3 Varieties

3.1 Selection and development

Varieties were initially selected for production per hectare and percentage oil traits. A recent exciting trend is the development of varieties for a wider range of traits including their ability to grow in drier areas, fatty acid profiles and potential industrial uses. These varieties may open up new markets and provide new value adding opportunities.

Early, mid and late season varieties better suited to WA have been bred in WA and the eastern states in recent years. Growers and agronomists are advised to investigate the agronomic benefits and requirements of new varieties as they are released to the market. A source of independent advice on varieties is available from GRDCs National Variety Testing Program (NVT).

3.2 Blackleg resistance

Blackleg is considered the most serious canola disease in Australia. Hence resistance to blackleg is a prime selection criterion for new varieties.

Recently, breeders have reverted to releasing varieties with polygenetic resistance to blackleg due to the breakdown of resistance to blackleg in South Australia and Victoria in 2003 by certain varieties. These varieties had their resistance to blackleg based on a single dominant gene originating from Brassica rapa ssp. Sylvestris. The blackleg fungus is continually evolving into new strains, hence the need to continue breeding new varieties with increased resistance in order to not only combat the blackleg threat but also improve the crop.

Varieties are rated for blackleg resistance and ranked on a scale by both the CAA (Canola Association of Australia) and DAWA. The CAA scale is based on percentage plant survival while the DAWA scale also includes the level of stem canker infections in surviving plants.

Each year CAA and DAWA publish their resistance ratings for commercially available varieties. Growers and agronomists are advised to consult these scales and to always select a variety with the highest disease resistance rating, especially in high blackleg threat districts and paddocks. In 2005 and 2006 they were reprinted in the Oilseeds WA seasonal updates.

3.3 Varietal types

Conventional

Conventional varieties have no specific herbicide tolerance. Many successful crops have been grown by sowing these varieties in relatively weed free situations.

Triazine Tolerance (TT)

More than 90% of canola varieties grown in WA are triazine tolerant (TT varieties). TT varieties have a generally accepted 5–10% lower yield potential than conventional varieties in weed free situations when sown at the same time. This gap has narrowed with the release of higher yielding TT varieties better suited to WA conditions.

Imidazolinone Tolerant (IT)

First bred conventionally by Cyanamid (now BASF licensed to Nufarm in Australia) to be tolerant of Imidazolinone, a Group B herbicide. In drier conditions and very low organic matter (OM), imidazolinone (a residual herbicide) can carry over in the ground to the following year affecting the next cereal crop.
Clearfield™ (registered trademark of BASF) production system varieties, designated CL, have been bred to tolerate imidazolinone. The Clearfield™ production system has been promoted as a total production package however there is no need to buy seed and herbicide together anymore. Imidazolinone herbicides include On Duty®.

Hybrid

Hybrid varieties are the result of cross breeding of two pure inbred lines of canola specially selected to increase yield. Yield increases can be significant. As hybrid varieties do not generally produce fertile seed, new seed is required for each crop. Retaining seed will reduce quality, genetic purity and vigour.

High Oleic, Low Linolenic (HOLL)

High Oleic, Low Linolenic oil content (HOLL) varieties have been bred and are being grown for speciality use in the fast food industry.

Industrial

Rapeseed oil is too high in erucic acid to qualify as canola. It can be used for industrial applications such as biodiesel, plastics, lubricants, lacquers and detergents. Recent trials of Indian mustard and other specialty oilseeds have kindled interest in industrial oils in WA.

Transgenic (GM)

Transgenic or genetically modified (GM) varieties have received very high levels of publicity. Roundup Ready Canola (Monsanto) and In-Vigour (Bayer Crop Science) have been considered for release in Australia. All Australian State Governments currently prohibit the commercial growing of GM varieties, making Australia a non-GM canola producer.

3.4 Variety selection

Variety selection can be critical to successful canola crops. Variety selection considerations include:

1. Relative yield and oil performance relevant to your district to maximise return ($/ha).
2. Will the variety grow and mature uniformly within your anticipated growing season.
3. Does it have strong polygenetic resistance to blackleg?
4. Harvest method required.

Each year new varieties are released to the WA market. These varieties have made a significant difference to the quality of crops in recent years. Oilseeds WA, the National Variety Testing Program (ACAS/GRDC), DAWA and others have tested the performance of different varieties across WA. Independent or company agronomists, seed companies and DAWA provide advice on varieties.

Seed quality

Seed that has poor germination and low establishment is the most expensive seed. The best results are generally attained from sowing quality assured seed. If you retain your own seed, then use seed from last season that has been tested for vigour and germination prior to sowing.

Quality assured seed is required to meet specified standards such as being grown in controlled/inspected paddocks and has been tested for germination, weeds and other foreign seeds. If you intend retaining your own seed, then it should be graded heavily to maximise seed size and tested for germination and weed seeds. Many growers store their seed in bags or Bulka-Bags to minimise viability losses due to heat.
**Seed size**

Research has shown that seed size has a significant effect on the vigour and germination of canola. Seed should be greater than 1.7 mm in diameter. The longer seed is stored the more variation in maturity and quality that is expected, therefore, germination testing is advised for retained seed.

Seed sellers may display the number of seeds per kg on canola seed bags. This data can be used to calculate the seeding rate where a certain establishment plant density is targeted. Less than 100% germination and survival needs to be assumed due to disease, insects, waterlogging and other factors.

Canola varieties generally range from around 250,000 to 320,000 seeds/kg. At these densities a 5 kg/ha sowing rate will provide around 140–160 seeds per square metre. If assuming an establishment efficiency of 50% then 70 to 80 seedlings/m$^2$ should result.