THEN AND NOW: THE HISTORY OF F1 HYBRID
SEEDS AND VARIETIES

Since the modern seed industry’s birth and beginnings almost 300 years ago, an astounding range of seeds and varieties has been developed.

Each seed and plant has been grown, chosen, then re-grown for desirable and successful traits. Seed from these crops were then saved to be used for many future generations to come, whether for local communities, pure enjoyment, or much larger agricultural operations around the world.

These tough, adaptable, and versatile varieties—many of which we still have and use today—are the result of hard work and natural selection on part of seed companies, working together with nature’s very best.

This includes what we have available here at Westar, such as our open pollinated vegetable, flower, and grass seed varieties. Each breed is the result of centuries of seeing the very best in what Mother Nature could produce, and making it even better.

EXPANDING ON WHAT MOTHER NATURE HAS TO OFFER

But as centuries have gone by and as the seed industry has expanded—and worldwide demands have grown—the answers to all agriculture’s solutions couldn’t be found in what nature could provide alone, or in one single seed’s line of genetics.

This is because, as global population boomed, humanity’s needs outpaced nature—despite all the versatility and strong crops it gave us so many hundreds of years ago.

Instead of waiting for nature to do her work, innovative farmers and growers found they could give nature a little push—or breed for certain traits—with the help of cross-breeding, or cross-pollinating, to produce what are called hybrids.

Today, this has given rise to one of the most popular type of seed on the market: hybrids.

THE STORY OF HYBRIDS: A NEED AND A VISION FOR BETTER CROPS

The term “hybrid” applies to the offspring of two very different parents, usually from two different varieties—though sometimes they can be the result of two different species altogether.

Hybrids in the plant world result from cross-breeding, cross-pollination, or what is also called “artificial selection.” This is when human beings step into the process of natural selection instead of nature itself.
Looking back on the history of hybrids, what created a need for them is easy to guess. Farmers and growers of old noticed the impressive variety that nature produced on its own through the use of open-pollinated seeds. But would counting on only the strongest from that genetic variety be enough to feed the world?

Open-pollinated varieties—though they have a gene pool diverse enough to produce great new varieties—could also yield weak plants and crops with each generation. Some offspring could also fail to inherit certain genetics too, for that matter, which is always a risk when saving open pollinated seed.

Though open-pollinated seeds didn’t pose too many obstacles for small farmers and gardeners back in the day, they did create challenges for larger farmers and seed companies. These companies needed to grow enough strong, healthy plants from seed to feed entire countries, and thus required a much more reliable seed stock to do this.

These limitations of standard, natural seeds may have become the biggest issue with the rise of globalization—and especially when mechanized agriculture began. Thus, hybrids of many sorts were developed and used over the entire history of agriculture to create newer, more successful varieties, as far back as 10,000 B.C.E.

However, global demand—which burgeoned starting in the 1700’s—demanded newer, better hybrids, and particularly the F1 hybrid.

**F1 HYBRIDS: WHAT ARE THEY?**

An F1 hybrid specifically refers to the first generation of hybrids from pure-bred parents who are either different varieties or species.

Before F1’s, the development and use of general hybrids had been around for a long time, and was utilized by agricultural societies for thousands of years—arguably since the dawn of agriculture itself.

*But as many different types of hybrids were explored, F1 hybrids proved to have some very distinct advantages.*

For example: a specific breed of corn could be cross-bred with a much different corn variety. This then produces a first generation of offspring stronger than either parent, and is called an F1 hybrid.

What’s more, all these F1 offspring—if specifically bred to inherit uniform dominant traits—would be born identical, with the exact same desired traits among each of them, but without being inbred.

When these F1’s cross-breed with others, however, the following generation is called F2, and the next F3, and so on. More often than not, the preferred traits from two hybrids crossing are lost with each of these following generations, making F1’s the most desirable of all of them and giving breeders the most control over what traits to expect.
Instead of letting nature take its course—as in the case of using open pollinated varieties—F1’s allow the farmer, as well as the seed saver and breeder, to “breed in” desired traits from other plants, species, or varieties into their desired crop, and enhance it for better commercial success.

NATURALLY CONTROLLING GENETICS: CROSS-BREEDING FOR F-1’S

Though hybridizing plants and even livestock was no new technology, the idea that F1 hybrids could be especially useful to agriculture—and better than other kinds of hybrids—probably arose around the time early genetics was first explored.

_In fact, Gregor Mendel—known as the “father of modern genetics”—used agricultural pea plant crops to develop the genetic theories we still use today._

Mendel’s experiments with breeding plants in the 1800’s showed how F1 hybrids could be produced. They also showed how these could be very favorable choices for certain agricultural seed stock, especially considering that they easily inherited dominant advantageous traits—and were born almost 100% identical without being inbred.

Compared to completely natural and pure-bred seed stock, F1’s made sowing and harvests much more predictable, and reduced the chances of crop failures by avoiding weak offspring. It also allowed very specific dominant traits—such as bigger size, better flavor, cold tolerance, and more—to be passed down to new seed almost without fail.

_The only apparent drawbacks to F1’s: since the exact same seed cannot be bred once again from those same F1 offspring, stock would have to be reproduced from new cross-breeding pair varieties again and again over the years._

If that same F1 variety was ever desirable enough to use again, it could not be easily bred again from F1 parents. In fact, the generation following F1’s (F2’s) would most likely produce less favorable plants on average, even compared to open pollinated seed and heirlooms.

BREEDING BETTER HYBRIDS FOR INTERNATIONAL SUCCESS

Sometime during the early 1900’s, a steadily growing international seed industry ran into some big hurdles.

Despite a global demand for better, more reliable seed and varieties on a larger scale, farmers and growers the world over didn’t always have a need for commercial seed varieties—that is, for open-pollinated seed varieties specifically.

As was the custom of the time, small farms and growers saved the seed from their most successful crops from the season previous to prepare for seasons to come, especially from their self-pollinating plants that would “breed true.” This was even the case if they sourced their open-pollinated seeds and heirlooms from commercial growers.
After all, what was the point of returning to buy more seed from a company, when you could easily save the seed and replant it for yourself for free?

Much changed in the early 20th Century, and around the 1920’s specifically, when more hybrid crops were developed and their seed introduced to the market—including F1 varieties. This suddenly gave seed companies, both domestic and industrial, a new economic edge.

*For one: most farmers could very well produce their own successful hybrids, but lacked the time, tools, capital, and developed expertise to do so on their own in addition to running their agricultural enterprises.*

Plus, hybrid seed—especially F1 hybrids—could never be replicated for the same successful crop the following year by simply saving seed from F1’s the year before.

In this way, seed companies around the world truly flourished when, with the help of hybrids, they carved out a new demand for more advantageous seed varieties than ever before—and with brand new and exciting types that only these companies could develop and sell.

*On a larger level, the work of these companies did the world a huge service: they perfected the very best seed varieties, whether hybrids or open-pollinated, and allowed farmers the world over to have more successful and reliable harvests than ever before.*

**AN F1 HYBRID LEGACY: THE BEST VARIETIES TODAY**

Today, F1 hybrid seeds are just as popular as ever.

For heirloom seed-savers and small gardeners, F1’s may not maintain the same genetic diversity as open-pollinated varieties. They may also not be quite as ideal (or as fun) to grow from the seed what you saved from them the previous year, as the next generation—F2’s—will be much more mixed.

For larger agricultural operations, however, F1’s can be much more profitable choices. Their predictable genetics means they will all mature and reach harvest in precisely similar ways and times, which can be especially desirable with mechanization.

They may also be bred with guaranteed traits, making them much more successful when produced on a grander scale: chemical resistance, pest resistance, uniform size, height, and more.

*Some famous plants are in fact F1 hybrids. These include:* 

- **Peppermint** (*Mentha piperita*) – A cross between watermint and spearmint
- **Early Girl Tomatoes** (*Solanum lycopersicum*) – One of the most popular tomato varieties
- **Burpless Cucumbers** (*Cucumis sativus*) – Hybrid cucumbers bred for thinner skins and less bitterness, fewer seeds
• **Seedless Watermelon Varieties** *(Citrullus lanatus)* – Most seedless watermelon varieties are F1 hybrids to be as reliably seedless as possible

### F1’S AND THEIR PLACE IN THE MODERN SEED INDUSTRY

For blooming and booming large agricultural operations, F1 hybrids will stand the test of time as some of the top seed choices for big farmers. For some other small farmers and gardeners, F1’s may have their own appeal on a more minimal scale, too.

*Here at Westar, we’re not just proud to make natural and standard seed varieties available for the small farmer and gardener. For the larger-scale grower, more often than not, F1’s are simply a better fit and we’re proud to provide these also.*

We think all options should be available to all types of farmers, and for the grower to ultimately decide what best meets their growing needs.

That’s why we include both types in our catalogues—making them equally available to our international markets, whether as wholesale or retail.

Open-pollinated seeds certainly provide robust genetics for the farmer who wants to save their seed.

Still, F1 hybrids on the other hand will provide advantages of predictability, reliability, and uniform dominant traits, which expansive farmers can depend on much better, from season to season and year after year.