Animal husbandry research at Bramley

Department of Agriculture, Western Australia
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ANIMAL HUSBANDRY RESEARCH AT BRAMLEY

A progress report of animal husbandry investigations at the Bramley Animal Husbandry Research Station, Margaret River.

BRAMLEY RESEARCH STATION is four miles north of Margaret River. The average annual rainfall of 45 inches falls mainly in the winter, providing a seven-month growing season which starts in March or April. The June-July period is excessively wet, causing extensive waterlogging of the soils.

The property totals 256 acres, of which all but 15 acres is sown to improved pasture.

Soil types at the Station represent those used for agriculture throughout the district. They include 197 ac. of Mungite and Forest Grove sands and sandy loams, 50 ac. of mixed alluvial soils (summer country) and about 10 acres of less fertile sands.

The breeding policy at Bramley is to grade up the milking herd to Friesian from a mixed Jersey-Guernsey herd. The reason for this is that the Friesian is the best breed to provide animals suitable for experiments on both milk and meat production.

When the milking herd has been built up to about 50 productive, uniform cows, it will be possible to conduct trials on the
effects of feeding and management on milk production, which will be applicable to beef dams as well as dairy cattle.

Trials already started include studies on calf rearing, foster-mothering, potash topdressing, pasture conservation and feed supplements.

**MASTITIS CONTROL**

The mastitis control programme at Bramley was implemented in 1964-65. The main aim was that mastitis must not interfere with feeding—milk production experiments. It was also important that the programme should be a practical one that could be carried out by any dairy farmer.

The routine introduced was:—

1. Use running water to wash udder and teats and stimulate milk let-down, the milker’s hands being used to massage and remove the dirt.

2. “Back-flush” the teat cups between cows, using at least 6 pints of water.

3. Apply the Rapid Mastitis Test.
   (a) The milk of all cows calving is tested daily for the first three days of lactation.
   (b) Quarters positive to the test three days after calving are treated.
   (c) Cows which still give positive reactions to the test after treatment are milked last.
   (d) Weekly tests are done on the milk from all cows. Any newly positive quarters are retested, and, if still positive, treated.

**Progress**

One cow was dried off with four quarters infected.

One cow has one quarter which was positive at calving and could not be cured. It is now milked as a three quarter cow.

One cow has one quarter infected and this is still infected. This cow is milked last.

One cow calved down with infection in all four quarters and was culled without treatment.

The milking herd thus consists of 52 cows in which the R.M.T. is negative in all four quarters and two cows with only one quarter infected. A relatively mastitis-free herd has been achieved through a programme which is practical in any milking shed.

**Calf Rearing**

During the years 1962-1964 one paddock was provided for the rearing of calves. This meant that calves of all ages were run together as a group until weaning at 12 weeks of age. During this pre-weaning period they were fed a maximum of one gallon of wholemilk daily, with access to good quality hay and pasture.

**Calf Weights**

Since 1962, calf weight gains to weaning have increased. This is due partly to an increasing proportion of Friesian breeding, and partly because the period of calving has been shortened so that there is less difference between the ages of early and late-born calves.

"Back-flushing" teat cups in the Bramley milking shed
Trade-in for further price reduction
Terms on ANY purchase

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MOWER DEMONSTRATIONS
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* L.P. GAS APPLIANCES TOO.

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dollar spent will be given a separate number. This means that the prizes
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and therefore, more chances).

Goods purchased terms-only entitle the customer to a number per dollar
paid during the year 1st July, 1966, to 30th June, 1967.
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Rural Group:
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Table 1.—The average performance of calves reared during 1964 and 1965

<table>
<thead>
<tr>
<th></th>
<th>No. of Calves</th>
<th>Birth Wt.</th>
<th>Wt. at 12 Weeks age</th>
<th>Wt. Gain—Birth to 12 Weeks age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
</tr>
<tr>
<td>1964</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heifer calves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guernsey (ex heifers)</td>
<td>8</td>
<td>57</td>
<td>153</td>
<td>96</td>
</tr>
<tr>
<td>Steer calves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friesian</td>
<td>6</td>
<td>93</td>
<td>208</td>
<td>115</td>
</tr>
<tr>
<td>Hereford x Friesian</td>
<td>4</td>
<td>89</td>
<td>193</td>
<td>104</td>
</tr>
<tr>
<td>1965</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heifer calves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guernsey (ex heifers)</td>
<td>7</td>
<td>59</td>
<td>162</td>
<td>103</td>
</tr>
<tr>
<td>Friesian</td>
<td>7</td>
<td>91</td>
<td>196</td>
<td>105</td>
</tr>
<tr>
<td>Friesian x Guernsey</td>
<td>13</td>
<td>75</td>
<td>182</td>
<td>107</td>
</tr>
<tr>
<td>Friesian x Jersey</td>
<td>2</td>
<td>58</td>
<td>158</td>
<td>100</td>
</tr>
<tr>
<td>Steer calves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friesian (reared)</td>
<td>9</td>
<td>89</td>
<td>223</td>
<td>134</td>
</tr>
<tr>
<td>Friesian (fostered)</td>
<td>7</td>
<td>101</td>
<td>291</td>
<td>190</td>
</tr>
<tr>
<td>Friesian x Guernsey (reared)</td>
<td>6</td>
<td>83</td>
<td>197</td>
<td>114</td>
</tr>
<tr>
<td>Friesian x Guernsey (fostered)</td>
<td>2</td>
<td>92</td>
<td>284</td>
<td>192</td>
</tr>
</tbody>
</table>

Table 1 summarises the weight gains achieved by calves during 1964 and 1965. The influence of breed on birth weight, weaning weight, and liveweight gain can readily be seen. A number of steer calves were foster-mothered in 1965, and it is convenient to compare their performance with artificially reared calves in Table 1.

**Time of Calving**

Cattle scales were installed at Bramley in December, 1963, for regular weighing of all cattle throughout the year. At that time a noticeable weight difference was found between early and late-born calves, Table 2 shows the weight differences between age groups of calves of the one breed. It can be seen that the calf drop became much more concentrated during these three years.

The weight differences between early and late born calves could be attributed to either differences in age as such or to differences in pasture and food available for calves born at differing times of the season. Alternatively, later born calves could be contaminated by older calves on the same pasture. The effect of age alone would not account for all the weight differences shown, as in 1964 the small age difference was associated with a relatively large weight difference.

The possibility that contamination of the pasture by older calves was having a real effect on the weight gains of younger calves was examined in the following year by subdividing the calf rearing area.

Table 2.—The average weights and ages of early and late born Guernsey calves

<table>
<thead>
<tr>
<th></th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight</td>
<td>Age</td>
<td>Weight</td>
</tr>
<tr>
<td></td>
<td>lb.</td>
<td>days</td>
<td>lb.</td>
</tr>
<tr>
<td>Early Calves</td>
<td>772</td>
<td>589</td>
<td>343</td>
</tr>
<tr>
<td>Late Calves</td>
<td>637</td>
<td>506</td>
<td>281</td>
</tr>
<tr>
<td>Difference</td>
<td>135</td>
<td>83</td>
<td>62</td>
</tr>
</tbody>
</table>
Calf Paddock Subdivision

For the 1965 calf rearing season, the rearing area was subdivided into four equal areas of a little over one acre each. Calves were then reared in age groups of 10 or 12 to a paddock, each being provided with a portable calf shelter and separate feeding bails. The calves remained in their respective age groups until weaning at 12 weeks of age.

The success of this system of rearing can be gauged by the fact that at 12 weeks of age, April-born calves had gained an average of 123 lb. whereas May-born calves gained 143 lb. in weight. It seems that time of birth has had little or no effect on the performance of calves when reared in these separate age groups.

Late Calves Feeding Demonstration

A number of Friesian heifer calves, born in September, 1965, were fed whole milk in the calf rearing area to the age of 12 weeks. During this time and during the following late spring, summer and autumn, these animals had access to a 14 per cent. protein mixture of linseed meal, coarsely-milled oats and minerals. The rate of feeding was to a maximum of 5 lb. per calf per day.

The object of this trial was to determine what weight gains could be achieved in late calves during this period, and to compare their size with autumn-born calves at mating time early in June. All the late-born heifers were mated at the same time as the autumn born calves, on June 1, 1966.

The results of this mating in terms of fertility are not yet available but the weights of the late calves at the time of mating are compared with those of normally-reared autumn born heifers in Table 3.

October-born calves, had been used in a trial in which they were subjected to a fairly intense stocking rate from weaning until a few weeks before mating. They had also been used in parasite control trials.

The weights of the autumn-born calves were therefore generally lower than would be expected under more lenient management conditions.

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Table 3.—Comparison of autumn and September-born heifer calves—1965

<table>
<thead>
<tr>
<th>Date of Birth of Heifer Calves</th>
<th>Average Age at June 1st</th>
<th>Average Live-weight at June 1st</th>
<th>Concentrate Fed Per Calf</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>months</td>
<td>lb.</td>
<td>lb.</td>
</tr>
<tr>
<td>September (11)</td>
<td>8.2</td>
<td>412</td>
<td>982</td>
</tr>
<tr>
<td>Autumn (30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Heaviest</td>
<td>12.1</td>
<td>361</td>
<td></td>
</tr>
<tr>
<td>15 Lightest</td>
<td>12.4</td>
<td>282</td>
<td></td>
</tr>
</tbody>
</table>

would have to be weighed against their cost. As potential replacement milkers for the dairy herd, the cost of purchasing suitable replacements would need to be compared with the value of the late calves in September, plus the cost of feeding concentrates over the summer.

Calf Rearing Trial

The 1966 calves are being used in a calf rearing trial. The calves have been allotted to three treatments designed to examine the effects of two levels of whole-milk feeding and two types of concentrate rations. This trial is not yet completed.

FOSTER-MOTHERING FOR DAIRY BEEF

The possibility that foster-mothering steer calves for meat production might be a profitable sideline to dairying is being examined at Bramley. Some preliminary observations on methods of foster-mothering and management and the economics of such an enterprise have already been made.

In 1965, four cows calving during June and July each reared two steer calves; one their own and the other a foster-calf. Another two cows reared single steer calves. These six cows would normally have been culled from the milking herd for such reasons as mastitis, low production and late calving.

The calves were kept on their “mothers” until four were sold for slaughter in mid-November and the remaining six a month later. The ages at slaughter ranged from 4 to 6½ months. The cows were also sold shortly after the calves.

The results and financial returns obtained from this demonstration are shown in Table 4.

Table 4.—The weights and returns of cows and calves from the foster-mothering demonstration

<table>
<thead>
<tr>
<th>Cow</th>
<th>Carcass Weight</th>
<th>Value of Carcass</th>
<th>Calf</th>
<th>Birth Weight</th>
<th>Final Weight</th>
<th>Carcass Weight</th>
<th>Value of Carcass</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>lb.</td>
<td>$</td>
<td>No.</td>
<td>lb.</td>
<td>lb.</td>
<td>lb.</td>
<td>$</td>
</tr>
<tr>
<td>016</td>
<td>639</td>
<td>120</td>
<td>11</td>
<td>96</td>
<td>560</td>
<td>292</td>
<td>55</td>
</tr>
<tr>
<td>007</td>
<td>567</td>
<td>106</td>
<td>12</td>
<td>101</td>
<td>567</td>
<td>343</td>
<td>79</td>
</tr>
<tr>
<td>14</td>
<td>558</td>
<td>104</td>
<td>15</td>
<td>100</td>
<td>483</td>
<td>281</td>
<td>64</td>
</tr>
<tr>
<td>04</td>
<td>691</td>
<td>130</td>
<td>16</td>
<td>97</td>
<td>595</td>
<td>312</td>
<td>63</td>
</tr>
<tr>
<td>011</td>
<td>705</td>
<td>133</td>
<td>17</td>
<td>87</td>
<td>504</td>
<td>300</td>
<td>64</td>
</tr>
<tr>
<td>012</td>
<td>497</td>
<td>92</td>
<td>18</td>
<td>90</td>
<td>560</td>
<td>298</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>366</td>
<td>23</td>
<td>98</td>
<td>504</td>
<td>286</td>
<td>53</td>
</tr>
</tbody>
</table>

513
For the four cows which reared two calves each, the average total carcass value (one cow plus 2 calves) was $232. The estimated initial value of each of these cows, plus that of her two calves, had they been sold shortly after birth, would be approximately $120. By retaining the "cull" cows for an additional season as foster-mothers, instead of culling them, a profit of $112 per cow was made.

For the two cows which reared single calves the profit was about $70.

One of the attractive features of this sideline is that it makes little demand on the dairy farmer's time. Apart from the initial foster-mothering, the animals required no attention until sold.

The breed used would have an important bearing on the success of rearing calves for meat. The Friesians used at Bramley proved admirably suited to dairy-beef production. Channel Island breeds would be less suitable as their calves are slower growers and do not finish as well. Dairy-beef cross calves would generally perform better than straight dairy types, except perhaps Friesians, where the difference is usually negligible.

As the returns from wholemilk are somewhat higher than the returns from butterfat it would be more profitable for a butterfat farmer to run a foster-mothered dairy-beef sideline than would be the case with a wholemilk supplier.

Observations on foster-mothering are continuing in 1966 with 10 cows and 16 calves, confined to a grazing area set aside for this purpose so that some assessment can be made of production per acre under this system.

**PASTURE CONSERVATION**

In the past, hay has been the chief form of conserved fodder at Bramley. As part of the general policy to examine all aspects of feeding cattle, it is planned to compare the values of different methods of conservation. These methods include hay, silage, rolled pasture and artificially dried hay.

This year an area has been set aside for silage making, with portable silage clamps.

As the quality of pasture falls rapidly towards the end of the growing season, the hay is cut and baled as early as possible each year. One of the chief objections to early-cut hay is the problem of unsuitable hay-making weather and the time required to dry the hay before baling. A hay drier has now been purchased and will be used to reduce the curing time required between cutting and baling early hay.

The principle in artificial drying of hay is to bale the mown pasture when its moisture content has dropped to, say, 45%.
The bales are then stacked in the open or in a shed and air is forced through them by means of the drier, consisting of a high powered fan-type blower. This should then reduce the moisture content to 20 to 25 per cent, which is normal for paddock-cured hay. Because curing time can be greatly reduced, there is usually a saving in nutrients, and therefore an improvement in quality, with artificially-dried hay.

The system is common overseas and its possible application in Australia needs investigation.

**Rolled Pasture Trial**

For the past two years, a fodder roller has been used at Bramley for short-term conservation of surplus spring growth, in addition to the normal quantity of feed conserved as baled hay. The pasture is cut, dried and rolled into 300 lb. untied bales, or rolls, and left in the paddock. The pasture rolls can, if required, be transported by a buck rake.

The rolled pasture method of conservation can be used as an alternative to dry standing summer feed and is suitable for summer-autumn feeding.

In 1964, two comparable paddocks were selected for testing this method of conservation. One was mown and rolled and the other allowed to mature and dry. Two groups of yearling steers and heifers were weighed, and one group placed in each of the two paddocks on December 8. They remained there until the trial terminated on January 28, when they were again weighed and removed from the trial area and grazed as one group.

During the 51 days of the trial, the animals feeding on rolled pasture gained an average of 154 lb. liveweight, whereas those grazing the dry summer pasture gained only 98 lb. Their subsequent performances were similar.

This trial demonstrated the feeding value of cutting pasture before maturity. This technique required no labour apart from the initial mowing, raking and rolling.

**FEED SUPPLEMENTS**

**Compounded Nutrient Block Trial**

A new type of stock feed supplement which has recently become available and for which good results have been claimed in trials in the Eastern States and overseas was tested at Bramley in 1964.

The supplement used is available commercially in 50 lb. blocks and is composed of grain sorghum, distillers dried solubles from molasses fermentation, urea, salt, calcium, phosphorus and cobalt.

The trial lasted from 16th February until calving in the following autumn and winter. The animals were divided into two equal groups of 17 cows on the basis of age, production and liveweight. The two groups so formed grazed the same two comparable paddocks throughout the supplement feeding trial, and were rotated between the two paddocks at fortnightly intervals. The block supplement was moved with the group being fed.

During the supplementary feeding period, the cows consumed an average of about 1 1/2 lb. supplement per head daily.

Table 5 takes into account most of the probable differences likely to be produced.

<table>
<thead>
<tr>
<th>Table 5—Comparison of supplemented* and unsupplemented cows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Calf birth weight</td>
</tr>
<tr>
<td>Calf birth weight, as % of dams weight (early calves only)</td>
</tr>
<tr>
<td>Calf weight gain to weaning</td>
</tr>
<tr>
<td>Cow weight gain—17th Feb.—29th Sept.</td>
</tr>
<tr>
<td>4% Fat Corrected Milk in 1st 3 months lactation</td>
</tr>
</tbody>
</table>

* Special grain—distillers' solubles—urea—mineral supplement fed pre-calving.

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by feeding a supplement of this type. Calves born to the supplemented group were slightly heavier than calves of the control group. In addition, calves from supplemented cows grew slightly faster to weaning.

Supplemented cows subsequently gained more liveweight and produced more milk (by 1.6 per cent.) during the first three months of lactation following supplementation.

All these differences were small and not statistically significant individually. However, the fact that in every case, the difference was in favour of the supplemented group indicates that a closer look at feeding this type of supplement to cattle is warranted.

**Urea Feeding Trial**

Urea is now used in a good many stock licks following research findings that under certain conditions the ruminant can use this compound as a partial substitute for protein. It has been suggested that sheep and cattle would utilise low quality summer roughage better if supplemented with this nitrogen containing compound.

In the late summer of 1964, an eight-week trial was conducted with two comparable groups of Guernsey heifer yearlings. Each group consisted of 12 animals. One group had unrestricted access to a commercial urea block, which contained 44 per cent salt, 23 per cent rock phosphate, 30 per cent urea with a small amount of distillers dried solubles and cobalt. The other group was not supplemented.

Hay was fed to both groups during the last three weeks of the trial. From records of liveweight changes before, during and for five months after the trial, no advantages or disadvantages could be associated with urea feeding under these conditions.

**WORMS IN CALVES**

Heavy worm infestations are responsible for big losses both from deaths and by stunting growth of calves, throughout the dairying areas of the South-West each year.

The advent of more efficient drenches over the past few years has provided a means of reducing these losses but with worm infestation the old adage “prevention is better than cure” holds true.

Various systems of management, mainly involving paddock rotations, have been used in attempting to reduce infestations acquired by calves up to weaning age and thus to keep the total worm burden down to a level where it does not cause serious ill-effects. Most systems have inherent disadvantages and results are variable. A new system has been tried at Bramley this year. Calves of similar age groups are introduced into paddocks rendered as free from infestation as is practically possible. Each group is kept in its original paddock from a few days old until weaning age of 12 weeks.

Such a system has advantages as a means of general disease control and of providing suitable nutrition, as well as limiting worm infestation in young calves. The area involved has not been stocked with cattle for the previous two seasons.

Results obtained this year have been promising in that of 42 calves reared to weaning in the four paddocks, and on which worm-egg counts were made at weaning, only eight showed evidence of infestation. These infestations were at a very low level, and would not have had adverse effects on the health and growth rate of the calves.

This result has been obtained in spite of the fact that climatic conditions were very suitable for worm development in the 1966 winter. A heavy worm infestation had to be treated in yearlings in other paddocks on the station in late June-early July. Outbreaks have also occurred in other districts.

**Heifers**

The heifers were divided into two groups of 15 calves each, to be placed onto paddocks which had previously been grazed by other cattle and which would presumably be contaminated, but not necessarily heavily contaminated. One of these paddocks had previously been topdressed with potash in addition to the general superphosphate topdressing; the other had received superphosphate only.
Seven of the calves in each group are drenched at monthly intervals with thiabendazole and eight in each group remain untreated.

All these heifers are weighed at monthly intervals and faecal samples are collected for examination.

Results obtained with these groups will provide information on the effect of worm burdens on growth rate, and the possible indirect effect on subsequent fertility and production.

Observations on the effect of worm burdens on growth and general health are repeated through all groups to obtain as large a total as possible.

The behaviour of the young cattle on the heavily contaminated paddocks will provide information on the effect of raising calves as free as possible from worm infestation on the development of resistance when subsequently exposed to infestation.

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