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MORE SHEEP PER ACRE

Heavy Rate Set Stocking – Esperance Downs Research Station

By R. J. DOYLE

THIS article describes a stocking rate demonstration in one paddock at Esperance Downs Research Station, using Merino wethers.

Paddock El., as it is commonly known, has excited much comment from visitors and local farmers alike.

It consists of 120 acres of annual pasture based on Bacchus Marsh subterranean clover sown during 1950-52, and top-dressed annually to the present time to an accumulated total of 2,350 lb. superphosphate per acre plus the necessary trace elements, copper and zinc.

Since establishment to pasture no cropping has been done and the paddock has not been cultivated.

Since December 1961, the area has supported 530 to 540 Merino wethers under continuous grazing. This represents a stocking rate of 9 wethers per 2 acres over a period of 4½ years.

To March 1966 (over 4 years) greasy wool production has exceeded 250 lb. per

Part of the wether flock on paddock El, stocked at 4½ sheep per acre since 1961

THE AUTHOR: R. J. Doyle, B.Sc. (Agric.)—District Agricultural Adviser, Esperance.
acre, and total fodder supplementation to June 1966, has amounted to a cereal grain equivalent of \( \frac{3}{2} \) lb. per head per day over 14 weeks. If it can be accepted that no further supplementation will be required before next summer, then the annual cost of hand feeding spread over five years from December 1961 to December 1966, would be 25 to 30 cents a head—a small cost to debit against the average annual wool production figure of 58 lb. per acre.

The history of Paddock E1 can be conveniently divided into three periods.

1950-1961
During 1950 to 1961 the paddock was stocked under a loose rotational grazing system. The area was generally subjected to infrequent grazing at varying grazing pressures and with different classes of stock. Up to 1961 the pasture had been generally understocked and this led to increasing grass dominance. At this point two possibilities were considered:

1. Cereal crop the area and return to pasture.
2. Increase stocking rate to control or lower annual grass content.

1962-1965
The second alternative was accepted and 540 Merino wethers were introduced in December, 1961, and maintained on the paddock until their sale in March, 1965. The success of this policy is evident from Table 1.

In 1963 top lines of spring-shorn Merino wether wool from Esperance Downs Research Station realised 90 pence per lb. Fleeces from E1 wethers as a whole were more uniform and there were less tender fleeces than from the rest of the flock.

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**Table 1.**—Wool production (lb. greasy)

<table>
<thead>
<tr>
<th></th>
<th>1962</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
<th>Total, 3(\frac{1}{2}) years</th>
<th>Average per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per head</td>
<td>10</td>
<td>14</td>
<td>12</td>
<td>7.5</td>
<td>43.5</td>
<td>12.4</td>
</tr>
<tr>
<td>Per acre</td>
<td>45</td>
<td>63*</td>
<td>55</td>
<td>34</td>
<td>197</td>
<td>56</td>
</tr>
</tbody>
</table>

* Wool production records were not kept separately for E1. for the 1963 shearing. The wool cut per head of all Merino Wethers on the Research Station averaged 14 lb.

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Esperance Downs Research Station is 18 miles north of Esperance and has an annual rainfall of about 17\(\frac{1}{2}\) in., of which more than 11 in. falls between May and October. The soils are sandy at the surface, overlying gravel and clay, and are typical of the better soils of the Esperance sandplain.

In this demonstration \(4\frac{1}{2}\) Merino wethers per acre have been carried continuously on well-established pasture based on Bacchus Marsh subterranean clover, for more than four years. Hand feeding has been necessary at critical periods for the past two years, and this stocking rate appears to be near the safety limit for productive pasture in this area.

**Sheep Condition and Mortality**
During the period under discussion, mortality was light except for losses following dipping in 1963, due to arsenical poisoning. Except for this period of accidental loss, the condition and body weight of the flock was never a cause for concern.

**Pasture Composition**
The composition of the pasture tended to stabilise, progressing from grass dominance before 1961 to a mixture with a greater proportion of wild geranium and capeweed. The annuals silver grass, barley grass and brome grass now form less of the non-leguminous fraction. Legume components include Bacchus Marsh sub. clover and cluster clover, with Dwalganup and Yarloop sub. clovers in less proportion.

Over the winter period at the high stocking rate pasture growth was never
much in excess of sheep demand, but by the end of spring sufficient extra feed was available to carry sheep through the summer, autumn, and break of the season, without supplementation.

1965-1966

Due to the increasing age of the wethers described it was decided to sell them off-shears in March, 1965. Although in very good order, depressed wool prices reduced the demand and hence sale value of these sheep. However, bearing in mind the market position at that time, returns were good:

217 loose, long and broken mouth wethers sold on the place to butchering trade @ 57s. a head.

312 sound mouth wethers sold at auction @ 62s. a head.

The 217 (sold in March) were described as “a bit too fat for the trade.”

Following the sale of the original Merino wethers, 540 replacements of various age groups were introduced to the paddock following shearing, dipping, drenching and vaccination. All sheep had been mulesed previously. Age groups were:

- 90—Rising 2-tooth.
- 90—Rising 4-tooth.
- 90—Rising 6-tooth.
- 90—Loose and broken.
- 90—Full and fresh full.

The introduction of various age groups will allow regular annual replacement of the oldest group with rising 2-tooth Merino wethers, and will provide information on the relative performance of wethers of varying ages run together at high stocking rate. All sheep are identified by numbered ear tags and are weighed monthly.

Wool production and live-weight records to March shearing 1966 for the newly-introduced group are set out in Table 2, and indicate the continued high production from this paddock.

The seasonal change in bodyweight is depicted in the graph, indicating the period of feed shortage. It is normal for bodyweights to decline over the summer-autumn period but the sheep return to high bodyweights by late spring. High production has been maintained under these conditions.

General

Wool production has again been maintained at a high level—62 lb. greasy wool per acre, with the average cut per head per group ranging from 12.7 to 14.3 lb.

Because the management of this demonstration calls for the introduction of young wethers to the paddock following shearing in March, at a time when the quality and quantity of feed is low, it would be expected that some hand-feeding would be necessary. This has been the case and the cost of this supplementation has already been discussed.

During May, 1965, it was necessary only to feed at a rate equivalent to $\frac{1}{2}$ lb. oat grain per head for one month. However, following heavy rainfall in January-February, 1966, the quantity and almost certainly the quality of dry paddock feed deteriorated at a faster rate than in

<table>
<thead>
<tr>
<th>Age</th>
<th>1965</th>
<th>1966</th>
<th>Wool Production (lb.), March shearing, 1966</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-tooth (90)</td>
<td>64</td>
<td>60</td>
<td>55</td>
</tr>
<tr>
<td>4-tooth (90)</td>
<td>84</td>
<td>81</td>
<td>74</td>
</tr>
<tr>
<td>6-tooth (90)</td>
<td>109</td>
<td>102</td>
<td>94</td>
</tr>
<tr>
<td>F. and F.F. (180)</td>
<td>119</td>
<td>109</td>
<td>102</td>
</tr>
<tr>
<td>Loose and broken (90)</td>
<td>117</td>
<td>103</td>
<td>99</td>
</tr>
<tr>
<td>Average per month</td>
<td>102</td>
<td>94</td>
<td>88</td>
</tr>
</tbody>
</table>

Total : 62 lb. per acre
previous years, and supplementation commenced in mid March and continued to late May. Worm infestation was evident for the first time, and this coupled with suspected paratyphoid undoubtedly worsened the situation generally. Shortly after drenching for internal parasite control supplementation was stopped and all groups improved in condition and gained in bodyweight, on an improving pasture.

**SUMMARY**

Observations over a 4½-year period have highlighted the production potential of old, well-established annual legume-based pasture in the Esperance district.

- Merino wethers stocked at 4½ sheep an acre have grazed continuously on 120 acres Bacchus Marsh sub.

- Total wool production (greasy) over the period exceeded 250 lb. per acre with no apparent deterioration in the wool value when compared with other Merino wool produced on the Research Station.

- With continuous grazing at high stocking rate obvious worm infestation was evident in only one period (May, 1966) over the 4½ years. Wethers are given an annual drench in early summer, when grazing dry paddock feed.

- Continuous grazing at a high stocking rate has resulted in a build-up of the herbaceous clover for 4½ years, with limited supplementation over the last two years only.

Seasonal liveweight trends of wethers of varying ages, set-stocked at 4½ sheep per acre
species, wild geranium and cape-weed, at the expense of annual grasses.

- The plant components wild geranium and capeweed have accepted heavy grazing pressure in early winter and coupled with subsequent build up of clover species in late winter-spring, have provided better quality summer feed than would be provided by grass dominant pastures.

- Hand feeding has been necessary in the last two years because of feed shortage in autumn-early winter. This may indicate that the stocking rate is near the upper limit for poorer seasons.

- The paddock will continue to be grazed under the present system to further study the long-term effects on pasture production and composition, and animal production.

**PRECAUTION**

There is a danger that the above results might lead growers into over-stocking pastures which are not as productive as the one described.

Progress to high stocking should be gradual and the rate selected must be in keeping with the productivity of the pasture, the “thrift” of animals used, water supplies and other factors. The normal procedures for animal disease prevention should be followed.

The stocking rate selected for the area described appears to be near the limit. Under these conditions some form of fodder reserve is necessary for the poorer seasons. This could be considered as a drought reserve, because hand-feeding would not be necessary in most years.

It is not suggested that pastures be stocked beyond a safe limit. If a wether stocking rate slightly lower than the one adopted in the demonstration had been used, it is unlikely that supplementary feeding would have been necessary to this time.

For maintenance of the clover component in pastures regular topdressing of superphosphate at an adequate level is necessary.

Red mite should be controlled in years of heavy infestation.
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