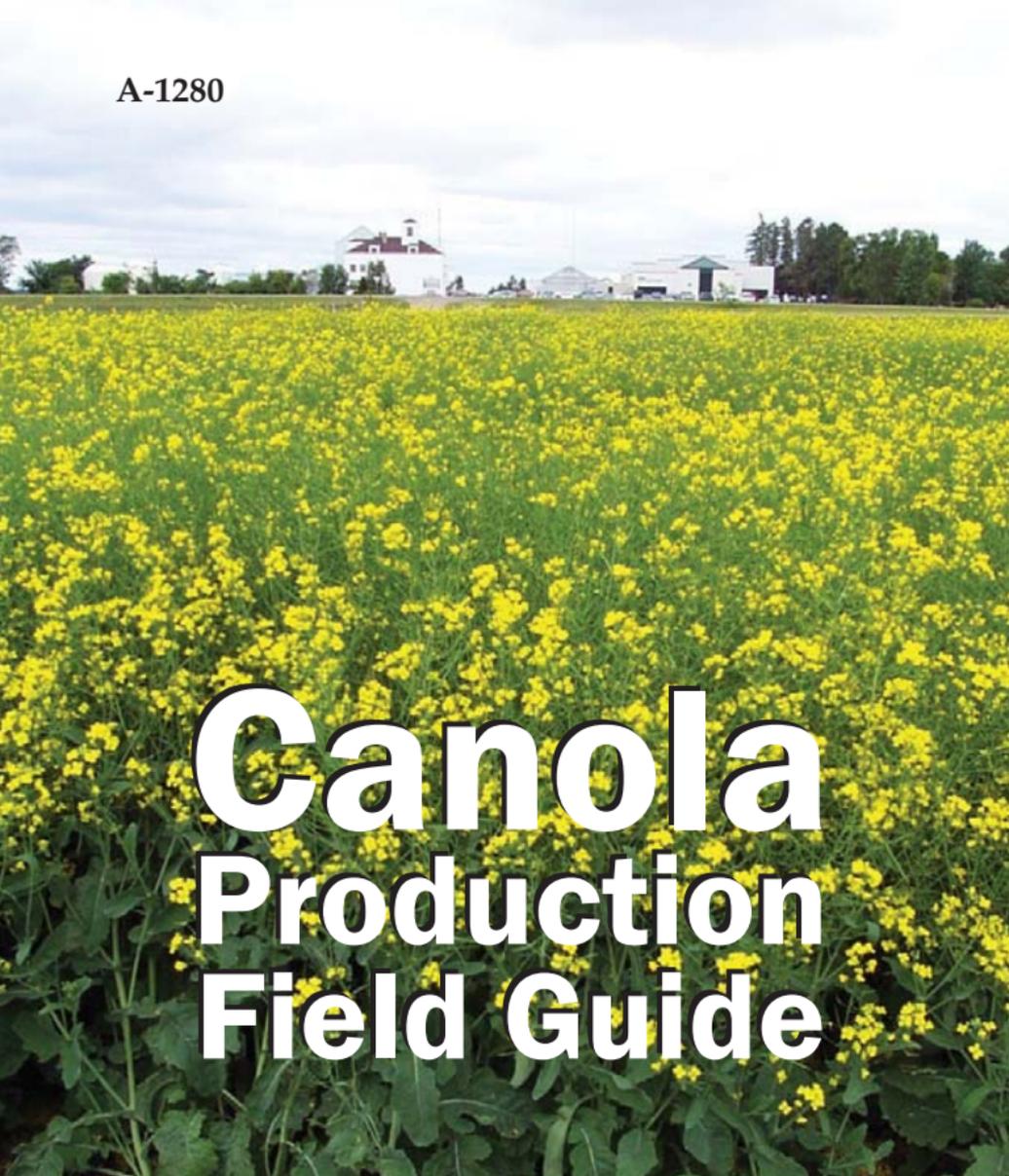


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# Canola Production Field Guide

**NDSU**  
**Extension Service**  
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# Introduction

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Canola is a popular oilseed cash crop in North Dakota. North Dakota leads the U.S. in canola production with approximately 89 percent of the domestic production in 2010. About 1.27 million acres were harvested in North Dakota in 2010. That was the second highest acreage harvested in the last 15 years. Statewide yields have averaged from 1,230 to 1,840 pounds per acre during the past five years.

Canola is a specific edible type of rapeseed, developed in the 1970s, which contains about 40 percent oil. The term “**canola**” is a registered name by the Western Canadian Oilseed Crushers Association. Canola varieties must have an erucic acid content of less than 2 percent and less than 30 micromoles of glucosinolates per gram of seed. This makes it acceptable as an edible oil and animal protein feed. Canola oil is considered one of the highest quality edible oils available. Canadian and U.S. farmers mostly grow low-erucic acid and low-glucosinolate varieties. High-erucic acid oil rapeseed is grown and used for industrial lubricants. This type of rapeseed mostly is grown in Europe, although some production occurs in Canada and the U.S.

In January 1985, the U.S. Food and Drug Administration granted canola oil GRAS (Generally Recognized as Safe) status for use in human foods. This has led to greatly increased sales and demand in the U.S., with only part of the demand being met by U.S. production. Canola oil has achieved worldwide commodity status and is extensively used in Japan, Canada and Europe.

## **Canola Varieties and Adaptations**

Canola is the genetically altered form of rapeseed, which consists of three species: *Brassica napus*, known as Argentine canola; *Brassica rapa*, known as Polish Canola; and *Brassica juncea*, known as quality canola brown mustard. All species belong to the Brassicaceae (Cruciferae) family, also known as the mustard family.

Each canola species has distinct agronomic characteristics that should be considered when selecting a variety to grow. Spring and winter annual types are available in *B. napus* and *B. rapa*. Winter canola is not grown in North Dakota because of poor winter hardiness. However, winter canola planted in the fall sometimes has survived in yield trials in North Dakota and northwestern Minnesota.

Nearly all canola raised in North Dakota is spring-sown *B. napus*. In general, *B. napus* canola has higher oil content and is higher yielding (greater than 20 percent), later maturing (10 days to three weeks), taller, more disease tolerant and more susceptible to late spring frosts than the *B. rapa* canola. The Polish

(*B. rapa*) varieties are more adapted to shorter growing seasons and where soil moisture may be limited. The main advantage of *B. rapa* canola vs. *B. napus* canola is if it is planted early, it flowers before the July heat, which reduces the potential for damage to flowers and related yield losses. If planted late, *B. rapa* canola will be more likely to mature before the first fall frost and produce a crop with fewer green seeds.

Canola varieties are developed from three different breeding techniques: open-pollinated, synthetic hybrids and hybrids. Hybrids and synthetic hybrids generally have higher yield potentials but also have higher seed cost. *B. juncea* canola was developed fairly recently in Canada. This species is more suitable to hot and dry conditions. *B. juncea* pods do not shatter as easily as other canola types. *B. juncea* canola is approved to grow in the U.S.

Herbicide-tolerant canola (HTC) varieties with resistance to a specific herbicide have been developed. Available HTC varieties include: Roundup Ready and Liberty-tolerant varieties that have been genetically modified and Clearfield (Imi) varieties that are resistant to the herbicide Beyond. Triazine-tolerant canola was developed in the early 1980s but is not used in the state. Clearfield and triazine-tolerant varieties were developed from traditional breeding techniques.

Markets are available for oils with specific characteristics and require a modification of canola's standard fatty acid profile. A small demand also remains for high-erucic acid rapeseed (HEAR) that is used in

plastics, lubricants, lacquers and detergents. Plant breeders have developed special-use varieties to meet these needs. Special-use varieties should be grown on a contract basis and must remain identity preserved. Canola is a relatively easy crop to manipulate genetically, and many new varieties with new quality and agronomic characteristics will be introduced in the future.

## Variety Selection

Choosing a variety is one of the most important decisions a producer makes in raising a successful crop. A variety's performance may differ from year to year and location to location due to changing environmental conditions. When selecting a variety to grow, consider a variety's performance across a number of locations and/or years. Key factors to use in choosing canola varieties are:

- **Yield** – Select varieties with consistently high yields.
- **Maturity** – *B. napus* canola varieties can mature 10 or more days later than *B. rapa*.
- **Plant Height and Lodging** – These factors are important considerations for ease of swathing.
- **Disease Tolerance** – Grow varieties with good resistance to blackleg. Varieties with superior lodging resistance reduce the incidence of sclerotinia.
- **Seedling Vigor** – Varieties with good seedling vigor will be more competitive with weeds and more likely to push through a shallow crust.