WESTERN
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GRDC
GROWNOTES™

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

CANOLA

SECTION 12

HARVEST

WINDROWING | DIRECT HARVEST | COMPARING WINDROWING AND DIRECT HEADING | SWATHED CANOLA ON RAISED BEDS | WET HARVEST ISSUES AND MANAGEMENT | RECEIVAL STANDARDS | ON-FARM SEGREGATION OF CANOLA VARIETIES | WEED MANAGEMENT AT HARVEST

SECTION 12

Harvest

Canola crops can be either windrowed (Figure 1) or direct-harvested. The method chosen depends on the availability and cost of contract windrowing, the type of harvesters available and the relative risk of adverse weather in a particular locality. Some of the advantages of windrowing are: uniform ripening, earlier harvesting (7–10 days), less exposure to spring storms and rain, reduced shattering losses during harvest, and less hail and wind loss. Harvesting can usually continue 'around the clock'. [1] Some advantages of direct heading include cost, availability of headers on farm and a higher harvest index on low-yielding crops.

Figure 1: Windrowing prior to harvest is the more common practice. (Photo: Rebecca Jennings)

12.1 Windrowing

Key points:

- Physiological maturity occurs when the seed moisture content reaches 35–45%.
- Check the crop regularly from 14 days after the end of flowering (10% of plants with flowers).

More information

Direct heading canola. Fact Sheet

Harvest management. Module 7. Better canola

DAFWA trial: Retained canola seed options at Grass Patch, 2013

[1] L Serafin, J Holland, R Bambach, D McCaffery (2009) Canola: northern NSW planting guide. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0016/148300/canola-northern-NSW-planting-guide.pdf

- Look for colour change across the whole plant, particularly in crops with lower plant populations.
- Sample from representative areas of the paddock, and check all varieties for change in seed colour; it will vary within a district.
- Book a contractor early in the season and contact again when the crop has reached the end of flowering.
- Optimal windrowing stage lasts for 4–6 days in most areas.
- When seed losses are obvious on the windrower, stop and consider direct harvesting. Planning is critical for a smooth harvest operation. Less experienced growers are advised to organise a contractor or an experienced neighbour to carry out the windrowing.

Canola is an indeterminate plant, which means it flowers until limited by temperature, water stress or nutrient availability. As a result, pod development can last over 3–5 weeks, with lower pods maturing before higher ones. Consequently, canola is often windrowed to ensure that all pods are mature at harvest.

Older canola varieties had a lengthy flowering period, but growers now have access to a greater range of varieties with differing maturities and more tolerance to pod-shattering.

Some early-maturing varieties have been developed with shorter flowering and pod maturity periods. Direct harvesting (instead of windrowing) is more of an option for these shorter statured and earlier maturing varieties in some regions.

Whether the crop is windrowed or direct-harvested will depend on the varieties grown, soil types, seasonal conditions, availability of windrowers, and the size and variability of the crop. Canola crops that are variable in their maturity or show significant differences in the maturity of the top and bottom pods are ideally windrowed to minimise shattering losses. The plant should be windrowed before the lower pods approach shattering stage.

Like hay cutting, windrowing of canola hastens the maturity of the crop, allowing the top pods to be harvested at the same time as the lower pods. By cutting the crop and placing it in a windrow on the stubble, the pods and seeds can dry faster than a standing crop (by as much as 8–10 days). Windrowed canola is much less susceptible than a standing crop to wind, rain and hail damage. In the windrow, seeds will reach a uniform harvest moisture content of 8% within 6–10 days of being cut.

Several harvester-front options are available for canola. A belt front, for example, can be used to windrow or direct-head a crop, but with minor modifications, it can also be used to harvest a windrowed crop. Various pick-up attachments or crop lifters can be used on existing open-front headers to harvest canola windrows.

For most canola-production areas, windrowing has the following advantages:

- allowing earlier harvest (8–10 days) because seed matures more evenly
- hastening maturity (in higher rainfall areas)
- evening maturity where soil types are variable in individual paddocks
- reducing losses from hail and excessive winds
- providing flexibility for the grower with large areas, because the timing of harvest is not as critical
- reducing shattering losses during harvest
- around-the-clock operation to cover large areas
- helping to control escaped or herbicide-resistant weeds in some cases [2]

12.1.1 When to windrow

Windrowing should start when 50–70% of seeds have changed colour to red, brown or black (Figure 2). The crop is usually ready for windrowing 20–30 days after the end of flowering, and should be regularly checked for changes in seed colour. The end of flowering is considered to be when only ~10% of plants have any flowers left on them.

Windrowed crops should be ready to harvest 5–14 days after windrowing, depending on the weather. The moisture content of the grain should be ≤8%. [3]

[2] P Carmody (2009) Windrowing and harvesting. Ch. 14. In Canola best practice management guide for south-eastern Australia. (Eds D McCaffrey, T Potter, S Marcroft, F Pritchard) GRDC, http://www.grdc.com.au/uploads/documents/GRDC_Canola_Guide_All_1308091.pdf

[3] L Serafin, J Holland, R Bambach, D McCaffery (2009) Canola: northern NSW planting guide. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0016/148300/canola-northern-NSW-planting-guide.pdf

In warmer, drier areas, windrowing is better done when seed reaches 50–60% seed-colour change. Under higher temperatures, the windrowed plant dries too rapidly to allow seeds to mature fully in the pods and oil content can be lower.

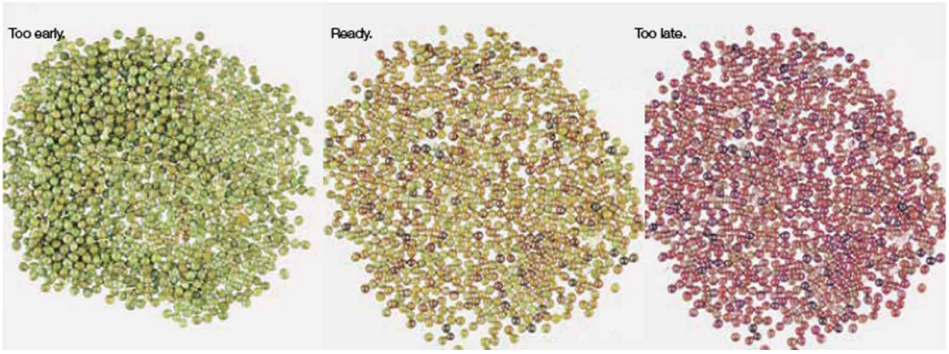

Figure 2: *Seed-colour changes determine the optimum time for windrow timing. (Photo: DAFWA)*

In summary, windrowing too early can result in lower yields and oil contents, and too late will lead to shattering losses.

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 or green-red 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.

The time from the end of flowering to windrowing will vary with season, paddock and variety. Check each crop every year to determine the best windrowing time.

If using a contractor, ensure that they are booked well in advance. Noting the end of flowering will help the grower and the contractor to determine approximately when the crop will be ready to windrow. It is most important that a decision to windrow is made based on assessment in a representative area of the paddock.

The optimal windrowing stage for canola lasts ~4–6 days, depending on temperature and humidity. Each day that windrowing is delayed past the optimum time will make the crop more susceptible to shattering losses. These can be minimised by operating at night or when humidity is high after dew or rain. However, where shattering losses during windowing are obvious, growers are advised to change strategy to direct harvesting or to desiccation followed by direct harvesting.

Windrowing too early, for example, by 4–5 days, can lead to yield losses of up to 10% and reduced oil content. A canola crop should never be windrowed before seed colour has changed, because it will result in significant yield loss. Rollers can be attached to the back of windrowers to help push the windrow down into the stubble and minimise wind damage. Note: withholding periods of pesticides relate to windrowing, not to harvest, if windrowing operations occur. [4]

More information

Revisiting canola management can lift returns

[4] P Carmody (2009) Windrowing and harvesting. Ch. 14. In Canola best practice management guide for south-eastern Australia. (Eds D McCaffrey, T Potter, S Marcroft, F Pritchard) GRDC, http://www.grdc.com.au/uploads/documents/GRDC_Canola_Guide_All_1308091.pdf

12.2 Direct harvest

Direct harvesting is cheaper than windrowing and it can be done with an open front with an extended platform or with a belt-front attachment. Canola is ready to harvest when almost all pods are dry and rattle when shaken, pods are pale brown, and the seeds are dark brown to black and have <8% moisture content. [5]

Direct heading of canola can often be carried out sooner than assumed, because although the crop stalks may still be green, crop delivery is based on grain moisture, not plant moisture.

Most headers are capable of direct heading canola; many machines come out of Europe where crops are regularly direct-headed. It is critically important to set up the header front correctly, according to the manufacturer's instructions.

Common draper fronts can be used to direct-harvest canola but can be problematic when there is an uneven flow of the crop into the machine. When canola is cut and fed onto the mat, it tends to bounce and fluff up and feed through in lumps. To counter this, a top cross-auger can be fitted that sits across the back of the header front, above the belt. When the canola fluffs up, it hits the auger, which then flicks it towards the centre to even the feed into the header.

Conventional 'tin-front' headers that have an auger at the bottom of the table are also capable of direct heading canola.

The crop takes virtually no threshing to get the grain out of the pods, so machines can be set wide-open to handle a significant amount of crop residue.

Incorrect setting-up of the reel can cause significant losses when direct heading canola. The reel on the header comes into play only when the crop is not feeding easily into the machine, so it should be set high, well forward and only slightly faster than the machine's groundspeed. The reel is not there to rake the crop into the header front because this will create losses from seed shatter. Rather, it should be a backstop for when the crop does not feed into the machine.

Harvesters should have sharp cutter bars so that they cleanly cut the crop rather than 'gnaw' it off.

TO ACCESS THE GRAIN ORANA ALLIANCE HARVEST LOSS CALCULATOR, VISIT: http://www.grainorana.com.au/documents

More information

Direct heading canola. Fact-Sheet.

Direct heading canola delivers at Devenish.

The benefits of disc seeders direct heading canola and on-farm storage.

Harvest options for canola—windrowing timing, direct heading, desiccation with Reglone and treatment with Pod Ceal. Effects on yield and oil percentages.

Harvesting canola in 2013—to windrow or direct head?

Canola harvest: is direct heading a serious option?

Early planning the key to canola direct harvesting.

[5] L Serafin, J Holland, R Bambach, D McCaffery (2009) Canola: northern NSW planting guide. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0016/148300/canola-northern-NSW-planting-guide.pdf

infocus

12.2.1 Comparison of canola varieties with delayed direct harvest, Gibson, Western Australia

In this trial at Esperance Downs Research Station, Gibson, most canola had acceptable losses prior to harvest, even with delayed harvest (Figure 3). The greatest proportion of losses occurred at harvest. The PodGuard™ variety IH51RR had significantly smaller losses than other varieties both before and at harvest.

Figure 3: Esperance Downs Research Station delayed harvest 2014. (Photo: DAFWA)

Background and aim

Farmers are shifting from swathing (windrowing) to direct harvesting of canola. This allows them to speed up their operations. It is unclear whether all cultivars chosen by growers are suitable for direct harvesting. Although cultivars are marketed as suitable for direct harvesting, there appears to be no systematic testing of cultivars to determine whether these claims are correct. In particular, it is not known whether some cultivars shed more seed than others prior to harvest. If farmers move to direct harvesting, this could become an issue.

Bayer CropScience have released for the Australian market a canola variety (IH51RR) with the PodGuard™ trait. This non-genetically modified (GM) trait is reputed to virtually eliminate shedding of seed out of the pods of canola. This trial includes IH51RR, and it will provide a source of independent testing of the trait in Western Australia.

The aim was therefore to determine whether canola cultivars vary in rates of shedding.

Trial and treatment details

Site information and fertiliser rates are presented in Table 1. There were 12 treatments comprising four cultivars (IH51RR, IH30RR, Hyola 404RR, ATR Stingray) and three harvest times (on time, and 2 weeks and 4 weeks later).

The experimental design was a split-plot with four replicates. Main plots were times of harvest and subplots were varieties.

Table 1: Details for canola delayed direct harvest trial, Gibson, Western Australia

Property	Esperance Downs Research Station (EDRS), Gibson, Paddock N14
Agzone 6	Growing season rainfall (GSR, Aug.–Oct.) 314 mm; GSR + stored water (estimate) 324 mm. Thunderstorm caused 44 mm rain in one day with associated strong winds on 14 Nov., 3 days prior to second harvest
Soil type	Fleming sand, duplex (1.4% organic carbon)
Paddock rotation	Wheat 2013, subterranean clover-based pasture 2012 and 2011
Sowing date	14 May
Fertiliser	Gypsum (17% Ca, 14% S) at 400 kg/ha topdressed over whole site before seeding; Agras No.1 (16%N, 9.1%P, 14.3%S, 0.06% Zn) at 102 kg/ha at seeding; muriate of potash at 120 kg/ha topdressed over whole site 4 weeks after seeding; urea (46% N) at 103 kg/ha topdressed over whole site on 10 July; Twin Zinc (70% Zn) at 1 L/ha on 4 July; Mantrac (50% Mn) at 1 L/ha on 9 July; UAN (32%N) at 70 L/ha on 4 Aug.

Results and conclusions

The Bayer PodGuard™ variety IH51RR had smaller losses at harvest than other varieties, averaging 3% losses at the latest harvest date compared with 10-14% for the other varieties (Figure 4).

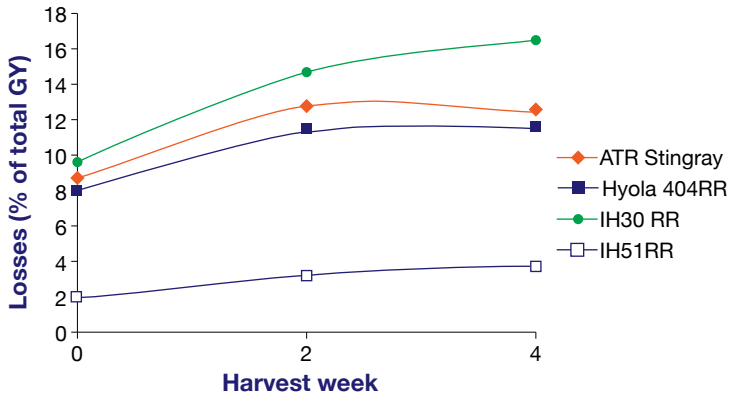

Figure 4: Losses (% of total grain yield, GY) over time for four canola varieties at Gibson in 2014.

Most of the losses of all varieties occurred at harvest. Despite strong winds and rain prior to the second harvest, shedding before harvest was lower than expected, ~15–70 kg/ha (17–29% of total losses), with most loss at harvest (~70–400 kg/ha). Interestingly, the PodGuard™ variety IH51RR did not shed seed out of the pod, but any losses prior to harvest were due to the occasional pod dropping off the plant.

The losses at harvest when using the Department of Agriculture and Food Western Australia (DAFWA) small-plot harvester were likely to be larger than when using wider commercial machines (usually <150 kg/ha). The harvester was moving slowly (3 km/h) to enable stopping at the end of the plots; this resulted in the crop building up at the knife, and consequently, the reel was spending considerable time beating the crop before it moved into the broad elevator. When the DAFWA harvester is moving more quickly, this buildup is reduced. Nevertheless, the trial demonstrated that the PodGuard™ trait does result in lower total losses.

More information

Harvesting canola in 2013-to-windrow or direct head?

Harvest options for canola—windrowing timing, direct heading, desiccation with Reglone and treatment with Pod Ceal—effects on yield and oil percentages

However, the variety IH51RR appears inherently lower yielding and of lower oil production than most other canola varieties. Consequently, even with greater losses in other RR cultivars, IH30RR and Hyola 404RR produced similar yields (~2.8 t/ha) and more oil (46% compared with 43% for IH51RR). It would therefore be interesting to see the performance of this non-GM trait in a better genetic background. [6]

12.3 Comparing windrowing and direct heading

12.3.1 Windrowing

This technique is likely to be the most widely used. The majority of canola is currently windrowed (Figure 5). The objective of windrowing is to lay the cut material on top of the lower stem material to allow air movement under the windrow to assist in the drying process.

Advantages of cutting the crop and placing it in a windrow on the stubble:

- The pods and seeds will ripen faster than a standing crop (by as much as 8–10 days).
- Windrowed canola is much less susceptible to wind and hail damage than is a thin, standing crop, especially if it has been desiccated with diquat (Reglone®).
- Seeds will reach a uniform harvest moisture content of 8% earlier than with desiccation or direct heading.
- It can help in the management of uncontrolled or herbicide-resistant weeds.
- Even, well-made windrows will speed up the harvest operation.

Disadvantages:

- There are additional costs.
- In very wet seasons, the crop can deteriorate in a windrow.
- The optimum timing lasts only 4–6 days depending on the temperature and humidity.
- The use of contractors may compromise timing.
- Timing of windrowing is determined by percentage change in seed colour, which is a compromise to allow for variability in the weather post-windrowing.
- Windrowing too early can lead to yield losses of up to 30% and reduced oil content, whereas too late makes the crop far more susceptible to shattering losses.
- Poorly made windrows that are uneven result in ‘lumps’ or ‘haystacks’, which will slow the harvesting process; any blockages that occur can be time-consuming and costly to clear, especially where contractors charge on a machine-hour basis.
- If the cut plants are ‘pushed’ down onto the ground during the windrowing operation, the dry-down time may be increased, especially if moderate to heavy rain is received before harvesting.

[6] M Seymour (2015) Comparison of canola varieties with delayed direct harvest, Gibson (14ED11). Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/canola/comparison-canola-varieties-delayed-direct-harvest-gibson-14ed11?page=0%2C0

Figure 5: The majority of canola crops are windrowed prior to harvest.

Timing

Collect pods from the main stem of a number of plants and from different positions in the canopy to determine the optimum timing for windrowing. The top third of the plant will have mostly green seeds that are firm but pliable; the middle third, ~80% of seeds green or green-red and very firm but pliable, and 20% red-brown to light brown; and the bottom third, dark brown to black seeds. [7]

Check withholding periods when using Reglone® (see www.apvma.gov.au).

12.3.2 Direct heading

Recent research into direct cutting of canola has shown it to be a viable harvest alternative to windrowing in some circumstances. Favourable conditions for direct heading include having a crop canopy that is slightly lodged and knitted together, even maturity across the paddock, and few green weeds (or when sprayed with a desiccant).

Advantages of direct heading:

- There are no windrowing or desiccation costs.
- Crops dry out faster after wet weather than windrowed crops.
- Crops are allowed to maximise yield potential and oil contents.
- It suits rocky areas, which can be a problem when windrowing, and reduces the risk of harvester blockage that can occur with windrows.

[7] J Midwood (2013) Canola harvest: is direct heading a serious option. GRDC Update Papers, 6 February 2013, http://www.grdc.com.au/Research-and-Development/GRDC-Update-Papers/2013/02/Canola-harvest-Is-direct-heading-a-serious-option

Disadvantage:

- In crops that are variable, the wait for ripening can expose the crop to wind damage, and thicker crops can take a considerable time to ripen evenly.

Timing

The general colour of the crop is a poor guide of when to harvest; use seed moisture content. The addition of pod sealants is an extra management aid when direct harvesting; it helps by reducing pod shattering and by allowing crops to achieve their full yield potential but is an added cost. When sprayed onto the crop, it provides a unique elastic, semi-permeable membrane over the filling pods. Timing is earlier than the optimum time for windrowing. [8]

12.3.3 Desiccation followed by direct heading

The most common desiccant is diquat (Reglone®), which is registered for aerial application.

Advantages:

- The technique is useful on variable soil types because it allows more even crop ripening.
- It is ideal for weedy crops.
- Crops dry out faster after wet weather than a windrowed crop.

Disadvantages:

- There are shedding losses if a ground-rig has to be used.
- Shattering losses can be very high in windy conditions.
- It is expensive, especially if the desiccant is applied by air.

Timing

The correct time for desiccation is when 70–80% of seeds have changed colour in the middle pods; this is when the crop has passed its optimal windrowing stage. The crop will be ready to harvest within 4–7 days after the desiccant is applied, depending on the size and density of the crop.

Other desiccants such as glyphosate are regularly used pre-harvest on canola in Canada and Europe. This provides far slower senescence of the plants, considerably reducing pod shattering and providing superior end-of-season grass-weed control. [9]

[8] J Midwood (2013) Canola harvest: is direct heading a serious option. GRDC Update Papers, 6 February 2013, http://www.grdc.com.au/Research-and-Development/GRDC-Update-Papers/2013/02/Canola-harvest-Is-direct-heading-a-serious-option

[9] J Midwood (2013) Canola harvest: is direct heading a serious option. GRDC Update Papers, 6 February 2013, http://www.grdc.com.au/Research-and-Development/GRDC-Update-Papers/2013/02/Canola-harvest-Is-direct-heading-a-serious-option

FAQ 12.4 Swathed canola on raised beds

Harvesting crops on raised beds differs from harvesting on normal seedbeds only in terms of the constraints imposed by tracking the harvesting equipment in furrows, if so desired (Figure 6). Ideally, harvesting machinery should have wheel tracks that fit the furrows, but normally the beds are harvested with standard-sized tyres and equipment driving on top of the beds.

Swathing crops on raised beds is possible, but special care should be taken to line up the swath width with a multiple of the raised beds.

Effective swathing on raised beds requires a swather that places the swath on the top of a bed. This can be arranged by adapting the swather's opening to match the top of a bed. If a swath is not located squarely on top of a bed, some of it will fall into the furrows.

A swath that overhangs the furrows is unlikely to be a problem to lift and harvest, provided it is harvested when seed moisture content is at, or slightly above, the limit and the straw is still a little pliable, as with field peas. If the swath placement is not wholly on top of a bed and the straw is too wet or too dry, its pick-up and threshing will be inefficient and harvest loss will occur.

Other options can be implemented where farmers have a large enough crop to make it worthwhile to invest extra time and capital. For example, one farmer in the Esperance district has configured his bed-former to build a 2.5-m-wide bed amongst beds that are 2.0 m wide, specifically to carry a swath and facilitate the harvest of the swaths. [10]

[10] D Bakker (2014) Swathing and harvesting on raised beds. Department of Agriculture and Food Western Australia, https://www.agric.wa.gov.au/waterlogging/swathing-and-harvesting-raised-beds

Figure 6: Harvesting on raised beds. (Photo: DAFWA)

12.5 Wet harvest issues and management

Canola generally withstands extended wet harvest periods better than other crops such as wheat. Severe windstorms can cause seed shatter more readily in canola; however, newer varieties have been selected to improve this characteristic. [11]

12.6 Receival standards

Canola receival standards are presented in Table 2. [12]

Table 2: Commodity standards—canola (from AOF 2014)

Parameter	Specification
Oil (%)	42.0 base level; 1.5% premium or deduction for each 1% above or below 42
Free fatty acid (%)	1.0 base level; 2% deduction for each 1% over the base level, rejectable over 2.5
Moisture max. (%)	8.0; 2% deduction for each 1% over maximum
Test weight min. (kg/hL)	62.0; rejectable under this limit
Protein	Unlimited
Seed retention	Unlimited
Germination	Unlimited

[11] L Serafin, J Holland, R Bambach, D McCaffery (2009) Canola: northern NSW planting guide. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0016/148300/canola-northern-NSW-planting-guide.pdf

[12] AOF (2014) Quality standards, technical information and typical analysis. 2014/15. Australian Oilseeds Federation, http://www.graintrade.org.au/sites/default/files/file/Commodity%20Standards/AOF_Standards_201415_Final.pdf

The Western Australian canola receival standards are:

- CAN: non-GM canola. This segregation is for non-GM canola varieties only. The adventitious presence of up to 0.9% of GM events approved by the Australian Government Office of the Gene Technology Regulator is permitted.
- CAG: canola. This segregation is for all approved GM canola as well as any non-GM variety.

More information

Quality standards, technical information and typical analysis, 2014/15

GRDC's Integrated Weed Management Hub

Effective separation of canola varieties on-farm is key to delivering canola grain to the correct segregation. Lateral flow strip-test kits are available from Foss Pacific to test for the presence of approved GM material in canola.

Certified seed

As part of the segregation process, growers must check the identity and purity of the seed to be sown. Seed to be planted for CAN canola crops must be at least 99.5% pure, or in other words, contain <0.5% GM seed. Check the seed label for information on variety and purity.

12.7 On-farm segregation of canola varieties

Growers planning to deliver to the non-GM canola segregation (CAN) must separate glyphosate-tolerant and non-glyphosate-tolerant canola crops by at least 5 m.

Figure 7: Crop of canola in flower next to a leafy wheat crop. (Photo: DAFWA)

12.7.1 Processes to segregate canola varieties

All canola growers need to know how to segregate different canola varieties to meet CBH Group (Co-operative Bulk Handling Ltd) delivery standards and international trading standards. Growers also need to discuss their planting intentions for boundary paddocks with their neighbour before planting (Figure 7).

The processes required to segregate canola varieties are similar to the processes used to segregate other grains such as feed barley from malt barley.

In accordance with best practice, growers should ensure that:

- all bags of seed are labelled;

- seed of different varieties are stored separately;
- seed is stored in vermin-free areas;
- lot numbers of all seed sown are retained; and
- record is kept of where each seed-lot was sown.

12.7.2 Farmer-saved canola seed

Some seed companies allow growers to retain open-pollinated varieties for sowing in subsequent years. Farmer-saved seed should be tested by a commercial laboratory for the presence of approved GM varieties before sowing. This will provide confidence that the seed will produce CAN grain. Growers intending to retain seed must ensure that a 400-m buffer is maintained between the seed crop and glyphosate-tolerant canola crops, including those on neighbouring properties.

12.7.3 Machinery hygiene

Good machinery hygiene is essential for the delivery of segregated canola. Thoroughly clean all grain-handling and storage equipment between handling of different varieties of seed or grain. The Australian Oilseeds Federation has published a useful guide: 'Harvesting equipment clean down guidelines—canola'.

It is important to ensure that farm staff and contractors know the variety and status of canola being grown on your property and the processes required to ensure effective segregation. Seed bags, silos and trucks should be clearly labelled to minimise the risk of accidental mixing of different grades or varieties of canola.

12.7.4 Crop management

The Licence and Stewardship Agreement for glyphosate-tolerant canola requires growers to maintain a 5-m buffer between glyphosate-tolerant canola crops and any non-glyphosate-tolerant canola crops. If canola is planted within the 5-m buffer zone, this canola crop must be harvested and delivered as CAG canola.

Swathed canola crops are at risk of being moved into adjacent paddocks (including neighbouring properties) via strong winds or floodwaters. Avoid swathing boundary paddocks if possible; if you must swath, leave a buffer of standing crop about one header-width wide along the boundary fence.

If you are aware that heavy rainfall could carry plant material from your property onto neighbouring properties, consider installing diversion banks to prevent movement of plant material. Develop a plan to manage any resultant herbicide-tolerant volunteer plants. Discuss your management plans with your neighbours before planning canola in your boundary paddocks.

Growers need to be aware that staff of utilities such as Western Power, Water Corporation and telephone companies may gain access to the wayleaves on their properties without notification or permission. This could lead to the accidental transfer of pollen and seed between paddocks, but the percentage should be extremely low and is unlikely to affect the delivery standards of grain.

12.7.5 Volunteers

The control of all herbicide-tolerant volunteers must be part of your weed-management plan. Good paddock records are required to ensure that volunteer canola plants are controlled in succeeding crops with the appropriate chemical. Prevention is better than cure, so every effort should be made to minimise the spread of canola seed outside the sown paddocks. Always clean down seeders, swathers and headers within the paddock before moving the equipment to other areas.

Numerous herbicide options are available to manage herbicide-tolerant canola volunteers. Select a chemical that is compatible with the current crop in the paddock.

Livestock grazing canola stubble can excrete viable canola seeds for up to 7 days. To minimise the spread of herbicide-tolerant volunteers, it is advisable to contain livestock in an area of the paddock and provide supplementary feed for a week before moving them to a canola-free paddock.

12.7.6 Record keeping

Be aware of and comply with any requirements for record keeping for your canola plantings. It is anticipated that the grains industry will continue to move towards adoption of quality assurance systems by all growers. [13]

12.8 Weed management at harvest

Weed seed removal can be achieved in two ways:

1. Harvesting provides an excellent opportunity to remove weed seeds from the system and prevent them from being spread across the paddock or farm. Collecting seed at harvest has the potential to be a useful component of an integrated weed management program.
2. Grazing weed-contaminated crop residue can be a cost-effective way of controlling weed growth. Animal digestion of weed seeds prevents a large proportion of seeds from entering the seedbank.

Weed-seed collection at harvest will not increase grain yield, because the weeds have already caused damage to the crop. The tactic can only prevent increases to the seedbank, and it may give a yield advantage to the next season's crop through reduced weed numbers during the season. [14]

More information

Crop Weeds: Weed management at harvest

For more information, see Section 6. Weed management.

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