Sorghums for grain and fodder in the South-West

F. E. Ryan
SORGHUMS FOR GRAIN AND FODDER IN THE SOUTH-WEST

By F. E. RYAN, B.Sc. (Agric.), Agrostologist

THE high yields of sorghum grown for fodder and grain at the Denmark and Wokalup Research Stations suggest that these crops can play an important role in the higher rainfall areas of the State. As a source of green fodder, sorghums could take the place of maize during the summer months. Where the crops are not grazed, they could produce grain for feeding to dairy stock and pigs.

A total of 68 demonstrations, involving either grain or fodder sorghum have been carried out in the higher rainfall areas during the past six years and the following is a review of the results reported.

GRAIN SORGHUM

During the five summer seasons 1949-50 to 1953-54, a total of 27 demonstrations involving grain sorghums were sown in the dairying areas.

Varieties.

In 1949, Wheatland was the only one used for this purpose. In 1950 Hegari was used, and later as the result of experiments on the Research Stations, Martins, Alpha and Early Kalo were used.

Wheatland variety was found to be somewhat late in maturity for most districts and better results were obtained from Alpha and Early Kalo which are somewhat earlier in maturity. The date of maturity is dependent on the time of sowing and in the demonstrations under review many crops were planted too late. When planted in November, grain ripened by the end of March or early April.

Districts.

The demonstrations were arranged in most dairying districts as shown in Table 1.

Table I.

<table>
<thead>
<tr>
<th>Year</th>
<th>Metropolitan-Pinjarra</th>
<th>Harvey-Brunswick</th>
<th>Bunbury-Donnybrook</th>
<th>Busselton-Margaret River</th>
<th>Bridgetown-Boyup Brook</th>
<th>Manjimup-Northcliffe</th>
<th>Denmark-Albany</th>
<th>Darkan-Collie</th>
<th>Total</th>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
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<td>1</td>
<td>1</td>
<td>11</td>
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<tr>
<td>1950-51</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td></td>
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<td>1</td>
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<td>5</td>
</tr>
<tr>
<td>1951-52</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>6</td>
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<tr>
<td>1952-53</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>1953-54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
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<td>10</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>27</td>
</tr>
</tbody>
</table>
The heavy rainfall areas such as Busselton, Margaret River, Denmark, Albany were found most suitable and most demonstrations were arranged in these districts. Success of this demonstration was not limited, however, to the higher rainfall areas and good results were obtained at Darkan, Boyup Brook, Bridgetown and Bunbury as well as Margaret River and Denmark.

It is obvious that ploughing the land sufficiently early in the spring to conserve adequate moisture enables this crop to be grown successfully in any of the dairying districts.

**Utilisation.**

All farmers experienced difficulty in making use of the grain sorghum crop. Practically no harvesting machinery is available in the dairying areas with the exception of one or two districts. For this reason, the crop cannot be harvested in the usual way.

Farmers were not willing to cut and stack this crop after the seed had matured, but a number of them made use of the crop by turning either pigs or stock into the matured sorghum and allowing them to harvest the grain themselves. Where this was done, good results were recorded. The utilisation of the crop by this method tends to limit its usefulness to a short period, but as this is the autumn period when feed is not readily available, it still must be considered a means of providing grain for stock at this time of the year.

**Causes of Failures.**

About 50 per cent. of the demonstrations arranged were unsuccessful for various reasons. These may be reviewed as follows:—

**Time of Ploughing.**

The most important cause of failure was the effect of drought and this is closely allied to the time of ploughing. In order to conserve sufficient moisture in the soil for the growing of this crop, the land must be ploughed and fallowed in the early spring. Frequently in these demonstrations, this was delayed until the time of sowing at the end of November-December or in some cases in January.

On summer-moist land or land which retains its moisture late, it may be possible to plough and seed down in December, but generally ploughing and cultivation should take place during the spring when the land is supplied with adequate soil moisture.

**Time of Sowing.**

In many cases, the planting of this crop was delayed until the end of December or early January. This does not allow sufficient time for the seed to mature before the onset of cool and wet conditions in the autumn. The most successful time of planting appears to be in November and where adequate preparation has been given and the crop planted in November, the grain ripened by the end of March or early April.

**Poor Soils.**

In a few cases, poor soils, very sandy in nature or newly cleared, were chosen. These areas were not able to support a heavy crop of sorghum. In a few cases, copper, zinc and potash deficiencies caused the poor crops.

**Seed.**

In one year, almost all demonstrations failed, because of poor seed. Owing to the difficulty in obtaining fresh seed, stocks held over from the previous year were used. Some weevil damage occurred and a very poor germination was obtained from this seed. It is obvious that for this crop, fresh supplies of seed are needed if the crop is to succeed.

**Varieties for the South-West.**

Hegari, Alpha and Early Kalo varieties are shorter in their growing period than Wheatland and Martins and proved more satisfactory for the purposes of this demonstration. Early maturing varieties are necessary if the crop is to mature before the onset of the autumn rains.

**FODDER SORGHUM**

Maize has been a standard fodder crop for many years on dairy farms, but requires a fertile soil well supplied with moisture for best results. The fodder sorghums, particularly Saccaline and Italian have become prominent in recent
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years as alternative crops for this purpose and are more drought resistant than maize. They can be grown on somewhat poorer conditions than is necessary for a maize crop.

They also have the capacity for regrowth following cutting, which provides an extension of the period when they supply green fodder, and the second growth results in an increase in the total yield.

In some respects, fodder sorghums occupy a place among the fodder crops intermediate between Sudan grass, which is grown for grazing, and maize which is grown for cutting. The sorghums can be cut at first flowering and the regrowth grazed.

Forty-one demonstrations have been carried out during the last five years to test the value of this crop in comparison with both maize and Sudan grass and the following reviews the results reported.

Varieties.
The two varieties commercially available in this State are Saccaline and Italian sorghums. On most areas, Saccaline was the best variety in these demonstrations, although very good results were obtained on some sites with Italian. Saccaline is the coarser variety of the two and both are relished by stock.

Districts.
Saccaline was found suitable for all districts and good crops were obtained at all centres. The distribution is shown in Table II.

Comparison with Maize.
On fertile areas under irrigation or well supplied with moisture during the summer months, maize was found to be more productive of bulk than Saccaline but in drier situations and in the lighter rainfall areas of the dairying districts, Saccaline was found equal to, or more productive than, maize. This indicates that greater drought-resistance of Saccaline sorghum can be used to increase the area available for summer cropping on dairy farms.

In a number of instances, the regrowth following cutting was found to provide a considerable additional amount of green fodder and this was grazed off. This ability for regrowth was not shown to any degree by maize. Under highly fertile conditions, maize is preferred, but on the less fertile soils and particularly on slightly drier soils, Saccaline has given better results.

Comparison with Sudan Grass.
Sudan grass and Japanese millet are summer crops primarily grown for grazing and two, three or more grazings may be obtained during the season dependent on the soil moisture.

### Table II.

**SORGHUM DEMONSTRATIONS—FODDER TYPE.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Perth-Pinjarra</th>
<th>Harvey-Brunswick</th>
<th>Bunbury-Donnybrook</th>
<th>Busselton-Margaret River</th>
<th>Bridgetown-Boyup</th>
<th>Manjimup-Northcliffe</th>
<th>Denmark-Albany</th>
<th>Darkan-Collie</th>
<th>Total</th>
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<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>17</td>
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<tr>
<td>1950-51</td>
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<td>2</td>
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<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>1951-52</td>
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<td>3</td>
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<td>3</td>
<td>7</td>
<td>15</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>41</td>
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</table>

A number of failures occurred in the Busselton-Margaret River area but these are attributed to the choice of sandy soils which have since been found lacking in copper, zinc and potash. In this district, good crops have been produced on more fertile soils not affected by these deficiencies.
In some demonstrations, Saccaline sorghum was grazed in the same manner as Sudan grass. Under these conditions it made poor recovery after grazing. Sudan grass is much more satisfactory under such grazing management. Saccaline, however, provides a bulk of fodder for cutting and makes considerable regrowth after cutting which can be grazed.

**Comparison with Grain Sorghum.**

Saccaline and Italian sorghum are much more productive of green fodder than grain sorghums and as grain production is not usually an important consideration, these fodder sorghums are much more attractive for fodder than the grain sorghums.

If the summer crops are grown for fodder production, it is better to use either maize or one of the fodder sorghums or if grazing is required then Sudan grass, but if grain production is the aim, then grain sorghums may be used.

**CONCLUSIONS**

The use of fodder and grain sorghums is being demonstrated in all dairying districts. The fodder sorghums, Saccaline and Italian, can be successfully grown in all these districts and are adaptable to poorer soil and moisture conditions than is necessary for maize. They are able to produce a large bulk of green forage which is very palatable to stock and have the ability to make considerable regrowth following cutting. Best results in these demonstrations have been obtained from the Saccaline variety.

One of the most important factors determining the success of these summer foders is the conservation of soil moisture which depends on ploughing and fallowing of the soil in the early spring when adequate moisture is present in the soil.

The use of grain sorghums as a crop in dairying areas is limited by the lack of harvesting machinery. The standing crop may be fed to pigs or cattle after maturity.
in the autumn and constitutes a valuable source of grain and forage during this time. Most farmers are not equipped to harvest and store seed for use at other periods of the year. The varieties commercially available are generally slightly late in maturity, but Early Kalo, Alpha and Hegari are suitable if planted sufficiently early in November. Later planting does not allow the seed to ripen before the onset of cool and wet weather in the autumn. Yields of 50 bushels per acre have been recorded in some demonstrations.

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