



ADVANCED CROP & NUTRITION
SIOUX CENTER, IOWA



PRODUCT
CATALOG



ABOUT US

Advanced Crop and Nutrition is an industry leader in crop and livestock consulting. Our job is to educate producers and help them solve agriculture issues.

We work by balancing soil nutrients, building biology, and incorporating trace minerals, while working with producers and suppliers to create yearly cropping recommendations.

We offer products and programs that produce this year's crop and build the soils for the future. ACN produces an exclusive line of livestock products that include manure treatments, improved feed and forage, and promote animal health.

STEWARDSHIP AND THE FUTURE OF FARMING

Advanced Crop and Nutrition is dedicated and always looking for new ways to promote stewardship in our future farmers, even in young future generation farmers.

Hank's great grandfather once said: "The soil we have been blessed to care for is all there will ever be; there won't be more. Be a good steward of the land and she'll be good to you".

Our goal at ACN is to help you protect and care for your most valuable resources while improving your operation's productivity – today, and in the future.

"Progressive farming" is a statement heard around the globe, but what does that mean?

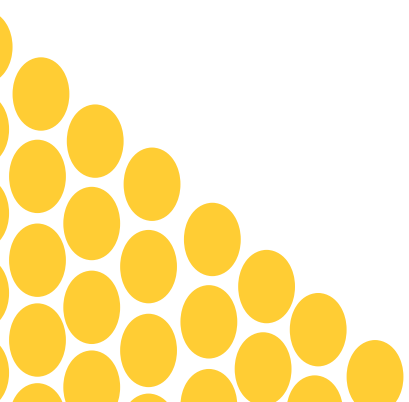
World demand for food production continues to climb and the discussion is that we may need to feed two billion more mouths by 2050. This thought, coupled with the fact that some countries continue to demand a richer diet with more meat, dairy, and eggs, will mean an increased need for more corn and soybeans going toward the livestock sector of the food production industry, as well.

As farmers continue to look for economical ways to improve production in the future, our goals will evolve. How can we economically improve production with the land we care for? What does it look like to be better stewards of the soil, water, and air that we have been entrusted to care for?

That's where ACN comes along-side the farmer. We strive to be part of your team of experts (agronomists, nutritionists, veterinarians, loan officers, equipment dealers, farm managers, and family) that will help you continue to achieve your goals of production in the future. We believe the biology and health of your soil will be crucial to nutrient utilization, water conservation, and healthier, more productive plants, which enables the farmer to supply a higher quality produce or food to livestock and the consumer, while being courteous to our fellow man in the process.

Lofty goals = Great Responsibilities. ACN continues to research and develop our products on a continuous basis. In this ever-changing industry we desire to build, produce, and market the best product possible for the good of our clients and their operations, while being mindful of our neighbors and environment.

**OUR PASSION IS TO SERVE
YOU, BY ENHANCING THE
PRODUCTIVITY AND
PROFITABILITY OF YOUR
FARMING OPERATION.**





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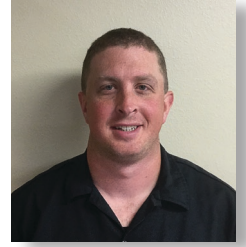
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CHECK OUT THESE PRODUCTS ONLINE

FOLIAR MICROBOOST

Foliar micro feed

SOLU-PIKS

Organic Bio Release

MOLYBDENUM 3%

Soil micronutrient

STRESSTECH

Fungal endophytes that enhance drought, temperature, and salt stress tolerance of crop plants.

BIO-RITE

Livestock probiotics



L-CBF BOOST™ 4-0-3-2S



General Information

QLF Agronomy L-CBF BOOST™ 4-0-3-2S (liquid carbon-based fertilizer) is a combination of balanced crop nutrients with complex carbon sources. Feeding soil biology and enhancing plant nutrient availability.

Guaranteed Analysis

Total Nitrogen (N)	4.0%
0.7% Ammoniacal Nitrogen	
3.3% Other Water-Soluble Nitrogen	
Soluble Potash (K ₂ O)	3.0%
Sulfur (S)	2.0%
2.0% combined Sulfur (S)	

Ingredients

Derived from Sugar Cane Molasses, Urea, Ammonium Sulfate and Sulfuric Acid

Technical

Net Weight: Bulk as Invoiced	
Weight Per Gallon lbs/gal at 68°F.	11.10
Specific Gravity.	1.324
pH at 68°F	3.7
Critical Low Temperature	20°F
Sugar	30%

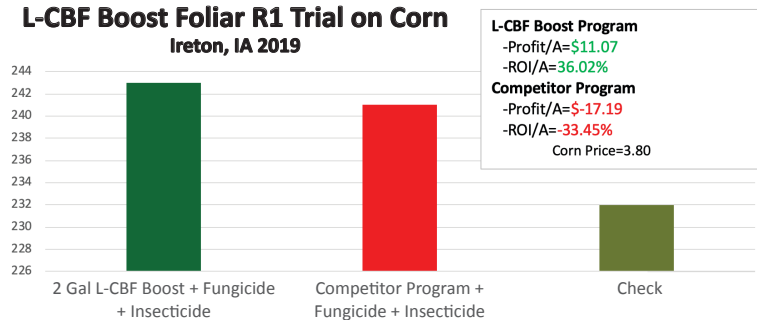
Characteristics

- **Provides a BOOST:** 30% sugars and packaged with a fermentation yeast extract in L-CBF BOOST™ help increase soil microbes and support plant growth. Microbes help make nutrients more plant-available, improve soil structure and speed residue decomposition.
- **Limit Risk of Leaf and Root Burn:** When added to UAN, L-CBF BOOST™ can help reduce the risk of leaf and root burn often caused by UAN 28-32% N applications.
- **Reduce Losses to Drift:** Adding L-CBF BOOST™ to other liquids and sprays can limit losses to drift.
- **All Major Crops:** L-CBF BOOST™ has a low pH (3.7) and can be applied to corn, soybeans, alfalfa and small grains. Ask your consultant for more information on dilution rates and application methods.

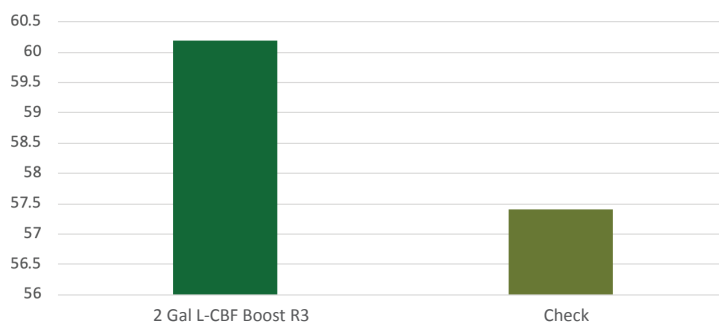
Compatibility: L-CBF BOOST™ is compatible with most other liquid fertilizers. Always perform a compatibility “jar” test before application.

Application: Combine L-CBF BOOST™ with other liquids at a 10-20% inclusion rate (e.g. corn, wheat, grasses). Refer to soil test and your consultant for specific uses.

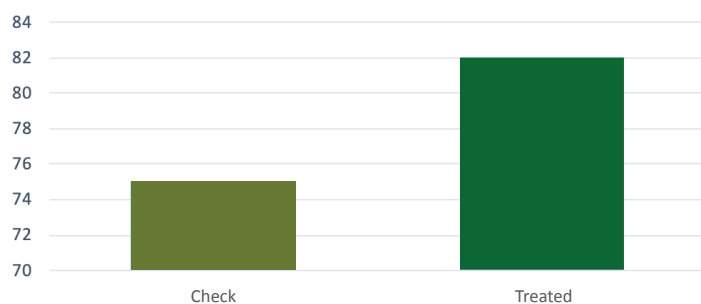
L-CBF Boost Foliar R1 Trial on Corn Ireton, IA 2019



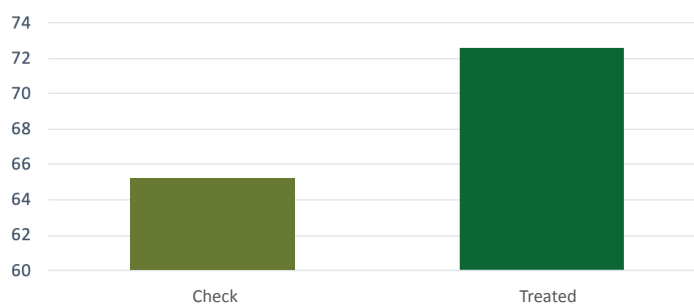
L-CBF Boost Foliar Trial on Soybeans Hawarden, IA 2019



L-CBF Boost 2 gallons/Acre Foliar on Soybeans Rock Valley, IA 2018



L-CBF Boost 2 gallons/Acre Foliar on Soybeans Lake Park, IA 2018



L-CBF 7-21-3 MKP STARTER



General Information

QLF Agronomy *L-CBF 7-21-3 MKP Starter* (liquid carbon-based fertilizer) is a combination of balanced crop nutrients with complex carbon sources. Feeding soil biology and enhancing plant nutrient availability. *L-CBF 7-21-3 MKP* promotes early plant and root growth for stronger starts and higher yields.

Guaranteed Analysis

Total Nitrogen (N)	7.0%
4.8% Ammoniacal Nitrogen	
2.2% Urea Nitrogen	
Available Phosphate (P ₂ O ₅)	21.0%
Soluble Potash (K ₂ O)	3.0%

Ingredients

Derived from Sugar Cane Molasses, Urea, Monopotassium Phosphate, Ammonium Polyphosphate Solution, Phosphoric Acid and Ammonium Hydroxide

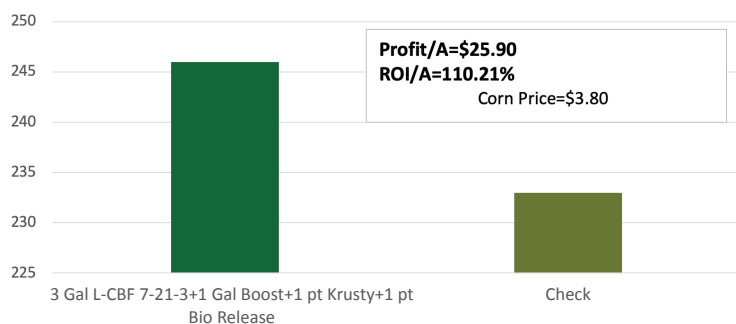
Technical

Net Weight: Bulk as Invoiced	
Weight Per Gallon lbs/gal at 68°F.	11.2
Specific Gravity.	1.341
pH at 68°F	5.6
Critical Low Temperature	20°F
Sugar	7%

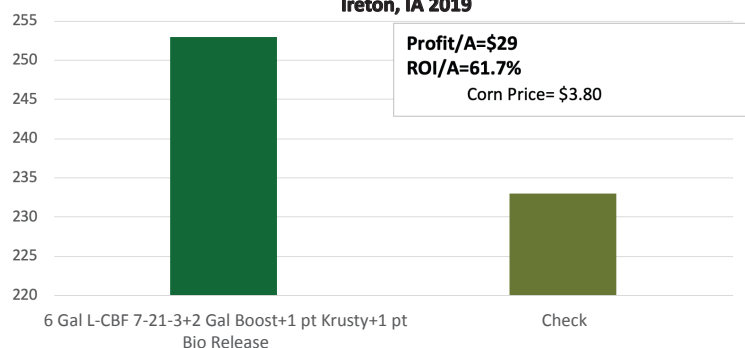
Characteristics

- **High Orthophosphate Blend:** derived from the most concentrated 100% orthophosphate water-soluble fertilizer available, MKP (monopotassium phosphate) is over 50% P₂O₅ and 34% K₂O.
- **Provides a BOOST in Growth:** 7% sugars derived from QLF Cane Molasses and packaged with a fermentation yeast extract to help increase soil microbes and support plant growth. Microbes help make nutrients more plant-available, improve soil structure and speed residue decomposition.
- **All Major Crops:** *L-CBF 7-21-3 MKP* is a stand-alone starter that can be applied to corn, soybeans, alfalfa and small grains. Ask your consultant for more information on dilution rates and application methods.

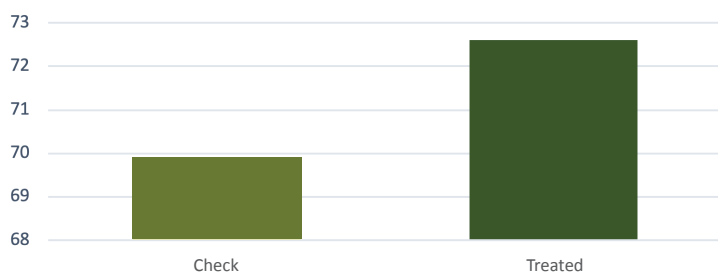
ACN Program vs Check on Corn
Ireton, IA 2019



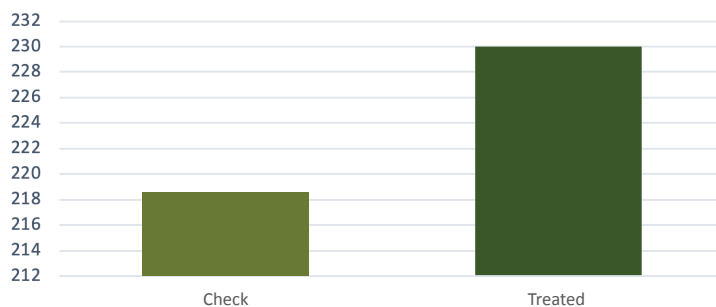
ACN Program 2x vs Check on Corn
Ireton, IA 2019



L-CBF 7-21-3 2 gallons/Acre In-Furrow on Soybeans
Ireton, IA 2018



L-CBF 7-21-3 5 gallons/Acre In-Furrow on Corn
Rock Rapids, IA 2018



KELPAK

Kelpak is a natural biostimulant extracted from freshly harvested *Ecklonia maxima* kelp, a seaweed high in natural growth promoting compounds, scientifically proven to increase the health, quality and yield in a wide variety of crops. Kelpak is designed for use as a seed treatment, in fertilizer solutions, in furrow and as a foliar treatment.



Benefits

- Increase in root tips improves:
 - Plant nutrient and water uptake
 - Natural cytokinin production and subsequent foliar growth
- Reduces transplant shock
- Increases growth of seedlings and nursery plantouts
- Increases photosynthesis and carbohydrate production
- Reduces symptoms of abiotic stress
- Increased yields with better returns
- Improves shelf-life and produce quality during cold storage
- Kelpak is approved by WSDA Organic Program

Application

- Seed coating
- Root dip
- Soil drench
- Drip irrigation
- Foliar spray (conventional, electrostatic or aerial)

Optimal Usage

- Do not dilute more than 1:500
- Do not over dilute with drip irrigation application
- Apply as a pulse during last 10 minutes of irrigation cycle
- Do not apply more frequently than 7 days apart
- Compatible with most pesticides

CORNSPIKE

Guaranteed Analysis

Boron (B)	0.1%
Copper (Cu)	0.5%
0.5% Chelated Copper (Cu)	
Iron (Fe)	0.25%
0.25% Chelated Iron (Fe)	
Manganese (Mn)	1.0%
Zinc (Zn)	5.0%
5.0% Chelated Zinc (Zn)	

Derived from boric acid, copper IDS, iron EDTA, iron IDS, manganese EDTA, manganese IDS, zinc EDTA and zinc IDS.

Application

- **All Major Crops:** QLF CornSpike can be

applied to all types of crops.

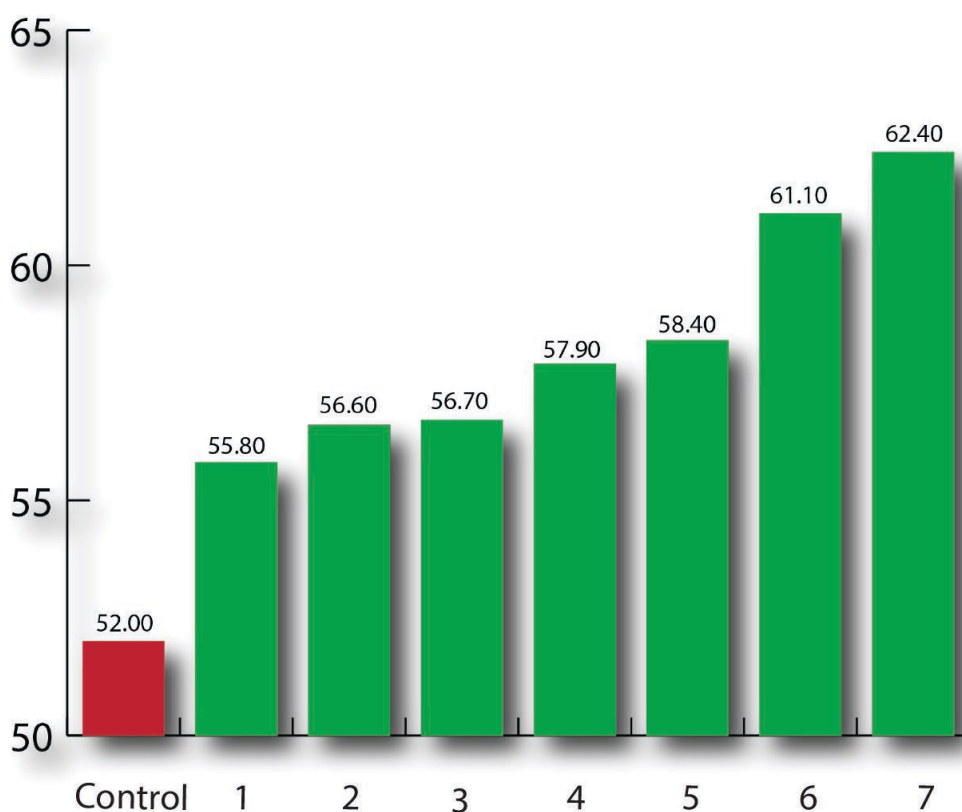
- **Maintenance Rate:** Apply 1 to 2 quarts per acre.
- **Medium to Severe Deficiency Rate:** Apply 3 to 4 quarts per acre.
- Applications should be made at or prior to planting or at the start of the growing season. Applications should be made every 7 to 28 days as needed throughout the season.

Warning: The use of Boron on any crops other than those recommended may result in injury to the crop. Contact your county agent or field representative before making application.

L-CBF BOOST & KELPAK FIELD TRIAL—SOYBEANS



This study conducted by Precision Ag Research in Clarion, Iowa, proved to positively affect **yield and profitability**. The objectives for these field trials were to evaluate results of including L-CBF BOOST and Kelpak in seed treatment and foliar application at different rates and timing on soybeans. This study concluded there is a synergistic effect with Kelpak (as a seed treatment or applied at R1) when used with L-CBF BOOST (banded or at R1).



Treatment	Rate
Control	
1	BOOST (2gal), Banded & BOOST (2gals), R1
2	Kelpak Seed Treatment (ST), BOOST (2gal), Banded & Kelpak (1qt), R1
3	BOOST (2gal), Banded & + Kelpak (1qt), R1
4	Kelpak (ST) & BOOST (2gal), Banded & BOOST (2gal), R1
5	Kelpak (ST) & BOOST (2gal), Banded
6	BOOST (2gal), Banded & BOOST (2gal) + Kelpak (1qt), R1
7	Kelpak (ST) & BOOST (2gal), Banded & BOOST (2gal) + Kelpak (1qt), R1

L-CBF AMINO 15-0-1 NITROGEN



QLF Agronomy **L-CBF AMINO 15-0-1** (liquid carbon based fertilizer) is a combination of balanced crop nutrients with complex carbon sources. It contains three sources of nitrogen (Amino, Urea, & Ammoniacal)

L-CBF AMINO 15-0-1 provides plant available nitrogen to promote higher yields and overall plant health.

Characteristics

- **Multiple Nitrogen Sources:** L-CBF AMINO 15™ delivers efficient foliar nitrogen from top tier sources, Urea and Amino Acid. Plant nitrogen uptake with L-form Amino Acids are energetically advantageous, utilizing and assimilating with no additional energy consumption.
- **Versatility and Compatibility:** L-CBF AMINO 15™ is a cost effective tank partner with a proven return on investment utilized in multiple fertilizer and pesticide applications.
- **All Major Crops:** L-CBF Amino 15™ is a supplemental foliar nitrogen source that can be applied to corn, soybeans, alfalfa, and small grains. Ask your consultant for more information o dilution rates and application methods.
- **Lower pH:** L-CBF AMINO 15™ compliments better performance of slightly acidic foliar solutions for increased cuticle penetration and maximum leaf absorption.

Analysis

Total Nitrogen (N) 15.0%
15% Urea Nitrogen
Soluble Potash (K₂O) 1.0%

Ingredients

Derived from Sugar Cane Molasses, Urea, L-Amino Acids

Technical

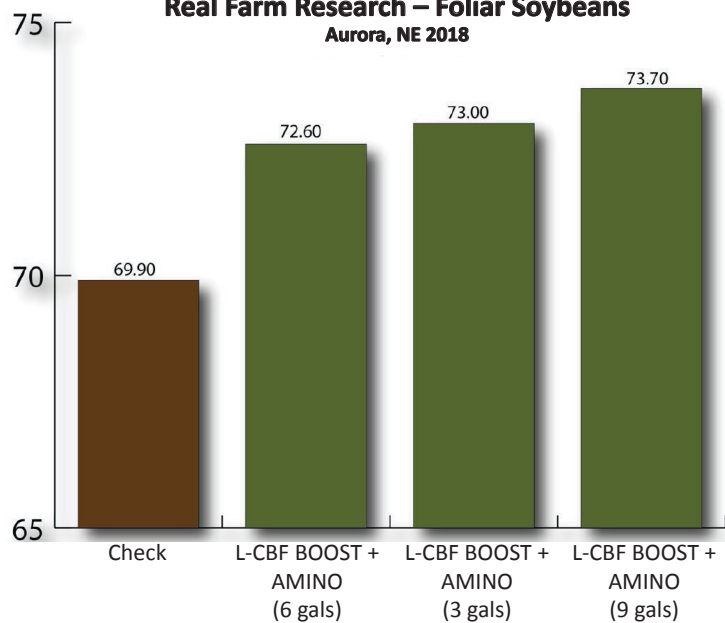
Net Weight: Bulk as Invoiced
Weight Per Gallon lbs/gal at 68°F 10.0
pH at 68°F 4.7
Sugar 10%

Application

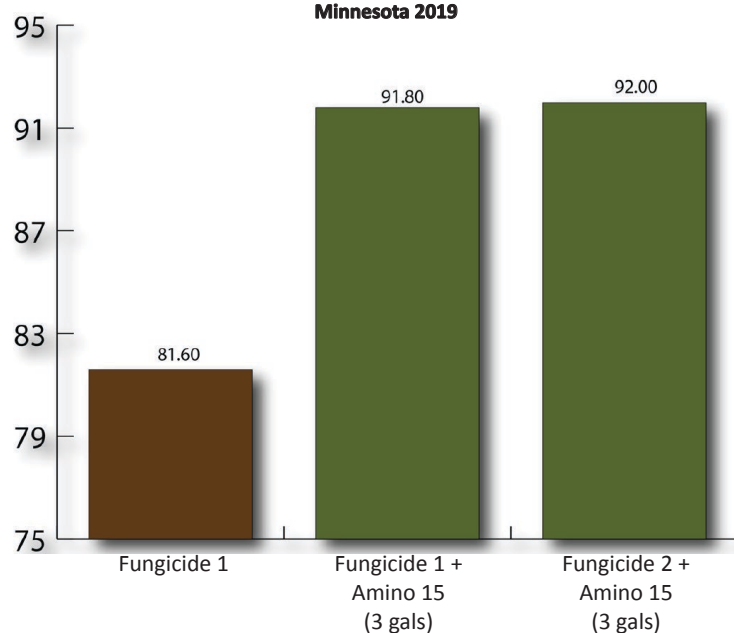
L-CBF AMINO 15-0-1 Nitrogen can be applied using the following methods:

Crop	Placement	Rate Per Acre
Corn	Foliar	3-6 gal
Wheat	Foliar	3-6 gal
Soybeans	Foliar (R1-R3)	3-6 gal
Alfalfa	Foliar	3-6 gal
Pasture	Foliar	3-6 gal

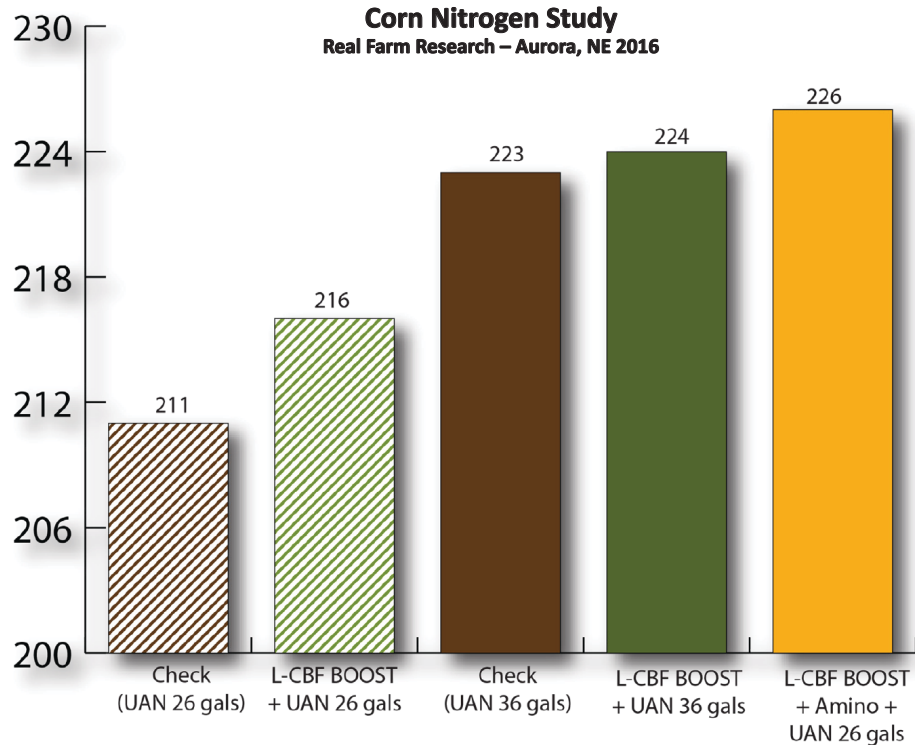
Real Farm Research – Foliar Soybeans
Aurora, NE 2018



Wheat – Foliar
Minnesota 2019



Corn Nitrogen Study
Real Farm Research – Aurora, NE 2016



RAPID

RAPID seed treatment fits the name. The ingredients in this product promote fast seedling growth and enhanced root growth. **RAPID** will increase the number of plants growing from the soil, and a well-known fact is, more emergence = more yield. **RAPID** will get you all that you can get from each bag of seed.

Dry Biological Seed Inoculant

Combination of Soil Biology Boost and dry Bio-Release

Soil Biology Boost

- Contains mycorrhizal fungi
- Colonizes roots
- Boosts biology in rhizosphere
- Improves nutrient availability

Mycorrhizal Fungi Benefits

- Enhanced seedling growth
- Enhanced root growth
 - Efficient water and nutrient uptake
 - Increased drought and stress tolerance

Bio-Release

- Reduces nutrient tie-up in the soil
- Enhances nutrient availability in the soil

Application

- 2 ounces per acre in corn
- 3 ounces per acre in soybeans



**See website for yield data*

BIO-RELEASE

General Information

Bio-Release is a fertilizer and soil additive. It is a biologically produced compound that reduces nutrient tie-up in the soil, prevents chemical interaction of positive and negative charged ions and releases otherwise unavailable plant nutrients.

Bio-Release

- In-furrow or side-dress at 1 to 2 quarts per acre to release unavailable soil nutrients.
- Can be used with herbicides and pesticides to condition and buffer water, and prevent chemical tie-up with nutrients, making it more effective.

Tank Mixing

Fill the tank half full of water, add *Bio-Release* and agitate to dissolve. Add dry formulations and dissolve, followed by liquids. ADD ANY CHEMICALS LAST. Bring to volume with water.

Compatibility

Bio-Release is compatible with most fertilizers (including phosphates) and registered pesticides. However, compatibility jar test is strongly encouraged before mixing. Always refer to product labels.

See page 18 for yield data using *Bio-Release* with Starters.



KRUSTY

If you have compaction in your soil you want to take a look at this product. *Krusty* can be used in-furrow with your starter at planting time or broadcast sprayed for great results in yield and production.

General Information

Krusty reduces soil compaction, allowing water and air to move deeper into soil profile. Being a biologically fermented extract, *Krusty* contains multiple polymers and bio-surfactants that will swell and shrink within the soil, reducing the natural binding effects of compacted soil.

Krusty

- Helps to aerate soil, reducing anaerobic conditions, foster pathogens, toxins and plant and root diseases.
- Contains both nonionic and anionic surfactants, preventing it from washing out of the soil and reducing leaching.
- Contains natural chelates to work with soil minerals, allowing *Krusty* to work more effectively.

Uses

- Apply at rate of 1 quart to 1 gallon per acre depending on compaction; 1 quart to ½ gallon will loosen general compaction issues; ½ to 1 gallon per acre for more serious and severe compaction levels.
- Very effective at planting in a 4-6" band with seed to reduce compaction for new growth at low rates, 1 quart per acre. *Krusty* can be applied on existing plants without tissue damage to reduce compaction post planting.
- Apply with 5 to 20 gallons of water and then let rain or irrigation water carry it into the soil profile.
- Can be included with a fall crop residue program to allow microbiology an improved opportunity to degrade plant matter.

Krusty Trials 2017

(All tests were run through a starter system on the planter.)

- Control (Compost Tea, Moly and Bio-Release)
 - Compaction Probe Results
 - Test 1 = 230 psi
 - Test 2 = 215 psi
 - Test 3 = 220 psi
 - Average Yield
 - 207.42 BU/A
- Krusty Test #1 (Krusty at 16oz/A, Compost Tea, Moly and Bio-Release)
 - Compaction Probe Results
 - Test 1 = 190 psi
 - Test 2 = 180 psi
 - Test 3 = 185 psi
 - Average Yield
 - 225.62 BU/A
- Krusty Test #2 (Krusty at 13oz/A, Compost Tea, Moly and Bio-Release)
 - Compaction Probe Results
 - Test 1 = 200 psi
 - Test 2 = 200 psi
 - Test 3 = 195 psi
 - Average Yield
 - 215.62 BU/A
- Krusty Test #2 (Krusty at 22.5oz/A, Compost Tea, Moly and Bio-Release)
 - Compaction Probe Results
 - Test #1 = 190 psi
 - Test #2 = 170 psi
 - Test #3 = 185 psi
 - Average Yield
 - 217.63 BU/A

TEA, BIO-RELEASE AND KRUSTY IN-FURROW VS STARTER W/O KRUSTY

AMOUNT OF KRUSTY	CHECK	TREATED	DIFFERENCE
16oz Krusty	207.42	225.62	18.2
13oz Krusty	207.42	215.62	8.2
22.5oz Krusty	207.42	217.63	10.21

AG NATURAL

Ag Natural is a biologically fermented extract that boosts the plant's immune system to improve sustainability and plant health. Farmers applying Ag Natural have saved money with this foliar product, and seen increased yields. Ag Natural increases plant health to maturity, which in turn, adds more weight and greater yields.

General Information

- Biologically fermented extract
- Boosts plant's immune system
- Improved sustainability
- Improved plant health

Application

- 1 to 2 quarts per acre
 - 10 to 15 gallons of water with ground sprayer
 - 2 to 5 gallons of water with aerial sprayer
- All-natural product
 - No re-entry interval
 - No harvest interval



Ag Natural Yield Information

HYBRID	CHECK	TREATED	DIFFERENCE
Dekalb 60-67SS	239.1	242.3	3.20
Pioneer 0157 Conv	226.15	240.88	14.73
Pioneer 1151 Conv	221.23	237.14	15.91
Pioneer 0937AM	212.3	217.4	5.10
Average			9.7

Ag Natural Tonnage Check	ACRES	WEIGHT	TONNAGE PER ACRE	DIFFERENCE
Check #1 Treated	1.33	53560 LBS	20.14 tons/Acre	.71 tons
Check #2 Untreated	1.35	52480 LBS	19.43 tons/Acre	
Check #3 Untreated	1.33	50820 LBS	19.10 tons/Acre	.52 tons
Check #4 Treated	1.33	52200 LBS	19.62 tons/Acre	
Average				.62 tons per acre more

Healthy to harvest – boosts plant's immune system for greater yields.

BIO-EMPRUV

General Information

Bio-Empruv is a biological fermentation extract containing a host of different substances that can accomplish numerous actions within a corn plant. *Bio-Empruv* contains biologically derived extracts, enzymes, vitamins, minerals, natural growth regulators and stimulators, antioxidants, amino acids and bases and more. It also contains natural phytoalexins to boost the corn plant's immune system and increase the resistance to disease and pathogens, as well as to environmental stresses. *Bio-Empruv* contains natural and biodegradable ingredients. No chemicals or residues.

Bio-Empruv

Privately field tested for 2 years on corn. Has increased yields from 10 to 70 bushels, depending on application timing and infection rate.

Foliar Application

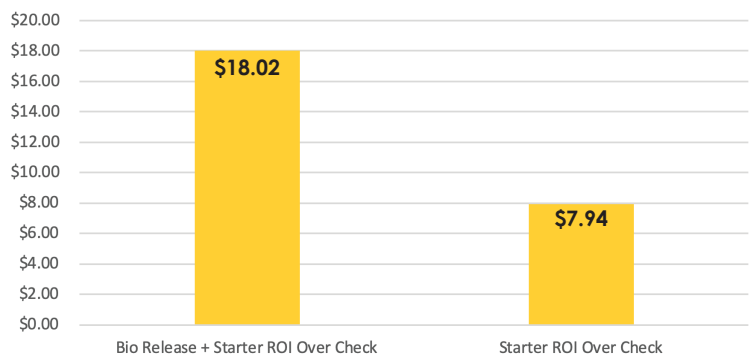
- Produces a systemic effect in the plant. For best results apply 1 quart per acre early, at V3-V5, for a systemic and residual effect.
- Compatible with most pesticides and can be applied with other fertilizers, minerals, herbicides, insecticides or fungicides. Always refer to the other products' labels for compatibility and do a jar test.
- May be applied anytime during the growing season to improve crop health and yield potential.
- Apply late season to an unhealthy corn crop for faster recovery.



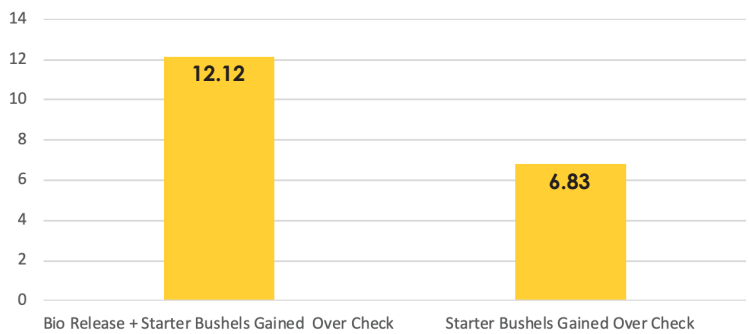
Goss's Wilt in corn.

3 & 4 YEAR ACN YIELD DATA

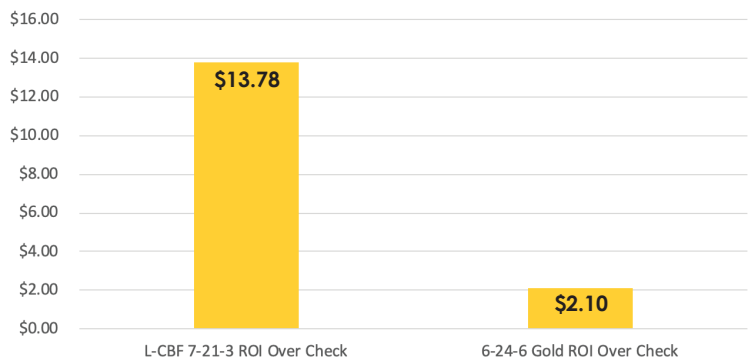
4 Year Bio Release + Starter ROI vs Just Starter ROI



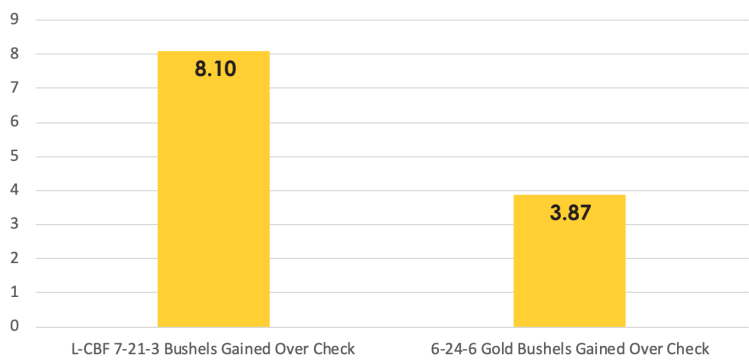
4 Year Bio Release + Starter Bushels Gained vs Starter Bushels Gained



3 Year L-CBF 7-21-3 ROI vs 6-24-6 ROI



3 Year L-CBF 7-21-3 Bushels Gain vs 6-24-6 Bushels Gained



3 & 4 YEAR YIELD ADVANTAGES WITH QLF AND BIO-RELEASE

Hofmeyer Plot 2016

TREATMENT	ROWS	YIELD %	BUSHEL GAINED	COST OF TREATMENT	ROI/ACRE	% RETURN	PRICE/BUSHEL \$3.00
Nothing	24	220.3					
5 Gal 9-18-9	24	229	8.7	19	\$7.10	37.37%	
5 Gal 9-18-9 and Pam & Sam	24	233.1	12.8	27.75	\$10.65	38.38%	
5 Gal 9-18-9, qt Bio Release	24	231.3	11	18.4	\$14.60	79.35%	
Plot Average		228.43					

Hofmeyer Plot 2017

TREATMENT	ROWS	YIELD %	BUSHEL GAINED	COST OF TREATMENT	ROI/ACRE	% RETURN	PRICE/BUSHEL \$3.00
6-24-6 5 gal (starter check)	24	226.7	N/A				
6-24-6 & N Bistro	24	239.8	13.1	12	\$27.30	227.50%	
L-CBF 7-21-3	24	233.2	6.5	1.4	\$18.10	1292.86%	
6-24-6, Bio Release	24	240.8	14.1	7	\$35.30	504.29%	
6-24-6, Pam & Sam	24	237.1	10.4		\$22.45	256.57%	
6/24-6, Bio Release, Pam & Sam	24	238.1	11.4	15.75	\$18.45	117.14%	
6/24-6, Bio Release, Pam & Sam, Moly, Micro 5-5	24	245.2	18.5	24.25	\$31.25	128.87%	
Plot Average		237.27					

Rock Rapids Plot 2018

TREATMENT	ROWS	MOISTURE	YIELD %	BUSHEL GAINED	COST OF TREATMENT	ROI/ACRE	% RETURN	PRICE/ BUSHEL \$3.00
Check	16	19.75%	218.59	N/A				
Water, 2 gal Boost, 1 qt Bio Release	16	18.80%	231.05	12.46	\$13.85	\$23.54	169.98%	
QLF 7-21-3 1, qt Bio Release	16	19.00%	229.83	11.24	\$26.75	\$6.96	26.00%	
QLF 7-21-3	16	19.00%	229.92	11.33	\$19.25	\$14.73	76.53%	
Kugler 6-24-6 + Mico's	16	20.10%	231.93	13.34	\$19.25	\$20.76	107.84%	
Kugler 6-24-6, 1 gal Boost	16	19.30%	225.74	7.15	\$22.24	-\$0.98	-4.35%	
Kugler 6-24-6, 1 qt Bio Release	16	19.90%	233.73	15.1	\$15.14	\$18.67	69.78%	

Hofmeyer Plot 2019

TREATMENT	ROWS	MOISTURE	YIELD %	COST OF TREATMENT	BUSHEL GAINED	ROI/ACRE	% RETURN	PRICE/ BUSHEL \$3.75
Check 1	12	17.20%	205.40	\$0.00	0.00			
5 gal LCB-F 7-21-3	12	17.10%	212.60	\$20.00	6.37	\$3.89	19.45%	
5 gal QLF L-CBF 7-21-3 and PT Kelpac	12	17.20%	217.80	\$25.63	11.57	\$17.76	45.15%	
5 gal QLF L-CBF 7-21-3 and QT Bio Release	12	17.20%	214.50	\$27.50	8.27	\$3.51	12.76%	
Check 2	12	17.20%	207.60	\$0.00	0.00		0.00%	
2 gal QLF L-CBF Boost	12	17.30%	200.60	\$7.50	-5.63	-\$28.61	-381.47%	
6-24-6 Gold	12	17.60%	204.50	\$17.50	-1.73	-\$12.93	-73.89%	
Check 3	12	17.60%	205.70	\$0.00	0.00		0.00%	

COMPOSTING

Give your crops what they want. Composted Cattle Manure is the environmentally sound way to fertilize.

BENEFITS OF COMPOSTED CATTLE MANURE AS FERTILIZER

#1 ORGANIC MATTER

Use of composted cattle manure with our added proprietary blend of Compost Tea (which includes live/active bacteria, fungi, and protozoa) adds organic matter resulting in:

- Healthier soil
- Better moisture retention
- Better infiltration; less run off

#2 HEALTHIER CROPS

Composted cattle manure helps correct deficiencies in your soil.

- High levels of most nutrients
- Slow release nitrogen
- Other micronutrients that plants need

#3 ENVIRONMENTAL QUALITY

- Reduce odor
- Weed seed free
- Reduced pathogens

#4 BIG YIELDS!



Applications include third party recommendations and product verification by Nutrient Advisors, LLC.

A 4 TON PER ACRE APPLICATION GIVES YOUR FARM:

Analysis per ton: 21 N - 30 P - 35 K - 11 S - .25 ZN

80 Nitrogen

120 Phosphorus-P205

140 Potassium

45 Sulfur

1 Zinc



BIO-AMEND & BIO-AMEND 2.0



Bio-Amend used in cattle barn pits.



Bio-Amend used in hog barn pits.



Picture of a 3.5 million gallon, 1st stage lagoon, taken 08/2015. It had been treated with *Bio-Amend* for about a year. No crust and easy agitation during fall pumping. No odor.



This is the 2nd stage lagoon at the same operation, where they pull water for flushing the sand lane. During the summer this lagoon would get very stagnant and the odor would be very strong. It had been treated with *Bio-Amend* for about a year and the odor was gone, and the sand was cleaner because of cleaner water.

Bio-Amend is an outstanding pit and lagoon treatment product that contains 17 strains of active bacteria including 2 strains of purple, non-sulfur bacteria. This biological product works great in any anaerobic manure storage setting. Bio-Amend works in a way that it helps increase plant availability of the nutrients in the manure, as well as reduce odor, reduce flies, and regain capacity, among others. Simple application and ease of use, along with its great benefits, puts this product at the top of its league.

General Information:

BIO-AMEND contains 17 species of live active bacteria, including purple non-sulfur bacteria. BIO-AMEND is used on all forms of anaerobic manure storage and livestock species, including hog pits and lagoons, dairy lagoons and pits, and cattle pits.

Benefits in the Facility:

- Reduce to eliminate bottom solids
- Regain capacity
- Reduce to eliminate crusting
- Reduce pit odors and harmful gas production
- Reduce fly population
- Increase ease of pumping

Benefits in the Field:

- Increase manure consistency
- Pre-digest manure
- Increase plant available nutrients
- Nutrients stored in non-leachable organic compounds
- Inoculate soils with beneficial bacteria
- Reduce manure and soil salt levels
- Increase yield



Picture taken 9/20/16 of a 9 million gallon dairy lagoon treated with Bio-Amend 4/2016 for the 1st time. Very little crust, and owner said odor was greatly reduced from previous years.

Treatment Rate:

BIO-AMEND: 325 gallons per 1 million gallons of manure storage capacity per year

BIO-AMEND: Fall, after pump out: 150 gallons per million gallons manure capacity
Spring, after warm up: 175 gallons per million gallons manure capacity

Concentrate :

BIO-AMEND 2.0: 32.5 gallons per 1 million gallons of manure storage capacity per year

BIO-AMEND 2.0: Fall, after pump out: 15 gallons per million gallons manure capacity
Spring, after warm up: 17.5 gallons per million gallons manure capacity

BIO PRESERVE & BIO PRESERVE 2.0

General Information:

Bio Preserve is an outstanding forage and alfalfa inoculate. It contains 13 strains of active bacteria including 8 *Lactobacillus* species, 3 *Bifidobacterium* species, 1 *Bacillus* species, and yeast species.

Bio Preserve is a leading inoculant in the industry with its ability to enhance fermentation, prevent mold and toxin growth, and break down more Cellulose and Lignin within the forage, to make more nutrient availability (energy) for your livestock. *Bio Preserve* is produced in an active/ liquid state, never being frozen or dried. This product is grown in a consortium manner, allowing the bacteria to work as a team, with each member knowing their individual job during the fermentation, nutrient enhancement, and preservation process.

Feed Stuffs

- Corn silage
- Alfalfa
- Baleage
- Corn stalks

Benefits

- Enhances fermentation
- Prevents mold and toxin growth
- Aids in nutrient availability
- Breaks down cellulose and lignin



Treatment Rates

- **BIO PRESERVE:** 32 fluid ounces per ton of feed
- **BIO PRESERVE 2.0:** 2 fluid ounces per ton of feed through chopper

Bio Preserve comes in liquid form, (no mixing required) ready to put into your applicator for simple and timely application.

**See our website for testing analysis of Bio Preserve 2.0*

4-Year Average Shrink on Corn Silage

TREATMENT	AVERAGE SHRINK %	AVERAGE SHRINK % OVER 365 DAYS
No Inoculant Year 1	2.32%	14.11%
No Inoculant Year 2	2.07%	10.79%
No Inoculant Year 3	1.47%	8.92%
No Inoculant Year 4	<u>1.14%</u>	<u>6.84%</u>
No Inoculant 4-Year Average	<u>1.95%</u>	<u>11.27%</u>
Bio-Preserve Year 1	1.95%	11.86%
Bio-Preserve 2.0 Year 2	1.65%	8.58%
Bio-Preserve 2.0 Year 3	<u>0.00%</u>	0.00%
Bio-Preserve 2.0 Year 4	<u>0.56%</u>	<u>3.36%</u>
Bio-Preserve 4-Year Average	<u>1.04%</u>	<u>5.95%</u>
Competitor Year 1 Average	2.02%	12.29%
Competitor Year 2 Average	1.85%	9.64%
Competitor Year 3 Average	1.50%	9.13%
Competitor Year 4 Average	0.73%	4.38%
4-Year Competitor Average	<u>1.53%</u>	<u>8.86%</u>

Every year we test a different competitor inoculant. In turn, these numbers show the average of each competitor for that year.

MASTERS CHOICE

FLOURY GRAIN 101

In the United States nearly 40% of all corn grown is fed to livestock; it's the largest consumer of corn in the country, a fact that's often overlooked. Nearly all the corn hybrids sold here were developed for the once booming export market, resulting in tightly packed, hard endosperm kernels. However, those days are long gone, with exports making up less than 13% of the modern marketplace. As such a large part of the American ag economy, shouldn't we be breeding corn especially for livestock operations? We think so.

By now you've likely heard of floury grain and the benefits that it provides when fed. Masters Choice floury grain has up to 15% more

available energy than standard corn hybrids due to its higher digestibility. A slower rate of passage is another contributing factor to the higher digestibility of Masters Choice floury grain, as it stays in the rumen up to twice as long as harder, slicker industry hybrids, even when both are ground to a fine dust (Because, let's be honest, when you grind a rock, it's still a rock).

Another benefit of floury grain, that you may not yet be completely familiar with, is the increased microbial yield being associated with floury corn hybrids. These microbial proteins greatly contribute to milk production on dairy operations.



IF YOU FEED IT - YOU NEED IT.

LIVESTOCK FOCUS

At Masters Choice, our commitment to the livestock and silage really differentiates us from our competition. There really aren't any other companies out there that have structured their entire business, and corn breeding programs, to cater to the needs of livestock producers. One of the most incredible advances that dedication has brought is our revolutionary MPG Index, a proprietary hybrid evaluation system that can statistically prove our milk production advantage over the competition.

For close to a decade we have been carefully refining our hybrid selection tool, aiming to narrow in on the products that digest most efficiently and make the biggest impact on the farm. Through the years our selection process has evolved into the MPG Index. It is our firm belief that there is not one single test that can accurately correlate the quality of silage to milk production. So, rather than rely on one test, or even just one lab's analysis, we have created this unique Index to marry together over 25 different layers of testing, creating the most accurate picture possible.

To our knowledge, this is the most exhaustive forage analytic metric in the world, and it's backed and validated by an 8 week, 96 cow, privately commissioned feeding trial. The trial confirmed that hybrids with a higher MPG Index score had a greater potential to make milk. To us, this is a breakthrough that demonstrates when you're selecting silage hybrids for your farm, you can feel confident in placing a Masters Choice hybrid that has been repeatedly tested and proven.

PASSAGE RATE

One factor that contributes to the increased digestibility of our softer grain, is passage rate. These floury hybrids can stay in the rumen up to twice as long as harder, slicker industry hybrids, even when both are ground to fine dust. One recent study shows that vitreous hybrids pass through the digestive system twice as fast as floury varieties. Because our hybrids stay in the rumen longer, they have more time to be digested.





ADVANCED CROP & NUTRITION

