

Heritage**seeds** 



CANOLA
SOWING
GUIDE

2015/16

INTRODUCTION

Canola is grown in nearly all cropping regions and is the third largest broadacre crop nationally, only behind wheat and barley. Australia produces quality canola seed which is in high demand in the global market due to the reliability of supply, its high quality and our world leading food safety and traceability systems.

Heritage Seeds has invested in industry leading canola genetics to provide growers with varieties that perform across a wide range of growing environments, delivering profitability and maximising returns to farmers. Our aim at Heritage Seeds is to ensure consistency of production whilst striving to develop higher yielding, higher oil content and better blackleg resistant varieties for all growing regions.

Before any Heritage Seeds variety is released to the market it undergoes a stringent regime of testing to ensure it will perform to grower expectations and stand up to infield environmental challenges. Varieties are tested in regional blackleg nurseries across the country to establish their blackleg rating and resistance group status. They are also entered into the independently managed National Variety Trials (NVT) which are located over many varying locations. Our canola varieties are evaluated for their performance in these NVT sites over a number of years before they are considered suitable for release to the market.

At Heritage Seeds we are excited about the future of canola and are continuing to invest in innovative technology that delivers benefits to growing canola in Australia.



CONTENTS

| | |
|-----------------------------|----|
| Introduction | 2 |
| Varieties | 6 |
| Variety Attributes Chart | 8 |
| Blackleg Management | 10 |
| Seed Treatments | 11 |
| Agronomy | 12 |
| Windrowing | 14 |
| Harvesting - Direct Heading | 15 |
| Contacts | 16 |



MARKET LEADING GENETICS

Hybrid Breeding Explained

Hybrid canola seed is the result of a controlled cross-pollination process using male and female inbred parents during the production phase. A canola flower contains both the female and male reproduction components in the same flower. For this reason breeders cannot rely on physical separation for the 100% cross needed to produce pure hybrid seed.

To successfully develop pure hybrid seed a process involving two unique steps has been developed by the breeders.

Step 1: Making the female inbred male-sterile. That means flowers of the female inbred produce no pollen, it is then cross-pollinated with a maintainer line.

Step 2: Restore fertility in the seed produced from the cross so that when it is planted the F1 hybrid seed can flower and self-pollinate. This is accomplished with a fertility restorer gene inserted into the male inbred used during the crossing process. This gene is completely dominant meaning all of the F1 hybrid seed flowers, grow and look just like an open-pollinated crop. This is explained in the diagram shown here.

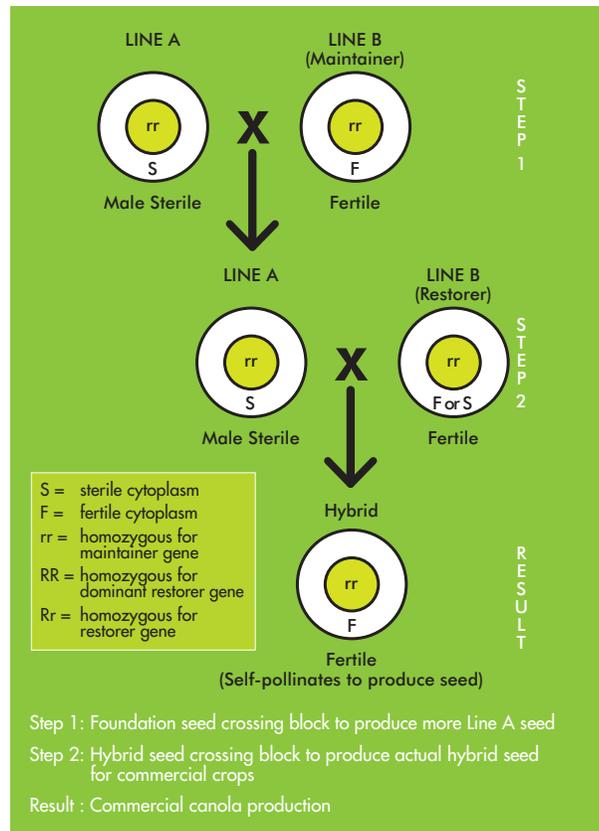


Image courtesy of Dr Gregory Brown, McGill University, Canada.

Retained Seed

Growers intending on retaining the seed from a hybrid crop run the risk of significant crop issues and reduced production. This is due to the fact male and female inbred genes will segregate, breaking down the original genetic structure leaving a much more variable plant. This will ultimately lead to lower yields, lower oil content and variable disease resistance from this retained seed.



Retained Seed

F1 Seed

Clearfield® Production System

The Clearfield® production system combines superior genetics of high yielding, high oil content varieties with the effective technology of Intervix® herbicide.

INTERVIX®

- Group B herbicide
- 33g/l Imazamox + 1.5g/l Imazapyr
- Powerful grass weed control
- Highly effective on broadleaf weeds, particularly wild radish, mustard and turnip
- Residual activity during the growing season
- Foliar action and soil residual.

Clearfield® varieties are developed through conventional plant breeding techniques and are not genetically modified organisms. This can be an advantage when marketing seed at harvest time.

Intervix® is a registered trademark of BASF.



Male Sterile Flower

Male Fertile Flower

VARIETIES

CARBINE CL CANOLA

Carbine is a market leading Clearfield hybrid canola that offers a competitive package of yield and oil potential. Early-mid maturity that is well suited to areas where 44Y87 (CL) and Hyola 474CL are grown. Carbine has performed well in early hybrid canola regions and in a wide range of soil types. Excellent plant vigour and standability with a shorter plant height for direct harvestability.

RIMFIRE CL CANOLA

Rimfire CL is a new commercial Clearfield hybrid. It has been released due to its outstanding performance in NVT sites over the last four years. Mid maturing variety that performs well in all areas where 44Y89 (CL), 44Y84 (CL) and Hyola 474CL are grown.

Rimfire CL offers an exciting combination of outstanding yield potential with high oil percentage coupled with a very strong blackleg rating. It has very good early vigour with excellent standability and medium plant height.

BANKER CL CANOLA

Another new Clearfield hybrid from Heritage Seeds is Banker CL. It is being evaluated as a true mid maturity option for the medium to high rainfall regions to complement our evolving commercial portfolio.

It is suited to areas that are currently growing Hyola 575CL, 45Y88 (CL) and 45Y86 (CL). Banker CL offers a combination of outstanding high yield potential, high oil percentage and reliable blackleg package. Excellent early vigour and standability with medium plant height.

ARCHER CL CANOLA

A leading variety across a number of NVT sites, Archer is the first commercial Clearfield hybrid release for Heritage Seeds. It is well suited to the medium-high rainfall regions where 45Y88 (CL), 45Y86 (CL), Hyola 575 and 577CL are currently grown. It has a robust package of outstanding yield and high oil percentage. It benefits from the unique trait of prolonging its flowering period under favourable conditions to maximise its high-very high yield potential. Regarding blackleg, there is no seedling resistance detected and the cultivar is reliant on adult plant resistance.



A Heritage Seeds
Canola for
every region.

ATTRIBUTES CHART

| Variety | Maturity | Yield Potential | Oil Content | Blackleg Rating | Blackleg Groups | Early Vigour | Plant Height | Direct Heading Potential | Equivalent Varieties |
|-------------------|-----------|-----------------|-------------|-----------------|-------------------------------------|--------------|--------------|--------------------------|--------------------------------------|
| Carbine | Early-Mid | High | High | MR-MS | A | Excellent | Short-Medium | Yes | 44Y84 CL 44Y87 CL Hyola 474 CL |
| Rimfire CL | Mid | High-Very High | High | R-MR | A & B | Exceptional | Medium | Yes | 44Y89 CL 44Y84 CL Hyola CL |
| Banker CL | Mid | High-Very High | High | R-MR | A | Exceptional | Medium | Yes | 45Y86 CL 45Y88 CL Hyola 575 CL |
| Archer | Mid-Late | High-Very High | High | MR-MS | Manage according to blackleg rating | Exceptional | Medium | Yes | Hyola 577 CL |

BLACKLEG MANAGEMENT

Description

Blackleg is a damaging pathogen that can potentially spread quickly when fungal spores are released from infected canola stubble and transported extensively via wind and rain splash. Blackleg is more severe in regions that have highly intensive canola production and/or in high rainfall zones with annual falls of greater than 550mm.

Blackleg Groups and Rotations Explained

Canola breeding and marketing companies firstly submit potential varieties to the blackleg nursery to be screened and tested to determine the level of resistance and the resistant group(s) the particular variety has. Canola cultivars will have different combinations of blackleg resistance genes. Over time, growing cultivars with the same blackleg resistance genes has led to changes in the blackleg pathogen's virulence, which has enabled it to overcome cultivar blackleg resistance. By rotating between cultivars with different resistance genes, you can reduce the probability of resistance breakdown and reduce disease severity.

For further information please refer to the GRDC Blackleg Management Guide.

The Intensity of canola crops and isolation from the previous production area is one of the first considerations that needs to be recognised to lower the risk of blackleg infection.

Management

To manage your property by maintaining or working towards a low risk status of infection we recommend following the best practice guidelines of blackleg management, which include:

- Fungicide – Use canola seed professionally treated with Fluquinconazole such as Jockey[®] Stayer[®] and fertiliser treated with Flutriafol
- Crop Isolation – Ensure the distance from last year's canola stubble is no less than 200m, especially if it's on the prevailing wind side of the paddock
- Never sow into or next to the canola stubble from the previous year.

Crop blackleg severity



Imagery courtesy of Marcroft Grains Pathology

SEED TREATMENTS

It is good insurance to ensure your canola seed is protected through the establishment and early growth periods from sucking insects, soil and air borne diseases. Heritage Seeds canola varieties come complete with the combined superior protection of Jockey[®] fungicide and Gauch[®] insecticide on every seed, giving you the best protection and superior genetics in every Heritage Seeds bag.



SEED QUALITY

Heritage Seeds canola seed is only bagged, tagged and sold if it meets all minimum industry standards, ensuring the seed you purchase is of the highest quality.

| | |
|----------------------------|--|
| Min Germ | 90% |
| Min Purity | 99.8% |
| Other Seeds | Max. tolerance 0.1% Guaranteed no noxious weeds |
| Herbicide tolerance | Field screening tolerance |
| Hybridity | Greater than 90% |

AGRONOMY

Nutritional Requirements

“Know your soil nutritional levels before sowing canola”

It is highly recommended to conduct an up to date soil test on all paddocks to be sown to canola. The four most important nutrients which positively impact canola production are nitrogen, phosphorous, potassium and sulphur.

Nitrogen is one of the most important nutrients when growing canola, and can have the biggest impact on maximising yield.

A guide to suggested rates of nutrients for canola in south-eastern Australia:

| | After Dominant Legume Pasture | Low Rainfall | Medium Rainfall | High Rainfall or Irrigation |
|-------------|-------------------------------|--------------|-----------------|-----------------------------|
| Nitrogen | Nil-40kg/ha | 25-50kg/ha | 50-100kg/ha | 120-150kg/ha |
| Phosphorous | 20-25kg/ha | 10-15kg/ha | 15-20kg/ha | 20-25kg/ha |
| Potassium | 15-20kg/ha | 15-20kg/ha | 20-25kg/ha | 25-30kg/ha |
| Sulphur | 20-25kg/ha | 20-25kg/ha | 25-30kg/ha | 30-35kg/ha |

Sowing Rates

Knowing the size of your canola seed before you commence sowing is very important as it can have a dramatic impact on your target plant density. Seed size versus sowing rate is vital in achieving optimal plant density. Below is a simple equation to use when calculating the sowing rate.

- A – Target Plant Density. Example 35/m²
- B – Seed count per KG. Example 180,000
- C – Adjustment for germ%. Example 92%
- D – Adjustment for Establishment%. Example 85%

$$\text{Sowing Rate} = \frac{35(A) \times 10,000}{180,000(B) \times .92(C) \times .85(D)} = 2.4\text{kg/ha}$$

Information is also provided on the bag tag.

Target Plant Population per Annual Rainfall Zone:

| Plant Yield per M ² | Rainfall Low <400mm | Rainfall Medium 450-550mm | Rainfall High 600mm+ | High Rainfall Irrigation |
|--------------------------------|---------------------|---------------------------|----------------------|--------------------------|
| 20 | ✓ | ✓ | | |
| 30 | ✓ | ✓ | ✓ | ✓ |
| 40 | | ✓ | ✓ | ✓ |
| 50 | | | ✓ | ✓ |
| 60 | | | ✓ | ✓ |

Bag tags and how to read what they contain:



WINDROWING

Benefits

- More even maturity and ripening of the seed
- Earlier harvestability
- Reduces potential pod shattering and the risk of yield losses
- An opportunity for weed control practices

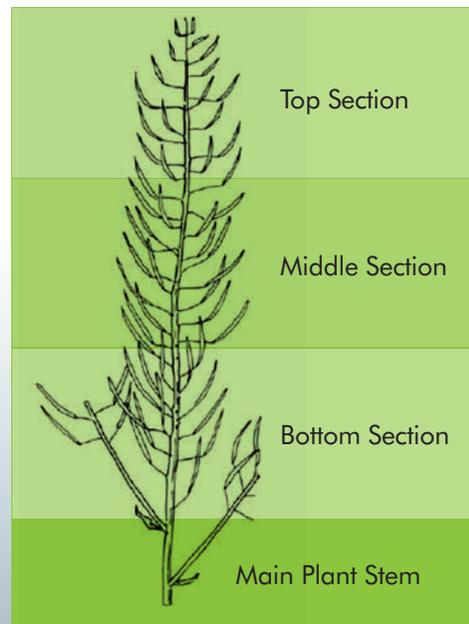
When

- Seed colour will determine the best time that windrowing should occur. This is when approximately 50% of the seeds are commencing colour change or have changed from green to brown and seeds will be quite firm when rolled between your fingers.

How and where to test

The optimum time for windrowing is when the top third of the plant has mostly green seeds. These should be firm but pliable when rolled between the thumb and forefinger. The middle section of the plant will have 80% of seed green-red/brown and be very firm but pliable. The other 20% may be red-brown to light brown. The bottom third of the plant will have dark brown to black seeds.

Testing seed maturity should be an average representation of the plant and the paddock. Take a sample of the seed pods from the upper, middle and lower section of the main stem. This will give an even representation of the maturity of the plant. It is best to take various samples from random areas of the paddock to ensure a good cross section of maturity. The illustration demonstrates where to collect samples.



HARVESTING – DIRECT HEADING

While it is more common for growers to windrow their canola crops as a risk management tool there is increasing interest in direct harvesting of standing canola crops. Ripe standing canola crops are vulnerable to environmental conditions and associated yield loss, but have the potential of higher yields and oil content, and lower green seed levels. Harvest must commence as soon as the crop is ripe to minimise any loss of yield due to pod shattering. Heritage Seeds varieties can be direct harvested due to selection for a shorter hybrid plant height in genetic traits during the breeding process, naturally producing better pod shattering tolerance when compared to the traditional taller varieties.

Acknowledgements:

Australian Oil Seed Federation

GRDC Canola Guide

National Variety Trials

Marcroft Grains Pathology

GRDC Blackleg Management Guide

NSW Department of Primary Industries

NVT - nvtonline.com.au

<http://biology.mcgill.ca/faculty/brown/index.html>



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