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M Hardie

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"KING SIZE" ONIONS NOT WANTED ON THE LOCAL MARKET

By M. HARDIE, Vegetable Instructor

WESTERN AUSTRALIA produced 3,500 tons of onions in 1955 and 7,000 tons in 1964. This 100 per cent increase was achieved with only a 39 per cent increase in acreage, so that crops produced much higher yields.

But the average size of onions was nearer to grade 1 maximum size—3 in. diameter—and merchants and retailers soon indicated that they preferred a big proportion of onions to be in the 1\(\frac{1}{2}\) in.-2\(\frac{3}{4}\) in. diameter range.

In view of this situation, trials were conducted to ascertain what spacing, both within and between rows, would produce the best yield and most onions of the required sizes.

The trials were grown at the Vegetable Research Station, Medina, in the Spearwood market gardening district, 12 miles south of the Perth Metropolitan area, where more than 90 per cent of the State's onion crops are grown. The soils are mainly infertile, coastal sands but with the use of large quantities of organic and artificial manures and frequent irrigation, produce heavy crops of vegetables of a high standard.

The two trials were planted in the 1965-66 season, using the Spearwood Brown Globe variety, practically the only variety grown. As the traditional method of growing onions in Western Australia is from transplants, this method was used with four spacing treatments in the first experiment. However, as more and more growers are turning to direct-seeding this technique was used in the second experiment.

Transplant spacing experiment

In the transplant trial half the plots were planted with five single rows of onions 10 in. apart whilst the remaining plots held three pairs of rows, with 11 in. between the pairs and 6 in. between the rows in each pair. In each case, spacings between plants of 1 in., 2 in., 3 in. and 4 in. were used. This gave eight treatments which were replicated eight times. Each plot was 90 sq. ft. in area. Normal dressings of a complete fertiliser mixture were applied to each plot at the same rate per acre.

The 2\(\frac{3}{8}\) in. and 2\(\frac{1}{4}\) in. diameter Spearwood Brown Globe onions on the right are much preferred on the local market to the 3\(\frac{1}{2}\) in. and 3\(\frac{1}{4}\) in. onions on the left.
Effect of spacing on yield and bulb size

<table>
<thead>
<tr>
<th></th>
<th>Grade 1 yield</th>
<th></th>
<th>Total yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cwt per acre</td>
<td>Av bulb size (oz.)</td>
<td>Cwt per acre</td>
</tr>
<tr>
<td>1 in. spacing single rows</td>
<td>435.9</td>
<td>82.9</td>
<td>525.6</td>
</tr>
<tr>
<td>1 in. spacing double rows</td>
<td>431.7</td>
<td>75.1</td>
<td>552.9</td>
</tr>
<tr>
<td>2 in. spacing single rows</td>
<td>410.7</td>
<td>84.9</td>
<td>483.3</td>
</tr>
<tr>
<td>2 in. spacing double rows</td>
<td>429.0</td>
<td>86.6</td>
<td>495.2</td>
</tr>
<tr>
<td>3 in. spacing single rows</td>
<td>319.8</td>
<td>76.7</td>
<td>417.0</td>
</tr>
<tr>
<td>3 in. spacing double rows</td>
<td>369.9</td>
<td>79.8</td>
<td>463.5</td>
</tr>
<tr>
<td>4 in. spacing single rows</td>
<td>202.1</td>
<td>48.6</td>
<td>415.8</td>
</tr>
<tr>
<td>4 in. spacing double rows</td>
<td>260.4</td>
<td>59.3</td>
<td>438.9</td>
</tr>
</tbody>
</table>

For No. 1 grade and total yield the 1 in. and 2 in. spacings in both the single and double row plantings were significantly better than the other spacings. There was no significant difference between single and double rows for grade 1 or total yield. The quantity of large grade onions (greater than 3 in. diameter) increased with the wider spacings and the quantity of picklers increased with closer spacings.

**Planting Costs**

Plant spacings normally used at Spearwood (10 in. x 2 in.) require about 200,000 plants an acre. Seedlings, without including overhead expenses, cost about 50c per 1,000 to produce and the planting of an acre of onions would entail another $120.

On this basis estimated costs would range as follows:

- 2 in. single row—$220.
- 2 in. double row—$264.
- 1 in. single row—$440.
- 1 in. double row—$528.

Increased planting costs for the 1 in. spacing or for the double rows, cannot be economically justified because the increased yield was not significant. The best spacing is 2 in. single rows.

**Rate of seeding experiment**

The second experiment was designed to find the best rate of seeding from direct-seeded onion crops. Provided germination is good and damping-off is controlled, at least 2 1/2 lb. of seed is required in seed-beds to obtain the 200,000 plants needed for an acre. In this trial the plots were direct-seeded at rates of 5, 7 1/2 and 10 lb. per acre.

Plots consisted of 10 rows, each 5 in. apart. At the 5 lb. per acre rate of seeding the plants were spaced an average distance of 1/4 in. apart whilst at the highest rate they were 3/4 in. apart.

Because of the high plant density obtained from the higher seeding rates an increased rate of fertiliser was used on half of the plots. The two fertiliser programmes were designated “A” and “B.” “A” programme was a complete fertiliser mixture applied in fortnightly dressings to a total of 12 cwt. per acre. “B” programme was the same fertiliser mixture applied at 24 cwt. per acre. Copper sulphate was applied to the trial area before seeding at rates of 5 lb. and 10 lb. per acre respectively, according to the fertiliser programme.
At the lower rate of fertiliser $7\frac{1}{2}$ lb. of seed per acre gave a significantly better yield than 5 lb. but not better than the 10 lb. seeding rate. With the heavier rate of fertiliser the yield from $7\frac{1}{2}$ lb. of seed was not significantly greater than from 5 lb. whereas 10 lb. gave significantly better results than either $7\frac{1}{2}$ or 5 lb. rates.

**Weed control**

Chemical weed control is necessary if close planting is to be practical for onion growing. However, herbicides have given variable and disappointing results on onions grown on sandy soils under sprinkler irrigation and most crops are weeded by hand. This would not be practical in high-density stands.

However, recent trials with two new herbicides—linuron and dacthal—give promise that weed control will not be a problem in onion crops in the future. Trials are now under way to further investigate spacing and weed control treatments.

**In brief ...**

Trials at the Vegetable Research Station indicate little difference in yields from onions transplanted at 1 in. or 2 in. spacing in either single rows 10 in. apart or double rows 6 in. apart with 11 in. between pairs. The 2 in. single row spacing gave the highest net return due to the high cost of planting out seedlings at 1 in. spacing.

For direct seeding in 5 in. rows there was a significant increase in grade 1 yield when seeding rate was increased from 5 to $7\frac{1}{2}$ lb. per acre. A 10 lb. per acre seeding rate gave higher yields than $7\frac{1}{2}$ lb. per acre when a higher rate of fertiliser was used.

Although large onions are not wanted by local traders this does not necessarily mean that these have no value. Correspondence following onion exports to Japan has indicated that provided the internal flesh is of a white to creamy colour there may be a market for large onions in that country.

To take advantage of this, growers should ensure that the seed they sow will produce bulbs which will meet the requirements for this market should they be of a large size.

### Effect of fertiliser and seeding rates on yield and grade

<table>
<thead>
<tr>
<th>Rate of seed per acre</th>
<th>Fertiliser programme</th>
<th>Grade 1 yield</th>
<th>Grade 1</th>
<th>Total yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cwt. per acre</td>
<td>%</td>
<td>cwt. per acre</td>
</tr>
<tr>
<td>5 lb.</td>
<td></td>
<td>440</td>
<td>77-8</td>
<td>566</td>
</tr>
<tr>
<td>5 lb.</td>
<td>A</td>
<td>448</td>
<td>80-2</td>
<td>559</td>
</tr>
<tr>
<td>7\frac{1}{2} lb.</td>
<td>B</td>
<td>508</td>
<td>78-9</td>
<td>644</td>
</tr>
<tr>
<td>7\frac{1}{2} lb.</td>
<td>A</td>
<td>475</td>
<td>78-2</td>
<td>608</td>
</tr>
<tr>
<td>10 lb.</td>
<td>B</td>
<td>532</td>
<td>76-9</td>
<td>692</td>
</tr>
<tr>
<td>10 lb.</td>
<td>A</td>
<td>574</td>
<td>81-3</td>
<td>707</td>
</tr>
</tbody>
</table>

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