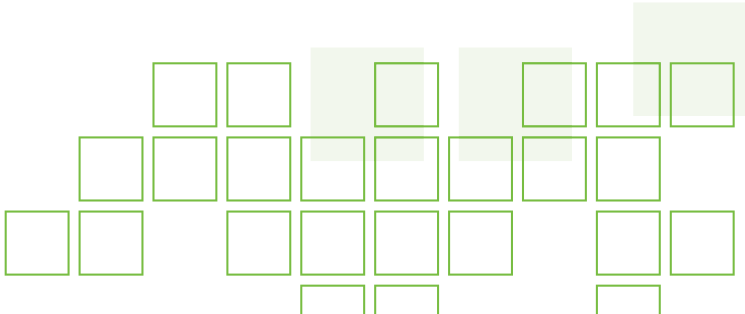




2022 SUNFLOWER

HYBRID & MARKET GUIDE



SUPERIOR SUNFLOWER HYBRIDS

Nuseed's North America based nurseries are the breeding ground for superior sunflower hybrids

HERE'S WHY:

✔ R&D trials are strategically located in sunflower-growing areas in the United States

✔ Nuseed is the only multinational company working with all sunflower hybrid seed types and herbicide traits, including the largest confection hybrid breeding program in North America

✔ Industry leading sunflower molecular lab and seed production located in West Sacramento, California

✔ Hybrid trait selection at North America based trials under regional disease and insect pressures

✔ Strict quality assurance program

AN IMPORTANT AGRICULTURAL CROP

While the vibrant, strong sunflower is recognized worldwide for its beauty, it is also an important source of healthy edible oil and protein meal. As one of the world's leading oilseed crops, sunflower oil is a valued and healthy vegetable oil. Sunflower seeds are also enjoyed as a healthy snack and nutritious ingredient to many foods.

THE THREE SUNFLOWER MARKETS

CONFECTION

This highly recognizable black and white seed serves as a tasty and healthy snack. Confection sunflower hybrids are planted at a lower population in the field to grow longer more plump seeds. The largest of the seeds get sold to the in-shell market, like what you eat at baseball games, while the smaller seeds are utilized in the dehull market, where they are sold as sunflower kernels for baked goods.

OIL

Oil sunflower hybrids are utilized for the oil that can be extracted from the seeds. Natural sunflower oil is a combination of monounsaturated, polyunsaturated, and low levels of saturated fat. Oil sunflowers are generally classified based on their oleic (monounsaturated fat) content.

PRIMARY CATEGORIES OF COMMERCIALY AVAILABLE HYBRID SEEDS

Nusun[®]: Oleic levels of 55-75%

High Oleic: Oleic levels greater than 82% (common minimum crush requirement)

CONOIL (DEHULL)

As a cross between confection and oil-type seed, conoils provide ultimate versatility. Conoils have a higher yield and oil content than traditional confection seed and, although they are usually dehulled for baking needs, they may also be used in the confection and oil markets.

HERBICIDE TOLERANT TRAITS

Sunflowers are considered a non-GMO crop, but herbicide tolerance has been established through years of selective breeding. Nuseed has built the Clearfield[®], Clearfield[®] Plus and DuPont[™] ExpressSun[®] traits into the majority of our hybrids to help growers manage weeds.



The Clearfield Production System for sunflowers provides growers with broad-spectrum residual grass and broadleaf weed control, including ACCase resistant weeds. The Clearfield system combines high-yielding sunflower hybrids with SOLO[®] herbicide tolerance for superior postemergent weed control in no-till, minimum or conventional tillage systems.



DuPont ExpressSun sunflower hybrids are tolerant to Express[®] herbicide. This revolutionary production system offers broad-spectrum control or suppression of broadleaf weeds, a simplified approach for enhanced weed control in sunflower and improved yield potential for a cost-effective crop management solution with complete re-cropping flexibility the following year.

Nuseed hybrids are treated with the most advanced fungicide and insecticide seed treatment to protect your seed investment.



CONFECTION

Confection sunflowers are grown to meet the specific needs of processors in the in-shell snack market. These are the familiar snacking seeds that are characteristically large and have white stripes. They are generally over half an inch in length with half their weight coming from the kernel.

6946 DMR

Maturity: Early
Seed Type: Round (RT)

Exclusive to Canada, 6946 DMR is the industry's leading confection hybrid that delivers the highest test weight of any confection hybrid on the market. Early maturity, genetic resistance to multiple races of downy mildew, large seed size for in-shell and excellent dehulling percentage make it great for northern production.

MARKET: Confection **TRAIT:** None **DMR:** Yes

- High yield in northern regions
- Excellent rust tolerance
- Early maturity and high test weight
- Excellent dehuller with high nutmeat percentage

PANTHER DMR

Maturity: Early
Seed Type: Long (LT)

Panther DMR offers confection growers excellent yield potential and high test weight. Known for its very early maturity and great standability, this processor preferred hybrid with downy mildew resistance is a perfect fit for northern growers.

MARKET: Confection **TRAIT:** None **DMR:** Yes

- Very high percentage of large seed
- High yield and test weight
- Shorter height, uniform plant type
- Very early flowering

NEW N4H161 CL

Maturity: Ultra-Early

This ultra-early high oleic is the perfect hybrid for Northern climates with short growing seasons for a double crop option for winter wheat growers. With a shorter plant height, N4H161 CL has excellent root strength and late season plant health.

MARKET: High Oleic **TRAIT:** Clearfield **DMR:** Yes

- High oleic, tolerant to SOLO herbicide
- Earliest maturity in the Nuseed lineup
- Excellent yield and oil content for maturity
- Short plant height

NEW! HIGH OLEIC

Nuseed is proud of our NEWEST SUNFLOWER HYBRID – the ultra-early **N4H161 CL**. Developed in the U.S., our new high oleic oil hybrid delivers on high-performance agronomics, yield and top-end oil content.

SUNFLOWER FACT

SUNFLOWERS HAVE

DEEP ROOT SYSTEMS

ALLOWING THEM TO REACH NUTRIENTS AND WATER THAT OTHER CROPS MAY NOT BE ABLE TO ACCESS.





HIGH OLEIC

High oleic sunflower oil has a longer, more stable shelf-life, neutral taste profile, and heart healthy benefits that make it attractive for commercial cooking applications. The oilseed crush industry requires a minimum oleic level ranging from 82% to 85%. Some Nuseed sunflower hybrids reach oleic acid levels greater than 90%.



The NuSun sunflower oil profile was developed by the U.S. National Sunflower Association, in coordination with the USDA, to create an oil essential for the food industry. NuSun oil has a naturally high smoke point and does not require trans-fat creating hydrogenation to remain stable at high temperatures.

COBALT II

Maturity: Early

Cobalt II is an early and disease resistant high oleic hybrid. A great fit for both wet fields and late plantings, Cobalt II also delivers high yields to back it up. With excellent disease resistance including protection against multiple races of downy mildew, Cobalt II is a hybrid you can rely on.

MARKET: High Oleic **TRAIT:** Clearfield **DMR:** Yes

- High oleic, tolerant to SOLO herbicide
- Excellent disease resistance
- Excellent seed set and center fill
- Shorter plant height

N4H302 E

Maturity: Medium-Early

A welcomed addition to Nuseed's high oleic lineup, N4H302 E will not disappoint. Best suited for the northern growing regions, this hybrid performs well from east to west. N4H302 E impresses producers all season long with its early season emergence and excellent oleic content at harvest.

MARKET: High Oleic **TRAIT:** DuPont ExpressSun **DMR:** No

- High oleic, tolerant to Express herbicide
- Excellent high oleic content
- Great early season emergence
- Good late season plant health

TALON

Maturity: Early

Looking for market flexibility? Talon produces a valuable grain for the bird food market while providing growers additional marketing options for dehull or crush as required. Concerned about tough growing conditions? Talon is an early hybrid with excellent stalk and root strength. Weed pressure a problem? Talon is an ExpressSun hybrid and is a versatile solution for growers.

MARKET: NuSun **TRAIT:** DuPont ExpressSun **DMR:** No

- NuSun, tolerant to Express herbicide
- Excellent hullability and meat-to-hull ratio
- Early maturity, single-cross hybrid
- Excellent root strength

N4HM354

Maturity: Medium-Early

The high yield potential for this medium-early hybrid and its fit from Canada to Texas make it stand out from the rest. Great oil content, resistance to multiple races of downy mildew and strong stalks are additional benefits that make N4HM354 a must have for your farm.

MARKET: NuSun **TRAIT:** Clearfield **DMR:** Yes

- NuSun, tolerant to SOLO herbicide
- Consistent yield, oil profile
- Great root and stalk strength
- Widely adapted across multiple growing regions

	CONFECTION		HIGH OLEIC			NUSUN	
	6946 DMR	PANTHER DMR	NEW N4H161 CL	COBALT II	N4H302 E	TALON	N4HM354
MATURITY	EARLY	EARLY	ULTRA-EARLY	EARLY	MED-EARLY	EARLY	MED-EARLY
TRAITS	DMR	DMR	Clearfield/DMR	Clearfield/DMR	ExpressSun	ExpressSun	Clearfield/DMR
EMERGENCE	7	7	8	8	9	7	8
DROUGHT TOLERANCE	7	6	7	7	7	6	7
UNIFORMITY AT FLOWERING	7	7	8	9	8	8	8
YIELD FOR MATURITY	9	8	8	8	7	7	9
TEST WEIGHT	9	8	8	7	7	6	7
DRY DOWN	8	7	6	8	8	7	8
OIL CONTENT	N/A	N/A	6	6	7	5	8
LATE SEASON PLANT HEALTH	8	7	8	7	7	6	7
STALK RATING	7	8	7	8	7	7	8
ROOT RATING	6	7	8	8	6	8	8
PLANT HEIGHT	6	6	3	5	6	5	6

HOW MANY ACRES ARE IN THAT BAG?

POPULATION	CONFECTION	OILSEED	
	SIZE S/M/L (100K)	SIZE 2/3 (200K)	SIZE 4 (225K)
15,000	6.7	13.3	15.0
16,000	6.3	12.5	14.1
17,000	5.9	11.8	13.2
18,000	5.6	11.1	12.5
19,000	5.3	10.5	11.8
20,000	5.0	10.0	11.3
21,000	4.8	9.5	10.7
22,000	4.5	9.1	10.2
23,000	4.3	8.7	9.8
24,000	4.2	8.3	9.4
25,000	4.0	8.0	9.0
26,000	3.8	7.7	8.7
27,000	3.7	7.4	8.3
28,000	3.6	7.1	8.0
29,000	3.4	6.9	7.8
30,000	3.3	6.7	7.5

VALUE BEYOND YIELD[®]

Nuseed teams locally and globally are dedicated to providing farm customers with excellent seed, service, and new opportunities.

Nuseed's R&D and breeding teams have a long history in building our world-class germplasm and delivering input traits with top agronomic performance proven locally.

Simultaneously, we're developing and commercializing proprietary output plant-traits, like Nuseed Omega-3 Canola, with very specific end-use benefits and added value.

We build Nuseed Value Chains connecting local growers to global end-use customers and add value at each step and for every participant.

Learn more at nuseed.com

