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HEXOESTROl IMPLANTS WITH YEARLING STEERS
(An Experiment at "Cranmore Park," Walebing, 1958)

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The implantation of pellets containing the growth-promoting hormone, hexoestrol, into the ears of cattle being prepared for slaughter is common practice in the United States of America. In the United Kingdom also, its use is becoming increasingly popular with beef producers. Research in these countries has shown that increased liveweight gains and more efficient feed conversion can be expected at very little cost.

However, their methods of feeding cattle for market differ markedly from ours particularly under the feed-lot system of the U.S.A. For this reason overseas findings may not apply here, at least to the same degree, and in order to assess the usefulness of the practice as an economic aid to our own production it is necessary to carry out research under the typical paddock grazing conditions by which practically all our cattle are marketed.

Investigations using hexoestrol implants which have so far been carried out in Australia have given variable results. In some cases only slight increases in liveweight gain were obtained, while at the other extreme, daily gains have been about half a pound or more and similar to those commonly obtained overseas.

In order to obtain information on the results of the practice in the agricultural areas of this State, an experiment was conducted with yearling steers at "Cranmore Park," Walebing during the period June-September, 1958.

INVESTIGATION AT "CRANMORE PARK," 1958

The market price of lightweight beef normally commences a downward movement at the end of September, and it is the usual practice on this property to market surplus weaners and young steers late in September before the drop in price occurs. The animals are by then sufficiently well finished for the local trade.

On June 12, 20 Shorthorn x Aberdeen Angus steers 12 to 16 months old were eartagged, weighed and divided into two similar groups. They had mostly reached forward store condition following a rather difficult autumn-early winter period.

The cattle in one group were implanted in the back of one ear with 60 mgm. hexoestrol (four gromax "C" pellets each containing 15 mgm.) and the other cattle were untreated to serve as a control group.

Both groups were run together throughout the period and were grazed on improved pastures except for three weeks on young oat crops early in the season.

The experimental period of 96 days ended on September 16 when the cattle were despatched to the Midland Abattoirs for slaughter the following day.

The carcasses were inspected for conformation and finish and individual weights recorded. After chilling overnight, further assessments were made of group differences by carcass measurement as used in the "McMeekan System" of carcass appraisal. The measurements were the depth of eye muscle and its external fat cover at the cut surface between the tenth and eleventh ribs, and also the length of the hind leg.
RESULTS

Growth rates and slaughter data are shown in Table I. Pasture growth in 1958 developed later than usual and liveweight increases were rather low for the first few weeks. However, over the full experimental period of 96 days the average liveweight gain of the treated group was 67 lb. per beast greater than the untreated controls. The carcass weight was 34 lb. extra. These differences were very highly significant.

The average daily liveweight gain of the control group was 2.05 lb. while for the implanted group it was 0.7 lb. higher at 2.75 lb.

Dressing out percentages were virtually the same at 49.7 per cent. and 49.8 per cent. respectively. The carcasses of the implanted group showed less finish than the controls particularly on the legs and shoulders. Internal fat was light and similar for both groups. Generally, the control group had reached marketable condition but the implanted group was not quite ready (see photographs). Fat cover over the eye muscle was significantly less for treated carcasses.

Depth of eye muscle and length of leg were both slightly greater for the treated group but neither difference was significant.

No side effects such as raised tail-head or depressed loin were evident before slaughter.

DISCUSSION

The effect of hexoestrol in promoting liveweight gains increases with age and is at its maximum when the natural growth stimulus is falling off. However, even at the relatively young age of the experimental steers the average liveweight increase of 67 lb. was considerable. Its equivalent in carcass weight viz. 34 lb. at the then current price (200s. per 100 lb.) for lightweight steer beef is equal to £3 8s. for each beast treated.

The cost of the pellets is about one shilling for each beast so that the net gain due to treatment was well worth while, even after allowing for the labour cost of implanting.

Research both in Australia and overseas has shown the necessity for animals to be well forward towards market condition when implanted. As the hormone stimulates meat production at the expense of fat, it follows that if the animals are not sufficiently forward there is the likelihood that they may carry too little fat when marketed even at the present day standards of “finish.” This occurred with several of the treated steers which were decidedly lacking in fat cover. Due to seasonal conditions the cattle were not as forward at the commencement of the experiment as is generally the case at this time of the year and, although the level of nutrition was quite adequate for the purpose of the experiment (the control group increased 2 lb. per day), the hexoestrol-treated group was still barely ready for market and clearly showed the lesser finish due to treatment.

If the level of grazing had been lower or if the animals had been less forward in condition when implanted, it was obvious that treatment would have resulted in their being unfinished for marketing when required.

Usually the dressing percentage is less with treated animals, that is there is greater loss on slaughter, and this minimises the liveweight gains when considered as carcass weight. In this experiment, however, both groups dressed out at the same percentage of approximately 50 per cent. This percentage is another indication that the beasts were not as forward as usual, as the dressing for such yearlings in other years was 53 per cent. or higher.

The thickness of fat cover over the eye muscle is a guide to the amount of external fat or “finish” of the whole carcass. The measurements showed appreciably less fat cover for the treated carcasses, even greater than when assessed by eye.

The shortness of leg and depth of eye muscle are indicative of meat development, particularly in the more valuable parts of the carcass, but in this experiment the differences between the groups for these two items were small. However it is pointed out that as the treated group carried less fat, their greater carcass weight was primarily due to extra lean meat production and not fat.

In the light of present information, 60 mgm. appears to be the most suitable dose and this is usually suggested. Further
Experimental cattle photographed just before trucking for slaughter. The top picture shows the implanted group; lower picture shows the control group (untreated). Although the control animals show slightly better "finish," the implanted group weighed an average of 67 lb. per beast more (liveweight) and dressed out 34 lb. heavier.

investigation is required on this point, however, before firm recommendations can be made. Smaller amounts may result in lower weight gains while larger doses may give rise to objectionable side-effects such as the raising of the tail-head and depression of the loin region. No such effects were seen in this experiment.

Although quite worthwhile weight increases were obtained, this has not always been the case with investigations carried out in other parts of southern Australia. Results have been sufficiently divergent for it to be apparent that more information is necessary before the true value of the practice can be assessed under the varied conditions of the beef raising areas.

However there is already sufficient information to show that treatment should be given only to cattle which are well forward in condition and which will be run under good grazing conditions until slaughtered three to four months from the time of implanting. It is important to confine treatment to cattle being prepared for slaughter.

SUMMARY AND CONCLUSION
During the winter-early spring period, 10 yearling Shorthorn x Aberdeen Angus steers were implanted in the ear with 60 mgm. of hexoestrol (4 pellets each containing 15 mgm.). A similar untreated group was retained as controls. The average weight of both groups was 583 lb. They were run as one group on improved good quality pasture and slaughtered after 96 days.

The average weight of the control group increased by 197 lb. (2.05 lb./day) and of the implanted group by 264 lb. (2.75 lb./per day). The difference of 67 lb. was equal to 34 lb. carcass weight which represented an increase in value per beast of £3 8s. due to treatment.

There was no difference in dressing percentage between the two groups. The carcasses of the treated animals were significantly less finished than the untreated controls and several were below local trade standard in this respect. The extra carcass weight was due primarily to lean meat production and not to fat.
From these results it would appear that some economic gain may be obtained through increased liveweight by the use of hexoestrol implants when preparing yearling beef cattle for slaughter. However, it is necessary for the animals to be well forward in condition and to have ample good quality grazing throughout the treatment period, otherwise some loss in value may occur due to lack of finish.

ACKNOWLEDGMENTS

Acknowledgment is made to Mr. P. Lefroy for his generous help and co-operation throughout the investigation at “Cranmore Park.” Thanks are also due to Mr. B. F. Carlin, Agricultural Adviser, Moora, for his assistance; to Mr. R. Rigg of Messrs. J. and A. Patton, who purchased the cattle, for permission to use the carcasses for appraisal, and to the management and staff of the Midland Abattoirs for their co-operation and assistance during slaughter and examination of the carcasses.

Table I

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of</th>
<th>Liveweight at Implanting on June 12</th>
<th>Final Weighing Sept. 16</th>
<th>Gain in weight</th>
<th>Carcass Weight</th>
<th>Dressing Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control untreated</td>
<td>10</td>
<td>583 lb.</td>
<td>780 lb.</td>
<td>197 lb.</td>
<td>205 lb.</td>
<td>388 lb.</td>
</tr>
<tr>
<td>Implanted with 60 mgm. Hexoestrol</td>
<td>10</td>
<td>583 lb.</td>
<td>847 lb.</td>
<td>264 lb.</td>
<td>275 lb.</td>
<td>422 lb.</td>
</tr>
<tr>
<td>Difference in favour of implanted group</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>67 lb.</td>
<td>70 lb.</td>
<td>34 lb.</td>
</tr>
</tbody>
</table>

* Very highly significant. N.S.—Not significant

Table II

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Length of leg</th>
<th>Depth of eye muscle</th>
<th>Depth of fat over eye muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>15-7 ins.</td>
<td>49 mm.</td>
<td>9-7 mm.</td>
</tr>
<tr>
<td>Implanted Group</td>
<td>16-1 ins.</td>
<td>51 mm.</td>
<td>7-4 mm.</td>
</tr>
<tr>
<td>Difference</td>
<td>0-4 N.S.</td>
<td>2 N.S.</td>
<td>2-3* mm.</td>
</tr>
</tbody>
</table>

* Significant. N.S.—Not Significant

W.A. HORTICULTURAL ADVISER TO GO OVERSEAS

The Senior Horticultural Adviser of the Department of Agriculture (Mr. F. Melville) has been loaned to the Commonwealth Government to undertake duties as Assistant Fruit Officer in London this year.

The Minister for Agriculture (Mr. L. F. Kelly) said that Mr. Melville, who was a graduate of the University of W.A., had been engaged on research work in connection with the storage and transport of fruit, particularly in preventing the occurrence of “scald” in Granny Smith apples held in cool stores.

On behalf of the Commonwealth he would investigate technical aspects of the condition and quality of Australian fruit, particularly apples and pears, as it reached the main markets in the United Kingdom, Sweden and Germany. He would study trends in marketing and evaluate the competition which Australian fruits encounter when compared with the produce of other countries.

He would also visit fruit production centres in Britain and the United States and would investigate overseas research into storage and transport problems. Subsequently the information gained would be made available to growers, exporters and inspectors on his return to Western Australia.

Mr. Kelly said that Mr. Melville’s survey of the leading production and research centres was being undertaken at the request of the West Australian Fruit Growers’ Association who would meet half the costs involved. Special attention would be paid to the fruit industry in California where conditions greatly resembled those in Western Australia.
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