



Swathing and Harvesting Multiple Stage Canola Crops

When dealing with canola stands suffering from low plant populations and/or multiple growth stages, swathing management becomes critical in order to achieve the best yield and quality possible.

In canola stands with low plant populations the architecture of the plants changes and we see more branching occurring. Research by S.V. Angadi of AAFC Swift Current (CROP SCIENCE, VOL. 43, JULY– AUGUST 2003) showed that as plant population decreased, the number of pods per plant increased. Contribution to yield by the main stem was reduced whereas the contribution to yield from primary and secondary branches increased significantly. Canola plants mature from the bottom of the plant up and from the middle outwards. Therefore, this additional branching in stands with reduced plant numbers may lead to a larger proportion of pods containing immature or even translucent seed as the main stems approach the typically recommended swathing stage of up to 60% seed color change. In these cases it is best to consider a whole plant seed color change approach rather than just looking at seed color change on the main stems.

In canola stands with adequate plant populations but variable maturity resulting from issues like uneven emergence, it will still be appropriate to assess maturity of individual plants based on the seed color change on the main stems. However, optimizing returns will depend on assessing the percentage of plants at each stage of maturity and accurately estimating which growth stage represents the greatest proportion of the yield within the field.

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To start the assessment, first segregate the field into areas with obvious differences in overall maturity. These different maturity zones will often be linked to the topography of the land, but not always in the way we expect. While the hills typically tend to be drier and hence quicker maturing than mid slope to lower level areas, delayed germination on the hilltops in dry spring conditions or excess moisture stress in lowlands can sometimes cause the opposite scenario. A person may want to open up the field and swath a lap around the outside edge or use a quad to travel to the areas selected. Examine those areas and assess the crop based on the following criteria:

- A) Within each distinct maturity area (or zone), look at assessing a smaller 10 X 10 meter area. This should represent a big enough sample area to encompass the varying stages of crop within the larger maturity zone.
- B) Start by pulling some of the ripest representative plants and counting pods on main stem, then on side branches (primary or secondary). This will help determine where the bulk of the yield will be (i.e. main stem vs. branches).
- C) Next start pulling apart pods on the main stem looking at number of seeds per pod and the % of seed color change taking place inside (refer to the Canola Time of Swathing Guide at https://canola-council.merchantsecure.com/canola_resources/product12.aspx). Then assess the major branches for seed number and color change as well as signs of

seed firmness, which is an indicator of physiological maturity. When rolling the seeds that appear green between your fingers, if a layer appearing like onion skin rolls out, then the seed is still moist and not ready.

- D) If the most mature plants are still too immature for swathing, then note the sample location so you can return in a few days to re-evaluate the maturity. Seed color change will typically increase 10% every two to three days, but will be quicker in hot dry conditions. If the assessment of the ripest plants indicates they are ready, then move to later maturing areas or plants within the sample area, again counting pods and looking at seed color change or firmness. Keep in mind that translucent seeds are very immature and will likely be lost if the crop is not left to mature further.
- E) Once you have completed this, you should have a good picture of the range of maturity in that zone within the field and be able to assess the portion of the seed that is ready vs. the portion that would benefit from delaying swathing.
- F) Finally, sample from many areas within the field to adequately assess the overall readiness for swathing (at least one sampling within each maturity zone identified at the start). This may also help determine if some areas of the field should be managed separately.

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Here is an example:

1. Canola field with 2 distinct stages of maturity. The earliest zones are estimated to be 40% of the field while about 60% of the field is 10 days to 2 weeks later.
2. In the earliest maturity zones you choose a 10X10 sample area and estimate that 60% of the plants within the areas have about 100 pods per plant with the main stem averaging 30 pods. The rest of the plants from thinner areas (half the plant density) in this zone have about 200 pods and 30 on the main stem.
3. The main stem pods in these early maturity zones have fewest seeds per pod but are at 60% seed color change. There is a range of seed numbers in the pods on the branches. First branches have seed with no color change but firm to roll whereas seeds on the secondary and tertiary branches are firm to mushy, especially in the thin areas.
4. In the areas of later maturity, most plants contain 150 pods per plant and 50 are main stem.
5. In these zones of late maturity, the main stem pods have more seeds per pod and are firm, whereas the branches have variable seeds per pod and are translucent to mushy.
6. From the pods counts, a rough estimate of relative plant yield and maturity from the different maturity zones can be determined. In this case, the early zones have main stem pods with low yield but are most advanced in maturity. The branches in these areas have moderate yield and mid-maturity. The later zones have moderate yield but are much later, while the branches in these zones have good yield potential but are extremely late maturing.

It is late August and there is no frost on the horizon, but the distribution of the two maturity zones within the field does not allow for managing them separately. To maximize yield, you should time swathing for the majority of the yield that has a reasonable chance of maturing before a killing frost. In this example, you would target the branches on the early zones, and the main stem pods in the later zones, which would mean waiting for some additional seed color change to occur. Shatter loss from the early main stem pods will be more than offset by continued filling in branch pods and main stem pods on later maturing plants. The branch pods in late areas will likely not

finish and are a minor part of the yield. However they may contribute to the green seed content, so sacrificing a portion of that seed is not a big concern.

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the example above, if the forecast suggested a high risk of frost within 10 days and the weather was cool and moist one might

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consider going ahead and swathing. The translucent seed in the last set of plants will likely shrivel and blow out of the combine or be lost as dockage, but this portion of the yield would probably be lost to the frost damage anyway, as would significant returns from downgrading of the remaining yield.

As the season moves on and cool conditions continue the need to swath earlier to minimize green seed potential could occur. Although the ideal seed color change to optimize yield is when 60% of the seed on the main stem has turned, results from time of swathing trials indicate that the risk of grade losses due to green seed when swathed at as little as 10% seed color change will be small relative to the potential grade losses from fall frost damage, particularly if conditions allow for slow dry down of the swath.

Swathing

With low plant stands, the ability to anchor the swath to the stubble is hampered. To reduce potential losses from swaths blowing, keep the following recommendations in mind;

- A) Swath into the prevailing winds.
- B) Cut the plants just below the lowest pod.
- C) Using a swath roller, push down the swath so that the edges are nestled into the stubble. Because the swath will be on or close to the ground, curing and/or dry down time may take longer.

Understanding the chemical-aided dry down process

Growers who decide to straight combine some of their canola may be considering pre-harvest weed control or desiccation, particularly in fields with uneven maturity. While these products can hasten dry down of mature plants, they will kill any immature ones. It is also important to understand that these products are not designed to seal the pods against pod shattering, and in some cases may make the crop more vulnerable to shattering if harvest is delayed. **Be prepared to harvest as soon as the crop is ready**, because the more rapid dry down will leave the crop vulnerable to shattering sooner than if it is left to mature on its own. If applying pre-harvest chemicals with ground rig sprayers, using crop dividers can reduce the amount of crop loss due to trampling and shattering. In addition, traveling back and forth in the direction of prevailing crop lean will help reduce losses.

On Roundup Ready canola varieties, a pre-harvest glyphosate application will assist in some dry down of green weeds and offer perennial weed control, but it will not dry down the crop. For other types of canola, it is critical **not to apply the product too early**. Apply when the crop has 30% or less seed moisture content. At this stage, **which is past the typical swathing timing**, pods are green to yellow, and most seeds have turned from green to yellow or brown. For a faster acting desiccant like Reglone, it is even more important to delay application to allow seeds to reach physiological maturity. The recommended stage is when an average of 65-75% of seed on the whole plant has turned brown. Keep in mind that this will likely be well past 75% seed color change on the main stem.

Also remember to use only products that are registered for pre-harvest application. The use of unregistered products may leave unacceptable levels of residue in the seed.

Straight Combining

With lower plant stand populations, the crop will usually lodge more readily. With the reduced ability to properly anchor a swath, there may be the temptation to straight cut. If you plan on straight cutting, the same suggestions for successful straight cutting still apply. It is still important that the stand be even in maturity as much as possible. For information on straight cutting canola, please refer to the canola fact sheet on straight cutting at https://canolacouncil.com/merchantsecure.com/canola_resources/product35.aspx.

Storage and Conditioning

With the potential of green seed and sub-optimal combining conditions, proper storage and conditioning will be required. It is important to dry the crop if needed, or to aerate the canola to lower the temperature and even out the moisture content as soon as the crop is put into the bins, even if harvested dry. Refer to storage chapter 12 in the Canola Growers Manual, available online at <http://www.canolacouncil.org/contents12.aspx>.