



2024

SUNFLOWER & CANOLA

HYBRID & MARKET GUIDE



PROFIT AND PERFORMANCE FOR GROWERS, VALUABLE NUTRITION FOR ALL.

DHA PRODUCTION COMPARISON


**10,000
1KG FISH**

=

**2
ACRES**

**OMEGA-3
CANOLA**

We are partnering with select canola growers to meet the increasing demands of the aquaculture and human nutrition markets for plant-based long-chain omega-3 sources.

Omega-3 canola is revolutionizing how plant-based solutions interact with other segments of the agriculture industry.

Nuseed Omega-3 Canola is processed into our proprietary oil ingredients, Aquaterra® for aquafeed and Nutriterra® for human nutrition markets. Both products are more than just alternative sources of omega-3; they are uniquely rich in total DHA, vital building blocks for good nutrition.


aquaterra®


nutriterra®



CONTRACT ADVANTAGE

The Omega-3 Canola Production System delivers fair, competitive market value profit potential via grower controlled, flexible contracting options and stable yield performance, in support of land & ocean sustainability.

Nuseed factors in farm location, business priorities, stewardship and production capabilities for our contract producers.



Interested in growing Nuseed Omega-3 Canola?

Go to Omega3Canola.com to fill out a contract assessment to see if you're a good fit for our program.



END-USE
MARKET
OPPORTUNITY



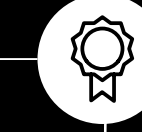
FLEXIBLE
CONTRACT
OPTIONS



ATTRACTIVE
BASIS
OPPORTUNITY



GROWER
INCENTIVES



FORCE
MAJEURE
ACT OF GOD
CLAUSE



DELIVERY
GUARANTEED



AGRONOMY
SUPPORT



CUTTING-EDGE CANOLA HYBRIDS

GENETICS WITH THE MOST ADVANCED WEED CONTROL SYSTEM

One of the smartest routes to high yield potential is through effective weed control. With improved control of tough weeds, flexibility in spray rates and timing, and higher yield potential through genetics and crop safety, TruFlex® canola can make it happen.



IMPROVED CONTROL OF TOUGH WEEDS

The flexibility of the TruFlex canola system will allow for the control of harder-to-kill weeds like cleavers, foxtail barley and wild buckwheat. It will also help enable season-long dandelion control.



FLEXIBILITY IN SPRAY RATES AND TIMING

TruFlex canola will have a wider application window as compared to Roundup Ready® canola. If weather or a late flush of weeds delays your spray date, no problem – you will be able to spray up to first flower* when applying sequential rates of 22 fl oz/ ac. The TruFlex canola system also enables flexibility with your Roundup PowerMAX® herbicide application rate to help get the job done.

*First flower is when 50% of the plants in the field have no more than one flower.



HIGHER YIELD POTENTIAL THROUGH GENETICS AND CROP SAFETY

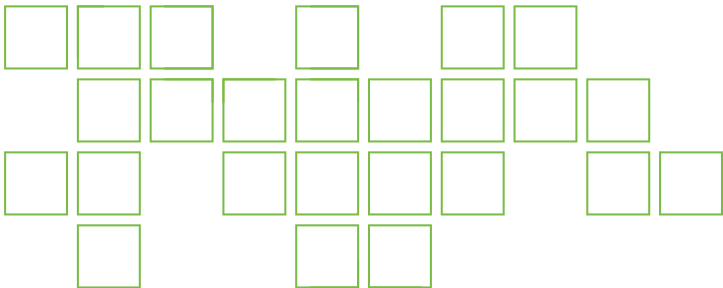
New genetics have packed a lot of yield potential into each TruFlex canola seed. New advances in trait technology will help enable better weed control and crop safety compared to Roundup Ready canola. It's a combination that could give you the opportunity to see much more yield potential at harvest time.



CANOLA HYBRID CHARACTERISTICS

	NC155 TF	NC471 TF	NC527CR TF
BLACKLEG	Multi-gene Resistant	Multi-gene Resistant	Multi-gene Resistant
CLLUBROOT	Susceptible	Susceptible	Multi-gene Resistant
MATURITY	-3 Days	Equal to Checks	+1.5 Days
FUSARIUM WILT	Resistant	Resistant	Resistant
PLANT HEIGHT	Medium	Medium-Tall	Tall
SEED COLOR	Black	Black	Black
EARLY SEASON VIGOR	8	8	8
STANDABILITY	9	7	7
OIL CONTENT	7	7	7
STRAIGHT CUT RATING	5.5	6.5	5.5

Hybrid Rating Scale 1=Poor, 9=Excellent



TruFlex[®] CANOLA HYBRIDS

Reminiscent of “Polish-type” hybrids of the past, **NC155 TF** provides growers with an extremely early maturing hybrid that doesn’t sacrifice yield. Flowering earlier and longer allows for exceptional pod set while maturing quickly to allow for quicker harvestability. Use **NC155 TF** in long season zones to avoid summer heat blast or in shorter season zones to spread out capital requirements and avoid the risks of frost.



NC155 TF

MATURITY: ULTRA-EARLY

- TruFlex[®] Canola with Roundup Ready[®] Technology
- Extremely early maturing
- High yielding
- Early flowering with great longevity

DISEASE PACKAGE

Blackleg: Multi-gene Resistant

Fusarium Wilt: Resistant

AGRONOMICS

Plant height: Medium

Seed color: Black

Early season vigor: 8

Standability: 9

HARVEST CHARACTERISTICS

Oil content: 7

Straight cut rating: 5.5

Hybrid Rating Scale 1 = Poor, 9 = Excellent

TruFlex[®] CANOLA HYBRIDS

Nuseed is a global leader in canola genetics and trait development. **NC471 TF** has been developed for North American grower needs and has shown exceptional blackleg resistance. Together with the benefits of TruFlex technology, **NC471 TF** will provide growers a new level of protection against one of the most detrimental diseases of canola.



NC471 TF

MATURITY: MEDIUM

- TruFlex[®] Canola with Roundup Ready[®] Technology
- Excellent blackleg resistance
- High yielding
- Harvestability ease

DISEASE PACKAGE

Blackleg: Multi-gene Resistant

Fusarium Wilt: Resistant

AGRONOMICS

Plant height: Medium-Tall

Seed color: Black

Early season vigor: 8

Standability: 7

HARVEST CHARACTERISTICS

Oil content: 7

Straight cut rating: 6.5

Hybrid Rating Scale 1 = Poor, 9 = Excellent

TruFlex[®] CANOLA HYBRIDS

Utilizing high yielding Nuseed genetics, **NC527CR TF** now combines the most current multigenic traits for clubroot resistance. A medium-late maturing variety with great harvestability characteristics.



NC527CR TF

MATURITY: MEDIUM-LATE

- TruFlex[®] Canola with Roundup Ready[®] Technology
- Multigenic clubroot resistance
- High yielding
- Excellent harvestability

DISEASE PACKAGE

Blackleg: Multi-gene Resistant

Fusarium Wilt: Resistant

AGRONOMICS

Plant height: Tall

Seed color: Black

Early season vigor: 8

Standability: 7

HARVEST CHARACTERISTICS

Oil content: 7

Straight cut rating: 5.5

Hybrid Rating Scale 1 = Poor, 9 = Excellent



**MADE HERE,
TESTED HERE,
GROWN HERE.**

American farmers can trust the performance of Nuseed sunflower products. Why? Because Nuseed develops all our North American sunflower hybrids right here in the heart of the U.S.A. sunflower growing region. With global responsibilities for sunflower advancements, our Research and Development station in Breckinridge, MN along with testing centers across the sunflower growing region, ensures that our hybrids are built for the Heartland.

With the help of the Nuseed Innovation Center in Sacramento, CA, we are developing the technologies and breeding capabilities to bring the latest innovations to the U.S. sunflower market. With traits such as Advanced DMR (Downy Mildew Resistance), Phomopsis tolerance along with the herbicide tolerance choices, Nuseed is building hybrids that meet individual needs of growers. In addition, with a wide range of maturities, sizes and oil profiles, Nuseed can satisfy demands of all four key segments of the downstream sunflower market. Look to Nuseed for options in High Oleic, NuSun[®] (mid-oleic), Conoil (Dehull) and Confection.

Sunflowers tested on acres like yours to ensure they perform on your acres.

HERBICIDE TOLERANT TRAITS

Sunflowers are a non-GMO crop. Through years of selective breeding techniques Nuseed has introgressed the Clearfield[®], Clearfield[®] Plus and 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 Beyond[®] Xtra herbicide tolerance for superior postemergent 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[®] Xtra herbicide and performance-enhancing methylated seed oil, growers can better manage some of the toughest weeds in their fields.

ExpressSun[®] trait

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.



	HIGH OLEIC								NUSUN				CONOIL (DEHULL)		CONFECTION	
	N4H161 CL	COBALT II	N4H302 E	HORNET	N4H422 CL	N4H470 CLP	NEW N4H490 E		N4H521 CL	TALON	FALCON	N4HM354	CAMARO II	BADGER DMR	NEW N5H493 CL	PANTHER DMR
MATURITY	ULTRA-EARLY	EARLY	MED-EARLY	MEDIUM	MEDIUM	MEDIUM	MEDIUM		MED-LATE	EARLY	MED-EARLY	MED-EARLY	MEDIUM	MEDIUM	MEDIUM	EARLY
TRAITS	Clearfield/ DMR	Clearfield/ DMR	ExpressSun	Clearfield/ DMR	Clearfield/ DMR	Clearfield Plus/ DMR	ExpressSun/ DMR		Clearfield/ DMR	ExpressSun	ExpressSun	Clearfield/ DMR	Clearfield/ DMR	Clearfield/ DMR	Clearfield	DMR
EMERGENCE	8	8	9	8	8	8	8		8	7	7	8	7	8	7	7
DROUGHT TOLERANCE	7	7	7	8	8	9	8		8	6	8	7	8	7	7	6
UNIFORMITY AT FLOWERING	8	9	8	7	8	9	9		7	8	8	8	8	7	8	7
YIELD FOR MATURITY	8	8	7	9	8	8	9		9	7	8	9	9	7	8	8
TEST WEIGHT	8	7	7	7	8	8	8		8	6	8	7	8	7	6	8
DRY DOWN	5	8	8	6	7	7	6		6	7	7	8	7	7	7	7
OIL CONTENT	6	6	7	7	7	9	8		8	5	7	8	7	4	3	N/A
LATE SEASON PLANT HEALTH	8	7	7	8	8	8	8		8	6	8	7	8	7	7	7
STALK RATING	7	8	7	7	9	8	7		7	7	8	8	8	7	8	8
ROOT RATING	8	8	6	7	9	8	7		6	8	7	8	6	8	8	7
PLANT HEIGHT	3	5	6	7	8	7	8		7	5	6	6	6	8	6	6



HIGH OLEIC

Developed in the U.S., our high oleic oil hybrids deliver on high-performance agronomics, yield and top-end oil content. The oilseed crush industry requires a minimum oleic level ranging from 82% to 85%.



HIGH OLEIC

While oleic levels can vary year to year due to environmental pressure, Nuseed sunflower hybrids target a minimum oleic level of 85% or higher, with some hybrids reaching greater than 90% oleic acid.

N4H161 CL

MATURITY: ULTRA-EARLY

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

MARKET: High Oleic

TRAIT: Clearfield

DMR: Yes

- Beyond Xtra herbicide tolerant
- Earliest maturity in the Nuseed lineup
- Excellent yield and oil content for maturity
- Short plant height



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

- Beyond Xtra herbicide tolerant
- 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: ExpressSun

DMR: No

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



HORNET

MATURITY: MEDIUM

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.

MARKET: High Oleic

TRAIT: Clearfield

DMR: Yes

- Beyond Xtra herbicide tolerant
- Outstanding yield potential
- Consistent oil content
- Late season plant health





HIGH OLEIC

High oleic sunflower oil has a neutral taste and provides excellent stability without hydrogenation for the food industry and high oleic sunflower oil offers a trans-fat free oil solution for end use customers. High-oleic sunflower oil is also being used in many of the new plant-based food products.



N4H422 CL

MATURITY: MEDIUM

Top of the rating scale for stalk and root strength, this hybrid has consistently high test weights and uniformly clean stalks. A black seed coat with above average oil content makes the N4H422 CL an ideal hybrid for the bird food or the oil crush market.

MARKET: High Oleic

TRAIT: Clearfield

DMR: Yes

- High oleic, Beyond Xtra herbicide tolerant
- Strong Stalk and roots
- Excellent late season plant health
- Solid test weight



N4H470 CLP

MATURITY: MEDIUM

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.

MARKET: High Oleic

TRAIT: Clearfield Plus

DMR: Yes

- Beyond Xtra herbicide tolerant
- Clearfield Plus provides improved yield potential
- Excellent stalk and root strength, good late season plant health
- Consistently strong yield and oil content



NEW N4H490 E

MATURITY: MEDIUM

N4H490 E is part of Nuseed's expanding Express portfolio. It's also the first of many products coming down the pipeline with advanced downy mildew resistance. This high oleic oilseed is able to compete in the field with its root strength, excellent oil content and yield.

MARKET: High Oleic

TRAIT: ExpressSun

DMR: Yes

- Express herbicide tolerant
- Very competitive in yield across regions
- Excellent test weight and oil content
- Strong stalks and roots
- First sunflower hybrid in the Nuseed lineup with advanced DMR



N4H521 CL

MATURITY: MEDIUM-LATE

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.

MARKET: High Oleic

TRAIT: Clearfield

DMR: Yes

- Beyond Xtra herbicide tolerant
- Outstanding yield potential
- Full season plant health
- Great oil content and test weight





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.



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: ExpressSun

DMR: No

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



FALCON

MATURITY: MEDIUM-EARLY

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 consistently delivers in both yield and oil content, making it a good fit for the NuSun and bird food markets.

MARKET: NuSun

TRAIT: ExpressSun

DMR: No

- Express herbicide tolerant
- Excellent stalk strength
- Consistently good yields
- Medium plant height



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

- Beyond Xtra herbicide tolerant
- Consistent yield, oil profile
- Great root and stalk strength
- Widely adapted across multiple growing regions



CAMARO II

MATURITY: MEDIUM

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.

MARKET: NuSun

TRAIT: Clearfield

DMR: Yes

- Beyond Xtra herbicide tolerant
- Improved sclerotinia head rot tolerance
- Great stalks and late season plant health
- High yielding, uniform single-cross hybrid





CONOIL (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.



CONFECTION

Confection sunflowers are grown to meet the specific needs of processors in the in-shell snack market.

SUNFLOWER MARKETS

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.

OIL

Approximately 75% of sunflowers grown are utilized for the oil that can be extracted from the seeds. Sunflower oil is naturally made up of 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)

CONOIL (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.

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.

BADGER DMR

MATURITY: MEDIUM

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.

MARKET: Dehull

TRAIT: Clearfield

DMR: Yes

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



NEW N5H493 CL

MATURITY: MEDIUM

N5H493 CL, Nuseed's first high oleic conoil bred specifically with the dehull market in mind. With excellent standability, fast drydown and Beyond Xtra herbicide tolerance, fields will be clean and standing straight into harvest.

MARKET: Dehull

TRAIT: Clearfield

DMR: No

- Beyond Xtra herbicide tolerant
- Processor preferred for the dehull high oleic market
- Striped seed with excellent hullability
- Competitive yield
- Confection planting seed



PANTHER DMR

MATURITY: EARLY

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





Advancing canola and sunflower by adding **VALUE BEYOND YIELD®** for growers.

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 | 888-786-SEED



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Seed containing a patented trait can only be used to plant a single commercial crop. It is unlawful to save and replant Roundup Ready® spring canola, Roundup Ready® winter canola, and TruFlex® canola with Roundup Ready® Technology. Additional information and limitations on the use of these products are provided in the Technology Stewardship Agreement and the Bayer Technology Use Guide: tug.bayer.com. U.S. patents for Bayer technologies can be found at the following webpage: cs.bayerpatents.bayer.com