

Canola Harvesting Options -2010

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Canola can be either swathed and then harvested or direct combined. Whether to swath or direct combine is a management decision because both can be done successfully. Swathing is generally recommended for winter canola if harvest cannot be completed in a timely manner. Direct combining requires no additional equipment for wheat growers. Harvesting canola is a slower process than harvesting wheat. Ripe canola should be harvested immediately as preharvest shattering happens frequently. Equipment should be ready to combine canola just as soon as the crop is ready and it should be harvested before wheat, otherwise crop losses likely will occur. Losses from pod shattering due to excessive wind, rain, and hail can be devastating, resulting in yield losses greater than 50 percent when the crop is ripe. Holes in the combine or trucks should be plugged with tape or caulk to ensure that the seed is not lost.

Direct Combining

Direct combining is generally recommended for the southern Great Plains because dry-down is accelerated by high air temperatures at ripening. Ideally, canola should be harvested when the average seed moisture is 8 to 10 percent and no green pods are visible. However, canola is an indeterminate crop and retains a few immature seeds at harvest. Do not bother with allowing smaller immature pods and seed to mature. If the combine is set correctly, these will be blown out the back. Waiting for smaller seed pods to mature will result in larger, higher yielding seed pods to shatter and reduce yield potential. Harvesting at slightly higher moisture content (10 to 15 percent) and then drying down in a bin may help reduce the effects of pod shatter. Check the grain in the grain tank to ensure there is little to no green seed.

Ripe standing winter canola is easy to thrash. Therefore, after first setting the combine, try opening the concaves more, as this reduces grinding of stalks. This will allow more material through, and by not grinding the green stalks, the moisture content of the canola seed will be lower. Keep an eye on what is coming out the back. Do not be concerned if you see a few green pods.

Canola seed is very difficult to see once it falls onto the ground. It is better to place a small box on the ground ahead of the combine and then look to see what is inside after the combine passes over it. Check around the combine for places where the seed may be falling out and fill those cracks with duct tape, caulking, or grease.

Advantages to direct combining

- Best opportunity to deliver No. 1 quality because of reduced green seed potential.
- Able to combine during hot (greater than 85 degrees Fahrenheit) dry weather conditions and maintain quality.
- Generally results in the best yield, protein, and oil content.
 - One-pass harvest with either the grower's combine or by custom cutters.

- No swathing equipment or pickup attachments for combines required.
- Best method for stands of canola that are tall, heavy, "laced" together, or lodged.
- Avoids risk of improperly laying (twisting or bunching) the crop on the ground by swathing.
- Decreased risk of diseases from poor drying and maturing that can occur when canola is lying in a windrow.
- Thicker, more productive crops will mature evenly and are easier to direct combine.

Disadvantages to direct combining

- Must harvest when crop is ready. Do not wait several days until wheat harvest is finished.
- Bad weather or wet fields at maturity could delay harvest allowing shattering to begin.
- Shattering due to hail, high wind, or severe storms may be worse if the crop is standing.
- The longer the mature crop stands in the field, the greater potential for shatter losses. Rain on a standing crop increases the potential for shatter losses as it promotes decay.

General settings for conventional combines

- In general, the ground speed of the combining operation is slower than wheat.
- Harvest canola immediately below the seedpods to avoid excess trash and green stems moving through the combine and slowing harvest (Photo 81).
- The reel should be set high and as far back over the grain table as possible.
- Reel speed should be the same as the ground speed.
- Cylinder speed should be slow (450 to 650 rpm), about one half to two thirds that for wheat. Cracked seed indicates excessive speed.
- Concave clearances - $\frac{3}{4}$ inch in the front and $\frac{1}{8}$ to $\frac{1}{4}$ inch in the rear. Remember, canola is easy to thresh and you don't want to grind the stems any more than necessary. Grinding the stems can increase seed moisture. Increase concave clearance until seed is not threshed from pods.
- Fan speed is similar to wheat (400 to 600 rpm). Shaking the seed out of the chaff is better than trying to blow the chaff out.
- Top sieve/chaffer set at $\frac{1}{4}$ to $\frac{3}{8}$ inch for proper separation.
- Lower cleaning sieve set at $\frac{1}{8}$ to $\frac{1}{4}$ inch.
- For rotary combines, use preset settings from the operator's manual. Most settings can be adjusted from the cab.

Swathing

Swathing reduces the possibility of seed losses from wind and hail. If swathing is the preferred method of harvest, it is important that the plant be at the proper stage of maturity. The best time to swath for optimum canola seed yield and quality is when average seed color change on the main stem is 40 to 60 percent and the seed contains 30 to 40 percent

moisture. But canola can be swathed at 30 to 40 percent seed color change without sacrificing significant yield or quality. This widens the “swathing window” for growers.

Swathing involves cutting and placing the crop in windrows directly on the cut stubble for approximately 7 to 10 days or until the seed moisture is 8 to 10 percent (Photo 82). At this time, the canola can be harvested with a pickup header. The windrow should not be placed on the ground. Swathing during hot (85 degrees Fahrenheit), dry, and windy weather will stop natural chlorophyll clearing due to low seed moisture. Try to swath during the cool evening hours, at night, or early morning to allow the seed to dry at a slower rate. The draper, belt-style of swather is superior to the auger style in reducing crop damage.

Regardless of the swather type used, the windrow must flow smoothly through the swather without bunching or twisting. Bunching and twisting leads to uneven drying and combining problems as well as increased disease potential. Canola should be swathed just below the pods to reduce the amount of crop passing through the throat. This leaves a maximum amount of stubble on which to lay the windrow and ensure adequate air circulation. Swathing too early will result in green seed, lower oil content, and higher seed moisture. Swathing too late will result in excessive shattering.

Field staging for optimum time of swathing

Start inspecting fields approximately 7 to 10 days after flowering ends. Walk out and sample five to 10 plants, examining pods on the main stem only. Seeds in pods on the bottom third of the main stem mature first. Using the seed color change chart (Photo 85), take note of the seed color change percentage on the main stem. Only seeds with small patches of color (spotting) should be counted as color change. Most of the seeds in the top third should be firm and roll, as opposed to break or crush, when pressed between the forefinger and thumb. After assessing the main stem, look at the seed from the pods on the side branches to ensure that they are firm with no translucency, especially with low plant populations. Once you have sampled the seeds, estimate the average percent seed color change for that field. Continue inspections every 2 to 3 days to monitor color change. The key to curing the crop in a windrow is moisture. The enzyme responsible for clearing the chlorophyll requires 14 days to change the seed to a mature color. Seed color is more important than the overall field, straw, or pod color when gauging the optimum time to swath.

Advantages of swathing canola:

- Harvest 8 to 10 days earlier.
- With earlier harvest comes an increased potential for double cropping.
- More management flexibility with large acreages since the timing of harvest is not as critical.
- Swathing can be done around the clock to assist with harvesting large acreages.
- Cutting weeds early allows a cleaner, drier sample and reduces the number of weed seeds that reach maturity.

- A properly swathed, tight windrow will withstand heavy rain storms and high winds.
- Uneven field maturity makes swathing a desirable option because of time management concerns with direct harvesting the canola.
- Swathing is advantageous if environmental conditions promoting shattering exist (hail, hard rain, high winds).

Disadvantages of swathing canola

- Research has shown a 10 percent yield reduction when plots were swathed at the optimum stage compared to direct combining.
- Do not swath canola if the weather forecast is for extremely hot, dry, and windy conditions. Swathing at temperatures of 85 degrees Fahrenheit or greater will rapidly dry the crop and result in excessive seed shrinkage.
- Swathing too early results in excessive seed shrinkage and swathing too late results in excessive seed shatter.
- Additional equipment and a second pass over the field are required.
- Once the crop is swathed, the seed does not continue to fill. Seed swathed before accumulating its full complement of oil and protein will not accumulate any more after swathing. This reduces yield, oil, and protein content and increases green seed.
- The necessary machinery may not be readily available.
- Stands of canola that are tall, tangled, or lodged make it difficult to lay down an unbunched, smooth windrow.
- The amount of material in a heavy crop to be forced through the throat of the swather may be a problem.
- Light or fluffy windrows can be lifted and blown by the wind. Swath rollers that lightly push the windrow down into the standing stalks reduce the risk of blowing (Photo 83).

Combining swathed canola

Canola is ready to combine when seed moisture has dropped under 10 percent. Under normal conditions, this is about 5 to 14 days after swathing. Most seeds will be mature with little or no green color. A moisture meter is essential to ensure correct harvest timing. If green seed is present due to rapid dry down and it is early in the harvest window, the windrows may be left longer to clear more green seed. Only a small percentage of green seeds will reduce the grade. By leaving the windrows to reduce green seed, you also run the risk that prolonged wet weather will delay combining and result in yield and quality losses. Windrows are best picked up using a rubberized draper belt. These belt types have rubber or synthetic fingers and are preferred when harvesting canola as the gentle action helps to reduce shattering losses. The aluminum pick-up is more suited for bunched windrows. Direct cut headers require crop lifter attachments that are the width of the windrow that lift it into the header. The rest of the cutter bar may be covered to prevent or reduce the amount of second-cut stubble entering the combine. **19**

Pushing

Pushing is a relatively new procedure for canola harvesting that has been suggested as a faster and less expensive alternative to swathing. A “pusher” is mounted on the three-point hitch of a bidirectional tractor, and it is driven through the canola at a relatively high speed to force lodging (Photo 84). Mounting a pusher on front loader brackets has not been successful because the unit is too wide and heavy. The pusher must be kept level during this high-speed operation. By pushing the canola over, it is less susceptible to blowing in the wind and shatter losses.

Although experience with pushing is limited, it may work better in some crop situations than in others. Pushers work best in fields with high production potential and few or no terraces. Pushing works better in taller, even crops. Shorter, thin crops simply stand back up, minus a few pods, after the pusher has gone through the field. The optimum speed for pushing may vary depending on crop size and density. The goal is to push the stalks over, but not break them off or rip them out of the ground. Vertical sickles are located at both ends of the pusher and directly in front of the tractor tire tracks. These are designed to ensure a clean cut between passes and reduce the amount of canola crushed to the ground by the tires. Pods cut off by these sickles are lost.

After the crop matures, it is direct combined. The combine must travel in the opposite direction of the pusher. The combine header must operate much closer to the ground than for standing canola. Harvesting is slower because more stalk material enters the combine. Growers should carefully scout fields for armyworms and other foliage feeders, and if they are present control them before pushing. A few growers in Oklahoma will be pushing their canola fields in 2009.

Desiccants

Generally, desiccants to facilitate drying are expensive and not necessary in the Great Plains because of high temperatures during dry-down. Desiccants are advantageous where plants are excessively lodged, weed infestations are heavy, maturity is not uniform, and the crop is not going to be swathed.