



Agronomic Spotlight

Canola Best Management Practices

Three types of canola are grown in the United States: spring canola, winter canola requiring vernalization, and winter canola without the vernalization requirement. Canola has many benefits in a crop rotation, and management practices are important to obtain a high yield potential.

CANOLA

Canola refers to the species *Brassica napus*, *Brassica rapa*, and *Brassica juncea* that produce edible oils used for cooking (Figure 1). Canola is a cool-season crop. The majority of canola growth is complete prior to the hottest summer months. Spring canola is planted early in the spring and harvested in late summer. Spring canola is generally grown in the northern states from Minnesota to Washington. Winter canola is planted in the fall, overwinters, and is harvested in mid-summer. Some

winter cultivars require vernalization in order to produce flowers and seed. These are generally produced in the Pacific Northwest, the Great Plains, and Midwest regions of the U.S. Winter cultivars that do not require vernalization are grown in the southeast regions of the U.S. Winter canola is considered to have a higher yield potential than spring canola due to larger seeds with higher oil content.

USEFULNESS IN ROTATION

Canola is commonly grown in a rotation following small grains (wheat or barley) and corn or sorghum. Using canola in a rotation with grass crops provides an opportunity to better manage grassy weeds since grass-based herbicides can be applied to the canola crop.

Additionally, as canola and other brassica crops decay, they release chemical compounds that may be toxic to some soil-borne fungal diseases of plants (biofumigation properties) which can provide a healthier environment for subsequent crops. However, in areas where soil-borne diseases (like *Sclerotinia stem rot*) that affect canola are a problem, canola should be grown only once every four years and not in a close rotation with other susceptible crops like legumes or sunflowers.



Figure 1. Flowers of *Brassica napus* and *Brassica rapa*. (Courtesy of the Canola Council of Canada)

MANAGEMENT PRACTICES

Weed Management. In canola, weed competition is of greatest concern early in the season. In general, a well established canola crop will compete better with weeds. However, if seedling establishment is compromised due to poor seedbed conditions, delayed planting, or if proper pre-season weed control was not addressed, weed competition may be a significant problem. In-season herbicide options are limited in canola, so preventative weed control is critical. For proper seedbed preparation, tillage and/or a pre-plant, broad-spectrum herbicide should be applied to control early-season weeds. Always

use caution and follow plant-back restrictions as canola is highly sensitive to herbicide carryover. Herbicide tolerant canola products also offer farmers more flexibility with weed management and planting time.

Soils and Fertility. Highest yields are usually obtained when canola is grown on well-drained, silt loam soils. Avoid planting canola on saturated soils and soils that have drainage problems.

For optimal growth and development, sufficient levels of nitrogen (N) must be available to a canola crop prior to the period of rapid growth when the plants transition from vegetative stages to reproductive stages. Canola requires almost half of its total N uptake prior to the bolting stage. For winter canola, rapid N uptake occurs in the fall after planting and in the spring after winter dormancy is broken. For spring canola, rapid N uptake occurs in early spring after planting.

When time and equipment permit, a split fall-spring N application is recommended for winter canola as this can provide the N needed by the crop during both stages of rapid N uptake while minimizing N losses from leaching and denitrification. Apply 25 to 33 percent of the total applied N in the fall prior to planting and top-dress the remainder in early spring. Applying too much N in the fall can reduce winter hardiness and result in higher levels of winter-kill.

Applications of phosphorus (P), potassium (K), boron (B), sulfur (S), and lime should be based on soil test results taken as soon as possible after harvest of the previous crop and before seeding canola. S and B are important nutrients for canola growth and yield potential and should be carefully monitored.

Tillage Considerations. Studies have shown that winter canola yields are reduced when planted into conservation tillage. Seeding, germination, and emergence can be hindered by heavy residue from the previous crop, which in turn can have a negative effect on winter survival. Canola seeds are very small and it can be difficult to attain good seed-to-soil contact when planting through heavy residues. Conversely, spring canola has responded positively under conservation tillage. Cooler soil temperatures and shading of seedlings, common effects of conservation tillage and standing residue cover, may be decreased in spring canola due to residues having been partially degraded over the winter months.

Planting Date. Winter canola is generally planted six weeks prior to the average date of the first killing frost in

order for plants to become well enough established to survive winter dormancy and compete with weeds in the spring. In southern regions, planting four weeks prior to the first killing frost date may be sufficient. Plants should have four to six fully opened leaves in the rosette stage prior to the onset of winter, which usually corresponds to approximately 45 days of growth. Planting too early can increase the potential for insect problems (flea beetles and aphids) and winter kill due to excessive vegetative growth. Spring canola should be planted as early in the spring as possible while managing frost dates, but preferably after soil temperatures have reached 49° F and higher.

Seeding Rate, Depth, and Row Spacing. Seeding rates vary greatly depending on seed size, planting method, and whether planting spring or winter canola. A rule of thumb is to use a seeding rate that results in 10 to 16 seedlings/sq ft. Because only 40 to 60 percent of the seeds planted will grow into mature plants, this should result in an optimal plant stand at harvest of 5 to 10 plants/sq ft. Generally, this equates to a seeding rate of approximately 5 to 6 lb/acre when using 7- to 8-inch row spacing. Increase the seeding rate if planting late, if using narrow row spacings or if the seedbed is not optimal, such as when direct seeding into heavy residue where germination may be lower. Decrease the seeding rate if planting early and when using wider row spacings. Canola seeds can be planted 1/4 to 1 inch deep as long as they are being planted into moisture. Row spacing may depend on the planting equipment available. Winter canola is planted in 6- to 20-inch rows and spring canola in 6- to 15-inch rows. Narrower row spacings promote quicker canopy closure which can help with weed control.

Harvest Considerations. Canola can be direct harvested if the moisture content of the crop is uniform and around 8 to 10 percent. Canola seeds are light and easily lost out of the back of the combine so pay careful attention to ground speed, motor speed, and airflow rate to minimize losses. Alternatively, more uniform maturity and moisture content can be achieved by swathing or “pushing” the canola crop before being threshed. Canola can be swathed when the crop reaches 30 to 35 percent moisture and 40 to 60 percent of the seeds on the main stem have turned dark brown. “Pushing” canola, where the canola plants are pushed over rather than being cut, serves the same purpose of accelerating maturity but may result in less seed shatter over direct cutting or swathing.

Sources

Canola Growers' Manual. U.S. Canola Association. www.uscanola.com.

Canola Growers' Manual. Canola Council of Canada. www.canolacouncil.org.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** ©2017 Monsanto Company
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