

Managing Fall Frost on Canola

When the first fall frost is in the forecast, a decision on how to best handle your canola crop must be made. If your crop is still standing, then a decision on when to swath must be made. If your crop is standing when a killing frost hits, the crop will dry down faster and will stop filling. If the frost is light and there is adequate time for recovery of the crop, yield and grade loss may be reduced.

Canola Frost Symptomology

Once the canola crop has had a killing frost, the crop will change color, ranging from white or white speckled pods if the frost was mild to black pods if the frost was severe. If the moisture in the seed is more than 45%, seed shriveling will occur. Once the seed has frozen, the enzymes that remove the green color from the seed are not able to function, and the green will no longer be degraded from the seed. A severe fall frost can result in shriveled white seed.

Swathing Before the Frost?

Swathing in anticipation of frost only works when seeds are firm and when the swath will have three good drying days before the frost hits. The seed will require time to dry down to below 20% moisture. Once the seed has dried down to this point, the frost damage will be minimal. If the frost hits after swathing and prior to a sufficient drying period, there may not be enough time to have sufficient seed color change. The only way that green seed levels can still be reduced after the frost is if there is sufficient moisture drawn back into the seed, as well as sufficient time prior to another frost, for the enzymes that remove the green to reactivate and have time to complete the pigment degradation process. If canola is fairly green, swathing too early to avoid the risk of frost can often translate into yield and quality losses.



Figure 1. Bleached and shrunken canola pods as a result of a severe frost. *Photo courtesy of the Canola Council of Canada.*

When and How to Swath after the Frost

Assess the canola field one to three days after the frost event. You may want to assess the field once again one to two days later to ensure there has not been any additional damage showing up that was not apparent at the first assessment timing. There are several options you will have to consider in regards to crop management. When making your decision you will want to be sure to include the upcoming weather forecasts.

Light Damage Assessment

If there is light damage, either in patches or throughout the field, leave the crop and swath at the proper stage based on the seed color change of the healthy seed. Light damage may cause some seeds to turn “shoe polish” brown, but pods and most seeds generally remain intact and turgid. Swathing immediately after a light frost may result in higher economic and yield losses than if the crop were left alone.



Figure 2. “Shoe-polish” brown seeds resulting from a light frost.

Light to Moderate Damage Assessment

With moderate frost damage, pods will have white speckling on the outside, and some seeds will turn brown and shrivel. However, pods remain reasonably intact and pliable, and some seed remains green and turgid. Waiting to swath until healthy seed is at 50-60% seed color change gives healthy seed time to reach optimum yield and quality. Damaged seed will shrivel and blow out of the combine or end up as dockage. Monitoring a crop with moderate frost damage will be critical, as pods will be more prone to shattering. If necessary, swathing areas that are prone to shatter a bit earlier may result in higher overall yield.

Moderate to Severe Damage Assessment



Figure 3. White speckling on the pods and as a result of a moderate frost. Several seeds are turning brown prematurely while others appear healthy. *Photo courtesy of the Canola Council of Canada.*

When 50% of the field has moderate to severe frost damage, yield and quality will likely be reduced. The canopy will turn white, the pods will have a bleached and shrunken appearance, and the seeds may shrivel and turn white. Swathing when plants with minimal damage reach 50-60% seed color change can allow the intact

seed to continue to change color and fill, improving both grade and yield. Anything severely damaged may shell out or be separated out with the chaff or as dockage.

Severe Damage Assessment

When more than 50% of the field is severely damaged by frost, there is a high risk that the plants will shatter and seed will be lost. It would be best to swath prior to seed loss to protect any viable seed. Quality is likely to be poor anyway, so the goal will be to protect as much yield as possible by swathing early. Once the frost damaged fields are swathed, the crop should be left to allow time for as much seed color change as possible to occur in the swath prior to combining.