1-1-1971

Rapeseed. 3. Varieties and their growth patterns in Western Australia

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RAPESEED

3. VARIETIES AND THEIR GROWTH PATTERNS IN WESTERN AUSTRALIA

By M. L. POOLE, Research Officer, Plant Research Division.

RAPE belongs to the genus "Brassica" which also includes such plants as the garden cabbage, wild turnip and cultivated mustard. The name is derived from the Latin word "rapum", meaning turnip.

Two types of oilseed rape are suitable for Western Australian conditions. These are:—

- Brassica napus var oleifera sub var annua. Summer rape. Target is an example of this type.
- Brassica campestris var oleifera sub var annua. Summer turnip rape. Arlo is an example of this type.

The table below outlines the principal agronomic differences between the two species. The two species are easy to tell apart on these characteristics. Unfortunately, the varieties within each species are very similar and differ by only a few days in maturity and cannot normally be separated on appearance. The only way to be sure of a particular variety is to buy seed of known origin.

The main varieties being grown in Western Australia come from Canada, the world’s largest producer of rapeseed. Research programmes in that country are concentrating on producing new types of rapeseed products. Breeding programmes are aimed at producing varieties with very low levels of erucic acid and high levels of oleic acid in the oil. This oil should be more suitable for salad oils and margarine manufacture. It has been given the name Canbra oil by the Canadians. Varieties with low levels of toxic compounds in the meal which is used in livestock rations are also being bred.

- The main varieties of B. napus are:—

**Target**

Until recently Target was the main B. napus variety grown in Canada but has recently been replaced by Turret, Oro and Zephyr. It is the main B. napus variety being grown in Western Australia at present.

**Turret**

This variety has slightly earlier maturity, is higher yielding and has higher oil and protein content than Target under Canadian conditions. It is slightly shorter than Target but has similar seed size. It is being tested by the Department of Agriculture for possible release here next year.

**Oro**

This variety was the first commercial variety free of erucic acid developed. It matures slightly later than Target.

**Zephyr**

A sister line to Oro, Zephyr is also a zero erucic acid type and is thought to be slightly earlier maturing than Oro, but otherwise is very similar.

<table>
<thead>
<tr>
<th>Character</th>
<th>Target type (Brassica napus)</th>
<th>Arlo type (Brassica campestris)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves</td>
<td>Dark green, cabbage-like and smooth</td>
<td>Light green, bristly hairs</td>
</tr>
<tr>
<td>Flowers</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Pollination</td>
<td>Mostly self-pollinated</td>
<td>Almost complete cross-pollination</td>
</tr>
<tr>
<td>Height</td>
<td>4 to 6 feet</td>
<td>3 to 4½ feet</td>
</tr>
<tr>
<td>Seed</td>
<td>Very dark brown to black when mature (130,000 seeds per lb.)</td>
<td>Small, reddish-brown to black when mature (200,000 seeds per lb.)</td>
</tr>
<tr>
<td>Maturity</td>
<td>December</td>
<td>November</td>
</tr>
</tbody>
</table>

177
Masoweiki
This variety is of Polish origin but came into Western Australia via a Japanese trading company. It matures about a week earlier than Target and is being tested in trials this year.

Tanka and Nugget
These are old, less productive Canadian varieties which have not been introduced into W.A.

- The main varieties of *B. campestris* are:—

**Arlo**
This variety was developed by the Swedish Seed Association at Svalof in Sweden in the early 1950s and subsequently licensed in Canada, where for many years it was the main variety grown. It has now been superseded by Echo, Polar and Span. It is the main *B. campestris* variety being grown in W.A.

**Echo**
Developed at the Indian Head experimental farm in Canada, this variety was released in 1964 to replace Arlo. It is the tallest commercial *B. campestris* variety and, in Canada, has slightly higher yield than Arlo.

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**Figure 1.—Growth patterns of Arlo and Target following mid-May planting.**

<table>
<thead>
<tr>
<th></th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUG</th>
<th>SEPT</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>P Planting</th>
<th>M Maturity</th>
<th>P - M 185 days</th>
<th>P - M 177 days</th>
<th>P - M 204 days</th>
<th>P - M 192 days</th>
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<td>P ARLO—Grt.Southern &amp; Esperance.</td>
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<td>2</td>
<td>P</td>
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<td></td>
<td></td>
<td>P ARLO—West &amp; Central W/Belt.</td>
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<td>3</td>
<td>P</td>
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<td></td>
<td>P TARGET—Grt.Southern &amp; Esperance.</td>
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<td>4</td>
<td>P</td>
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<td>P TARGET—West &amp; Central W/Belt.</td>
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</tbody>
</table>

- Vegetative or rosette stage
- Bud formation and stem elongation
- Flowering
- Pod filling

Growth stages of rapeseed plants.

Left: rosette stage.
Centre: flower bud formation and stem elongation.
Right: late flowering and pod formation.
Polar

This variety was developed at the University of Manitoba and licensed in 1969. It is similar in yield to Echo but slightly higher in oil and protein under Canadian conditions.

Span

This is the first commercial variety of B. campestris to be free of erucic acid. It was developed by the Canadian Department of Agriculture at Saskatoon. It yields about 5 per cent. less than Echo and Polar under Canadian conditions.

Testing these varieties

The Department of Agriculture is comparing the varieties Target, Turret, Oro, Arlo, Echo and Polar in variety trials in 1971. At the same time seed supplies of these varieties are being bulked up on the Department’s research stations. The best varieties will be released to farmers in 1972 as pedigree seed.

The varieties Zephyr and Span are under Canadian export embargo at the present time and therefore are not available in Australia.

The climate of the district and the timing of farm operations will determine which species or variety will be best for a particular location. Results of 1971 experiments will allow detailed variety recommendations for regions to be given early in 1972.

Growth patterns in Western Australia

The two species develop at different rates in different areas. Figure 1 can be used as a guide for the development of these crops from a mid-May planting through to maturity and may be useful for planning spraying and harvesting. Target (B. napus) and Arlo (B. campestris) have been chosen as typical of each species and other varieties in each group will vary by only a few days. The different growth stages are shown in the photograph.

To estimate maturity with later plantings, add half the delay period to the maturity time. For example, delaying planting by a month until mid-June will delay maturity by about two weeks.

NEW DEPUTY DIRECTOR

Mr. S. T. Smith was appointed to the position of Deputy Director on July 9. He fills the position left vacant with the promotion of Mr. E. N. Fitzpatrick to Director last May.

Mr. Smith was appointed from the position of Assistant Director where he was responsible for the co-ordination of research and extension activities, supervision of Departmental training programmes and administration of special grants for extension and research.

As Deputy Director, Mr. Smith will be responsible for much of the day-to-day administration of the Department, and will assist the Director in scientific aspects of administration and represent the Department on various committees.

Mr. Smith (49) was Chief of the Department’s Soils Division from March, 1967, and was appointed Assistant Director in September last year. He is well known to farmers throughout Western Australia for his work on soil surveys and soil salinity.

As the Department’s Senior Soil Research Officer from 1952 to 1967, Mr. Smith travelled widely in the farming areas and was associated with work on the problems of soil conservation, erosion and flooding.

In 1962 he spent a year as a technical expert on soils for UNESCO in the Sudan and in 1966 represented the Department of Agriculture at a UNESCO soil science conference in the Netherlands, followed by soil research investigations in England and the U.S.A.

Early last year Mr. Smith was a member of a study group of senior officers of all State Departments of Agriculture which visited South Africa, Holland, the United Kingdom, U.S.A. and New Zealand to study extension services and organisations.