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Strip vs continuous grazing of irrigation pasture

By R. Sprivilis, R. Bettenay and T. Pavy, Dairy Division

Following a 1974/75 Wokalup Research Station trial which demonstrated that 5.48 cows/ha was a more productive continuous grazing rate than either 4·1 or 6.85 cows/ha, a 1975/76 trial has shown that even more production can be gained from strip rather than continuous grazing.

The trial involved 36 Friesian-Jersey cross cows which began the trial in early lactation with an average liveweight of 425 kg/head.

The pastures involved were irrigated kikuyu, paspalum and perennial clovers fertilised with 3:2 superphosphate-potash as a single dressing of 250 kg/ha in autumn 1975, and four split dressings of gran 34 at a rate of 147 kg/ha (50 kg N) applied in October, December, January and March.

Treatments for the trial are summarised in the Table and were managed as four separate paddocks with nine cows in each. Two continuous grazing treatments, one identical with the best for the 1974/75 trial (Treatment A = 5.45 cows/ha) and the other 12 per cent. more heavily stocked (Treatment B = 6.12 cows/ha) were compared with two rationed strip grazing treatments each of 6.12 cows/ha.

For the strip grazing treatments, C and D, pasture dry matter on offer was measured weekly and the size of daily strips was calculated Cows on treatment C were grazed at moderate grazing pressure taking the pasture feed down to about 50 mm and leaving some 1 500 kg/ha dry matter in the post grazing residues.

Treatment D cows were made to graze their strips hard, leaving about 1 000 kg/ha dry matter in the residues which were taken down to about 25 mm above ground level.

The trial commenced at the end of October, 1975, and continued for 26 weeks until the beginning of May, 1976.

All groups gained weight during the trial but results for continuously grazed treatments showed the same trends as for 1974/75. Cows stocked at 6.12 cows/ha gained less liveweight, had a shorter lactation, lower milk yield per cow and per hectare, and lower milk protein, lactose and SNF levels than cows stocked at 5.45 cows/ha.

Although stocked at a rate equivalent to the highest continually grazed treatment, both strip grazing groups produced more milk per cow and per hectare than continuously grazed groups. Strip grazed groups also milked longer and gained most liveweight.

The group strip-grazed at moderate pressure also produced milk with the highest SNF content, although the heavy pressure strip-grazed group did experience a few lapses in SNF levels.

Milk production from strip vs continuous grazing

<table>
<thead>
<tr>
<th>Details</th>
<th>Continuous Grazing</th>
<th>Rationed Strip Grazing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low stocking rate A</td>
<td>High stocking rate B</td>
</tr>
<tr>
<td>Cows/ha</td>
<td>5.45</td>
<td>6.12</td>
</tr>
<tr>
<td>Days in milk at trial start</td>
<td>71</td>
<td>69</td>
</tr>
<tr>
<td>Change in live wt—%</td>
<td>3.4</td>
<td>1.9</td>
</tr>
<tr>
<td>F.C.M. yield—kg/cow</td>
<td>2 115</td>
<td>1 637</td>
</tr>
<tr>
<td>kg/ha</td>
<td>11 527</td>
<td>10 018</td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein content—%</td>
<td>3.24</td>
<td>3.07</td>
</tr>
<tr>
<td>Lactose content—%</td>
<td>4.46</td>
<td>4.40</td>
</tr>
<tr>
<td>SNF content—%</td>
<td>8.81</td>
<td>8.53</td>
</tr>
<tr>
<td>% of SNF TESTS below 8.45</td>
<td>Nil</td>
<td>43</td>
</tr>
</tbody>
</table>

F.C.M. = 4% fat corrected milk.
Testing crop varieties

As an increase in yield of one per cent of the Western Australian wheat crop could bring over $3 million more per year in export earnings, planting the best varieties is important to the efficiency of the State's crop production. Quality too is improved so it is vitally important for growers to be well aware of the potential of new varieties. A real advantage is that increases can be obtained at little extra expense because seed of improved varieties usually costs no more than others.

Although most crop plants now produce up to 20 per cent more than varieties grown 20 years ago, there is ample scope for further improvements in yield, disease resistance and quality.

Apart from new lines brought in from outside the State, W.A.'s breeding programme tests several thousand cross-bred selections a year in breeders trials. About 60 of the most promising undergo testing at regional centres and the best are tested on a more intensive basis. In 1975/76, 33 wheats, 10 oats, 11 barleys, 5 lupins and 5 linseed varieties were included in wide scale tests.

Over the last 10 years some 600 varieties have been examined on a regional basis. Of these about 250 have undergone detailed assessment.

On behalf of growers the Department undertakes the wide scale testing of any new crop varieties which may have application locally, including all new varieties released in other States. Additional wheat trials are sown as part of an Interstate Wheat Variety Trial programme which includes all varieties being considered for release by Australian breeding organisations.

The basis of the Department's variety testing is a yearly network of field trials conducted throughout the cereal areas. In 1975/76, this included 248 separate trials with wheat, barley, oats, lupins and linseed at 56 different sites. Each trial consisted of a series of drill sown plots 60 m long and 2.5 m (12 rows) wide with a different variety sown on each plot.

Several plots of each variety are sown at each site to provide unbiased and accurate average measurements.

About 7,000 such plots were sown in 1975/76, mostly in trials on farmers' properties in paddocks which they had prepared for their own crops. The trials are sown and harvested by Department of Agriculture staff using equipment purchased and maintained with industry funds. Farmers contribute land (up to 2 or 3 ha) and keep the grain produced.

The mass of yield, quality, disease resistance and other data accumulated each year must be processed rapidly if findings are to be applied in recommendations and testing programmes for the next season. A Cyber computer at the W.A. Regional Computing Centre performs a vital function in this regard and produces summaries which include effects of environmental influences such as area, time of sowing, soil type, land slope, land development and cropping sequence.

Preparing wheat for cross-pollination. Several thousand crosses are made and planted out for testing each year at South Perth.
As well as comparing varieties, information from variety trials is used to compare crops as alternatives for different areas. This knowledge is important to many growers confronted with constant changes in production costs, grain prices and relative yields of new varieties.

Variety testing has played a direct role in the recent release of several new varieties, including locally produced Madden wheat and West oats. The most recent were lupin varieties Marri and Ultra, recommended for release in early 1976.

Of introduced varieties, Clipper barley from South Australia was tested extensively before being recommended for wide scale production in W.A. Similarly, an initial test on Egret wheat in 1973, enabled quick recognition of its application to Soft wheat areas.

Overall it is estimated that more than 80 per cent of the wheat area and more than 90 per cent of the barley and oat crops are now sown to varieties which have appeared in recommended lists within the last three years.

**GRAIN QUALITY**

A major function of the Grain Products Laboratory is evaluation of the quality of crossbred material from breeding and variety testing programmes.

**Wheat**

Quality evaluations of wheat progress to detailed tests which include production of loaves or biscuits and commence at least six years before a variety is released.

Some 330 samples were extensively tested for milling and baking quality in 1975/76, while small scale tests were done on about 1,100 different lines. Lines showing promising characteristics included 63W12-1, a potential wheat for the Australian Standard White (W.A.) Wheat grade. 63W12-1 showed excellent milling quality and appeared to be of similar hardness and strength to Gamenya, the main wheat variety being grown in this State. 70W10-19, a soft wheat with weak dough characteristics similar to the variety Glu-club, appears to have desirable qualities for the Australian Soft (W.A.) Wheat Grade.

**Barley**

Quality objectives in the barley breeding programme relate to barley for feed purposes and the production of malt. Selections which have desirable field characteristics are screened for grain colour, plumpness, hectolitre weight and fibre content. Small scale malting tests are also carried out on promising lines.

Two barley lines, 68S02-8 and 68S14-46, show similar quality characteristics to the recommended two-row variety Clipper. A third crossbred, 68S17-75, has yielded well in advanced trials and appears to be suitable for feed purposes.

**Oats**

Several advanced lines from the oat breeding programme have promising quality characteristics. They include 66Q01-8, 66Q01-63 and 67Q02-22, all of which have satisfactory grain colour, hectolitre weight, groat percentage and grain size.

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Baking and evaluating loaves from flour samples is an essential step in testing the quality of wheat cross-breds.