



S U N F L O W E R

2019

**HYBRID  
& MARKET  
GUIDE**



## 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.

## SUNFLOWER MARKETS

**OIL** Approximately 75% of sunflowers grown in the U.S. 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. Oil sunflowers that are not used for oil extraction purposes can also be used in producing high quality bird food.

### PRIMARY CATEGORIES OF COMMERCIALY AVAILABLE HYBRID SEEDS

NUSUN® = OLEIC LEVELS OF 55-75%

HIGH OLEIC = OLEIC LEVELS GREATER THAN 82% (COMMON MINIMUM CRUSH REQUIREMENT)

**CONFECTION** In the U.S., this highly recognizable black and white seed serves as a tasty and healthy snack or food addition. 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.

**DEHULL** The dehull market requires processors to mechanically remove the hull and separate the kernel to be sold as a raw ingredient or roasted for snacking. The shell of conoil type sunflower seeds (a cross between confection and oilseeds) is the easiest to separate.

## HERBICIDE TOLERANT TRAITS

Sunflowers are a non-GMO crop because herbicide tolerance has been established through years of selective breeding. Nuseed has introgressed the Clearfield®, Clearfield® Plus or DuPont™ ExpressSun® traits into a number of 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 Beyond® herbicide for superior postemergence weed control in no-till, minimum or conventional-tillage systems.*



*To help maximize sunflower yield, rely on the new Clearfield Plus Production System for sunflower. When paired with Beyond herbicide and performance-enhancing methylated seed oil, growers can better manage some of the toughest weeds in their fields.*

**DuPont™**  
**ExpressSun®**  
trait

*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 to weed control in sunflowers, improved yield potential through enhanced weed control, a cost-effective crop management solution, and complete re-cropping flexibility the following year.*

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

# MEET THE NUSEED 2019 ALL-STAR LINEUP

We've added three new high oleic oil hybrids to our roster.



## NEW HIGH OLEIC

Nuseed is proud to introduce our newest players – the adaptable N4H302 E, the strong N4H470 CL Plus and the high-yielding N4H521 CL. Developed in the USA, our new high oleic oil hybrids deliver on high-performance agronomics, yield and top-end oil content.

### NEW HIGH OLEIC N4H302 E

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

A welcomed addition to Nuseed's high oleic lineup, N4H302 E will not disappoint. Bred to be adaptable anywhere north to south in the sunflower growing region, this hybrid will impress producers all season long with its early season emergence and late season plant health.

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

### NEW HIGH OLEIC N4H470 CL Plus

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

This hybrid delivers an all around win on the farm. With excellent agronomics including solid stalks and roots, plus the added benefits of downy mildew resistance and improved weed control with the Clearfield Plus production system, growers will achieve solid yields and top-end oil content.

- Clearfield Plus for improved weed control
- Consistently strong yield and oil content
- Excellent stalk and root strength
- Excellent late season plant health

### NEW HIGH OLEIC N4H521 CL

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

N4H521 CL is the fullest season high oleic hybrid in the Nuseed lineup and it yields big. The oil profile combined with a nice black seed color ensures multiple market options. An excellent fit for South Dakota, the High Plains and Texas, this hybrid will help a grower succeed with its outstanding yield potential.

- High oleic, Beyond herbicide tolerant
- Outstanding yield potential
- Full season plant health

HYBRID	MATURITY	DROUGHT TOL.	UNIFORM. AT FLOWER	TEST WEIGHT	DRY DOWN	OIL CONTENT	YIELD FOR MATURITY	PLANT HEIGHT	STALK RATING	ROOT RATING	LATE SEASON PLANT HEALTH	EMERGENCE
N4H302 E	MED-EARLY	7	8	7	8	7	7	6	7	6	7	9
N4H470 CL Plus	MED	9	9	8	7	9	8	7	8	8	8	8
N4H521 CL	MED-LATE	8	7	8	6	8	9	7	7	6	8	8

HYBRID RATING SCALE 1 = Poor, 9 = Excellent (excluding Plant Height)  
 PLANT HEIGHT RATING SCALE 1 = Shortest, 9 = Tallest



# HIGH OLEIC

High oleic sunflowers were developed through traditional breeding methods to deliver much higher levels of monounsaturated fats (oleic content) than traditional oil sunflower seeds. 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. A typical fatty acid profile for high oleic oil is greater than 82% oleic acid, with some hybrids producing as much as 90% oleic acid.



## COBALT II

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

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.

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



## DAYTONA

**MARKET** High Oleic **TRAIT** Clearfield **DMR** No

With shorter plant height and earlier maturity, Daytona stands out in drier environments. Its excellent stalk and root strength are more than a match for strong winds. Combine all this with the Clearfield production system and this proven high oleic hybrid from Nuseed is a tough one to beat.

- High oleic, Beyond herbicide tolerant
- Excellent stalk and root strength
- Improved disease tolerance
- Does well in drier, western environments



## HORNET

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

Looking for a high yielding high oleic hybrid with all-around protection? Hornet is for you. With stalk and root structures that have been proven against the elements and disease protection including downy mildew resistance, Hornet offers solid performance and profit.

- High oleic, Beyond herbicide tolerant
- Outstanding yield potential
- Consistent oil content
- Late season plant health



## SIERRA

**MARKET** High Oleic **TRAIT** None **DMR** No

Sierra is a high yielding, high oleic hybrid best suited to full season environments. This consistent performer offers an economical option for growers interested in growing a non-herbicide tolerant oilseed hybrid.

- High oleic, conventional
- Great stalk and roots
- Best suited for full season, high-yield environments
- Uniform single-cross hybrid

HYBRID	MATURITY	DROUGHT TOL.	UNIFORM. AT FLOWER	TEST WEIGHT	DRY DOWN	OIL CONTENT	YIELD FOR MATURITY	PLANT HEIGHT	STALK RATING	ROOT RATING	LATE SEASON PLANT HEALTH	EMERGENCE
COBALT II	EARLY	7	9	7	8	6	8	5	8	8	7	8
DAYTONA	MED-EARLY	8	6	8	7	6	7	5	8	6	7	8
HORNET	MED	8	7	7	6	7	9	7	7	6	8	8
SIERRA	MED-LATE	8	8	7	6	6	9	8	7	7	7	7

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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. It has a good shelf life and neutral taste profile making it an excellent choice for frying oil. A typical fatty acid profile is 65% oleic acid, 26% linoleic acid and 9% combined saturates.

## NuSun TALON

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

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.

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

## NuSun N4HM354

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

N4HM354 is the newest NuSun hybrid from Nuseed. 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.

- NuSun, Beyond herbicide tolerant
- Consistent yield, oil profile
- Great root and stalk strength
- Late season plant health

## NuSun FALCON

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

Falcon is a fiercely resilient hybrid. Strong agronomics and the ExpressSun herbicide trait make for a low management season. Easy to grow and even easier to market, Falcon has an improved oil content which fits well into the NuSun and bird food markets.

- NuSun, Express herbicide tolerant
- Excellent stalk strength
- Consistent good yields
- Medium plant height

## NuSun CAMARO II

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

Camaro II is a performance hybrid, engineered to resist both wind and weather. Its root and stalk structure is enhanced with stacked disease resistance to keep sunflower growers on the road to a low management, high-yielding season. Year after year Camaro II generates high yields and profits.

- NuSun, Beyond herbicide tolerant
- Improved sclerotinia head rot tolerance
- Great stalks and late season plant health
- High yielding

HYBRID	MATURITY	DROUGHT TOL.	UNIFORM. AT FLOWER	TEST WEIGHT	DRY DOWN	OIL CONTENT	YIELD FOR MATURITY	PLANT HEIGHT	STALK RATING	ROOT RATING	LATE SEASON PLANT HEALTH	EMERGENCE
TALON	EARLY	6	8	6	7	5	7	5	7	8	6	7
N4HM354	MED-EARLY	7	8	7	8	8	9	6	8	8	7	8
FALCON	MED-EARLY	8	8	8	7	7	8	6	8	7	8	7
CAMARO II	MED	8	8	8	7	7	9	6	8	7	8	7

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# DEHULL

The conoil seed type is the most versatile of the sunflower seed types and offers opportunities across multiple markets including kernel, oil, confection and bird food. This seed is generally higher in oil content than confection seeds and realizes a greater yield.

Most conoil production is sold into the kernel or dehull market where the seeds are mechanically dehulled by a processor. This is more easily accomplished with conoil seeds as the shell is loosely attached to the meat and readily separates. The largest consumption of conoil seed comes from wholesalers, bakeries and sunbutter manufacturers.

## N5LM307

**MARKET** Dehull **TRAIT** Clearfield **DMR** Yes

Nuseed was first to market with a black seeded conoil. N5LM307 is now a top choice hybrid for the dehull market. Easy to grow, this uniform, medium-early maturity Clearfield hybrid also provides market flexibility and the flexibility to be planted in all sunflower growing regions.

- Conoil, Beyond herbicide tolerant
- Excellent hullability preferred by processors
- Excellent end-of-season plant health
- Medium maturity gives planting flexibility in all regions

## BADGER DMR

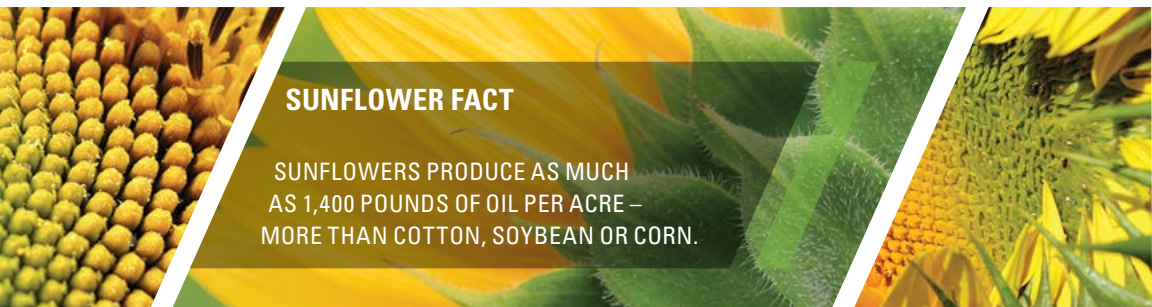
**MARKET** Dehull **TRAIT** Clearfield **DMR** Yes

Badger DMR's high yield is matched by its high test weight, a valuable quality for dehull processors. With Badger DMR there are abundant marketing opportunities, giving growers flexibility at harvest.

- Conoil, Beyond herbicide tolerant
- High yield is matched with high test weight
- Excellent hullability and meat-to-hull ratio
- Striped seed for hulling

HYBRID	MATURITY	DROUGHT TOL.	UNIFORM. AT FLOWER	TEST WEIGHT	DRY DOWN	YIELD FOR MATURITY	PLANT HEIGHT	STALK RATING	ROOT RATING	LATE SEASON PLANT HEALTH	EMERGENCE
N5LM307	MED-EARLY	7	7	7	8	8	6	7	7	8	8
BADGER DMR	MED	7	7	7	7	7	8	7	8	7	8

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### SUNFLOWER FACT

SUNFLOWERS PRODUCE AS MUCH AS 1,400 POUNDS OF OIL PER ACRE – MORE THAN COTTON, SOYBEAN OR CORN.

# CONFECTION

In the U.S., confection sunflower production is divided into three markets by the size of the seed grown. The largest of the seeds are sold in the shell. These are the familiar snacking seeds in a heavy black shell with a characteristic white stripe. They are generally over half an inch in length with half their weight coming from the kernel. The medium-sized seeds are mechanically hulled by the processor and sold into the kernel market. They can be sold raw, roasted as a snack or used as an ingredient. The smallest of the sunflower seeds are used in the bird and pet food markets.

## PANTHER DMR

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

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.

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

## JAGUAR DMR

**MARKET** Confection **TRAIT** Clearfield **DMR** Yes

This early maturing confection hybrid allows northern producers the option to plant even after heavy spring rains. With desirable traits of downy mildew resistance and the Clearfield production system, Jaguar DMR withstands many of the hazards that nature can throw at it.

- Beyond herbicide tolerant
- Large, dark, wide seed
- Good stalk and root strength
- Widely adapted

## LD5009

**MARKET** Confection **TRAIT** None **DMR** No

LD5009 is a medium maturing confection hybrid specifically developed to produce uniform, long and dark colored seed for sunflower export markets. LD5009 is a medium height hybrid with excellent stalk and root strength that performs best in sunflower producing regions.

- Large, dark seed - processor preferred
- Uniform single-cross hybrid
- Excellent emergence
- Excellent stalk and root strength

## 4334

**MARKET** Confection **TRAIT** Clearfield **DMR** No

4334 produces very large, long and dark grain required for the ever changing global confection markets. This Clearfield hybrid has above average yield, good uniformity and is easy to harvest. 4334 is a competitive hybrid that provides growers an exceptional return on their investment.

- Beyond herbicide tolerant
- Excellent seed size, length and color
- Excellent stalk health and standability
- Fits domestic and export markets

HYBRID	MATURITY	SEED TYPE	DROUGHT TOL.	UNIFORM. AT FLOWER	TEST WEIGHT	DRY DOWN	YIELD FOR MATURITY	PLANT HEIGHT	STALK RATING	ROOT RATING	LATE SEASON PLANT HEALTH	EMERGENCE
PANTHER DMR	EARLY	LT	6	7	8	7	8	6	8	7	7	7
JAGUAR DMR	EARLY	LT	6	8	7	8	7	6	7	8	6	7
LD5009	MED	LT/XL	6	8	7	7	7	7	7	8	6	8
4334	MED-LATE	LT	7	6	7	6	8	7	7	7	8	7

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## NUSEED'S U.S. BASED NURSERIES ARE THE BREEDING GROUND FOR SUPERIOR SUNFLOWER HYBRIDS.

### HERE'S WHY:

- Nurseries 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 breeding nursery located in Woodland, California
- Hybrid trait selection at U.S. based nurseries under regional disease and insect pressures
- Strict quality assurance program



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