

# **Canola in the Wimmera and Mallee: minimise the risk, maximise the yields**



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## **Overview of the 2008 season**

The 2009 season was one we would like to forget, with decile 1 growing season rainfall for nearly all grain growing regions in Victoria. Despite the season, crops in many areas looked excellent, but those without stored subsoil moisture at sowing struggled considerably with no effective rainfall in spring. Oil contents were highly variable, and generally low. Frosts on 23 October and 17 November wiped off about one-third of the crop in the Western District.

The positive note was the lifting of the moratorium on GM canola in NSW and Victoria. A major benefit to this technology in dry seasons is the opportunity for no-till croppers to sow canola early and use Roundup Ready herbicide post-emergent for excellent weed control. Growers who did this were very pleased with the way the crop handled the dry conditions. The season once again reminded us of the importance of subsoil moisture and timely sowing of canola in the medium and low rainfall areas in seasons with dry finishes.

## **Sticking with canola**

Canola is an integral part of crop rotations. Wheat yields are on average around 20 percent higher after canola than after wheat. Benefits are in its weed-cleansing before subsequent crops, reduction in grass weed numbers, herbicide resistance management and cereal root disease reduction. Growers can manage some of their input costs and production risk. The following section describes a number of ways growers can reduce the financial and production risk of growing a canola crop.

## **Minimising risk while maximising yields – new research underpins risk management**

### ***Review of recent and old nitrogen timing trials – How late can you top-dress?***

In recent years, more research has looked at the timing of nitrogen application as a tool for reducing some of the risk – particularly the financial risk associated with growing the crop, allowing for rates to be varied depending on the seasonal conditions and outlook, for those with faith in the long-term weather forecasts. An increased number of canola growers have rapidly adopted the option of delaying most of the N application in recent years – many only using starter N and topdressing later. Some have asked: “How late can you go?”

Recent research in SA and the Wimmera suggests delaying N does not reduce yields if top-dressing before stem elongation (Potter *et al.* 2008; Moody 2008). At higher rates of N (eg. 100 units vs 50 units), top-dressing all N can give higher yields than pre-drilling; otherwise timing has no effect (Motley *et al.* 2001). Dry matter yields losses occurred when N application was delayed beyond the cabbage stage at Birchip in 2008 (Moody 2008). Canola will also respond to additional N applies during flowering in favourable seasons on responsive paddocks (Motley *et al.* 2001)

### ***Sowing date deadlines pulled back by advisors***

Many growers and advisors are reducing their production risk with canola by not sowing canola after the optimal deadline, as listed in the Victorian Winter Crop Summary. The guide lists optimal dates and acceptable but later than ideal dates. For example, in the Mallee consultants are now encouraging

growers to sow by mid-May, rather than by the end of May. For the West Wimmera, the end of May is one deadline advocated, and the start of June is the deadline for the northern Wimmera and heavier soil types in the southern Wimmera, so long as subsoil moisture is available at sowing.

### ***Subsoil moisture – minimum levels recommended by advisors before sowing canola***

A number of advisors now suggest growers have a minimum level of subsoil moisture before sowing canola in northern Victoria, some advocate 50mm plant-available water (PAW), others 25mm.

APSIM models suggest 50mm PAW can translate into at least 0.75t/ha for a 160-270mm growing season; for 5mm PAW it is 0.375t/ha. The benefits are less clear in wetter seasons.

### ***Dry sowing and Roundup Ready***

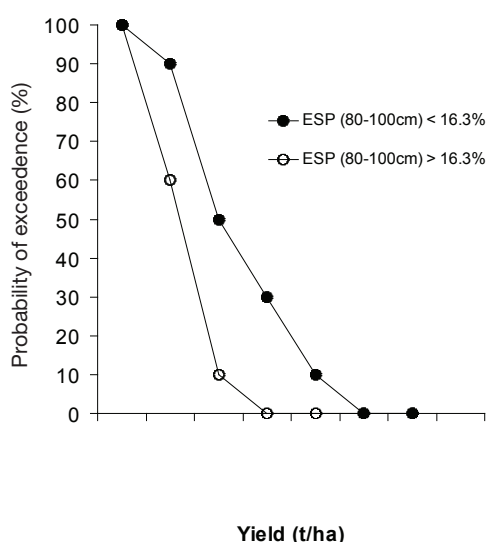
Dry sowing has generally been ideal for canola, especially for lighter soils. However, on certain soils growers consistently have trouble establishing dry sown canola after a dry start (eg. heavy soils at Woorak, West Wimmera).

Roundup Ready canola is another tool that growers can now use when dry sowing, allowing for excellent control of most weeds and effectively a knockdown in-crop, its main limitation probably the inability to be used after the six-leaf stage.

### ***Sodic subsoils – yield effects now quantified with recent research***

Sodic subsoils must be taken into account when determining target yields for canola crops. Recent GRDC-funded research by the Victorian DPI has shown that highly sodic subsoils limit the potential yields of canola.

Pooling of data from 2003-2007 from several sites in the Wimmera/southern Mallee showed that canola on subsoils with an exchangeable sodium percentage above 16.3 percent had a 10 percent chance of producing yields above 2t/ha, whereas paddocks with lower ESPs had a 50 percent chance (Figure 1, Nuttall & Armstrong 2009). Most of these crops followed long fallow.



**Figure 1.** Probability of exceedence for canola yield given subsoil (80-100cm) ESP (sodicity), where effects of levels either side of the median is compared. For all crops, data was restricted to where grain number was greater than 50000 grains/m<sup>2</sup>.

### ***No till canola***

The increased water use efficiency of no-till canola was highlighted again in the dry season of 2008. Roundup Ready canola is another tool being adopted by no-tillers, allowing them to sow directly into stubbles and spray out weeds post-emergent, usually avoiding the need for a Group A herbicide.

Most no-till growers do not pre-drill urea, preferring to apply N at sowing. Sowing rates tend to be lower than for conventionally cultivated canola crops, largely due to press wheels improving emergence.

### ***Sowing rates – recommendations and new research findings***

Most canola crops are achieving optimal plant densities, but there is still no shortage of crops around with excessive populations. Optimal plant densities in medium rainfall areas are of 30-50 plants/m<sup>2</sup>.

Seed sizes are now printed on bags to allow growers to more easily calibrate sowing rates. Some hybrids have very large seeds but it may not be necessary to increase sowing rates for these if the grower has been achieving very high plant populations in the past.

High plant populations may not affect yields in a season or site with good growing conditions, but in drier seasons or dry regions, very high plant populations of canola can reduce yields, as recently demonstrated in a three South Australian trials for the Better Canola project in 2007 (Potter *et al.* 2009 (2)).

### ***New research findings on retaining seed: hybrids and OP warnings***

Some SA growers are retaining seed from hybrid canola crops for the following year's crop. This should be avoided, as seed from hybrids is not the same as the parent crop and is no longer a hybrid and some traits (eg. herbicide tolerance) may not be present in the next generation. A trial conducted on the Eyre Peninsula, SA in 2008 showed a 31 percent yield loss from sowing retained seed from a hybrid canola crop (Fitzgerald 2009).

Farmers retaining seed from open-pollinated (non-hybrid) varieties (not including Roundup Ready) should only do so if the seed is good quality (not droughted, frosted etc.), is clean of weed seeds and has been germination tested. Seed should not be retained from OP varieties for more than one season due to genetic drift.

Most importantly, growers should also check if a variety has reduced resistance to blackleg before sowing retained seed. For example, a southern Wimmera paddock in 2007 had a 25 percent yield loss due to blackleg in outclassed variety sown with retained seed (yields were over 2.5t/ha, equating to a significant financial loss).

### ***Variety choice – hybrids or OPs?***

Hybrids tend to be on the high yielding side, but some open-pollinated varieties are outperforming hybrids. Anecdotal evidence suggests some hybrids have produced high levels of biomass early in the season, used more moisture than OP varieties early in the season and hayed off in a dry finish in 2007 in NSW and 2008 in south-eastern SA.

Hybrid seed is around \$15/kg more than OP varieties, so growers in more marginal regions will need to weigh up the yield benefits vs financial risks when considering a hybrid.

### ***Don't be too hasty to spray aphids***

Aphids were widespread in canola in 2008. A number of consultants and spray contractors have expressed concerns that growers were spraying paddocks unnecessarily. CESAR is currently undertaking research into IPM of aphids in canola and a better system for growers to work out when to spray a crop or when to just monitor it. Current thresholds need further validation. Availability of the aphicide, pirimicarb, was an issue for growers last year.

### ***Mandalotis beetle***

More research is needed into this pest that first became a problem in 2003 in emerging canola crops in the SA Mallee, and has caused problems in other parts of SA in 2008 on lighter soils (Eyre Peninsula, Mid North). Very little is known about the pest. Anecdotal evidence would suggest insecticide seed dressings can play a role in managing it.

## ***Frost and drought***

Severe late-season frosts in northeast Victoria and the Western District wiped out about more than one-third of Victoria's canola crop in 2008. Growers should avoid sowing before the start of the sowing window for their crops, as although this can sometimes pay off, the crops are at much increased risk of severe frost damage. Very early sown crops of an early-mid maturing variety in the Riverina were flowering in June/July in 2008.

NSW and Victorian DPI pre-breeders in the GRDC-funded National Brassica Germplasm Improvement Program (NBGIP) are selecting canola plants with better tolerance to frost, as well as drought, shattering and disease to be used by seed companies in their breeding.

## ***Variety choice 2 – TT vs Roundup Ready vs Clearfield***

The weed species can dictate the need for a herbicide tolerant canola.

A triazine tolerant variety can incur a yield and oil penalty when grown in situations where they are not warranted, but still has a place for weeds with staggered germination like wild radish.

Overall, growers have been extremely pleased with the weed control the Roundup Ready canola provided in 2008. The main limitations that concerned growers were the spraying cut-off at the 6-leaf stage and the inability of the spray to reach weeds under the crop canopy. The lack of residual activity of the herbicide and its softness on some weeds should be taken into account when considering using RR canola on a paddock (its lack of residual is also a benefit to more flexible rotations).

Clearfield canola can give excellent weed control, but herbicide residues and Group B resistance management are the major factors to be considered when growing this type of canola.

## ***New varieties update***

Once deciding on a herbicide tolerance system, selecting a variety should be based on maturity (suited to its location x sowing date), yield and oil and blackleg resistance and, if the choice exists, hybrid or OP. No new conventional varieties will be marketed in 2009. The first triazine-tolerant hybrid, T<sup>2</sup>Triumph Jardee was released this year. Check the Victorian Winter Crop Summary for details of all canola varieties and NVT results.

## ***Blackleg ratings update***

The blackleg resistance rating system for all canola varieties has been changed from numerical to a descriptive scale (eg. MR, MS etc.). Some varieties are listed as having reduced resistance to blackleg where resistance appears to be eroding. The system also lists management strategies for each rating for different rainfall zones.

## ***Juncea canola for the Mallee***

Research is currently investigating time of sowing, plant population, row spacing and nutrition. Results from 2008 trials should be available in March.

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