Liveweight trends of groups of fed and unfed weaner beef steers during and subsequent to a summer experimental feeding period together with slaughter data.

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Animals</th>
<th>Summer Feeding Period</th>
<th>Average Weight at Commencement</th>
<th>Average Weight at End</th>
<th>Live-weight Gain</th>
<th>Gain due to Feeding Grain</th>
<th>Average Weight at Slaughter</th>
<th>Gain after Feeding Period</th>
<th>Average Carcase Weight</th>
<th>Average Dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fed, Jan. 3 to May 8</td>
<td>15</td>
<td>lb. 591</td>
<td>lb. 699</td>
<td>lb. 108</td>
<td>lb. 40</td>
<td>lb. 920*</td>
<td>lb. 221</td>
<td>lb. 489</td>
<td>% 53.2</td>
<td></td>
</tr>
<tr>
<td>Control grazing only</td>
<td>15</td>
<td>lb. 576</td>
<td>lb. 644</td>
<td>lb. 68</td>
<td>lb. 32</td>
<td>lb. 849</td>
<td>lb. 205</td>
<td>lb. 442</td>
<td>% 52.1</td>
<td></td>
</tr>
</tbody>
</table>

* Slaughtered on September 24.

| Fed, Jan. 8 to June 7           | 15             | lb. 610               | lb. 697                       | lb. 87               | lb. 105          | lb. 907†                  | lb. 210                     | lb. 501                  | % 55.2              |
| Control grazing only            | 15             | lb. 610               | lb. 592                       | lb. 18†              | lb. 70           | lb. 818                  | lb. 226                     | lb. 434                  | % 53.1              |

† Slaughtered on September 17. † Denotes loss. Figures in brackets denote daily weight gains.

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During the first summer the control group continued to make gains throughout the period at the average rate of \( \frac{1}{2} \) lb. per day for each animal.

The additional oat grain ration which amounted to a total of 15 bushels per beast resulted in a further gain of 40 lb. over the 18-week period which is equal to \( \frac{3}{4} \) lb. per day. The current value of feed oats at harvest time of both years was in the vicinity of 7s. per bushel. Young beef about May and June brought approximately 200s. per 100 lb. of carcase. At these levels the oats fed cost 105s. and the extra carcase return was valued at 45s. The feeding did not pay for the increased weight.

When the experiment was repeated the next summer (1957) the liveweight changes of the control group reflected the lower value of the grazing. Instead of gaining as in the previous year, this group lost weight, but only to the extent of an average of 18 lb. per beast over the 21-week period and equal to 0.12 lb. per day. The fed group showed a response much greater than for the previous year to the grain feeding and gained 87 lb. over the period which with the 18 lb. loss of the controls made a total effective difference of 105 lb. In this case the value of the oats fed (17 bushels per beast) was 119s. and that of the extra carcase produced was 106s.

As the cattle were not slaughtered immediately after each of the experimental feeding periods it was not possible to compare the quality of the carcasses of each group at those times. However, field observations were that for the first year there was only slight difference between the groups in favour of the fed animals and both looked well. For the second year there was a marked difference. The fed group was attractive with a number in good marketable condition while the majority of the controls were in fair condition only.

Liveweight increases during the winter following the experimental feeding periods until slaughter, were similar for both groups. Taking the two years results into account, the fed group had obviously no advantage over the unfed groups during this time. The early gain (20 lb.) of the fed group for the first two months in the first year was not repeated the following winter and in fact the converse was true, the control gained 13 lb. more than the fed group for the same two-monthly period.

At slaughter, during the latter half of September each year, the fed group dressed out at a higher figure than the controls in each case. The difference was more marked in the second year.

In appearance, prior to slaughter, there was little to choose between the groups of the first trial but the difference was more noticeable in the second year when the control cattle required more time to gain prime marketable condition.

**DISCUSSION**

It is interesting to note that during the first summer the quality of the grazing was such that the control group continued to make gains throughout this period at the average rate of \( \frac{1}{2} \) lb. per day for each animal. This result was due partly to the
ample paddock feed of good quality resulting from the excellent season of 1955 and partly also to good pasture management in that some of the pasture and also an oat crop in the very early flowering stage, were mown and left lying in the paddocks.

At several of our research stations it has been clearly shown that this mowing treatment prevents much of the loss in food value of the grazing which occurs when the pasture matures beyond the hay stage. This mown material has a higher carrying capacity and also is more suited to the development of growing animals because of its higher protein content than that of normally matured pasture.

During the second summer the animals did better than was expected with the grazing available. The explanation probably lies in the fact that the season finished sharply and prematurely resulted in the herbage "haying off" and so retaining more of its feeding value.

In both years the control animals were quite healthy. The results show that at these two fairly divergent levels of summer paddock grazing it did not pay to feed oat grain at the rate used in order to produce extra beef from healthy weaners. At current prices the same result would apply to wheat and barley.

However, it is obvious that where the summer grazing is inadequate for keeping the stock healthy and in reasonable condition, some form of supplementary feeding is essential. Good quality meadow hay and silage are well suited for this purpose and self-feeding from supplies conserved where the material is cut is both effective and cheap.

It was decided to feed the oats whole. Undigested grain showed in the droppings but to a minor extent and it appeared doubtful if it would have paid to crush. However, oats should be cracked or lightly crushed for cattle from about a year old.

**SUMMARY**

Weaner beef steers were fed a daily ration of 5 lb. of oats for four to five months during the summer in addition to paddock grazing ad lib.

The experiment was repeated the following summer and for both periods the liveweight increase due to the oats did not pay for the cost of the grain.

When grazed on good quality improved pasture, the unfed steers made an average live weight increase of ½ lb. per day throughout the experimental feeding period and were in good condition at the commencement of winter. On fair grazing only, similar steers the next year lost weight (18 lb.) over the experimental period and were in only fair condition at the end of the period.
From the end of the experimental feeding period until slaughter, when both groups were run together, there was no difference in liveweight increase between them.

At slaughter, the fed animals dressed out at a somewhat higher percentage than the control.

Mowing surplus pasture at the hay stage is a sound practice for providing good quality paddock grazing for the summer and autumn at small cost.

ACKNOWLEDGMENTS

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The management and staff of the Midland Abattoirs provided the facilities for inspection and appraisal of the carcasses and their assistance so freely given is also much appreciated.

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