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R. F. Stone

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Premium wheat in Western Australia

**Erratum**
This should be in Volume 6 No 10

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PREMIUM WHEAT IN WESTERN AUSTRALIA

By J. A. PARISH* and R. F. STONE**

This article describes the requirements for premium wheat and suggests a simple way for farmers to predict if their wheat will be suitable. Correct initial sampling is vital.

IN a previous article (Parish, 1963)† the difficulties of sampling premium wheat crops were discussed and recommendations made. Soon it will be necessary for interested farmers to forward samples of this season’s crop. Requirements for premium wheat are described below and the procedure to obtain bids is set out.

Requirements for premium wheat are:—

(1) High protein content.
(2) Suitable variety.
(3) Absence of mottling.
(4) Low foreign matter content.

The fourth requirement is an obvious one since millers naturally want millable wheat grain and not other material. The varieties on which premiums have been paid in recent years are shown in the table below.

In general all of the semi-hard varieties sown on any appreciable acreage in this State are suitable with the exception of Bencubbin 48.

1962-63 SEASON

<table>
<thead>
<tr>
<th>Variety</th>
<th>Percentage</th>
<th>Average Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabo</td>
<td>87.5</td>
<td>18</td>
</tr>
<tr>
<td>Koda</td>
<td>5.4</td>
<td>1 9</td>
</tr>
<tr>
<td>Wongoondy</td>
<td>4.5</td>
<td>1 7</td>
</tr>
<tr>
<td>Mengavi</td>
<td>1.5</td>
<td>1 0</td>
</tr>
<tr>
<td>Dirk</td>
<td>0.7</td>
<td>2 0</td>
</tr>
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</table>

1963-64 SEASON

<table>
<thead>
<tr>
<th>Variety</th>
<th>Percentage</th>
<th>Average Premium</th>
</tr>
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</tr>
<tr>
<td>Dirk</td>
<td>1.1</td>
<td>1.9</td>
</tr>
<tr>
<td>Koda</td>
<td>7.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Wongoondy</td>
<td>3.8</td>
<td>1.4</td>
</tr>
</tbody>
</table>

1964-65 SEASON

<table>
<thead>
<tr>
<th>Variety</th>
<th>Percentage</th>
<th>Average Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabo</td>
<td>63.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Mengavi</td>
<td>16.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Koda</td>
<td>10.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Gammenya</td>
<td>6.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Spica</td>
<td>0.1</td>
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<tr>
<td>Dirk</td>
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<td>2.0</td>
</tr>
<tr>
<td>Eureka</td>
<td>0.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Wongoondy</td>
<td>0.4</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source—The Grain Pool of W.A.

It is difficult for farmers to tell whether their wheat has a high protein content.

* Cereal Products Adviser, Department of Agriculture
** Manager, Grain Department, Grain Pool of W.A.
Areas of this State consistently producing high protein wheat are shown in maps elsewhere in this issue.

Most premium wheat comes from the areas illustrated in blue. Farmers in these lower rainfall parts of the wheatsbelt who grow varieties such as Gabo, Wongoondy and Gamenya on fertile soils can expect, in suitable seasons, to produce wheat which will attract premium bids from millers. Also farmers in other parts of the wheatsbelt where conditions, especially soil fertility, are favourable to high protein levels can also produce premium wheat.

Suitability of Grain for Premium

Examination of the grain can give a useful indication of whether or not it is high in protein. At high protein levels, usually above 11 per cent., the semi-hard varieties have a translucent or flinty appearance which is a genetic characteristic.

At lower levels of protein, in these varieties a condition called mottling develops. White opaque patches develop in individual grains so that these grains have a variegated or mottled appearance. At still lower levels of protein, say, 7 per cent., this mottling process can go so far that the whole sample is opaque or white and starchy in appearance. Some idea of these effects on appearance can be obtained from the illustration opposite.

Farmers who are interested can inspect similar samples of grain at the district offices of the Department of Agriculture at Bridgetown, Esperance, Geraldton, Katanning, Merredin, Moora, Mt. Barker, Narrogin and Northam.

It is not certain that all the evenly translucent samples will attract premium bids but they do have good prospects. We can be quite sure that NONE of the mottled samples will attract bids and farmers are wasting their time submitting such samples.

Some uniformity of soil is necessary for the production of acceptable premium wheat, as any paddocks which have a considerable proportion of soil of low nitrogen status will produce too high a proportion of mottled grains.

Proportion of High Protein Wheat received as Premium Wheat

In the table below the premium wheat received each season 1957 to 1964 is shown and also the calculated amount of high protein wheat produced in some seasons.

<table>
<thead>
<tr>
<th>Year</th>
<th>Premium Wheat</th>
<th>High Protein Wheat, Good Quality Varieties exceeding 11% protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-58</td>
<td>301,407</td>
<td>2-2</td>
</tr>
<tr>
<td>1958-59</td>
<td>208,872</td>
<td>1-5</td>
</tr>
<tr>
<td>1959-60</td>
<td>596,961</td>
<td>7-3</td>
</tr>
<tr>
<td>1960-61</td>
<td>232,835</td>
<td>4-9</td>
</tr>
<tr>
<td>1961-62</td>
<td>292,026</td>
<td>6-1</td>
</tr>
<tr>
<td>1962-63</td>
<td>350,426</td>
<td>...</td>
</tr>
<tr>
<td>1963-64</td>
<td>232,955</td>
<td>...</td>
</tr>
<tr>
<td>1964-65</td>
<td>460,480</td>
<td>...</td>
</tr>
</tbody>
</table>

* Source—The Grain Pool of W.A.

The amounts of premium wheat are only small proportions of the good quality high protein wheat produced. It would seem that a greater use of the high protein wheat available, would be one means by which flour quality in this State could be improved. Payment of a higher premium could be one practical way of encouraging farmers to submit more wheat. At present prices, protein purchased in premium wheat is cheaper than dried gluten for flour improvement.

Procedure to obtain Premium

A farmer who wishes to obtain a premium should send a 10 lb. sample to the Grain Pool, enclosing in the sample a slip of paper showing his name, address, siding of delivery, variety, and quantity available.

This sample is divided into smaller sub-samples, one of which is retained for possible use in arbitration. The other samples are sent to mills interested in premium wheat. These mills examine the samples and if they wish to purchase the wheat, offer a premium bid.

The best of these offers is then communicated to the farmer by the Grain Pool (by telegram) and if it is acceptable
TEXTURE OF WHEAT GRAINS

Left: Hard translucent sample
Centre: Badly mottled sample
Right: Completely mottled sample

Hard translucent or vitreous grain
Mottled grain showing the development of a white opaque area
Soft grain all opaque and white in appearance
to the farmer the Grain Pool arranges for the licensed receiver, C.B.H., to receive the wheat direct into railway trucks which are despatched to the mill.

The wheat received at the mill is examined at the time of receipt by the miller and if he considers it up to the standard of the sample the agreed premium is paid. When he considers it not up to standard the miller lodges a claim for a reduction in his bid.

The matter is then referred for arbitration, in which the sample retained by the Grain Pool is examined and compared with samples of the wheat delivered. A representative of the Grain Pool thoroughly samples each truck load claimed to be below sample and, in the presence of the miller, seals the samples taken.

For the purpose of arbitration the wheat is examined for protein content (Kjeldahl method and by the Zeleny test.

A sliding scale which involves the use of both protein content and zeleny test value is used by the arbitrators to decide whether the wheat received is inferior to the samples submitted. The scale also indicates the amount by which the bid should be reduced if the wheat submitted is below sample in quality.

TO OBTAIN A SAMPLE . . .

1. Farmers owning an auto-header would find it best to take a number of strips through the paddock, taking many small sub-samples from the grain obtained. When sampling this way the farmer should take care to see that the header crosses obvious lines of different soil types and topography instead of going parallel with such lines.

2. Another method is to sample small numbers of heads by hand at a large number of sampling points through the crop. For most crops sampling at one point per acre would be sufficient. At each sampling point, a handful of heads is obtained and care should be taken that there is no discrimination against any particular type of head.

3. Alternatively, if a farmer harvests his crop first a sample can be drawn from the stacks of grain in the paddock. A small amount should be taken from at least every twentieth bag and all of these small samples thoroughly mixed to obtain ten pounds for despatch to the Grain Pool.

Before such samples are forwarded to the Grain Pool, they should be examined for uniformity and freedom from mottling.
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