



2024 SEED GUIDE

A NEW BREED OF FEED

syngenta®

WELCOME TO THE ENOGEN SEED GUIDE

What does it mean to be a new breed of feed? In the 2024 Enogen™ Seed Guide you'll discover the exciting and innovative opportunities of Enogen corn. Offering proven genetics and strong agronomic characteristics in the field as well as a substantial change in starch and sugar availability in the ration, Enogen hybrids help provide more available energy to feedlot and dairy cattle.

In the pages that follow we'll explain:

- What Enogen corn is
- The science behind alpha-amylase
- How Enogen can support beef and dairy operations

When it comes to Enogen corn the key takeaways are as follows: during the digestive process, Enogen corn helps convert starch to sugar more efficiently and rapidly, providing more readily available energy to beef and dairy cattle. With the flexibility to harvest for grain or silage and no additional agronomic challenges, Enogen hybrids offer excellent yield potential.

A new era of high efficiency feed begins now with Enogen corn hybrids.

We sincerely appreciate the opportunity to help support you, your cattle, and your operation. Read on to find the right fit for your field.

Here's to a successful season together.

Best Regards,

Dan Wright

Head of Seeds, Canada






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WHAT IS ENOGEN?

Enogen corn contains a highly efficient alpha-amylase (α -amylase) enzyme that helps ruminants to better unlock the available energy from each corn kernel by converting the starch and glycogen into simple sugars. α -amylase is more convenient and efficient in starch conversion than add-in amylase enzymes and does not affect any other factors of the corn grain, including oil, protein and starch content. Essentially, Enogen corn allows you to energize your operation with speed and efficiency.

BENEFITS IN THE BARN & BEYOND

Enogen corn is a high-energy feed that is easily digestible by beef and dairy cattle, leading to increased post-ruminal and total tract digestion. When fed as grain or silage, Enogen corn helps convert starch into sugar more efficiently and rapidly during the digestive process, providing more available energy. Cattle also readily adapt to Enogen corn, fed as grain or silage, making the transition to this new feed seamless. You'll be able to offer improved digestibility without increasing dry matter or forage intake. In fact, according to recent feeding trials at leading North American universities, Enogen corn may increase feed efficiency by 5% without a reduction in yield.¹ This increased feed efficiency may result in soil conservation, as well as land and water use savings.²

Above this, Enogen corn is highly flexible. Enogen corn hybrids are managed just like any other elite high-yielding corn hybrid. By combining breeding traits, we produced a significant range of hybrids adapted for different environments and growing conditions, so you can find the product that is best suited for your specific geographic and agronomic needs. Moreover, Enogen corn hybrids can be harvested as silage, grain, or high moisture corn so you can maximize production on every acre. All of this will help you get more out of your seed and your ration, lower costs and increase profit potential for your operation.

WHY SETTLE FOR ANYTHING LESS?

¹ University of Nebraska-Lincoln Research Studies, 2013-2017; Kansas State University Research Study, 2017

² Based on LCA conducted by the University of Arkansas Resiliency Center, 2020



ENOGEN FOR BEEF OPERATIONS

For beef producers growing corn for feed, a simple switch to Enogen corn can increase the feed value of corn in the ration. Enogen corn not only contains elite genetics and industry-leading agronomic traits, it also improves starch utilization, resulting in more available energy for your herd.

Corn is about 75% starch – a complex carbohydrate that provides energy to cattle to grow and finish. The α -amylase technology in the Enogen trait makes starch easier for your cattle to digest. Improved starch digestibility means more available energy for your beef cattle with improved total tract digestion.

According to feed trials at the University of Nebraska-Lincoln (UNL) and Kansas State University (KSU), Enogen corn hybrids in livestock production has been shown to increase feed efficiency by an average of 5% in stocker and finishing cattle.¹

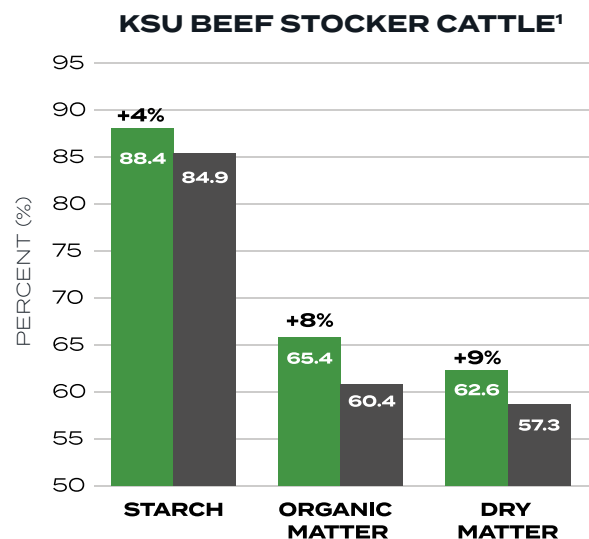
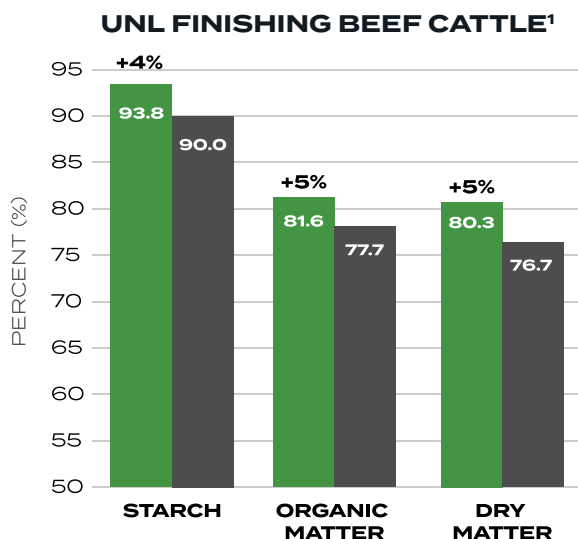
With the flexibility to be harvested as silage, grain or high-moisture corn, Enogen corn allows for significant ease of use and minimized management needs compared to alternative silage-specific hybrids for beef operations. In fact, farm-proven yields are equal to or better than non-Enogen corn hybrids.^{2,3}

Don't miss your chance to take advantage of this innovation and the substantial potential it brings to beef producers.

Improved feed efficiency could lead to lower feed costs. Higher value in the corn you feed means you're getting more out of your ration and increasing the possibility for profit in your operation.

TOTAL TRACT DIGESTIBILITY

■ ENOGEN ■ CONTROL



ENOGEN FOR DAIRY OPERATIONS

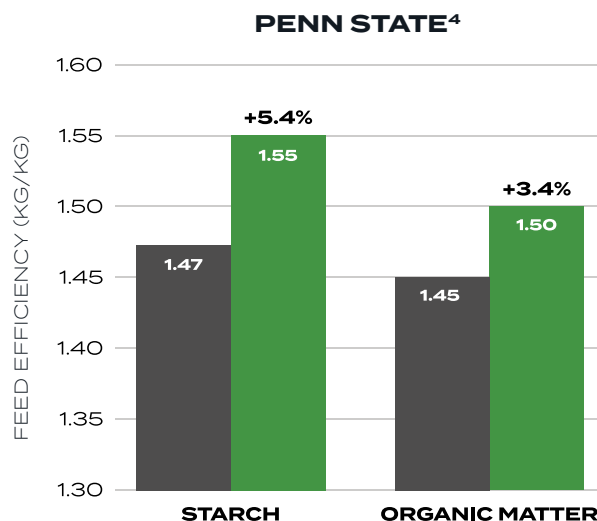
Enogen corn hybrids are proven, high-yielding hybrids with the traits you need to protect yield potential. Unlike some silage-specific hybrids, Enogen corn has no increased agronomic management challenges. As a dairy producer growing your own feed, switching to Enogen corn can help increase the feed value of silage in your ration – and much more.

Enogen corn provides greater feed efficiency through a higher tract organic matter digestibility, exploiting the energy potential of the ration and leading to better animal performance. The increased digestibility of the diet results in more energy that is available to the cow for milk production.

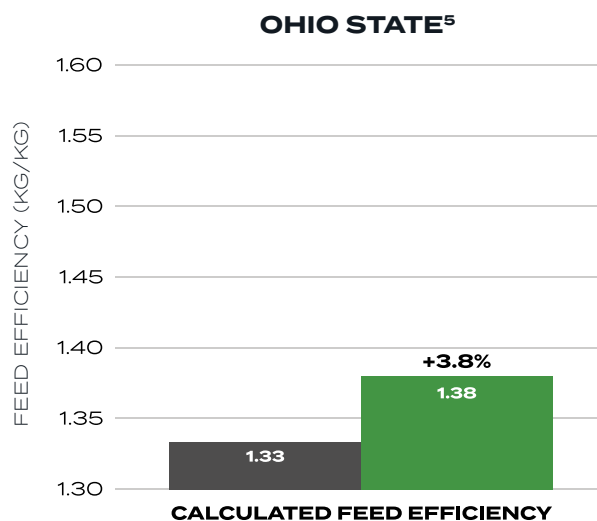
In addition to these technical innovations, Enogen corn boasts farm-proven results. Recent feed trials at leading North American universities have shown Enogen corn increased feed efficiency up to 5%¹ fed as grain or silage. Enogen corn continues to demonstrate excellent yield potential with elite genetics and production traits.

Enogen corn also offers unparalleled flexibility, with the option to harvest as silage, grain or high-moisture corn. Moreover, silage quality and consistency may make it less prone to spoilage.

Simply put, Enogen corn helps to deliver improved feed efficiency for dairy farmers so you can potentially lower feed costs and help improve profit potential for your operation.



■ ENOGEN ■ CONTROL



■ ENOGEN ■ CONTROL

¹ University of Nebraska-Lincoln Research Studies, 2013-2017; Kansas State University Research Study, 2017

² Syngenta production data 2012-2017.

³ Growers must comply with specific yet simple stewardship requirements

⁴ Cueva et al. 2021. Lactational performance, rumen fermentation, and enteric methane emission of dairy cows fed an amylase-enabled corn silage. J. Dairy Sci. 104, vol 9, 9827-9841. <https://doi.org/10.3168/jds.2021-20251>

⁵ Rebelo, L., C. Lee, W. Weiss, and M. Eastridge. 2020. Effects of Enogen Feed corn silage and corn grain on nutrient digestibility, production, and enteric methane emission in lactating cows. J. Dairy Sci. 103 (Suppl. 1): 171 (Abstract)

“BENEFITS OF ENOGEN CORN GO FURTHER THAN JUST YOUR FIELD”

FINISHING BEEF CATTLE

5%↑

Feed efficiency improved by approximately 5% when fed Enogen Feed Corn (EFC) as either dry rolled corn, steam flaked corn or silage.¹

GROWING BEEF CATTLE

5.5%↑

Feed efficiency improved by approximately 5.5% when fed EFC as whole shelled corn or dry rolled corn.¹

DAIRY COWS

6%↑

Feed efficiency improved by 6% in several University studies.²

¹ University of Nebraska-Lincoln, Kansas State University 2013-2018

² Syngenta contract research 2016-2017, 2019



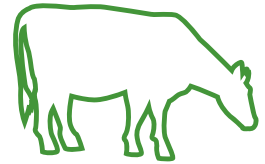
ENVIRONMENTAL IMPACTS

Offering proven genetics and strong agronomic characteristics in the field and a substantial change in starch and sugar availability in the ration, Enogen corn helps to provide more available energy to feedlot and dairy cattle. With the flexibility to harvest the corn for grain or silage and no additional agronomic challenges, Enogen corn is a valuable addition to your farming operation; however, the potential benefits of Enogen corn go further than just your field – much further.

Enogen corn contains a heat-stable and pH-tolerant α -amylase enzyme to improve the digestibility of the starch content of corn. Livestock systems that require less feed stuffs will implicitly require less fertilizer, water, and land inputs in the upstream supply chain, results in a reduction of overall environmental impacts. That's what we call a win-win.



Could lead to faster ensiling with less spoilage



Cattle comfort: may lead to less time at the bunk



No production loss after introduction



Lower feed costs = increased profit potential



Lower DMI: less feed with same production or greater



Greater flexibility in land use



More energy with better digestibility



Efficiency translates to lower environmental impact

ENOGEN CORN TRAIT

We've developed a new naming system to help you conveniently find the agronomic characteristics you need and feel confident in the seed you're putting in the ground. The Duracade trait stack now has a simplified name that leverages the brand equity already established in the market and is easy to spot on the shelf.

Here is a detailed breakdown of the trait stack name:

ABOVE & BELOW GROUND TRAIT STACKS		
TRAIT STACK BRAND NAME	DESIGNATOR	FORMER PRODUCT
Duracade™	D	Agrisure Duracade® 5122 E-Z Refuge

CORN TRAIT STACK CHARACTERISTICS


Above- and below-ground insect control



Duracade™ features a unique mode of action that controls corn rootworm differently than other traits on the market and acts as an excellent foundation for an effective corn rootworm control strategy.

- Provides multiple modes of action against corn rootworm and corn borer, as well as suppression of ear-feeding insects
- Includes a novel, alternate mode of action for corn rootworm to help preserve trait durability and delay insect adaptation for long-term field health
- Always provides a five percent integrated E-Z Refuge®

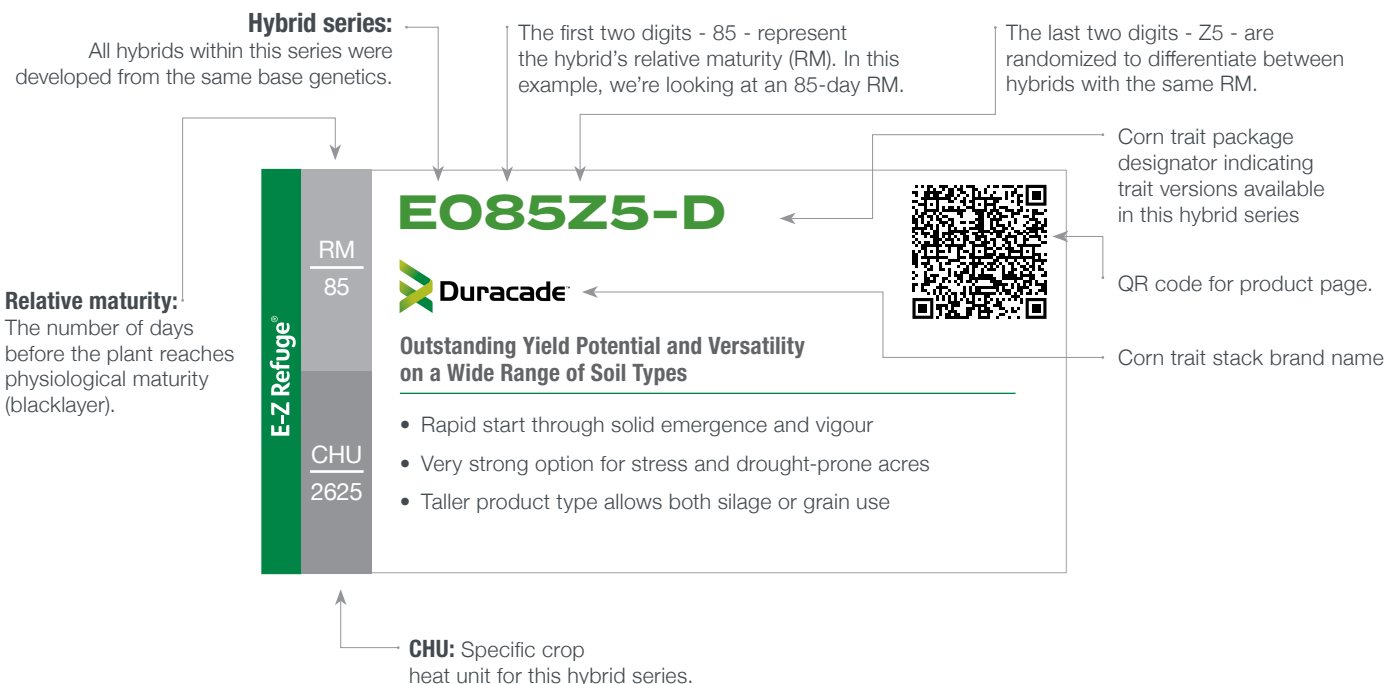
Duracade trait stacks provide comprehensive above-and below-ground insect control

		Optimum® AcreMax® XTreme (AMXT)	Qrome® (Q)	Genuity® SmartStax® RIB Complete® (SS)
Corn earworm	**	**	**	***
Black cutworm	***	***	***	***
Fall armyworm	*	*	*	***
Western bean cutworm	*	*	*	*
Common stalk borer	*	*	*	*
European corn borer	****	****	****	****
Western and northern corn rootworm	***	***	***	***

Legend - None, * Some, ** Good, *** Very good, **** Excellent

If you are concerned about trait-resistant insects, please contact your Syngenta Rep to discuss which trait is right for you.



DESCRIPTION KEY



PROTECT YOUR INVESTMENT

Even the highest performing hybrids with industry-leading traits require an additional layer of protection to keep early-season threats at bay. For Enogen corn seed, we tap into the complete Seedcare™ portfolio from Syngenta, so you can manage the most challenging diseases and insects in your fields.

Enogen is offering a choice of two seed treatment options for corn seed.

	PESTS CONTROLLED					DISEASES CONTROLLED CAUSED BY				
	Cutworm	European chafer	Wireworm	Seed corn maggot	Root knot nematode	Fusarium	Pythium	Rhizoctonia	Aspergillus	Penicillium
SEED TREATMENT 1										
 Vayantis® Xtra ¹					■	●	●	●	●	●
SEED TREATMENT 2										
 Fortenza® Complete	●	●	●	◆	■	●	●	●	●	●

Legend

● Control ◆ Suppression ■ Partial suppression

¹ Eastern Canada Only

CORN

Vayantis® Xtra

Vayantis® Xtra seed treatment provides the most comprehensive corn disease package, with control of multiple species of seed- and/or soil-borne pathogens by offering multiple modes of action. Vayantis Xtra combines Vayantis® with Maxim® Quattro, Vibrance®, and Draco™ to deliver six fungicides and a biological package. Experience enhanced Rhizoctonia control with Vibrance and the broadest spectrum of Pythium control with Vayantis. Draco complements existing genetics and synthetic seed treatments, and may help improve germination, water use efficiency, greening, vigour, and survival set in crops.

Fortenza® Complete

Fortenza® Complete seed treatment provides corn growers critical, early season protection from insects like European chafer, wireworm, seedcorn maggots, and cutworms, and also offers a fungicide solution against seed- and/or soil-borne pathogens in corn. Fortenza® Complete contains six fungicides, an insecticide, and a biological bacteria package. Plus, it delivers an alternative, non-neonicotinoid insecticide belonging to the diamide class. Experience enhanced Rhizoctonia control with Vibrance and the broadest spectrum of Pythium control with Vayantis®. And Draco™ may help improve germination, water use efficiency, greening, vigour, and survival set in crops.

Harness the power... of superior protection!

With three active ingredients, and a track record of consistent performance, count on the superior, long-lasting protection of Miravis® Neo fungicide.

Miravis® Neo fungicide is the simple, proven, and clean solution for corn. With three modes of action for preventative, early curative and long-lasting activity on the broadest range of diseases, including tar spot suppression. Miravis® Neo is the best fungicide to protect both crop quality and yield.

 Miravis® Neo

 syngenta.

ENOGEN HYBRID CHARACTERISTICS

Find the Right Hybrid for Your Farm

Shop a range of Enogen corn hybrids to meet your local agronomic needs and environmental challenges. Extensively tested for success in the field and feed. Feel confident that you’re making the right choice for your operation.

PRODUCT	TECHNOLOGY					MATURITY				AGRONOMIC/PLANT CHARACTERISTICS									SEEDING RATE						ADAPTION TO SOIL TYPES/YIELD ENVIRONMENTS				DISEASE TOLERANCE						SILAGE RATINGS												
Enogen Hybrids	Trait	Artesian	E-Z Refuge	LibertyLink	Glyphosate Tolerant	Relative Maturity	Crop Heat Units	RM to Silk	RM to Blacklayer	Emergence	Seedling Vigor	Plant Height	Ear Height	Staygreen	Drydown	Test Weight	Root Strength	Stalk Strength	Ear Flex	-20%	-10%	0	10%	20%		Drought Prone	Highly Productive	Variable Soils	Poorly Drained	Gray Leaf Spot	Northern Corn Leaf Blight	Goss's Wilt	Eyespot	Anthrachnose Stalk Rot	Tarspot	Fusarium Crown Rot	Yield (Ton/A)	NDF Dig. 30Hr (%)	Starch (% DM)	NEL (Mcal/lb DM)	Milk/T (lb/T DM)	Milk/A (Lbs/A)	Beef/T (lb/T DM)	Beef/A (Lbs/A)			
	E080Q1	D	X	X	X	X	80	2400	78	77	3	3	5	4	1	4	2	3	3	SF	●	●	★	★	●		★	●	★	●	-	5	4	3	-	2	-	3	2	2	2	2	2	2	2	2	
	E085Z5 <i>NEW</i>	D		X	X	X	85	2625	84	85	3	3	3	4	4	2	4	3	4	SD	●	●	★	★	★		●	★	●	●	4	4	4	-	3	-	5	3	2	2	2	2	2	2	2	2	
	E092W5	D	X	X	X	X	91	2750	91	91	2	2	3	4	4	3	3	5	4	SD	●	★	★	★	●		★	★	★	★	-	3	4	3	4	3	5	2	2	1	2	2	2	2	2	2	2
	E095D3	D		X	X	X	95	2850	95	95	3	3	3	4	2	3	2	3	2	F	●	★	★	★	●		★	★	★	★	4	5	3	2	3	4	3	2	1	1	2	2	2	2	2	2	
	E100A3	D		X	X	X	100	3000	100	100	3	2	4	4	2	3	4	3	3	SF	●	★	★	★	●		★	★	★	●	3	3	4	-	3	4	4	3	2	1	3	3	3	3	2	3	3
	E107C1	D		X	X	X	107	3200	110	105	3	4	1	4	3	4	3	2	3	SF	●	★	★	★	●		●	●	●	●	3	4	5	-	5	3	5	1	3	3	2	2	2	2	2	2	2

CHART KEY

- Ratings**
- ★ Greatest opportunity to maximize performance relative to other hybrids in maturity group
 - Performs well relative to other hybrids in maturity group
 - ▼ Performance is lower relative to other hybrids in maturity group
 - ✖ Performance is below desired levels relative to other hybrids in maturity group
 - Data not available

Agoronomic/plant characteristics, disease tolerance and silage rating

1 = Best
9 = Worst
- = Under evaluation
SD = Semi-determinate
SF = Semi-flex
F = Flex

Traits

D = Duracade™

Yield Calculated on a per-acre basis and adjusted to standard moisture.

NDF Dig. 30Hr (%) Measure of the indigestible and slowly digestible components of the silage at 30hr retention time.

Starch Indicates the percent of feed component that is starch.

Net energy lactation (NEL) Feed effect on net energy for lactating cows based on acid detergent fiber (ADF).

Milk/ton An estimate of forage quality driven by starch content, starch digestibility and NDF.¹

Milk/acre Combines the estimate of forage quality (Milk/ton) and yield (Tons/acre) into a single term.^{1,2}

Beef/ton A proprietary estimate of forage quality driven by TDN.¹

Beef/acre Combines the estimate of forage quality (Beef/ton) and yield (Tons/acre) into a single term.¹

¹ These ratings should not be used to estimate actual production per animal, but instead they should be used to determine relative overall silage quality and yield of each hybrid.


² Milk/A: Combining yield and quality into a single term, <https://fyi.uwex.edu/forage/files/2016/11/Milk-2016-Combining-Yield-and-Quality-into-a-Single-Term-2.pdf>

E-Z Refuge®

RM
80


CHU
2400

EO80Q1-D



Superior Yield Combined with Agrisure Artesian Technology

- Maximizes yield when it rains; increases yield potential when it doesn't
- Early flowering for good northern adaptation
- Heavy test weight




E-Z Refuge®

RM
95


CHU
2850

EO95D3-D



Exciting Yield Performance

- Broad adaptation across yield environments
- Superb stalks for season-long standability
- Solid agronomics for continuous corn acres




E-Z Refuge®

RM
85

CHU
2625


EO85Z5-D



NEW

Outstanding Yield Potential and Versatility on a Wide Range of Soil Types

- Rapid start through solid emergence and vigour
- Very strong option for stress and drought-prone acres
- Taller product type allows both silage or grain use




E-Z Refuge®

RM
100


CHU
3000

E100A3-D



High-yielding Dual-purpose Feed Hybrid Combined with Excellent Nutritional Value

- Strong agronomics allows for movement across many environments
- Very good performance across all soil types
- Semi-flex hybrid with sound agronomics allows for population flexibility




E-Z Refuge®

RM
91


CHU
2750

EO92W5-D



Top-end Yield Potential with Broad Adaptation

- Exceptional early disease package and drought tolerance
- Consistent performance brings exciting yield levels to this maturity range
- Maximum yield potential when placed in-zone and south of zone



E-Z Refuge®

RM
107

CHU
3200

E107C1-D



Lead Full-season Enogen Hybrid

- Excellent choice for continuous corn acres
- Stable performance with good heat stress tolerance
- Outstanding tonnage and quality at moderate planting populations



GROWER STEWARDSHIP AGREEMENT

Simple Stewardship Requirements

A strong stewardship program is essential for helping to protect and preserve the long-term value of the trait technology of Syngenta. Enogen corn is a high-value specialty grain that must be grown as an identity-preserved crop. Embracing this responsibility provides growers with the ongoing choice of Enogen corn and helps to ensure they remain good stewards of Enogen corn and the land.

Prior to planting Enogen corn, you are required to sign a Syngenta Canada Inc. Stewardship Agreement and an Enogen Feed Grower Agreement (EFGA). These agreements outline the terms and conditions for growing Enogen corn, including the terms of a limited license under Syngenta's intellectual property, compliance with Canadian Food Inspection Agency (CFIA)-mandated Insect Resistance Management (IRM) programs and grain channeling requirements.

STEWARDSHIP OVERVIEW

- Ensure 30 ft. border rows are adjacent to other annual crops unless separated by a physical border of 30 ft. or greater
- Clean any equipment used during planting, harvest, storing and transport including the following:
 - Seed tenders, planters, combines, choppers, trailers, wagons, grain carts, conveying equipment, grain bins
- Identify and segregate Enogen corn seed via the Enogen Value Tracker, which helps by providing visual aids for proper identification
- Return all unplanted seed to your reseller or dispose of it properly
- Complete all necessary documentation, report plant and harvest information in GrowMore360
- As part of your contract, Syngenta reserves the right to enter your fields and ensure Enogen corn-related stewardship requirements are being followed, including:
 - Border row verification

To read and understand the full stewardship requirements please consult the Enogen Syngenta Stewardship Guide at syngenta.ca/enogenstewardship, or receive further assistance, use the resources below.

Stewardship Questions & Support: Please contact Commercial Operations and Stewardship Syngenta Canada Inc.
Phone: 1-800-265-3554
Email: customer.service@syngenta.com



Before opening a bag of seed, be sure to read and understand the stewardship requirements, including applicable refuge requirements when planting insect protected traits as set forth in the Syngenta Stewardship Agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with those stewardship requirements.

To view recommended planting layouts, maps and configurations, please visit the Canadian Corn Pest Coalition at cornpest.ca or request a Grower's Handbook at 1-800-756-7333.

FREQUENTLY ASKED QUESTIONS

Not sure if Enogen is the right choice for your operation? Read through some of our most frequently asked questions to better understand the power and potential of this new breed of feed.

1. What makes Enogen corn different from a conventional corn hybrid?

Enogen corn contains a highly effective alpha-amylase enzyme that helps cattle convert starch into simple sugars more efficiently and rapidly during digestion, providing more available energy in every kilogram of feed consumed.

2. Why is starch digestibility important?

Starch digestibility is important since starch is a large component of the energy (TDN) within silage and grain you're feeding to your cattle. The higher the starch digestibility, the more energy within the feed available to be utilized by the animal. Ultimately, an increase in starch digestibility means an increase in feed efficiency.

3. What if I have multiple varieties of silage being stored in the same pile?

If you're working with multiple fields, we recommend chopping your Enogen corn field last to get as much Enogen corn at the front of your pile as possible and keep it as concentrated as possible. To receive the full benefits of using Enogen corn as silage, it needs to be fed exclusively as Enogen.

4. When is the best time to chop Enogen corn for silage?

We recommend making sure that your Enogen corn silage fields are below 70% moisture before you chop. Ideally, you would want to aim for 63% to 65% moisture. Chopping at 70%+ moisture may mean that you do not realize the full benefits of feeding Enogen corn.

5. Does Enogen offer any advantages to feed ability or feed quality?

Recent studies have shown starch digestibility of Enogen corn silage on the day of harvest is comparable to conventional corn silages that have been fermented for 157 days.¹ Enogen silages have also been proven to have a 42 hour advantage in stability, produce an additional amount of Acetate and lower amounts of Ethanol, all contributing to fresher feed being delivered to your feed bunks.²

6. What are the different ways I can feed Enogen corn?

Enogen can be fed in a variety of ways, including:

- Silage
- Earlage
- High moisture corn
- Dry rolled corn
- Steam flaked corn
- Whole shelled corn
- Grazed standing

7. Why is stewardship required?

Enogen corn is not commodity corn. It is a high-value specialty grain that must be grown as an identity-preserved crop. That's why growers are required to follow specific stewardship practices. Syngenta has developed a stewardship program to simplify proper management of the crop and to ensure it reaches its intended final destination.

8. Are there hybrids available in my relative maturity (RM) range?

Enogen hybrids are available in a range of RMs, from 80 days to 107 days.

¹ Syngenta Contract Research 2019 Mini Silo Project: time series with non-Enogen hybrids (8 locations), Enogen hybrids (10 locations). All samples fermented about 60 days in vacuum-sealed mini silos. Analysis by Rock River Laboratories, Inc.

² Fermentation characteristics and aerobic stability of silage from Enogen® Feed Corn, 2018. A. Baker and J.S. Drouillard, Kansas State University

CORN

GOT QUESTIONS?

Your Rep Can Help

Your Enogen Technical Sales representative understands local conditions and has the experience and expertise to recommend the right seed and crop protection solutions for your farm.



VISIT

syngenta.ca/findmyenogenrep



CONTACT

our Customer Interaction Centre at
1-87-SYNGENTA (1-877-964-3682)



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 Enogen™



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