

## STAND UP TO STRESS



**TERRAMAR**\*, intended for foliar use in row crops, delivers increased nutrient uptake and enhanced stress mitigation, which can optimize plant health and contribute to enhanced yield. It combines two technology platforms unique to Loveland Products:

- Carbon-Based Technology (CBT) Biologically converted leonardite
- Marine-Based Technology (MBT) Biologically converted kelp

**TERRAMAR** is exclusively available from Nutrien Ag Solutions<sup>®</sup>.



## **Key Features**

- Foliar applications deliver a unique set of highly active, metabolite-based compounds for quicker absorption through the plant leaf tissue
- Compatible with key crop inputs, including liquid fertilizers, insecticides, herbicides and fungicides, for maximum application flexibility

## **Key Benefits**

- CBT enhances nutrient uptake and provides key carbon derivatives for additional energy to optimize plant performance
- MBT improves crop tolerance to abiotic stressors such as heat, drought, salt and cold, which can represent significant yield-limiting factors



## **Unique Technology for Enhanced Plant Health**

With its proprietary combination of cutting-edge technologies, **TERRAMAR** is designed to augment a balanced crop nutrition system by enhancing nutrient uptake and improving plant response to stress.

**TERRAMAR** can be used to optimize plant performance in all growing conditions, ranging from ideal to stressful conditions where crop development could be impacted.

**TERRAMAR** may be applied in early post-emerge applications as well as mid- to late-season fungicide applications to enhance plant performance while minimizing weather-induced stress.

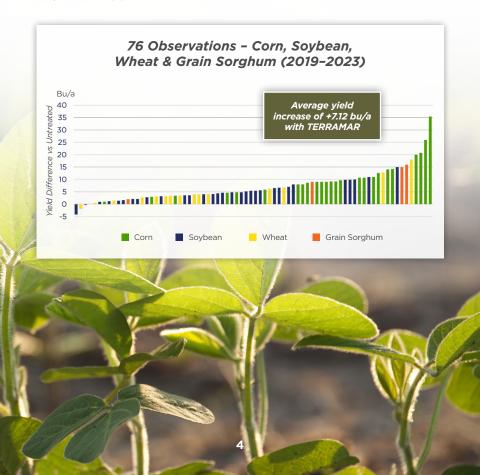


## **Enhancing Crop Growth and Minimizing Stress**

When **TERRAMAR** is applied in conjunction with a foliar program, increased nutrient use efficiency has been documented.

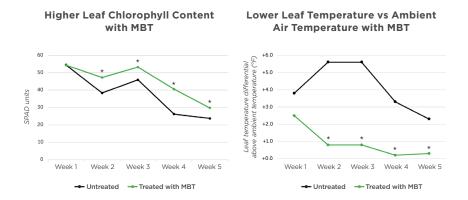
A foliar application of **TERRAMAR** is also particularly suitable for mitigation of abiotic stress at various stages of plant growth.

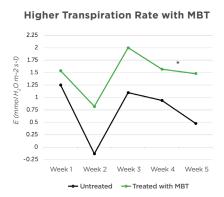
**TERRAMAR** has been shown to alleviate in-season plant stress by improving plant access to water and nutrition. Visible improvements in stressed crops can often be observed several days after application.



## **Benefits of Marine-Based Technology**

In a greenhouse trial, a foliar application of MBT on VT-stage corn had a positive effect on plant physiological processes during drought stress.





Note: Corn planted on 4/15/21 and harvested 8/6/21. MBT technology was applied at 1 quart/acre at VT on 6/8/21. 20 replications per treatment. The drought stress water regimen (30% of relative water content) began at VT. \*Significant difference.

## **Benefits of Carbon-Based Technology**

In a greenhouse trial, CBT significantly enhanced the growth of navy bean seedlings compared to the water control.

### **Enhanced Plant Growth**



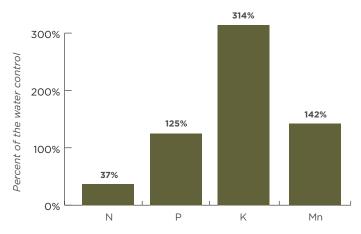


Water control

**CBT** treatment

CBT technology significantly increased corn shoot uptake of N, P, K and Mn compared to the water control.

### Increased Nutrient Uptake in Corn Shoots



### **Foliar Applications on Corn**

Untreated

### Corn - Greenfield, IL

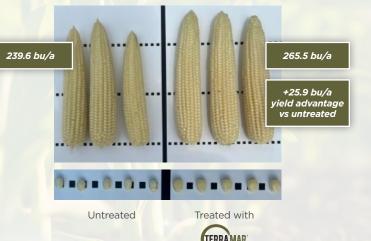
TERRAMAR foliar-applied at 1 quart/acre at V5



Visual difference 4 days after application

Treated with





Note: TERRAMAR applied June 26, 2022. Top photo taken June 30, 2022. Bottom photo taken August 5, 2022.

# **Corn - Oberlin, KS**TERRAMAR foliar-applied at 2 quarts/acre



Greater stalk diameter Larger root ball Deeper roots Heavier brace roots 57% greater soil penetration

Untreated

Treated with



+4.8 bu/a yield advantage vs untreated



Untreated



Treated with



Note: Photo taken July 11, 2022.

### **Foliar Applications on Soybeans**

#### Soybeans - Warren, IN

TERRAMAR foliar-applied at 1 quart/acre; drought stress conditions



Untreated

Treated with TERRAMAR



Note: Both sides planted with same variety on the same day. TERRAMAR applied June 30, 2022. Photo taken July 5, 2022.

### Soybeans - Liberty, IL

Grower standard practice (GSP) stress reduction product foliar- applied at V4 with herbicide program; TERRAMAR added in tank mix at 1 pint/acre



**GSP** 

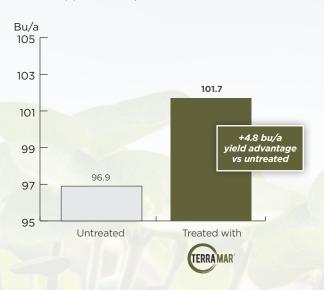


GSP + TERRAMAR

Note: TERRAMAR applied June 12th, 2022. Photo taken July 11, 2022.

### Soybeans - Cozad, NE

TERRAMAR foliar-applied at 1 quart/acre at R1



### **Foliar Applications on Wheat**

### Irrigated Wheat - Imperial, NE

TERRAMAR applied at 2 qts/acre with grower's standard topdress program (GSP)





Note: TERRAMAR applied April 1, 2022. Photos taken May 11, 2022.

#### Irrigated Wheat - Imperial, NE

TERRAMAR applied at 2 qts/acre with grower's standard topdress program (GSP)



Notes: Crop harvested July 6-7, 2022. Precipitation of 7.3" from October 2021 to harvest, which was 7.5" less than the 15-year average for this field.



# At a Glance

Application	• Foliar	
	Marine-Based Technology –     Metabolite-based compounds derived from biologically converted kelp (Ascophyllum nodosum)	
Key Ingredients	<ul> <li>Carbon-Based Technology – Key carbon derivatives and metabolic compounds derived from biologically converted leonardite</li> </ul>	
	<ul> <li>Soluble potash (4.00% K<sub>2</sub>O) derived from potassium acetate</li> </ul>	
Key Features & Benefits	Enhances nutrient uptake while providing key carbon derivatives for additional energy to optimize plant performance	
	<ul> <li>Improves crop tolerance to abiotic stressors such as heat, drought, salt and cold</li> </ul>	
	<ul> <li>Highly soluble and compatible with a broad range of liquid fertilizers, insecticides, herbicides and fungicides</li> </ul>	



## **Uses and Rates**

Application	Timing	Recommended Rate	Notes
Liquid Foliar	<ul> <li>With early Post herbicide</li> <li>With lateseason fungicide</li> </ul>	1-2 quarts/ acre	A spray carrier volume of 10-20 gallons per acre is recommended. Use of an adjuvant is encouraged for maximum dispersal and leaf adherence.

NOTE: Please see TERRAMAR label for additional details. Regular applications are important for maximizing crop potential during unexpected stress.



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