A review of the 1961-1962 silage competition

H G. Elliott
FOR the past five years the Australian Dairy Produce Board Pasture Improvement Committee (W.A.) has sponsored a silage competition in the dairying areas. Judging is done by the officers of the Dairy Division of the Department of Agriculture and prize money totalling £175 is awarded.

The break up of the prizemoney is shown in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Award</th>
<th>£</th>
<th>s</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Championship Award</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>First Prize Section A (6 zones)</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Second Prize Section A (6 zones)</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>First Prize Section B (1)</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>First Prize Section B (11)</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The number of entries according to the zones in the past five years is shown in Table 2.

It is interesting to note that most of the entries have been from zones 1, 3 and 6.

Entries from Bridgetown-Nannup (zone 4) have been low each year because most farmers in this area have other farming activities apart from dairying. As the competition is for farmers who make silage for feeding to dairy cows most of the farmers in this area are not eligible to compete.

The competition was divided into two sections for judging.

Section A—Quality—including botanical composition, maturity, colour, protein and moisture content.

Section B—Workmanship and feeding out. This was divided into two subsections, one for pits and clamps and the other for stacks.

The competition was held in six zones:
1. Coastal-Bullsbrook to Brunswick.
2. Bunbury-Donnybrook.
3. Busselton-Margaret River-Augusta.
5. Manjimup-Northcliffe-Pemberton.

Table 2

<table>
<thead>
<tr>
<th>YEAR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-58</td>
<td>13</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>11</td>
<td>3</td>
<td>40</td>
</tr>
<tr>
<td>1958-59</td>
<td>3</td>
<td>12</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td>1959-60</td>
<td>15</td>
<td>4</td>
<td>46</td>
<td>1</td>
<td>5</td>
<td>41</td>
<td>112</td>
</tr>
<tr>
<td>1960-61</td>
<td>10</td>
<td>7</td>
<td>42</td>
<td>2</td>
<td>6</td>
<td>13</td>
<td>80</td>
</tr>
<tr>
<td>1961-62</td>
<td>17</td>
<td>10</td>
<td>56</td>
<td>2</td>
<td>6</td>
<td>14</td>
<td>105</td>
</tr>
<tr>
<td>TOTAL</td>
<td>58</td>
<td>34</td>
<td>167</td>
<td>11</td>
<td>32</td>
<td>88</td>
<td>390</td>
</tr>
</tbody>
</table>
JUDGING POINTS

Section A (Quality)

The following scale of points was used for judging:

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Material ensiled (Botanical composition)</td>
</tr>
<tr>
<td>25</td>
<td>Maturity of herbage</td>
</tr>
<tr>
<td>10</td>
<td>Colour</td>
</tr>
<tr>
<td>10</td>
<td>Aroma</td>
</tr>
<tr>
<td>25</td>
<td>Protein</td>
</tr>
<tr>
<td>15</td>
<td>Moisture content</td>
</tr>
</tbody>
</table>

These points varied slightly from the scale of points used before. Moisture content has been added (15 points), and the points given for colour, aroma and protein have been lowered by five points each.

Section B—Workmanship

Divided into two subsections:

(i) Silage in pits or clamps.
(ii) Stacks.

These points were used:

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Surface wastage</td>
</tr>
<tr>
<td>25</td>
<td>Choice of site</td>
</tr>
<tr>
<td>25</td>
<td>Convenience of feeding out</td>
</tr>
<tr>
<td>25</td>
<td>Method of feeding out</td>
</tr>
</tbody>
</table>

Total 100

These points also varied slightly from those used before.

The 105 entries in the 1961-62 competition were judged by officers of the Dairying Division of the Department of Agriculture and the championship award by Mr. H. G. Elliott.

PRIZE WINNERS 1961-1962

CHAMPIONSHIP AWARD

Mr. J. C. Waugh, Manjimup.

ZONE WINNERS

Section A—Quality

Zone 1—Coastal—Judge H. G. Elliott

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>J. &amp; A. Phillips, Coolup</td>
</tr>
<tr>
<td>78</td>
<td>D. G. Spark &amp; Co., Coolup</td>
</tr>
</tbody>
</table>

Zone 2—Bunbury-Donnybrook—Judge T. Pavy

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>83</td>
<td>M. &amp; A. J. Bell, Elgin</td>
</tr>
<tr>
<td>72</td>
<td>A. J. Green, Boyanup</td>
</tr>
</tbody>
</table>

Zone 3—Busselton - Margaret River-Augusta—Judge A. Hamilton

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>C. Campbell, Warner Glen</td>
</tr>
<tr>
<td>83</td>
<td>J. Wood &amp; Co., Rosa Brook</td>
</tr>
</tbody>
</table>

Zone 4—Bridgetown-Nannup—Judge A. W. Hobbs

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>J. E. Bentley, Bridgetown</td>
</tr>
<tr>
<td></td>
<td>No second award</td>
</tr>
</tbody>
</table>

Zone 5—Manjimup-Northcliffe—Judge A. W. Hobbs

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>J. C. Waugh, Manjimup</td>
</tr>
<tr>
<td>73</td>
<td>N. F. Owens, Manjimup</td>
</tr>
</tbody>
</table>

Zone 6—Albany-Denmark-Walpole—Judge R. Sprivilis

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>R. Langley, Denmark</td>
</tr>
<tr>
<td>79</td>
<td>N. Barnes, Denmark</td>
</tr>
</tbody>
</table>

Section B, Subsection (i)—Pits or Clamps

Zone 1

Brownes Ltd., Coolup 90

Zone 2

No Award 83

Zone 3

E. Ireland, Rosa Brook 81

Zone 4

No Award

Zone 5

J. C. Waugh, Manjimup 83

Zone 6

N. Richmund, Denmark 91

Section B, Subsection (ii)—Stacks

Zone 1

C. W. Ward, Waroona 89

Zone 2

F. E. Green, Bunbury 82
Carting out silage for feeding to cows. It is important to select a site closer to paddocks in which the silage will be fed.

Zone 3
J. O'Neill, Yoongarillup .... .... 84

Zone 4
No Award

Zone 5
No Award

Zone 6
R. Woodward, Narrikup .... .... 89

JUDGES' COMMENTS 1961-1962

ZONE 1—17 Entries

Of the 17 entries in this zone 15 were made from pasture, one from oats and vetches and one from oats alone.

Nine entries, 465 tons, were made in stacks or buns and eight entries of 890 tons were conserved in pits or clamps. Only one entry of 40 tons was long material, the rest was chopped and made with forage harvesters.

Three entries of 450 tons were mown and wilted before picking up with a forager and carting into clamps.

Various methods were used for feeding out and most farmers adopted some mechanical means of picking up and loading—usually a front end loader on a tractor.

There was quite a range of maturity in the materials harvested. This was undoubtedly due to the dry conditions during the spring.

Quality

Direct harvesting with a forager on lush pasture, particularly clover, often resulted in a wet, soggy, yellow silage with an objectionable odour. There was much edge and surface wastage where this material was stacked in bun-type stacks.

Cracks and depressions were noticed between dumped loads of material indicating that not enough attention was given to correct packing and filling. This was probably caused by the farmer or the contractor working too quickly without assistance on the stack. The effect was more noticeable on stacks of early harvested material, particularly where it rained after making. The silage deteriorated quickly under these conditions.

Fly maggots infested all the exposed surfaces and under the surface seal of this type of silage.

Drier, clean, acid smelling silage was not affected in this way.

Selection of a Site

Careful selection of site was overlooked by many farmers in this zone. Often silage was made in paddocks too far away from where the stock were fed and caused a loss of time in feeding out. Other farmers did not select a site in the paddock which was on suitable ground or in a convenient position. Green material was often hauled too far, which meant a loss in time and greater expense in making the silage.

A suitable well drained site for storage and convenience in feeding out is most important.
Reducing Wastage

To reduce the surface losses in pits, stacks and clamps, various systems were used. These included covering with plastic vinyl covers, soil and sawdust. The plastic covers were generally not successful in this zone as the strong easterly winds damaged them. The reduction in surface wastage by using soil or sawdust was well worth the effort by farmers.

Rolling to seal the surface is satisfactory if the surface green material is succulent. However, this type of sealing will not keep out moisture from rain. If the silage is to be conserved over the winter, a waterproof covering should be used.

Moisture Content

The average moisture content of the 17 entries was 76.8 per cent. (highest 84.4 per cent., lowest 68.3 per cent.). Protein content averaged 12.1 per cent. (highest 18.2 per cent., lowest 6.7 per cent.).

ZONE 2—10 ENTRIES

Although silage making is becoming more popular in this zone, not many farmers enter the competitions.

All the entries in this zone were made in stacks.

The material was mainly forage harvested direct from the sward to the stack. As a result, high moisture silages were common in this zone. The average moisture content was 77.4 per cent. (highest 82.1 per cent., lowest 61.4 per cent.). One entry with 73 per cent. moisture was made of material cut with a mower, wilted and picked up to stack.

To reduce surface wastage some farmers used a sand covering and others used lush green material well rolled to act as a seal.

ZONE 3—56 ENTRIES

Twenty-nine farmers in this zone submitted 56 entries for judging and 3,270 tons were ensiled.

The quantity of silage in this zone is improving, indicating that farmers are realising its value as a means of fodder conservation, and also that the labour available on most farms in the area is capable of conserving quite high tonnages of silage.

Flail types of forage harvesters have undoubtedly assisted farmers to increase the tonnage of good quality silage. However, the quantity of silage made by this method fell from 69 per cent. in 1960-61 to 56 per cent. in 1961-62. The reason for this is that some of the new entrants who made silage for the first time used the buckrake for collecting the material from the mower swath for building the stack.

The average composition of all entries in Zone 3 over the last five years is shown in Table 3.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Entries</th>
<th>Percentage Moisture</th>
<th>Percentage Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-58</td>
<td>15</td>
<td>77.3</td>
<td>14.6</td>
</tr>
<tr>
<td>1958-59</td>
<td>46</td>
<td>79.1</td>
<td>12.9</td>
</tr>
<tr>
<td>1959-60</td>
<td>39</td>
<td>77.6</td>
<td>14.1</td>
</tr>
<tr>
<td>1960-61</td>
<td>56</td>
<td>78.2</td>
<td>13.5</td>
</tr>
</tbody>
</table>

These figures show that there has been little change in the percentages of moisture and protein since the competition started. This suggests that no changes have been made in the methods of making despite recommendations to reduce the moisture content by wilting after cutting.

One entrant who has made silage with a buckrake for the last two years has had good results. In 1960-61 his silage had moisture and protein contents of 64.6 per cent. and 16.3 per cent. respectively and in this competition his figures were 63.6 per cent. moisture and 15.4 per cent. protein.

Improvement in reducing the surface wastage was demonstrated by three farmers who conserved a total of 850 tons in stacks. Soil adjacent to the stacks was loosened by cultivation and then used to cover the stacks 6 inches to 8 inches deep. Before the silage was fed out the soil was removed by grader blades mounted on tractors. The surface wastage on some of the stacks covered this way was only 1 inch after removing the sealing layer.
META-SYSTOX-T offers the most effective means of controlling all sap-sucking insects. Even insects shielded from direct contact at the time of spraying will die later, when they feed. The same applies to insects hatched after spraying. Because it works through the plant sap stream, Meta-systox-T is not washed away by rain.

META-SYSTOX-T reaches all parts of plants—even new growth developed after application. It kills only sucking insects, leaving beneficial insects unharmed. It is economical, because fewer sprays are necessary. It is easily applied and safe to use.

META-SYSTOX-T controls Aphids, Mites, Red Spider, etc. Available at 38/- pint; 275/- gallon. Use 1 pint to 125 gallons water.
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Even better separating action for cleaner sample plus bigger capacity for faster harvesting are two new advantages of the A8-4. See all the excellent features of the A8-4 yourself; examine the extra improvements that have been made to the header that already is champion of its class.

Also, inspect the new McCormick International 135-bushel grain tank—it can be supplied fitted to your new A8-4 or ordered separately.

See us now for full details.
Feeding Out

Feeding out, which has always been a problem on small dairy farms, has made some advances with the aid of mechanisation.

Aids such as rear mounted grabs and farm made fork attachments fitted to high lift hydraulics on the front end of the tractor were used. These aids make the job of lifting out and transporting the silage to the feeding out area quicker and easier for the farmer.

One man operating the fork lift attachment can feed out three tons of silage in 30 minutes. The only hand work needed is forking the material off the truck onto the ground.

ZONE 4—TWO ENTRIES

Only two entries were received in this zone. One was made from lucerne and the other mainly from oats. Neither was of high quality.

The workmanship in one case was good but the material was harvested too late. Handling of the material in the other entry was too slow and as a result the quality was poor and considerable wastage occurred.

ZONE 5—SIX ENTRIES

All the entries were made from pasture. Five were conserved in pits and one in a double-ended wedge shape stack. Five entries were forage harvested and one was mown and carted.

Two of the pits were well covered with 6 inches of sawdust and the surface wastage was reduced to a minimum.

Although some of the material was cut a little late and was overmature by the time it was ensiled, it is noticeable that farmers are producing more and better quality silage than three or four years ago.

ZONE 6—14 ENTRIES

Rainfall declined abruptly in the spring in this area and less silage was made than usual.

Mr. R. C. Langley’s winning entry was cut from about 20 acres of perennial rye-grass, midseason and Yarloop subterranean clover pasture. The rye-grass was just starting to show the first flower heads at the time of cutting.

Grazing on the paddock finished in the first week in August and silage making started in the last week of September and extended into early October.

The material was cut, wilted for about 24 hours and then ensiled in a wedge stack using a buckrake and tractor. This silage had only 68 per cent. moisture and a high protein content of 19.2 per cent.

Excessive moisture content was the most common fault of the silage in this zone. The average moisture content was 81 per cent. Only two entries recorded below 75 per cent. and the highest was 86.5 per cent. The average protein content was 16 per cent.

Dry matter conserved varied between 11.4 cwt. and 18.6 cwt. per acre. There was little change in the nutritive value and the highest yielding silage had a protein content of 17.8 per cent. This silage was made by ensiling baled pasture in a pit.

The lowest dry matter yields were recorded in unwilted and chopped material ensiled in loaf type stacks. This could be due to excessive loss of sap at the time of compaction. These silages also tended to remain cold and developed a putrid smell.

Section B

Mr. N. Richmund was the winner of the pit section. The silage was baled and the visual wastage did not exceed 4 per cent. The bales were well compacted and covered by a layer of soil about 9 inches deep. About six tons of silage was cut per acre by this farmer and was the highest yield in the zone.

Mr. R. Woodward was the winner of the stack section.

A well drained, easily accessible site was selected and the surface wastage was about 7 per cent. The stack was built long to accommodate 40 to 50 cows at a time and an electric fence was used to control feeding out. This reduced both the time and labour of this job.
Comments

Five hundred tons of silage were cut from 135 acres averaging about 3.75 tons per acre.
Surface wastage varied from about 4 per cent. to 28 per cent. and, as expected, the lowest wastage was in pits. Poor compaction and scalding-off caused the greatest wastage, particularly where the stacks were short and narrow.

All the entries were on well selected sites. The conventional feeding out method of manual loading and carting out was still the most common. Three entries were self fed using an electric fence.
Generally the opening of the stacks was good except for one entry where an unnecessarily large surface was exposed. This caused deterioration of the silage due to exposure to the atmosphere for too long.

GENERAL COMMENTS—MAKING HIGH QUALITY SILAGE

The greatest problem in silage making seems to be to reduce the wastage which occurs as a fermentation, and side and top wastage. Although it is often said that this is unavoidable, many authorities claim that wastage can be as high as 40 per cent.

In silage with a dry matter content of 15 to 20 per cent., as much as 20 to 25 per cent. of the crude protein and 25 to 30 per cent. of the starch equivalent could be lost. The wastage in clamps, pits and silos is less than in stacks.

Some recent research work has shown that less emphasis should be given to temperature at the time of making and more to the dry matter content of the herbage being ensiled.

Wilting the Material

Moisture content affects the amount of fermentation and it seems that there are many benefits in pre-wilting the material to be ensiled. Nutrient losses are lower in pre-wilted silage unless it has been difficult to compact because of the drier material. Losses through seepage are less and a dry matter content of 30 per cent. or more can be obtained with pre-wilted material.

Loss of nutrients can occur during pre-wilting or because of extended pre-wilting due to rain. However these losses are more than outweighed by the lower nutrient losses in storage.

A higher dry matter intake can be expected from wilted silage than high moisture silage, particularly if animals are fed "ad lib." There seems to be some...
factor in low dry matter material which may affect the appetite of the animal.

Better and more vigorous fermentation takes place in wilted chopped material and it is easier to consolidate than unchopped material.

Storing and Sealing

Once the material has been wilted, it should be stored quickly, with immediate and continuous consolidation to avoid pre-heating of the first layer. The material must not be over-wilted.

After carting has been finished, the stack or pit should be covered with un-wilted material to assist in sealing and finally covered with sawdust, sand or soil.

Protein and Moisture Content

Table 4 shows the average protein and moisture content, with the highest and lowest figures for all zones. The average protein content of the 105 entries was 13.7 per cent and ranged from 6.7 to 21.2 per cent. The moisture content averaged 78.3 per cent and ranged from 61.4 to 86.5 per cent.