



# UNIBEST Ag Manager™

## ACQUIRING PRECISION SOIL DATA



US Patent 8,763,478  
US Patent 9,709,471  
Patent Pending's  
\*Please refer to UNIBEST's Data  
Liability Statement for all conditions

# UNIBEST AG MANAGER™

## Predictive Soil Testing & Modeling

- Simultaneously Adsorbs 14 Different Plant Nutrients
- Quantifies Soil Nutrient Release Characteristics (Lbs/A/Day) In The Effective Rooting Zone

## Nutrient Availability

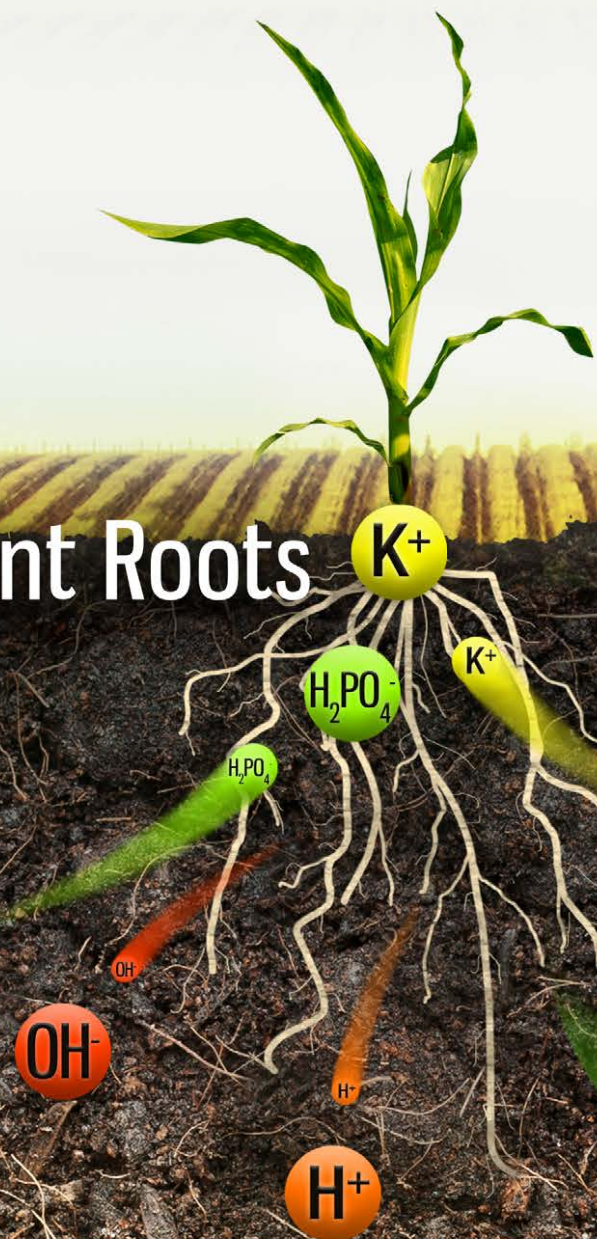
UNIBEST Ag Manager™ only adsorb nutrients from the soil if they are in forms and amounts available for root uptake.

UNIBEST Ag Manager™ values reflect the active, dynamic components of each soil medium and its bioavailability system as it functions over time.

Methods that extract soil chemicals with other chemicals do not reflect how elements in a natural soil environment respond to continuous removal by biological activity over time.

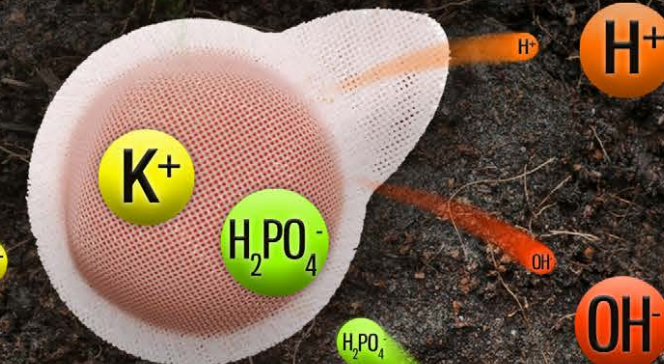
UNIBEST uses FIELD-MOIST SOILS to measure nutrient availability to a crop where traditional soil testing methods dry and grind soils, two processes which change the physical and chemical characteristics of a particular soil.

Plant Roots



Simulates Root Uptake Dynamics

UNIBEST Ag Manager™



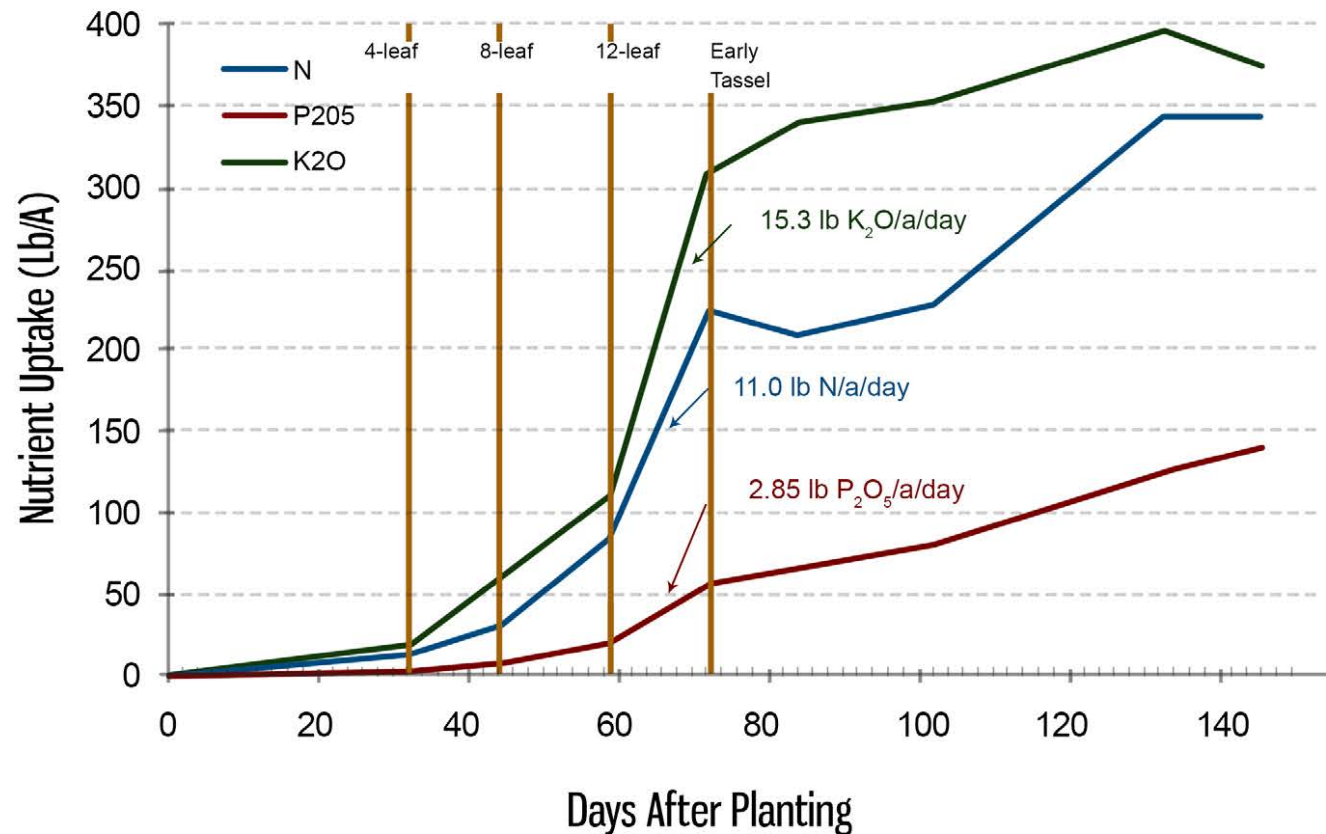
NO<sub>3</sub>-N, NH<sub>4</sub>-N, P, K, Ca, Mg, S, Fe, Mn, Cu, B, Zn, Na & Al

# Crop Nutrient Acquisition Rates Lbs/A/Day

Published research from plant measurement's provides data associated with crop acquisition requirements (lbs/A/Day) necessary at specific growth stages.

To Maximize yield & quality, crops depend on soils to supply specific levels of available nutrients at key growth stages to match nutrient uptake demands.

**Nutrient Uptake For High Yield Corn**  
(R. Flannery - 308 Bu/A)



# UNIBEST Ag Manager™

## A Predictive Measurement of Lbs/A/Day At The Soil Level

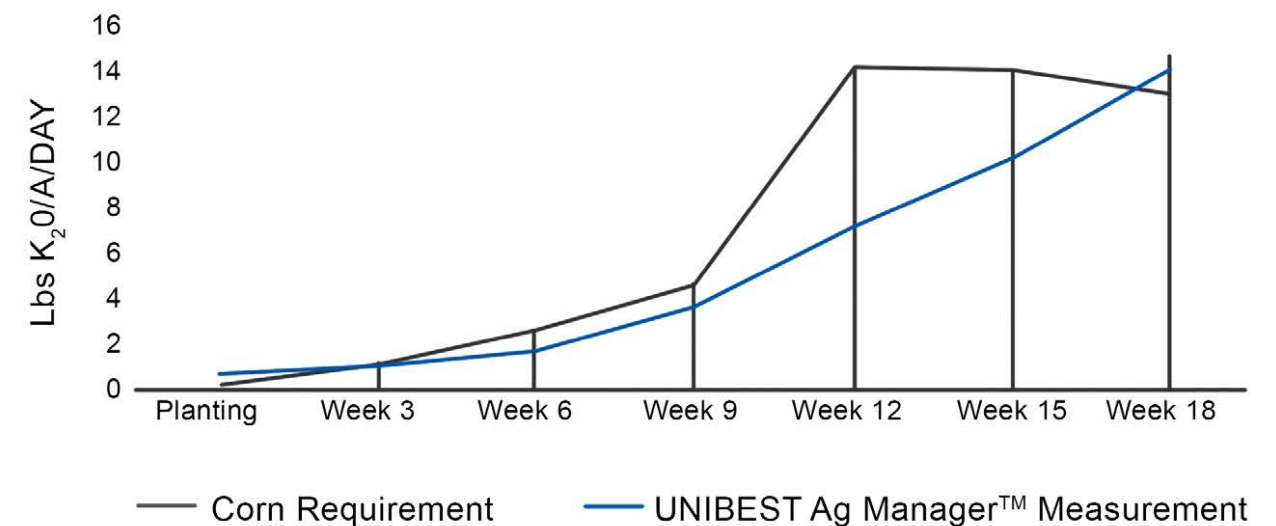
UNIBEST Ag Manager™ blends specific crop nutrient acquisition requirements with predictive soil level release characteristics to provide the precision data required for the future of precision agriculture.

A standard measurement of total nutrients in the soil does not identify a soils ability to release those nutrients in forms and amounts to match plant-uptake demand.



UNIBEST Ag Manager™ Analysis (Lbs/A/Day) provides the only measurement of a soils ability to supply these nutrients to meet nutrient acquisition requirements (Lbs/A/Day) by crop.

## Potassium (K) Management



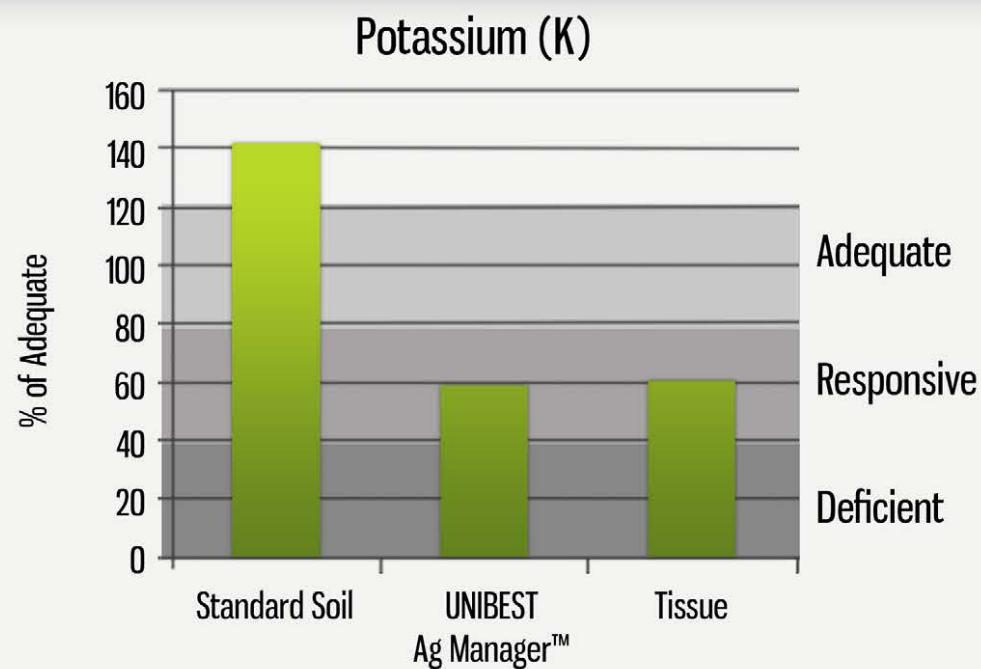
It's not the total amount of nutrient in a soil, but that soils ability to release nutrients at a rate that matches plant uptake demands at critical growth stages.

# Standard Soil Analysis Results Compared to UNIBEST Ag Manager™

What management decision would you make with only the standard soil data?

Standard Soil Test	Unit	SOILS		
		ALP 0915	ALP 1108	ALP 1113
Ammonium Acetate K	ppm	32	165.3	479
<i>Substantially different in Soil K Values</i>				
UNIBEST Ag Manager™ Resin K	ppm	18.17	35.98	33.11
<i>Similar Available K Values</i>				

Although the 1108 and 1113 ALP Soils have substantially different K values quantified by conventional extraction methods, the ability of the two soils to supply available K in a fashion that matches plant uptake demand are quite similar.



UNIBEST Ag Manager™ has been proven to predict plant-tissue nutrient levels by 2-4 weeks, making it the leading indicator to plant nutrition.

# BRIDGING THE GAP

UNIBEST Ag Manager™ bridges the gap between the two conventional testing methods by revealing only the plant-available portion of the total nutrient pool.



STANDARD SOIL TEST results provide the total amount of nutrients in a particular soil.

UNIBEST AG MANAGER™ measures the amount of those nutrients that are available to the plant during the time it is growing.

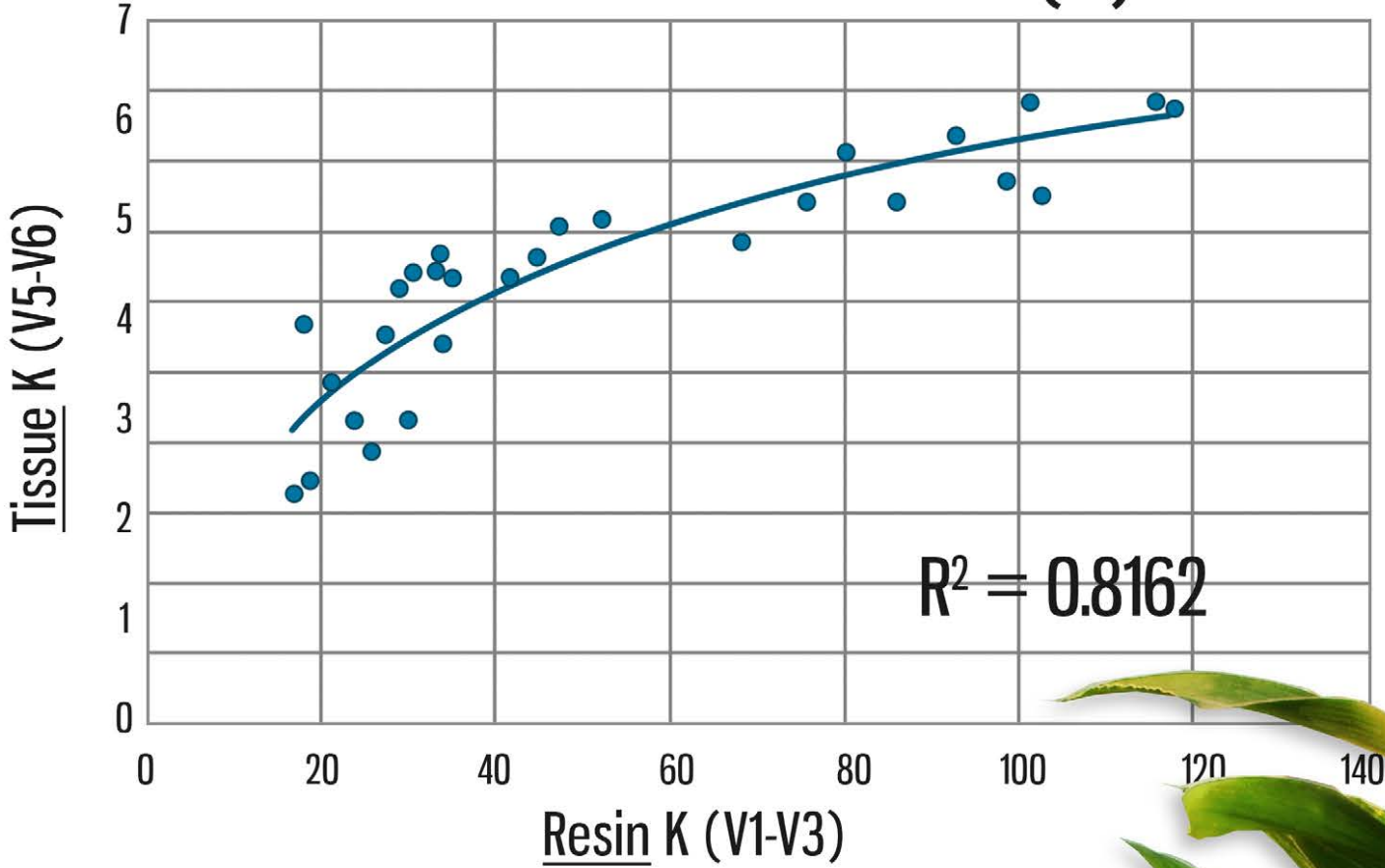
PLANT TISSUE TEST values provide the total amount of available nutrients that are absorbed by the plant during the time it is growing.

# UNIBEST Ag Manager™ Predicts Tissue Nutrient Levels

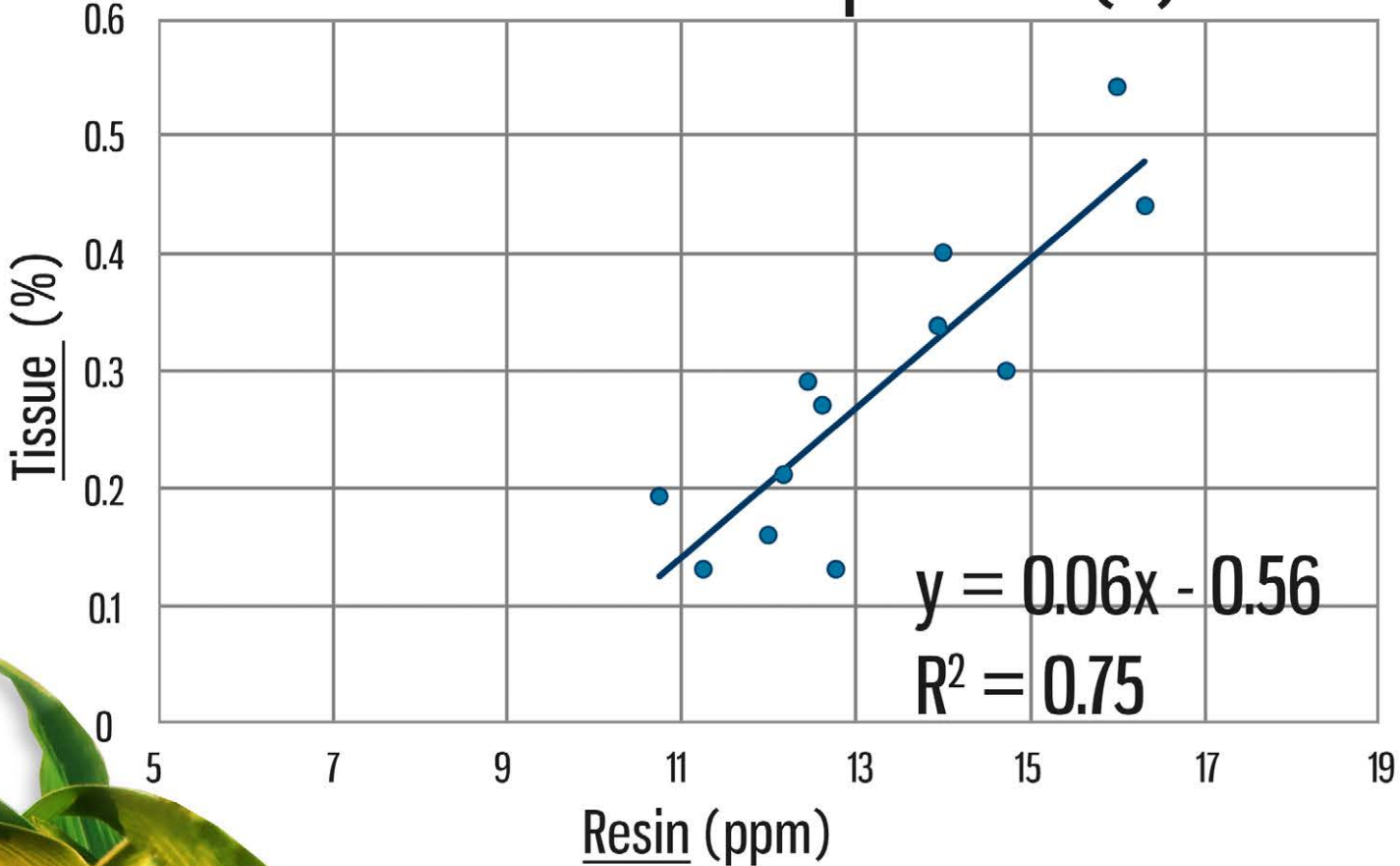
LEADING INDICATOR

Predicting A Plants Nutrient Status by 2-4 Weeks

### Corn Potassium (K)



### Potatoes Phosphorus (P)

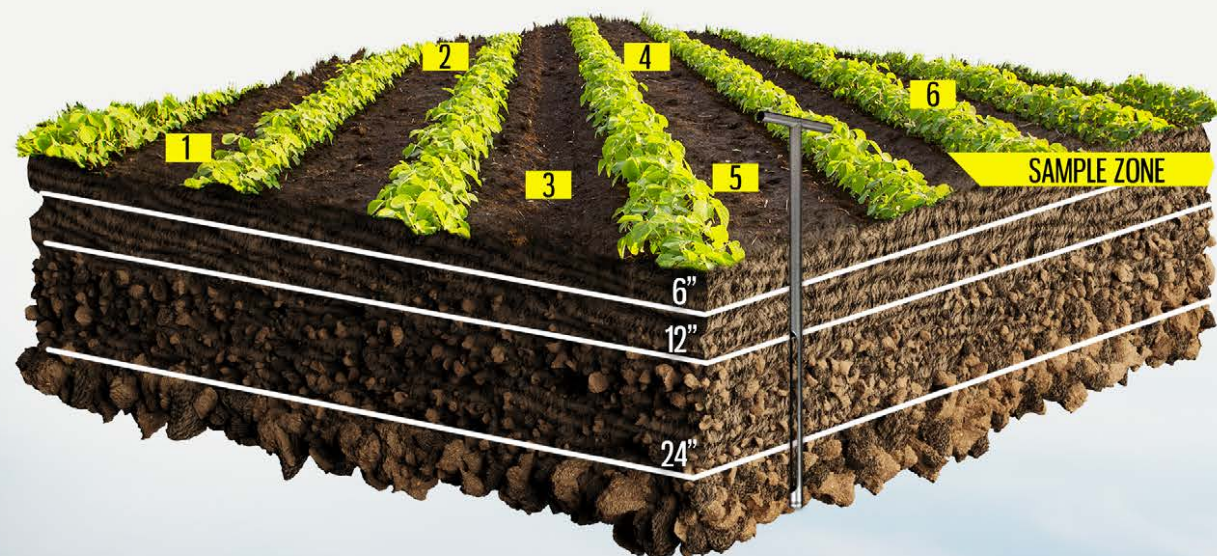


# Get Started with UNIBEST Ag Manager™

## Sample Collection & Preparation

### Collect Soil From Field/Zones

Sample depths should represent the Effective Rooting Zone (Area in-which 75% of the rooting mass will occupy at peak uptake)



Send Sample(s) to A Licensed UNIBEST Ag Manager™ Lab or Acquire UNIBEST Ag Manager™ Sample Kits To Prepare Your Own Sample(s)

## Laboratory Analysis



ONE METHOD - regardless of soil type

## Make Critical Fertility Management Decisions

### Variable Rate Applications

#### 4R's

- Right Source
- Right Rate
- Right Time
- Right Place



# UNIBEST Ag Manager™ Report

File Formats: PDF, Excel & CSV

40+ Crops for Crop Specific Report Formats  
 Non-Crop Specific Report Formats  
 Cover the Majority of Crops  
 & Nutrient Requirements

Optimal
Responsive
Low

## Parts Per Million

- Crop Specific Sufficiency Range - developed through correlation & crop acquisition requirements
- Sample Results (ppm) By Field and Zone
- Color Coded Results for Quick Evaluation

### PPM

Nutrient:		Total-N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	P	K	Ca	Mg	S	Fe	Mn	Zn	Cu	B	Al	Na	K:Mg	K:Ca
0-8" Sufficiency Range (ppm):		40-70	-	-	6-23	31-95	60-225	20-50	6-13	0.38-1.5	2.5-5	0.09-0.18	0.05-0.15	0.15-0.3	1-6	0.5-25	1-2	
SAMPLE ID	DEPTH	RESULTS																
Zone 1	0-8"	6.00	4.50	1.50	10.37	44.20	107.00	33.70	6.19	0.70	1.79	0.08	0.03	0.06	2.15	7.34	1.31	0.41
Zone 2	0-8"	10.00	8.90	1.10	6.54	24.61	121.00	25.13	9.58	1.10	2.12	0.05	0.05	0.10	2.22	6.56	0.98	0.20

## Pounds Per Acre

- Crop Specific Sufficiency Range (lb/ac) for Crops In Data Base - ppm sufficiency range converted to available lb/ac
- Available lb/ac By Field and Zone
- Color Coded Results for Quick Evaluation

### Available lb/ac

Nutrient:		Total-N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Ca	Mg	S	Fe	Mn	Zn	Cu	B
0-8" Sufficiency Range (lb/ac):		107-187	-	-	80-305	279-855	400-1500	133-333	27-59	4-16	27-53	0.96-1.92	0.2-0.6	0.6-1.3
SAMPLE ID	DEPTH	RESULTS												
Zone 1	0-8"	16.00	12.00	4.00	137.51	397.68	713.33	224.67	28.06	7.47	19.09	0.85	0.13	0.26
Zone 2	0-8"	26.67	23.73	2.93	86.72	221.42	806.67	167.53	43.43	11.73	22.61	0.53	0.21	0.43

## Pounds Per Acre Per Day

- lb/ac/day Sufficiency Range at Peak Uptake for The Crop - Published Data & Scientific Journals
- lb/ac/day Sample Results Measured Against Sufficiency Range
- Color Coded Results for Quick Evaluation

### 0-8" Available lb/ac/day

Nutrient:		Total-N	NO <sub>3</sub> -N	NH <sub>4</sub> -N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Ca	Mg	S	Fe	Mn	Zn	Cu	B
Corn Peak Req. (lb/ac/day):		6.5-11	-	-	0.8-2.1	5-15.3	-	-	0.8-1.7	-	-	-	-	-
SAMPLE ID	DEPTH	RESULTS												
Zone 1	0-8"	0.96	-	-	1.27	7.10	-	-	0.83	-	-	-	-	-
Zone 2	0-8"	1.60	-	-	0.80	3.95	-	-	1.28	-	-	-	-	-

## UNIBEST Recommendation

- Amount of Nutrient Required to Adjust Soil by The Required ppm In Order to Match Crop Acquisition Requirements
- Includes:
- Fertilizer Efficacy Parameters
  - Crop Acquisition Requirements
  - Correlation to Tissue

### UNIBEST Recommendation lb/ac

SAMPLE ID	Yield Goal	Nutrient:										
		Total-N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Ca	Mg	S	Fe	Mn	Zn	Cu	B
Zone 1	200 bu/ac	157	-	-	-	-	6	-	4.90	0.40	0.18	0.49
Zone 2	200 bu/ac	142	16	159	-	-	-	-	1.40	1.10	0.10	0.30

# UNIBEST Ag Manager™

## Industry Leading Soil Nutrient Data From The Farm

- Zone or Grid Samples of The Effective Rooting Zone
- Pounds per Acre per Day (lbs/A/Day)
- Pounds per Acre (lb/A) Measurement of Available Nutrients

## Value Added Understanding of Nutrient Deficits/Requirements

- Maximize Soil(s) Available Nutrient Status to Match Crop Growth Demands
- Predictive Indicator to A Plants Nutrient Status Later In The Field

## Nutrient Recommendations to Maximize Yield & Quality - Delivered Through:

- GIS Software Partnerships
- or Data Directly From The Laboratory



Let UNIBEST Ag Manager™ help you achieve your next yield goal.





UNIBEST International  
500 Tausick Way  
Walla Walla, WA 99362

[www.unibestinc.com](http://www.unibestinc.com)

**Agronomic/Technical Support**  
Kristopher J. Borgman, *President of Agronomy*  
E-mail: [kborgman@unibestinc.com](mailto:kborgman@unibestinc.com)  
Cell: 509-386-7881

Dr. James A. Stottlemyre, *COO*  
E-mail: [jstottlemyre@unibestinc.com](mailto:jstottlemyre@unibestinc.com)  
Cell: 509-531-0200

Brennan A. Ingram, *VP of Business Development*  
E-mail: [bingram@unibestinc.com](mailto:bingram@unibestinc.com)  
Cell: 360-624-3458

