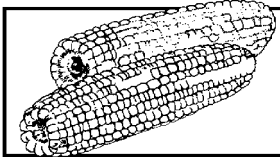


# Seed Corn

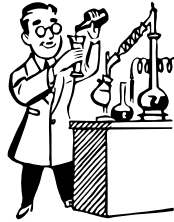


## What's in the bag?

### *What is hybrid seed corn?*



Hybrid seed corn is a unique and very specialized crop. The production of hybrid seed corn requires more time, expense and expertise to produce than other commercial crops. A seed corn grower does not plant a variety but rather 2 inbreds that cross to produce the seed of a variety. Hybrid seed corn production involves the crossing of two (2) inbred lines, **hybridization**. The two inbreds that are used in the process are referred to as **male** (the plant responsible for producing pollen) and **female** (the plant which produces the hybrid seed). Throughout the process extreme measures are taken to ensure the quality and purity of the seed being produced. Inbreds are crossed to create a variety that demonstrates certain characteristics, such as drought resistance or standability, or a variety that is produced for planting specifically in various conditions and climates.



### *The development of hybrids.*

Hybrid seed corn is developed to meet the special needs of commercial corn growers and processors. Before the advent of hybrids, farmers saved seed from one year to plant the next year; this seed was the result of open pollination and yields averaged about 40 bushels per acre. The introduction of hybrid seed corn has dramatically improved yields and quality. The corn is larger, stronger and stands up to the elements better. This is important as input costs are increasing and the dollar value per bushel is not keeping pace with these increases, in fact relative to inflation, the per bushel value is decreasing. In order to have a viable industry, yields must increase. Therefore, there is a need to improve hybrids for commercial corn production.

**The development of a new hybrid takes an average of 10 years.** Research is done using conventional methods and biotechnology to isolate the desired characteristics. A company will do extensive research to develop a new hybrid that, for example, adapts to the shorter growing season of Quebec or Manitoba. Research is done continuously to improve disease resistance, standability, the ability to endure drought or cold, produce high quality grain and of course to produce superior yields. The needs of processors are also a very important consideration in the development of new hybrids.

## **PRODUCTION**

**Planting** - Designated male and female seeds are planted in the correct row ratio, at the correct depth and population, as indicated by the production companies. The two inbreds are usually planted at separate times and in many cases the male inbred may require multiple plantings to ensure pollen at the time of receptive female silk. Consideration of the inbreds' characteristics determines the planting pattern used. In most cases, rows of the male inbred are planted between rows of the female, called interplant; however, they can also be planted in 4:1 or 6:2 female to male ratios.

Prior to planting and throughout the growing cycle, proper **isolation** must be guaranteed to ensure variety purity. Agriculture Canada requires, without extra male border rows, isolation of 200M (656 ft.) from commercial corn, popcorn, sweet corn or any other seed corn field with a different male. Most production companies exceed these requirements, insisting on 1000 feet from sweet corn and popcorn. This is to ensure no foreign pollen has access to the field that could result in contamination of the seed crop.

**Roguing** - The removal of all plants having characteristics different than those of the inbred lines, called off-types, is done by hand. After the inbred plants are 2 to 3 feet tall, the field is rogued. This process may require a crew doing several passes of the field (each row is walked by a worker and any rogues removed by hand) as well as the field being inspected.

**Detasselling** - Hybrid seed is produced by crossing two parent inbreds. One parent (designated the female) is pollinated by the other parent (designated the male). Since corn is a self-pollinating plant, the tassels from the "female" must be removed so that only pollen from the male parent is present in the seed field for cross-pollination. The timing of detasselling is critical; if done too early, it can damage the plant and if done too late there is a risk of self-pollination. Initial detasselling may be done by machine with special care being taken so that the corn plant is not damaged. With or without mechanical detassellers, the fields must be gone through by a crew of workers to ensure that the field is 99.5% clear of female tassels. This may require several passes by the crew (each row is walked by a worker and all female tassels are removed).

After the silks of the female inbred have been pollinated, the male rows are destroyed to avoid possible contamination of the hybrid seed (the male self pollinates and does not produce the desired hybrid). The pollination window is the most critical time of the growing process.

**Harvest** - Harvest begins when the moisture in the seed corn reaches the optimum level. This level is based on research and varies by hybrid, but is generally in the 35% to 40% range. Slow drying has shown to result in improved yield potential. Harvesting earlier at higher moisture helps protect against an early frost, which could severely damage the quality of the seed. Harvest at most production facilities will run seven days a week.

To ensure gentle handling and protection of the seed germ, corn pickers are used. Kernels are left on the cob until they have been sorted, husked and dried. Between hybrids, care is taken to ensure the picker and trucks are thoroughly kernel cleaned to eliminate hybrid mixing.

## **PROCESSING**

At every step of processing, the overriding concern is maintaining hybrid purity and seed quality.

To avoid hybrid mixing only one hybrid at a time is brought to each unloading area. The area is thoroughly cleaned between hybrids.

**Husking and Sorting** - All husks must be removed from the corn to allow even drying. Husking beds are designed to carefully remove husks from the ears, maximizing kernel retention. The ears then move along the sorting table where they are carefully checked by the harvest staff.

**Drying** - Hybrid seed corn must be dried slowly, at low temperatures (approximately 38C); this is a critical step in maintaining seed quality. After the dried corn moves on, the dryer bins are kernel cleaned before receiving the next hybrid.

**Shelling** - Dried corn moves by conveyer to the Sheller, designed to carefully remove the kernels from the cob, avoiding damage to the seed.

**Bulk Storage** - Dried, shelled corn is conveyed to the bulk storage bins. The seed is not dropped down into the bins; this would cause damage and result in poor seed quality. Spirals or seed ladders gently lower the seed. At this stage a number of tests are conducted such as warm germination tests to ensure the seed meets standards for genetic purity and quality.

**Sizing** - Assuming the hybrid passes all of the required tests, slow bucket elevators and conveyers now gently move the seed to the Sizer. This equipment separates the seed by width and thickness, so that bags will contain uniform sized seed. This is important to farmers because some planters require uniform size to maintain proper plant populations.

**Bagging** - After sizing, the seed is nearly ready for bagging, but first it is treated with a fungicide to protect it from soil borne fungi that may attack it after planting. At the same time, a dye is put on the seed to indicate that it has been treated.

## **Hybrid Purity & Seed Quality**

**are key in all steps of the process.**



## **Seed Corn Growers of Ontario**

The Seed Corn Growers of Ontario (SCGO) represent the province's 500 seed corn growers. For more than 60 years, we have been actively contributing to the growth and competitiveness of seed corn production in Ontario. Our principal mandate is to work with individual seed corn companies to negotiate production contracts that not only keep our growers competitive, but also provide incentive to produce excellent seed corn. We work to ensure our growers are provided with the best information and programs to maintain and broaden their seed corn production skills.

Our growers are dedicated to the production of quality seed corn. On average, SCGO members produce over 30,000 seed corn acres .



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