
MONTY'S
PLANT & SOIL PRODUCTS
TRUSTED PARTNERS.
PROVEN SOLUTIONS.
POCKET GUIDE

CONTENTS

About Monty's

Monty's Plant Food has been pioneering advancements in the plant and soil enhancement product manufacturing industry since 1997. Founded by Montrose "Monty" Justice, an avid and award-winning gardener with a zest for life and an inquisitive character, Monty's products are developed to be the best quality plant food for agriculture, home and garden, turf, and hemp.

By utilizing proprietary technology, Monty's harnesses the power of purified humics and combines them with traditional macro and micro nutrients to develop innovative plant and soil solutions that are productive, economically feasible, environmentally sound and maximizes yields. More than twenty five years later, Monty's retains its founder's innovation, perseverance and spirit as a leader in the field of humics and soil health.

MONTY'S ACTIVATED HUMIC TECHNOLOGY

Farmers around the country are beginning to discover the value of humics. Humics are basically organic substances that work as soil catalysts. Not all humics are created equal, nor do they perform the same.

Monty's understands the right ratio of humic substances that maximize plant growth. Our engineered humic product stimulates all three soil health properties – biological, chemical, and physical – causing dramatic differences in soil, roots, and crops. Monty's understands the importance of that relationship and how it impacts the success of the plant's growth.

THIS is the Monty's edge!

BIOLOGICAL. Living organisms in the soil means... Increased biological activity

- ✓ Serves as a food source for microbes
- ✓ Converts and releases nutrients
- ✓ Builds organic matter and humus
- ✓ Better seed germination
- ✓ Early root development
- ✓ Healthier soils

GEOLOGICAL. Soil Structure means... Increased geological activity

- ✓ Mineralizes soil particles
- ✓ Increases water holding capacity
- ✓ Reduces compaction
- ✓ Easier tillage performance
- ✓ Reduces soil loss
- ✓ Stronger plants
- ✓ Improves soil porosity

CHEMICAL. Interaction of soil nutrients and nutrient means... Increased chemical activity

- ✓ Unlocks tied-up nutrients
- ✓ Improves CEC
- ✓ Converts raw fertilizer to plant food
- ✓ Increased fertilizer efficiency
- ✓ Higher yields

Successful farming requires year-round focus. Monty's harnesses the power of activated humics and fulvics to develop innovative solutions that target the specific needs of your soil and plants at each stage of the growing season.

① REVITALIZE YOUR SOIL

Success starts with a healthy soil. Healthy soil means healthier crops and higher ROI.

② STABILIZE YOUR NUTRIENTS

Feed your plants and soil while controlling nutrient loss due to leaching.

③ OPTIMIZE YOUR PLANTS

Maximize your foliar applications with Monty's unique fertilities and micronutrients.

④ REMEDIATE YOUR SOIL

Get your soils ready now for the many challenges you will face next season!

Monty's has solutions to your growing challenges all season

Monty's humics and fulvic products provide a wide array of benefits to your plant and soil throughout the year. Each product's primary benefits are highlighted below with an overall focus on maximizing your ROI.

	Catalyzer	Monty's Liquid Carbon	Monty's Dri-Carbon	HumicPT	Humihance	Surge XD	Drivas	Humi-Till
① REVITALIZE								
Improves Overall Soil Health	•	•	•	•				
Reduces Soil Compaction	•	•	•	•				
Reduces Salt Toxicity	•	•	•	•				
Supports Root Mass Development	•	•	•	•				
Improves Moisture Retention	•	•	•	•				
② STABILIZE								
Enhances Seed Germination					•			
Boosts Starter Applications					•	•		
Enhances Fertilizer Nutrient Efficiency					•			
Decreases Nutrient Loss					•			
③ OPTIMIZE								
Enhances Nutrient Uptake						•	•	
Decreases Nutrient Loss						•	•	
Increases Nutrient Bio availability						•	•	
Relieves Crop Stress						•	•	
④ REMEDIATE								
Enhances Residue Digestion				•				•
Unlocks Valuable Nutrients				•				•
Helps Reduce Disease				•				•

• *Primary Benefit*

Revitalize your soil and energize your crops with proven solutions from Monty's.

① REVITALIZE

STAGE: PRE-PLANT

PROBLEM: Soil compaction, residue buildup, high salt levels, tied-up and imbalanced nutrients, and herbicide carryover.

SOLUTION: Healthy soil is your plants' best resource and your foundation for maximizing yield. Monty's humic and fulvic products boost your soil's potential by reducing salts, breaking down residue buildup, and correcting nutrient imbalances. As soil biology improves, compaction problems ease and moisture management improves, too: giving you a stronger, more resilient base for all your plants.

Product Recommendation: MLC, Catalyzer, HumicPT and MDC

② STABILIZE

STAGE: AT PLANTING

PROBLEM: All nitrogen (dry or liquid), as well as phosphorus and potash, have high salt indexes. These high indexes contribute to issues with germination and root development and negative impact on the soil and biology. Loss of nutrients, especially nitrogen, through the soil profile making them unavailable to the crop.

SOLUTION: Feed your plants and soil, while controlling nutrient release and reducing loss due to leaching. Humihance fertilizer coating blends with all granular fertilizers, and delivers all the natural benefits of humics, improving nutrient uptake and mitigating fertilizer salts. Leading growers count on Humihance to maximize their fertilizer program for a better start, and a better season, year after year.

Product Recommendation: Humihance and Surge XD

③ OPTIMIZE

STAGE: FOLIAR

PROBLEM: Some liquid foliar fertilizers are less effective delivering nutrients to the plant.

SOLUTION: Take advantage of your foliar applications to give your plants a nutrient boost. Whether you're applying nutrients, insecticide, herbicide, or fungicide, add the power of our humics and fulvics to your tank for a supercharged spray that goes right to plant tissue for extra growth support. Maximized nutrients mean healthier crops and higher ROI.

Product Recommendation: Drivas, Surge XD

④ REMEDIATE

STAGE: POST HARVEST

PROBLEM: Residue build-up, especially from stacked hybrids; soil compaction; mold, fungi, and disease; high salt levels; tied-up and imbalanced nutrients; and herbicide carryover.

SOLUTION: Solve next season's problems before they start. Our biologicals and activated humics speed up residue breakdown which helps eliminate mold, fungi, and any disease in your residue. They also help clear up herbicide carryover while conditioning soil to help make nutrients more readily available for planting next season. For added remediation benefits, include MLC.

Product Recommendation: Humi-Till, HumicPT, and MLC

PRODUCTS

Monty's Provides Solutions!

SOIL AMENDMENT

Better soils, better crops

Monty's Soil Amendment products are designed to improve the overall health and vitality of the soil.

Products impact conditions such as compaction, aeration, organic matter levels, moisture management, and the breakdown of plant residue.

- **Monty's® Liquid Carbon™** helps improve and maintain the condition of your soil
- **Catalyzer™** helps reduce soil compaction and improve overall soil health
- **Monty's® Dri-Carbon™** improves your soil in an affordable, low-dose, dry formulation
- **HumicPT™** helps create the ideal soil environment with its unique combination of humics and microalgae
- **NanoBind®** works to give you rapid results and high microbial populations, while addressing salinity issues
- **Humi-Till®** helps break down crop residue by releasing nutrients for crop uptake, creating a healthier soil
- **Humi-Till® Activator** for residue management

Growers have used Monty's Soil Amendment products on soils ranging from heavy clays to light sand. This season, treat your soil in the spring before planting for results you will notice all season long.

Available in 2.5, 30, 275 gallon—and bulk sizes. For more information, contact your Monty's representative, dealer, or visit **www.montysplantfood.com**.

MONTY'S® LIQUID CARBON™

Proprietary Activated Humic Technology

- Reduces soil compaction
- Improves overall soil health
- Easy application during burn down
- Enhances micronutrient uptake
- Enhances breakdown of plant residue
- Tank-mix flexibility for year-round use

ACTIVE INGREDIENTS

Soil Amending Ingredients:

Humic Acids* 2%

Derived from Brown Coal

APPLICATION RATES

GENERAL: Apply at varying rates depending on purpose or desired result. For general soil conditioning, apply 2 quarts per acre directly to soil in fall and early spring. May also be applied at the same rate at pre-plant, planting, or for Residue Management. Apply 1 quart per acre when foliar applying with liquid nitrogen or other fertility products. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 gallons per acre directly to soil in fall and early spring. Monty's high-yield program can vary for crops, application rates and timing. If you are interested in a high-yield program, contact your Monty's representative.

** Monty's uses only the HPTA Method for determining our humic and fulvic acids levels (ISO 19822). Other manufacturers may use less reliable methods. Ask your Monty's representative for more information.*

CATALYZER

Monty's Concentrated Humics

- Proprietary, activated humics and fulvics found in MLC
- Concentrated soil conditioner
- Concentrated, so it reduces application, storage, and transportation costs ... increasing your ROI

ACTIVE INGREDIENTS

Soil Amending Ingredients:

Humic Acids* 2%

Fulvic Acids 0.7%

Derived from Brown Coal

APPLICATION RATES

GENERAL: Can be used in-furrow, foliar, 2×2, and y-drop. Apply at varying rates depending on the purpose or desired result. For general soil conditioning, apply 2 quarts per acre directly to soil in fall and early spring. May also be applied at the same rate at pre-plant, planting, or for Residue Management. Apply 1 quart per acre when foliar applying with liquid nitrogen or other fertility products. **HIGH YIELD:** Apply at a rate of 1-2 gallons per acre directly to the soil in fall and early spring. Monty's high-yield program can vary for crops, application rates, and timing. Best if used with other Monty's products including starters, foliars, micronutrients, and biologicals. See label for more detailed information. If you are interested in a high-yield program, contact your Monty's representative.

** Monty's uses only the HPTA Method for determining our humic and fulvic acids levels (ISO 19822). Other manufacturers may use less reliable methods. Ask your Monty's representative for more information.*

MONTY'S® DRI-CARBON™

Liquid Carbon in Dry Form

- Offers the same benefits growers have relied on from Monty's Liquid Carbon, only in a granulated product
- Enhanced micronutrient uptake
- Improved soil-moisture retention
- Catalyst for microbial activity
- Readily soluble with moisture

ACTIVE INGREDIENTS

Soil Amending Ingredients:

Humic Acids* 49%
36% Organic Carbon

Derived from Brown Coal

APPLICATION RATES

GENERAL: Apply at 10 lbs/ac. Can be applied with dry fertilizer. For crop specific application information, contact your representative. **HIGH YIELD:** Apply at 20-30 lbs/ac. Can be applied with dry fertilizer.

** Monty's uses only the HPTA Method for determining our humic and fulvic acids levels (ISO 19822). Other manufacturers may use less reliable methods. Ask your Monty's representative for more information.*

HUMIC PT™

Humics & Microalgae for an Ideal Soil Environment

- Reduces soil compaction
- Improves overall soil health
- Improves moisture management
- Enhances micronutrient uptake
- Enhances breakdown of plant residue
- Can be applied during burn down
- Feeds diverse range of beneficial microbes with inert microalgal superfood
- Increases microbial activity in all soil types
- Can be tank-mixed for year-round use

ACTIVE INGREDIENTS

Organic Matter 3.25%
Derived from Brown Coal and Algae

Humic Acids 1.5%
Derived from Brown Coal

Hydrophobic Fulvic Acids 1.0%
Derived from Brown Coal

APPLICATION RATES

GENERAL: Apply at varying rates depending on purpose or desired result. For general soil conditioning, apply 1 gallon per acre mixed in a minimum 15 gallons of water directly to soil in fall and early spring. May also be applied at the same rate at pre-plant, planting, or for residue management. Apply 1 gallon quart per acre when foliar applying with liquid nitrogen or other fertility products. Always conduct soil tests to determine nutrient levels and make needed amendments to assure good fertility levels in your soil. Monty's HumicPT is a supplement to your fertilizer program. Talk to your rep about more detailed application instructions.

NANOBIND™

Microbial Enhanced Soil Remediation

- Offers the same effectiveness and results a Monty's Liquid Carbon, enhanced with a microbial package and the science of nanotechnology
- Proprietary 1,000,000 + CFU beneficial microbial package
- Lowers salt buildup
- Remediate troubled fields
- Advanced nanotechnology

ACTIVE INGREDIENTS

Soil Amending Active Ingredients:

Lactobacillus culture 1,000,000-cfu/ml
Saccharomyces Boulardii culture..... 3,000,000-cfu/ml

APPLICATION RATES

GENERAL: Applied at various rates for different purposes; typically 2 qts/ac at pre-plant or for Residue Management. For crop specific application information, contact your representative.
HIGH YIELD: Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

"We could tell a huge difference in the treated and untreated areas of that field in the first year. We repeated the test the second year and were absolutely blown away. The corn was almost twice as tall, and the yield was over 50 bushels more than where we applied Monty's Carbon for just two years. It was the most impressive change I have seen in a field in the 25 years I have been in business! To make things even better, every Monty's employee that I have met has been extremely helpful and humble. They just want to help you improve your crops without any high-pressure sales."

BEN HUSHON
PARTNER, THE MILL

"We sprayed it on the corn stover planted and had about a 10 bushel bump this year at harvest. As good as the crop looked, we decided we needed to work on our corn, so we added it to our starter fertilizer—put a quart on the acre. Seed vigor and germination were superior this year. It did a really, really good job."

JOSH LANGDON
FARMER

HUMI-TILL®

Crop Residue Management

- Humi-Till is a unique blend of specific microbes and activated humics designed to decompose cellulose, lignin, and keratin in crop residue. Humi-Till breaks down crop residue—significantly reducing your planting problems and making the nutrients in crop residue available. Unlocks nutrients in crop residue
- Works to decompose cellulose, lignin, and keratin in crop residue
- Can be applied pre-plant or post-harvest, and with fall herbicide
- Minimize planting issues due to crop residue
- Works great on all types of residue including corn, wheat, soybeans, cotton, peanuts, and canola

ACTIVE INGREDIENTS

Soil Amending Active Ingredients:

Bacillus amyloliquefaciens	2.2 x 10^7 CFU/ml
Bacillus subtilis	4.4 x 10^7 CFU/ml
Humic Acids	1%

Derived from Brown Coal

APPLICATION RATES

GENERAL: Mix 3-4 quarts of Humi-Till in a minimum of 10 gallons of water/ac. Application rates/number of applications necessary will vary with soil conditions and the amount of crop residue. Once diluted, product must be used within 24 hours. If soil temperature is below 45°F, performance is significantly reduced. For faster results, apply with 1-3 gallons of liquid nitrogen/ac. **HIGH YIELD:** Apply 2-4 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

HUMI-TILL® ACTIVATOR

Crop Residue Management

- Offers all the benefits of Humi-Till... just add Monty's Liquid Carbon. It's convenient and flexible
- Unlocks nutrients in crop residue
- Works to decompose cellulose, lignin, and keratin in crop residue
- Can be applied pre-plant or post-harvest, and with fall herbicide
- Minimize planting issues due to crop residue
- Works great on all types of residue, including corn, wheat, soybeans, cotton, peanuts, and canola

ACTIVE INGREDIENTS

Soil Amending Active Ingredients:

Bacillus Amyloliquefaciens	2.2 x 10^7 CFU/ml
Bacillus Pumilis	2.2 x 10^7 CFU/ml
Bacillus Megaterium	2.2 x 10^7 CFU/ml
Bacillus Subtilis	2.2 x 10^7 CFU/ml
Bacillus Licheniformis	4.4 x 10^7 CFU/ml

APPLICATION RATES

GENERAL: Add entire packet to 275 gallons of Monty's Liquid Carbon and agitate until well mixed. Apply at the rate of 2 qts/ac mixed in a minimum 15 gallons of water. For faster results, apply with 1-3 gallons of liquid nitrogen/ac. **HIGH YIELD:** Monty's high-yield program can vary for crops, application rates and timing.

OMRI LISTED® For Organic Use

NOPA NON-GMO PROJECT VERIFIED

FEATURES AHT

FERTILITY

Results from over the top application

Monty's plant foods are designed to be used in conjunction with your current nutrient management program.

Each formula is specifically designed to provide the nutrients needed at particular growth stages: planting, vegetative, and reproductive. Whether you need to address specific nutrient deficiencies, combat heat, weather, or insect stress, or maximize production while keeping costs in check, Monty's has a foliar product for you.

- **Premium Blend** the key to success is the choice of phosphate
- **Seed Starter/Foliar** for quick emergence and early season vigor
- **All-Purpose Growth** for vigorous plant growth and crop stress management
- **Root & Bloom** root growth and seed and fruit development
- **Hay-Now®** hay and pasture liquid fertilizer
- **C795 Plus™** multi-use product ideal for seed and plant success
- **Agri-N™** foliar enhancement for green-up and energy
- **Midnight™** unique blend ideal for plant growth
- **Microhance®** is a nutrient package with six important nutrients
- **Nauxin™** essential nutrient package
- **Agrihance®** plant food for the starting, vegetative, or reproductive stages of growth
- **K28™** liquid potash nutrient supplement
- **Sulfur 15™** nutrient supplement
- **Calcium Plus™** nutrient supplement that provides chelated calcium directly to the plant

Available in 2.5, 30, 275 gallon—and bulk sizes. For more information, contact your Monty's representative, dealer, or visit **www.montysplantfood.com**.

PREMIUM BLEND

The Key to Success is the Choice of Phosphate

- A pop-up designed to get the seed out of the ground quickly to maximize a plant's development
- Uses 100% orthophosphate for rapid plant availability and a quicker start
- Contains Monty's activated humic technology
- 6-24-6 with 1% Sulfur and .05% EDTA Zinc
- Easier on your soil – contains no urea
- Sulfur and Zinc help increase the plant's stamina
- Complete package of nutrients, for fewer mixing issues and more value
- Can be applied in-furrow, 2x2, foliar or y-drop on corn, beans, and other crops

ACTIVE INGREDIENTS

Total Nitrogen (N)	6%
Available Phosphate (P_2O_5)	24%
Soluble Potash (K_2O)	6%
Sulfur (S)	1%
Zinc (Zn)	0.05%
Non-Plant Food Ingredients:	
Humic Acids	0.25%

Derived from Ammonium Hydroxide, Ammonium Thiosulfate, Phosphoric Acid, Potassium Hydroxide, and Zinc EDTA

APPLICATION RATES

GENERAL: At planting: 2-3 ga/ac for maximum efficiency. Early growth or with herbicides: foliar apply 2-4 quarts/ac. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 4-5 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

Do not mix with UAN. The addition of a compatibility agent may be required when mixing with Liquid Nitrogen or Potassium Carbonate at a high ratio. Monty's recommends administering a jar test prior to mixing.

SEED STARTER/FOLIAR

For Quick Emergence and Early Season Vigor

- A versatile liquid plant food that can be used at planting and as a foliar on any crop, enhancing plant development from germination through emergence
- Can be applied at planting, in-furrow, or 2x2
- Can be foliar applied to address crop stress
- Tank-mix flexible—can be applied with most herbicides, pesticides, and fungicides
- Low salt, pH balanced, safe and easy to apply. Will not burn and is non-corrosive
- Designed utilizing orthophosphoric acid (phosphoric acid) for rapid availability

ACTIVE INGREDIENTS

Total Nitrogen (N)	4%
Available Phosphate (P_2O_5)	15%
Soluble Potash (K_2O)	12%
Iron (Fe)	0.30%
Zinc (Zn)	0.05%

Derived from Ammonium Hydroxide, Urea, Phosphoric Acid, Potassium Hydroxide, Iron EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Standard dilution for both starter and foliar applications is 1-2 qts/ac diluted in water. Tank-mix flexible—can be applied with other fertility products and most pesticides, herbicides, and fungicides. The product can be applied through overhead and drip irrigation systems. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac diluted in water. Monty's high-yield program can vary for crops, application rates and timing.

ALL-PURPOSE GROWTH

Vigorous Plant Growth & Crop Stress Management

- Can be applied at planting in-furrow* or 2x2
- Can be foliar applied when overall plant growth is desired or to address crop stress
- Tank-mix flexible - can be applied with most herbicides, pesticides and fungicides
- Low salt, pH balanced, safe and easy to apply. Will not burn and is noncorrosive
- Designed utilizing orthophosphoric acid (phosphoric acid) for rapid availability

ACTIVE INGREDIENTS

Total Nitrogen (N)	8%
Available Phosphate (P_2O_5)	16%
Soluble Potash (K_2O)	8%
Iron (Fe)	0.30%
Zinc (Zn)	0.05%

Derived from Ammonium Hydroxide, Urea, Phosphoric Acid, Potassium Hydroxide, Iron EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Standard dilution for both starter and foliar applications is 1-2 qts/ac diluted in water. Tank-mix flexible—can be applied with other fertility products and most pesticides, herbicides, and fungicides. The product can be applied through overhead and drip irrigation systems. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac diluted in water. Monty's high-yield program can vary for crops, application rates and timing.

** Sensitive seeds may react adversely to the higher nitrogen content of this product. Consult your dealer or Monty's representative for more information.*

ROOT & BLOOM

Root Growth & Seed and Fruit Development

- Can be applied at planting in-furrow or 2x2
- Can be foliar applied when overall plant growth is desired or to address crop stress
- Low salt, pH balanced, safe and easy to apply
- Will not burn and is noncorrosive
- Tank-mix flexible—can be applied with most herbicides, pesticides, and fungicides
- Designed utilizing orthophosphoric acid (phosphoric acid) for rapid availability

ACTIVE INGREDIENTS

Total Nitrogen (N)	2%
Available Phosphate (P_2O_5)	15%
Soluble Potash (K_2O)	15%
Iron (Fe)	0.30%
Zinc (Zn)	0.05%

Derived from Ammonium Hydroxide, Urea, Phosphoric Acid, Potassium Hydroxide, Iron EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Standard dilution for both starter and foliar applications is 1-2 qts/ac diluted in water. Tank-mix flexible—can be applied with other fertility products and most pesticides, herbicides, and fungicides. The product can be applied through overhead and drip irrigation systems. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac diluted in water. Monty's high-yield program can vary for crops, application rates and timing.

HAY-NOW

Hay & Pasture Liquid Fertilizer

- Works on all grasses and legumes
- Can be applied with herbicides
- Easy to use and won't clog spray nozzles
- Enhances growth and root development

ACTIVE INGREDIENTS

Total Nitrogen (N)	7%
Available Phosphate (P_2O_5)	9%
Soluble Potash (K_2O)	5%
Sulfur (S)	4.5%
Iron (Fe)	0.2%
Zinc (Zn)	0.5%

Derived from Ammonium Hydroxide, Urea, Phosphoric Acid, Potassium Hydroxide, Ammonium Thiosulfate, Iron EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Foliar apply Hay-Now anytime from early spring green-up through fall. If cutting, apply Hay-Now after every cutting with 2-3 inches of regrowth. If grazing, apply Hay-Now every 30-45 days. Suggested application rate is 1-2 qts/ac.
For use on all grass hays and legumes. Winterize your hay and pasture fields with 2 qts/ac in the late fall. **HIGH YIELD:** Apply 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

C795 PLUS

Multi-Use Product Ideal for Seed & Plant Success

- Can be applied at planting, in-furrow, or 2x2. Can be foliar applied when overall plant growth is desired or to address crop stress
- Tank-mix flexible—can be applied with most herbicides, pesticides, and fungicides
- Low salt, pH balanced, safe and easy to apply Will not burn and is noncorrosive
- Designed utilizing orthophosphoric acid (phosphoric acid) for rapid availability

ACTIVE INGREDIENTS

Total Nitrogen (N)	7%
Available Phosphate (P_2O_5)	9%
Soluble Potash (K_2O)	5%
Sulfur (S)	4.5%
Iron (Fe)	0.2%
Zinc (Zn)	0.5%

Derived from Ammonium Hydroxide, Urea, Phosphoric Acid, Potassium Hydroxide, Ammonium, Thiosulfate, Iron EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Standard dilution for both starter and foliar applications is 32-64 ounces diluted in a minimum of 15 ga/ac. Product can be applied through overhead and drip irrigation systems. Sensitive seeds may react adversely due to the higher level of nitrogen. **HIGH YIELD:** Apply 1-2 ga/ac diluted in water. Monty's high-yield program can vary for crops, application rates and timing.

AGRI-N

Foliar Enhancement for Green-Up & Energy

- Quick plant energy
- Fast green-up
- Enhanced growth
- Reduced plant stress
- Can be tank-mixed with farm chemicals
- Complements other Monty's products
- 14-0-0

ACTIVE INGREDIENTS

Total Nitrogen (N)	14%
Sugar	26%

APPLICATION RATES

GENERAL: Row crops: Apply 1-3 qts/ac for green-up and energy. Hay fields and pastures: Apply 1-2 ga/ac as a nitrogen source during the growing season. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

MIDNIGHT

Unique Blend Ideal for Plant Growth

- Most effective when applied during the reproductive stage of soybeans or corn
- Provides additional energy
- May also be applied to address crop stress

ACTIVE INGREDIENTS

Total Nitrogen (N)	10%
Available Phosphate (P_2O_5)	8%
Soluble Potash (K_2O)	4%
Sulfur (S)	3%
Iron (Fe)	0.45%
Zinc (Zn)	0.4%

Derived from Ammonium Thiosulfate, Urea, Phosphoric Acid, Potassium Hydroxide, Iron EDDHSA, and Zinc EDTA

APPLICATION RATES

GENERAL: Monty's Midnight is most effectively applied during stages R1 and R2 on soybeans and V4 to V5 on corn. For other crops, apply during the early reproductive stage. Application guidelines for one growing season in the absence of a soil test or plant tissue test: 1 to 2 qts/ac. Do not mix or apply Midnight with other products which contain plant nutrients. Can be applied with most pesticides. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 3-4 qts/ac. Monty's high-yield program can vary for crops, application rates and timing.

MICROHANCE

Nutrient Package - Six Important Nutrients

- For the prevention and correction of micronutrient deficiencies
- Foliar apply at any stage of growth
- Great tank-mix flexibility with herbicides, insecticides, or fungicides
- 5 micronutrients used by the plant to enhance metabolism
- Nitrogen to enhance growth and green-up
- Apply during growing season to help prevent stress

ACTIVE INGREDIENTS

Total Nitrogen (N)	3%
Sulfur (S)	1%
Boron (B)	0.25%
Iron (Fe)	0.15%
Manganese (Mn)	0.25%
Zinc (Zn)	0.25%

Derived from Aqueous Ammonia, Urea, Sulfuric Acid, Boric Acid, Iron EDTA, Manganese EDTA, and Zinc EDTA

APPLICATION RATES

GENERAL: Foliar apply 1-2 qts/ac. Can be applied by itself, in addition to a starter, or with many other products including herbicides, insecticides, and fungicides. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 3-4 qts/ac. Monty's high-yield program can vary for crops, application rates and timing.

NAUXIN

Essential Nutrient Package

- Foliar apply to any crop, at any stage of growth
- Nutrients used by the plant to enhance metabolism
- Nitrogen to enhance growth and green-up
- Apply during growing season to help prevent stress
- Tank-mix flexibility with insecticides, fungicides, and herbicides, including Engenia,® Enlist,™ and XtendiMax®

ACTIVE INGREDIENTS

Total Nitrogen (N)	3%
Soluble Potash (K_2O_5)	4%
Sulfur (S)	1%
Boron (B)	0.25%
Iron (Fe)	0.25%
Manganese (Mn)	0.25%
Zinc (Zn)	0.25%

Derived from Urea, Potassium Thiosulfate, Potassium Acetate, Boric Acid, Iron EDDHSA, Manganese EDTA, and Zinc EDTA

Contains Non-Plant Food Ingredients:

Glucose	6.5%

APPROVED FOR USE WITH
Engenia®
Enlist®
XtendiMax®

K28 LIQUID POTASH

Liquid Potash Nutrient Supplement

- Essential in photosynthesis
- Involved in regulating the opening and closing of leaf stomata
- Regulates CO2 uptake
- Involved in the regulation of water in plants
- Component of the plant's protein and starch synthesis
- Important in the activation of many growth related enzymes in plants

ACTIVE INGREDIENTS

Soluble Potash (K_20).....28%

Derived from Potassium Acetate

APPLICATION RATES

GENERAL: Mix in a minimum 10 gal of water/ac when applying.

- Corn: Early vegetative stage—1-2 qts/ac
- Cotton: 1 qt/ac with any application from bloom through boll set. May be applied 3-5 times per season
- Soybeans: 3rd to 4th trifoliate—1 qt/ac; Early Pod set—1 qt/ac
- Wheat: Apply 1-2 qts/ac prior to heading

HIGH YIELD: Apply in-furrow, 2x2, or Y-drop at a rate of 2-4 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

SULFUR 15

Nutrient Supplement

- An 8-0-0 foliar fertilizer with 15% sulfur
- Helps develop enzymes and vitamins in plant
- Promotes nodulation for nitrogen fixation by legumes
- Aids in seed production
- Is necessary in chlorophyll formation
- Is present in several organic compounds
- Sulfur & Nitrogen are both constituents of proteins and are associated with chlorophyll formation

ACTIVE INGREDIENTS

Total Nitrogen (N) 8%

Total Sulfur (S) 15%

Derived from Liquid Ammonium Thiosulfate

APPLICATION RATES

GENERAL: Mix in a minimum 10 gal of water/ac when applying.

- Corn: Early vegetative stage—1-2 qts/ac
- Cotton: 4-5 node stage or 1st or 2nd glyphosate application: 1 qt/ac; 9th node or after: 1 qt/ac
- Rice: Flag leaf—1 qt/ac
- Soybeans: 3rd to 4th trifoliate—1 qt/ac; Early pod set—1 qt/ac
- Wheat: Dormancy break—1 qt/ac

HIGH YIELD: Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

CALCIUM PLUS

Nutrient Supplement

- Chelated calcium readily available to plant
- Available calcium in plants to assist with nitrogen utilization
- Tank-mix flexibility
- Calcium has been shown to aid in developing improved cell function and strength which may improve standability and nitrogen utilization

ACTIVE INGREDIENTS

Calcium (Ca) 1%

Derived from Calcium EDTA

APPLICATION RATES

GENERAL: Foliar or soil applied at 1-2 qts/ac. For crop specific application information, contact your representative.
HIGH YIELD: Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

"I put Monty's Liquid Carbon with every application."

KEVIN KALB, MACC Group. Corn Warrior. Live To Farm. National Corn Yield Contest Winner

"I'm happy with the results of Nauxin I have seen on hail recovery, two years in a row. I had it on four different farms with hail, and the recovery has been impressive, to say the least. I definitely will be selling more in years to come."

ZACH PERLEBERG, Dealer

"We farm about 650 acres of corn, soybeans, wheat, and pasture. We use Monty's Liquid Carbon on our corn to reduce compaction and breakdown residue. It has given us higher yields and better soil health. Monty's products mix well, are cleaner, and are better products. Monty's has been a great return on our investment."

COLEY ROGERS, Farmer

"We applied Monty's (Hay-Now program) to our 5-acre hay field and within 2 weeks saw a real noticeable increase. First cutting we added granular fertilizer, then 2 quarts of Hay-Now. The second cutting was five weeks later... we saw 14 more bushels than the first cutting. First cutting we used granular fertilizer, and the grass was about 5" tall. We applied 2 quarts per acre of Hay-Now prior to the second cutting. Two weeks later, the grass was knee deep... 18-19" tall. Everyone loves it!"

JEFF HARDEGREE, Dealer

NUTRIENT MANAGEMENT

Improve the efficiency of your farming products

These products are designed to increase the efficiency of the products they are combined with, making nutrients more available to the soil and plant. Efficient mobilization of nutrients into the plant means healthier soil and plants and higher yields!

- **Surge® XD** Unique formulation of fulvic/humics to maximize delivery of nutrients
- **Drivas™** Unique formulation of fulvics to maximize delivery of nutrients
- **Humihance®** is Monty's easy-to-apply, humic-based fertilizer coating—designed to improve your fertilizer

Available in 2.5, 30, 275 gallon—and bulk sizes. For more information, contact your Monty's representative, dealer, or visit **www.montysplantfood.com**.

HUMIHANCE

Nutrient Supplement

- Can decrease nutrient loss while increasing nutrient efficiency availability
- Does not inhibit the soil's natural bacteria activity
- Can help reduce fertilizer salt toxicity
- Can improve organic matter conversion
- Can reduce soil compaction for better root development and planting conditions
- Can assist with moisture retention and improve nutrient uptake and is noncorrosive
- Can be used to stabilize Anhydrous Ammonia
- Can be used through Anhydrous Inductors

ACTIVE INGREDIENTS

Total Nitrogen (N) 1%

Derived from Ammonium hydroxide, Urea

Non-plant food ingredients:

Humic Acids 6%

Derived from Lignite

APPLICATION RATES

GENERAL: During the last step of the blending process, apply ½ gal/ton on the fertilizer. This product may be applied to fertilizer pretreated with Avail®, NutriSphere-N®, or Agrotain®. For crop specific application information, contact your representative. **HIGH YIELD:** Apply 1-2 ga/ton on fertilizer. Monty's high-yield program can vary for crops, application rates and timing.

Avail and NutriSphere-N are registered trademarks of Verdesian Life Sciences, LLC. AGROTAIN is a trademarks of Koch Agronomic Services, LLC.

SURGE XD

Extreme Delivery of Nutrients

- Designed to enhance nutrient uptake into the plant
- Apply directly to the plant
- Contains Monty's proprietary humics and fulvics
- Foliar apply with liquid macro and micronutrients
- Foliar apply with herbicides, fungicides, and insecticides
- Tank-mix flexible

ACTIVE INGREDIENTS

Fulvic Acid 0.45%

Humic Acids 1%

Derived from Brown Coal

APPLICATION RATES

GENERAL: Foliar apply at a rate of 1-2 qts/ac. Surge XD may be mixed with any grade of liquid fertilizer. Consult your local dealer for recommended rates for your particular region, soil type, fertilizer type and grade, and specific usage. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 ga/ac. Monty's high-yield program can vary for crops, application rates and timing.

DRIVAS

The Power Of True Fulvics

- Features Monty's proprietary, activated humic technology
- Pure fulvics means more nutrient driving power
- Designed to significantly enhance nutrient uptake into the plant
- Works as a chelator for nutrients
- Supports plant growth and flowering
- Foliar apply with liquid nutrients
- Foliar apply with herbicides, fungicides, and insecticides
- Tank-mix flexible regardless of pH

ACTIVE INGREDIENTS

Hydrophobic Fulvic Acids 0.7%

Derived from Lignite

APPLICATION RATES

GENERAL: Foliar apply at a rate of 1-2 quarts per acre. Drivas may be mixed with any grade of liquid fertilizer. Consult your local dealer for recommended rates for your particular region, soil type, fertilizer type and grade, and specific usage. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 1-2 gallons per acre. Monty's high-yield program can vary for crops, application rates, and timing. If you are interested in a high-yield program, contact your Monty's representative.

OMRI LISTED For Organic Use

FEATURES AHT

"Using Monty's on my tobacco has gained us about 200-300 pounds per acre; last season, my son used it and raised 3,400 pounds, and the plot right next to it only raised 2,900 without Monty's."

ANDY NEWTON, Farmer

"I have 8,000 acres of corn, wheat, soybeans, and barley, as well as 600 head of beef cattle. I have been using Monty's for the past 5 years. I use Monty's Liquid Carbon in the row. I am very pleased with increased production and how my crops look. I have seen increased bushels, more drought tolerance, and better root development. Monty's Liquid Carbon has been a good investment. It really helps on lower-producing soils and lower organic matter soils. It helps loosen soil. I have noticed the roots branch out more, are more vigorous, and penetrate the soil deeper. I have seen a 10-15 bushel increase in corn yields. I would recommend Monty's to everyone."

ZACH ROSE, Farmer

"I've been using Monty's products on my crops for more than eight years. Our soil tests show a proven response. Our CEC numbers have increased 50% since we started using MLC and Agri-Sweet FG! Using the Monty's program, our yields are consistently over 300 bushels for corn and 80 bushels for soybeans!"

ED MERSHON, Farmer

"Sprayed MLC on wheat in the fall. Probably had the best tillering we have ever had. Unbelievable tillering we have had and that has never happened."

JOHN SMITH, Farmer

SPECIALTY
Unique products and brands for unique needs

Monty's is in business to solve farmers' crop issues.

Our specialty products are designed to address specific issues and needs of today's innovative farmers in the quest for maximum yield. Talk to our team if you encounter a new problem and need a solution.

- **Agri-Sweet™ FG** refined sugar
- **Turf Power SRN™** 13-2-6 with micronutrients and humics
- **Calesco™** a water treatment for fertilizer, herbicide, pesticide, and/or fungicide applications
- **Multiplicity™** a dry source of microorganisms designed to help crops reach their full potential
- **NanoBoost®** assists herbicides by using the advanced science of nanotechnology
- **Sludge Relief** digestion aid

Available in 2.5, 30, 275 gallon—and bulk sizes. For more information, contact your Monty's representative, dealer, or visit **www.montysplantfood.com**.

AGRI-SWEET FG

Refined Sugar

- Can be used for any application where you are currently using molasses or sugar
- Tank-mix flexibility with farm chemicals
- Food source for soil microbes
- Quick, no-mess dilution
- Reduced nozzle problems
- Enhanced release of soil nutrients through microbial activity
- All-natural product

ACTIVE INGREDIENTS

Soil Amending Active Ingredients:

Fructose 24%
Glucose 31%

Derived from Corn Starch

APPLICATION RATES

GENERAL: Mix 2-4 quarts in a minimum of 15 gallons of water/ac. For crop specific application information, contact your representative. **HIGH YIELD:** Apply in-furrow, 2x2, or Y-drop at a rate of 2-4 ga/ac. Monty's high-yield program can vary for crops, application rates and timing. ***For a sugar source plus nitrogen, refer to Agri-N: Monty's sugar product with 14% added nitrogen.***

TURF POWER SRN

13-2-6 with Micronutrients & Humics

- Includes slow-release nitrogen and other important nutrients not typically found in conventional fertilizers... plus Monty's activated humics!
- Apply to any plant, at any stage of growth
- Can be used on all varieties of cool, transitional, and warm season turf in all growth phases
- Provides extended plant nutrition for controlled growth
- Slow release allows more balanced long-term benefits

ACTIVE INGREDIENTS

Total Nitrogen (N) 13%
Available Phosphate (P_2O_5) (Phosphoric Acid) 2%
Soluble Potash (K_2O) (Potassium Hydroxide) 6%
Sulfur (S) (Ammonium Thiosulfate) 1%
Iron (Fe) (EDTA) 0.15%
Manganese (Mn) 0.25%
Zinc (Zn) (EDTA) 0.1%

Non-Plant Food Ingredients:

Humic Acids 0.75%

Derived from Oxidized Lignite

APPLICATION RATES

GENERAL: Turf Power SRN is compatible with most herbicides and pesticides but should be jar tested prior to mixing in the tank. Do not mix concentrated components together prior to mixing with the appropriate amount of water. For specific application information, contact your representative.
HIGH YIELD: Monty's high-yield program can vary for crops, application rates and timing.

CALESCO

Specialty Water Conditioner

- A specialty water conditioner designed to prevent hard water scale buildup in pivot and drip irrigation systems
- Will bind with calcium, magnesium, and iron, preventing the formation of common hard water scale
- Can also be used to treat water prior to diluting fertilizers, herbicides, and pesticides; and minimizing insoluble solids that can form when minerals precipitate with phosphates (precipitated solids can inhibit uniform application rates and/or plug sprayer nozzles)
- Creates a stronger bond with Ca and Mg than typical AMS treatment
- The bond formed is water soluble and does not form a sulfate precipitate like AMS
- Unlike AMS, will bond with and remove interference from Fe
- Unlike AMS, forms a strong enough bond to stop Ca, Mg, and Fe precipitation with orthophosphate fertilizers
- Does not contain ammonia and is approved with Dicamba mixes

APPLICATION RATES

GENERAL: For most applications, a rate of 8 oz. per 100 gal of water is sufficient. Use the chart to determine precise application rates.

SUGGESTED GUIDELINES	
Calcium (PPM)	OZ / 100 GA
100	1
200	2
300	4
400	5
500	7
600	8
700	10
800	11
900	13
1,000	15
1,100	16
1,200	18

MULTIPLICITY

Dry Source of Microorganisms

- A dry package of microbial strains designed to promote early root development, plant stamina, and the overall health of the crop throughout the growing season. Can be used across a wide-range of agricultural settings
- Brings atmospheric nitrogen to the root area where it can become available to the plant
- Can solubilize insoluble forms of phosphorus making it available to the plant
- Enhance rhizosphere activity for better root development
- Synergizes the interactions between beneficial bacteria and fungi to do their best work
- A formulation of billions of microbes ready to help your crops reach their full potential

ACTIVE INGREDIENTS

A formulation of billions of microbes. See label for specific ingredients.

APPLICATION RATES

GENERAL: Multiplicity should be applied at the rate of 1 tsp/ac. Mix the required number of teaspoons of Multiplicity in one gallon of water. For example: to treat 25 acres, mix 25 teaspoons of Multiplicity in one gallon of water. After mixing, add to your tank. Multiplicity is tank-mix flexible with most agricultural products, and can be used as a pre-plant or pre-emergence soil spray, applied in furrow or foliar applied with chemicals and/or fertilizers. For foliar applications, final dilution rate should be 10-20 gallons of liquid/ac. For application through irrigation systems, contact your Monty's representative for more information. **HIGH YIELD:** Monty's high-yield program can vary for crops, application rates and timing.

NANOBOOST

Herbicide Booster

- Nanoboost assists herbicides by using the advanced science of nanotechnology to bind with herbicides and deliver them into the plant for a rapid, effective kill of troublesome weeds
- Maximize effectiveness of your current herbicide/ adjuvant program
- Low application rates for cost-effective use
- Better absorption performance
- Ideal complement for both burn-down and post-applied herbicides
- May prove beneficial when dealing with hard to control weeds such as marestail
- Tank-mix flexible—can be applied with most crop protection applications

ACTIVE INGREDIENTS

Proprietary blend of elemental compounds and derivatives	8%
Linear Ethoxylated Compound	1.5%

APPLICATION RATES

GENERAL: Nanoboost is tank-mix flexible and can be used with most herbicides once compatibility is confirmed with a jar test. For burn-down and post-applications use 3-5 oz/ac. For hard to control weeds, use a minimum of 4-6 oz/ac.

SLUDGE RELIEF

Microbial Agent for Organic Waste

- Sludge Relief is specifically formulated to help treat and maintain superior performance in waste lagoons, effluent tanks, or septic systems on your farm
- Consumes sludge and breaks down solids
- Controls odors
- Effective at 38˚ – 145˚ and in pH 5.0-5.9
- Reduces need for pumping
- Helps reduce BOD levels
- 1 trillion cfu formula

APPLICATION RATES

GENERAL: 10 gallons of Sludge Relief and 10 gallons of Monty's Liquid Carbon per 1,000,000 cubic feet as an initial treatment. After initial treatment, calculations will be required to determine a maintenance application of both products. Please refer to the Sludge Relief label or consult your representative for more information.

MICRONUTRIENTS

Microbial Agent for Organic Waste

BORON (10% B)

For Protein Synthesis, Cell Division, & Root Development

- Moves plant sugars up and down the plant daily
- Is essential for germination of pollen grains and growth of pollen tubes and for seed and cell wall formation
- Forms sugar-borate complexes associated with sugar translocation and is important in protein formation
- Available in 10% concentration

CoMoB (1.75% Co, 3.0% Moly, 0.50% B)

Cobalt (Co), Molybdenum (Mo), and Boron (B)

- A unique blend of micronutrients geared for maximizing plant growth
- Boron supports plant structure
- Molybdenum supports nitrogen fixation in legumes
- Cobalt is important for growth and metabolism

COPPER (7.5% Cu, 4% N)

Activates Plant Enzymes Required in Growth Process

- Necessary to chlorophyll formation in plants
- Catalyzes several other plant reactions
- Helps avoid sickly plants and failure to flower

IRON (4.5% Fe)

For the Prevention & Correction of Iron Chlorosis in All Crops

- A catalyst to chlorophyll formation
- Acts as an oxygen carrier
- Helps for certain respiratory enzyme systems

MAGNESIUM (2.5% Mg)

Activates Plant Enzymes Required in Growth Process

- Essential for photosynthesis
- Activator for many plant enzymes required in growth process
- Acts as a carrier of phosphorus in the plant
- Necessary for protein formation and in cell division

MANGANESE (6% Mn)

Essential for Cell Oxidation and Sugar Absorption

- Assists in chlorophyll production
- Affects lignin-building and is critical in preventing lodging/disease
- Accelerates germination and maturity, while increasing P and Ca
- Activates several important metabolic reactions and plays a direct role in photosynthesis by aiding chlorophyll synthesis
- Also available with Iron (Fe)

MOLYBDENUM (10% Mo)

Supplement to a regular Fertilization Program to Prevent and Correct Deficiencies

- Vital for the process of symbiotic nitrogen (N) fixation by rhizobia bacteria in legume root nodules
- Is needed to convert inorganic P to organic forms in the plant
- Is required for the synthesis and activity of enzymes

ZINC (9% Zn)

Increases Availability of Calcium (Ca) & Phosphorus (P)

- Improves assimilation of CO_2 in photosynthesis
- Improves the plant's metabolism and uptake of nitrogen
- Chelated for rapid absorption and utilization
- Aids synthesis of plant growth substances and enzyme systems
- Is essential for promoting certain metabolic reactions

NUTRIENTS ROLES

Primary, Secondary, and Micronutrients

Primary nutrients, including nitrogen (N), phosphorus (P), and potassium (K), are fundamental to crop growth and development. Nitrogen is vital for leaf and stem growth, protein synthesis, and overall plant vigor. Phosphorus supports root development, flowering, and fruiting, playing a crucial role in energy transfer and nucleic acid synthesis. Potassium regulates water uptake, enhances disease resistance, and improves stress tolerance, contributing to yield stability and quality. Balancing primary nutrient availability ensures optimal crop performance, yield potential, and agricultural sustainability, underscoring their indispensable role in crop nutrition and global food security.

Liebig's Law of the Minimum *states that the growth and productivity of a biological system, such as a plant or crop, are limited by the availability of the scarcest essential resource. According to this principle, even if all other necessary resources are abundant, growth will be constrained by the deficient resource. In essence, it highlights that the most limiting factor, often referred to as the "limiting nutrient," determines the overall productivity of the system. This concept has profound implications in agriculture, ecology, and various other fields, as it underscores the importance of identifying and addressing nutrient deficiencies to optimize productivity and yield.*

PRIMARY NUTRIENTS

Nitrogen (N)

- Essential for plant growth
- Nitrogen is essential in photosynthesis
- Directly responsible for creating protein content
- Nitrogen increases bushels of corn per inch of available water

Monty's Products: *Hay-Now, Humihance, Seed Starter, All-Purpose, Root & Bloom, Midnight, Microhance, Nauxin, Agri-N, and Sulfur 15*

Phosphorus (P)

- Plants absorb most of their P as their primary ortho-phos. (H_2PO_4)
- Plays a role in photosynthesis, respiration, energy storage and transfer, cell division and enlargement, and several other processes in the living plant
- Improves the quality of fruit, vegetable, and grain crops
- Helps roots and seedlings develop more rapidly
- Hastens maturity

Monty's Products: *Hay-Now, Seed Starter, All-Purpose, Root & Bloom, Midnight, Microhance, Nauxin, and Sulfur 15*

Potassium (K)

- Has a great impact on crop quality, kernel weight, kernels per ear, improved oil and protein content
- Influences water-use efficiency and improves drought tolerance
- Essential for protein synthesis
- Is involved in the activation of more than 60 enzyme systems (which regulate the rates of major plant growth reactions)
- Helps the plant overcome the effects of disease

Monty's Products: *Hay-Now, Seed Starter, All-Purpose, Root & Bloom, Midnight, Microhance, Nauxin, and Sulfur 15*

SECONDARY NUTRIENTS

Secondary nutrients, namely calcium (Ca), magnesium (Mg), and sulfur (S), are integral components of crop nutrition, often overlooked in favor of primary macronutrients. However, their significance cannot be understated. Calcium contributes to cell wall structure, enzymatic activities, and stress tolerance, reducing disorders like blossom end rot. Magnesium is crucial for chlorophyll synthesis, photosynthesis, and enzyme activation, enhancing plant growth and resilience. Sulfur is essential for protein synthesis, secondary metabolite production, and soil fertility. Ensuring adequate levels of secondary nutrients promotes healthy crop growth, improves yield and quality, and enhances agricultural sustainability in diverse cropping systems.

Calcium (Ca)

- Stimulates leaf and root development
- Strengthens plant structure
- Activates several plant enzyme systems
- Improves root growth conditions

Monty's Products:
Calcium Plus

Magnesium (Mg)

- Involved in photosynthesis
- Affects seed development
- Aids in phosphate metabolism, plant respiration, and the activation of many enzyme systems

Monty's Products:
Magnesium

Sulfur (S)

- Constituents of two of the 21 amino acids which form proteins
- Helps to develop enzymes and vitamins
- Aids in seed production
- Promotes nodulation for N fixation by legumes
- Is present in organic compounds
- Helps to avoid thin-stemmed and spindly plants

Monty's Products:
Hay-Now, Midnight, Microhance, Nauxin, and Sulfur 15

Soil and tissue testing are indispensable tools for farmers, providing critical insights into the nutrient status of their crops and the underlying soil conditions. By analyzing soil samples, farmers can identify nutrient deficiencies or imbalances, enabling targeted fertilization strategies to optimize crop growth and yield potential. Similarly, tissue testing allows farmers to monitor the nutrient uptake and health of their plants throughout the growing season, facilitating timely adjustments to management practices and ensuring optimal crop performance.

MICRONUTRIENTS

Micronutrients, though required in smaller quantities compared to macronutrients, play a crucial role in crop growth, health, and productivity. Elements like iron, zinc, manganese, copper, boron, molybdenum, and chlorine are essential for various physiological processes, including enzyme activation, photosynthesis, and nutrient uptake. Micronutrient deficiencies can lead to stunted growth, reduced yield, and poor crop quality, highlighting the necessity of balanced micronutrient management for sustainable agriculture. Incorporating soil and tissue testing, alongside targeted micronutrient fertilization, is essential to ensuring optimal crop nutrition, resilience, and profitability in diverse cropping systems.

Boron (B)

- Essential for germination of pollen grains
- For seed and cell wall formation
- Associated with sugar translocation and protein formation
- Helps to avoid stunted growth

Monty's Products:
Microhance, Nauxin, and Boron

Cobalt (Co)

- Is a trace element in plants
- Is a component of a number of enzymes
- Increases drought resistance of seeds
- Is important for nitrogen fixation in legumes
- Helps ensure maximum efficiency of plant activity

Monty's Products:
CoMoB

Copper (Cu)

- Necessary to chlorophyll formation in plants
- Catalyzes several other plant reactions
- Helps avoid sickly plants and failure to flower

Monty's Products: *Copper*

Iron (Fe)

- A catalyst to chlorophyll formation
- Acts as an oxygen carrier
- Helps for certain respiratory enzyme systems

Monty's Products: *Iron, Hay-Now, Seed Starter, All-Purpose, Root & Bloom, Midnight, Microhance, Nauxin, and Manganese (MnFe)*

Manganese (Mn)

- Plays a direct role in photosynthesis by aiding the plant's chlorophyll synthesis
- Accelerates germination and maturity while increasing the availability of P and Ca
- Deficiency symptoms appear on younger leaves
- Deficiencies may result from an imbalance with other nutrients such as Ca, Mg, and Fe

Monty's Products: *Hay-Now, Microhance, Nauxin, and Mn*

Zinc (Zn)

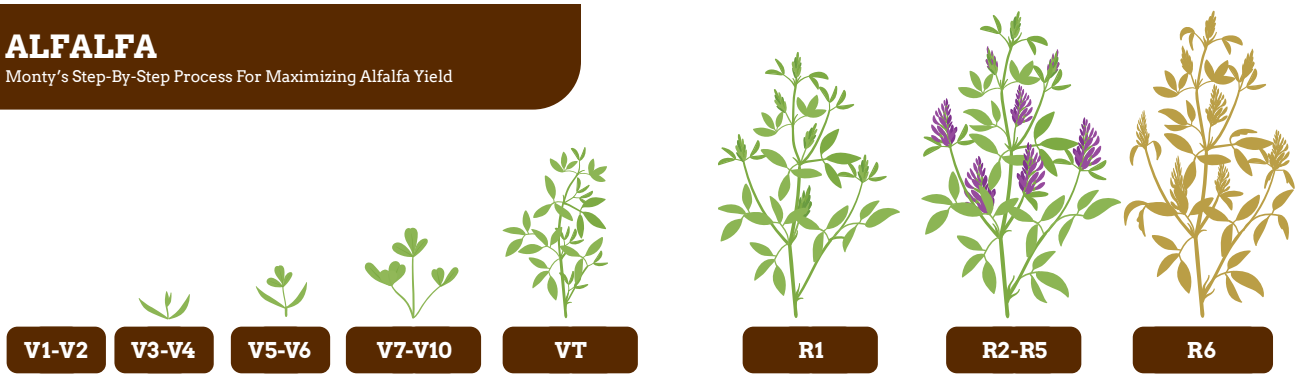
- Deficiencies tend to occur early in the growing season when soils are cold and wet
- Deficiencies will cause shortening of inner nodes and stunting of leaf nodes
- Aids in enzyme systems and is essential for certain metabolic reactions
- Aids synthesis of plant growth substances

Monty's Products: *Hay-Now, Seed Starter, All-Purpose, Root & Bloom, Midnight, Microhance, Nauxin, and Zinc*

CROP INFORMATION

ALFALFA

Monty's Step-By-Step Process For Maximizing Alfalfa Yield



MONTY'S RECOMMENDED PROGRAM

Pre-Plant

MLC: 2 qt/ac
Agri-Sweet FG: 2 qt/ac
Nauxin/Microhance: 2 qt/ac
Hay-Now: 2 qt/ac

Improves soil health and stimulates soil microbial populations

Vegetative

MLC: 2 qt/ac
Agri-Sweet FG: 2 qt/ac
Hay-Now: 2 qt/ac

May increase uptake of N application, buffer salt and pH

For optimum production, alfalfa requires 6.6-7.0 pH, while clovers and birdsfoot trefoil can withstand slightly more acidic conditions ranging from 6.0-6.5. Cool-season perennial grasses require a minimum of 5.8 for their optimum production, with warm-season and cool-season annuals typically require a minimum of 6.0 for their optimum production potential.

Bloom

Nauxin: 2 qt/ac
Surge XD: 1 qt/ac
Agri-Sweet FG: 2 qt/ac

Maximize yield

Winterization

MLC: 2 qt/ac
Agri-Sweet FG: 2 qt/ac
Hay-Now: 2 qt/ac

Residue management for next spring decreases soil compaction and increases soil microbial populations

Maintenance: Other products that can be used in alfalfa production: **MLC:** 2 qt/ac, **Humihance:** 2 qt/1 ton dry fertilizer, **Surge XD:** 2 qt/ac (Can be added to any herbicide/pesticide/fungicide application), **Microhance:** 2 qt/ac

ALFALFA Nutrient Deficiencies


Boron

Boron (B) symptoms develop in younger leaves and spread to older growth. Symptoms appear as small chlorotic spots that began to enlarge and coalesce to form white stripes.


Calcium

Calcium (Ca) deficiency appears first on the youngest leaf and spreads to older leaves. Tips of leaves turn pale and began to roll inwards. Leaves may twist back, tear off, or die. The base of the leaves will remain green.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining green.


Magnesium

Magnesium (Mg) appears on the middle leaves as green, yellow with yellow interveinal chlorosis that can turn to brown necrosis.

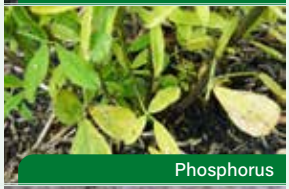

Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.

Nitrogen (N) deficient plants appear pale-green to yellow with necrosis/chlorosis and appear in older leaves.


Nitrogen

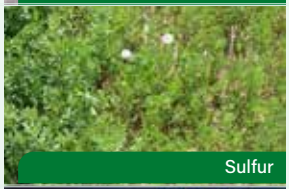
Phosphorus (P) may cause dark green coloration of the leaves and a purple color to the leaves. Older leaves may be dark yellow to orange or brown.


Phosphorus

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins.


Potassium

Sulfur (S) deficiency is characterized pale yellow color, uniform yellowing without necrosis.


Sulfur

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.

Zinc

ALFALFA Success in the Field

Hay

333% Increase
RESIDUE REDUCTION

Control	12
Humi-Till (2 qt/a)	28
Humi-Till (3 qt/a)	42
Humi-Till (4 qt/a)	52

Replicated field studies show that Humi-Till applied post-harvest significantly reduces plant residue withi 45 days after application.

Alfalfa Yield

280 Lbs/A
INCREASE

Control	4420
Monty's Program	4700

1st Cut Results - Lbs/Hay

Alfalfa yield was greater in Cuts 1, 2, and overall with the foliar fertilizer treatment. This advantage was 0.14, 0.14, and 0.30 tn dm/A, respectively. Alfalfa, using Monty's program, was taller overall, with a 1 inch advantage. In summary, Monty's program produced more tons of alfalfa compared to the standard dry fertilizer system.

Alfalfa: Relative Feed Value

122
R.F.V. INCREASE

Control	22
Monty's Program	144

Figures 1 & 2: Healthy, vibrant alfalfa fields utilizing Monty's program in Marshfield, Wisconsin, and Osage City, Kansas, respectively.

Figure 3: A fourth cutting of alfalfa after utilizing Monty's Dri-Carbon.

Figure 4: Monty's program implemented on this alfalfa in Grand Forks, North Dakota.


Figure 1

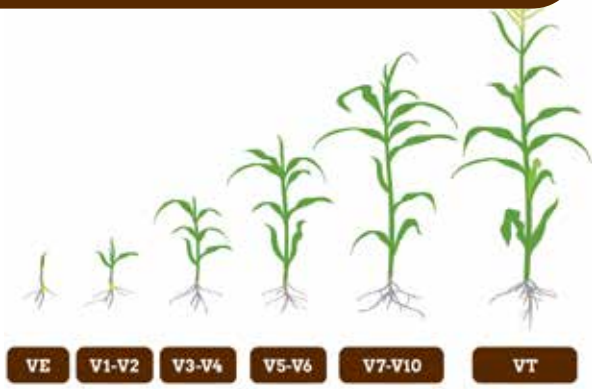

Figure 2

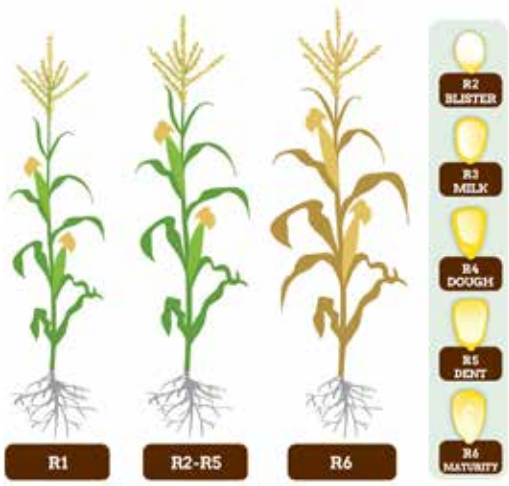

Figure 3


Figure 4

CORN

Monty's Step-By-Step Process For Maximizing Corn Yield





MONTY'S RECOMMENDED PROGRAM

Pre-Plant

MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac

Improves soil health & stimulates soil microbial populations

Planting

Premium Blend: 2-3 gal/ac
9-24-3: 3-5 gal/ac
Microhance: 1-2 qt/ac
Multiplicity: 8 oz/ac
MLC: 1-2 qt/ac

Benefits early corn development and increases stand establishment

VE Emergence - V6

Nauxin: 1-2 qt/ac
Surge XD: 1 qt/ac
Sulfur 15: 1-2 qt/ac
Premium Blend: 1-2 qt/ac
K28: 1-2 qt/ac
Agri-N: 2-4 qt/ac

Regulates water uptake. Increases tolerance to stress. Increases root mass. Prevents micronutrient deficiencies. Maximizes plant development.

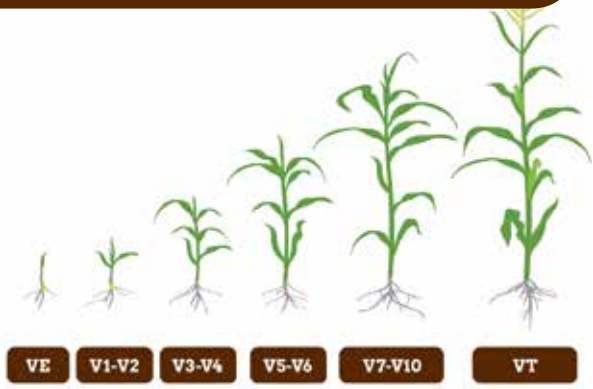
V3 - V6: Midnight: 1-2 qt/ac

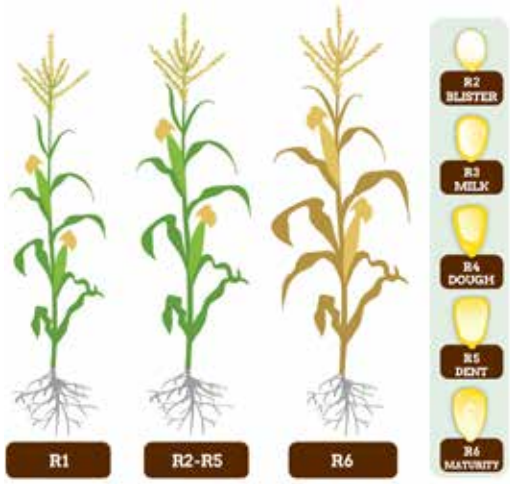
Foliar: 9-24-3: 2-3 gal/ac, **11-26 0-1S:** 2-3 gal/ac, **Nauxin:** 2-4 qt/a, **Surge XD:** 2-4 qt/ac, **Sulfur 15:** 2-4 qt/ac, **Premium Blend:** 2-4 gal/ac, **K28:** 1-2 qt/ac, **Agri-N:** 2-4 qt/ac

Y-Drop: 9-24-3: 2-3 gal/ac, **11-26-0-1S:** 2-3 gal/ac, **Nauxin:** 2-4 qt/ac, **Surge XD:** 2-4 qt/ac, **Sulfur 15:** 2-4 qt/ac, **Premium Blend:** 2-4 gal/ac, **K28**: 1-2 qt/ac, **Agri-N:** 2-4 qt/ac

CORN

Monty's Step-By-Step Process For Maximizing Corn Yield





MONTY'S RECOMMENDED PROGRAM

V7 - VT Tasseling

Premium Blend: 1-2 gal/ac
Nauxin: 1-2 qt/ac
Agri-N: 2-4 qt/ac
Sulfur 15: 1-2 qt/ac
K28: 1-2 qt/ac

Regulates water uptake. Increases tolerance to stress. Increases root mass. Prevents micronutrient deficiencies. Maximizes plant development.

R3-R5

Yield can be influenced during each of these following reproductive stages by applying **MLC**, **Surge XD**, **Agri-Sweet FG**, and **Microhance**

Post-Harvest

Humi-Till/Breakdown: 1 gal/ac
MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac
Agri-N: 2 qt/ac
Nauxin: 1 qt/ac

Residue management soil for next spring. Decreases soil compaction. Increase soil microbial populations.

Maintenance: Add 3 oz/ac of **Nanoboost** to speed up defoliation process. **Surge XD** can be added to any maintenance and/or micronutrient application to increase efficiency of application. **Calesco** can be added to all foliar applications to minimize insoluble solids – preventing sprayer clogging and promoting uniform application rates.

CORN Nutrient Deficiencies


Boron

Boron (B) deficiency is rare in corn. Symptoms develop in older leaves and become necrotic at the leaf tip, margins, and between the leaf veins.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining dark green. Symptoms appear first on younger leaves.


Magnesium

Magnesium (Mg) deficiency first shows up in older leaves turning pale green, followed by interveinal chlorosis. As magnesium deficiency progresses, reddish and purple spots appear on corn leaves.


Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.


Nitrogen

Nitrogen (N) deficient corn plants appear pale-green to yellow with, necrosis/chlorosis start at the leaf tip to the midrib. Symptoms advance from leaf tip towards base.


Phosphorus

Phosphorus (P) deficiency may cause dark green coloration of the leaves, dark yellow chlorosis and a purple color to the leaves. These symptoms occur first on older leaves.


Potassium

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins.


Sulfur

Sulfur (S) deficiency is characterized by pale green/ yellow color, uniform yellowing without necrosis. Symptoms begin as lesions, marginal leaf tips or broad bands of chlorotic tissue or yellowing, veins are not prominent.


Zinc

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.

CORN Success in the Field

Corn Yield

$148.60
ROI INCREASE

Control	199
MLC (1 qt/a)	204
MLC (2 qt/a)	221
MLC (4 qt/a)	230

Monty's Liquid Carbon (MLC) significantly increased yield, as well as increased stand population and ROI compared to the control plots. Yield was significantly increased at 2 and 4 qt/A application rate with highest yield and ROI achieved at 4 qt/A rate increasing yield 31 bu/A. An average ROI of $93.49/A was achieved from 1-4 qt/A application of MLC in furrow.

Corn Yield

$45.62
ROI INCREASE

Control	164
MLC	175

Monty's Liquid Carbon (MLC) increase yield by an average of 10.2 bu/A. An average ROI of $45.62/A was achieved from 2 qt/A application of MLC in-furrow.

Corn Yield

111 bu/a
INCREASE

Control	187
Monty's Program	298

Premium Blend, Microhance, Agri-N, Midnight, BioStrain

Results from this corn trial conducted in Hampstead, MD show a 111.2 BPA increase over the control plot.

Corn Yield

13 bu/a
INCREASE

Control	192
Microhance	205

A field trial conducted in Henderson, KY, resulted in a 13 bu/A yield increase average.

Figure 1: Corn applied with Monty's Catalyzer (Bottom) and without Monty's (Top).

Figure 2: MLC applied in-furrow (Left) increases root mass, plant height and vigor compared to untreated plots (Right). Corn treated with MLC matured faster (V5) compared to the untreated (V4).

Figure 3: MLC applied (Left) in-furrow shows an increased root mass providing higher nutrient uptake and better stand compared to untreated plant (Right). MLC results can be seen as early as V1.

Figure 4: Root mass comparison with Monty's program (Right) versus untreated (Left).


Figure 1

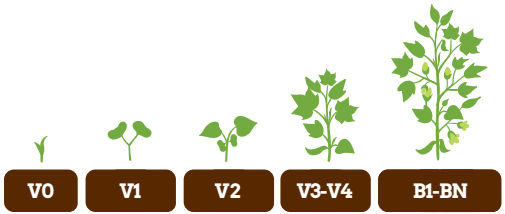

Figure 2

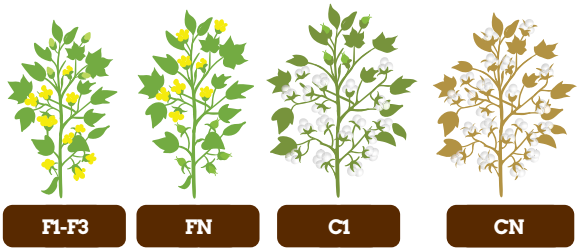

Figure 3


Figure 4

COTTON

Monty's Step-By-Step Process For Maximizing Cotton Yield





MONTY'S RECOMMENDED PROGRAM

Planting

Nauxin: 2 qt/ac
Calcium 3%: 2 qt/ac
9-24-3: 2 gal/ac
Surge XD: 1 qt/ac

Improves soil health & stimulates soil microbial populations

Vegetative

(At 5th True Leaf):
MLC: 2 qt/ac
Agri-Sweet FG/Agri-N: 2 qt/ac
Boron: 2 qt/ac
2nd Application if needed:
1 qt/ac each

Maximize yield & increase protein content. Increase uptake of all nutrients, buffering salt, pH, and CEC

Also consider: Nanoboost: 3 oz/ac, to speed up defoliation process

Flowering

Nauxin: 2 qt/ac
Calcium 3%: 2 qt/ac
9-24-3: 1 gal/ac
Surge XD: 1 qt/ac
Agri-Sweet FG/Agri-N: 2 qt/ac
Boron: 1-2 qt/ac

Maximize yield & increase protein content. Increase uptake of all nutrients, buffering salt, pH, and CEC

Also consider: Midnight: 2 qt/ac, applied alone at floral bud stage. **Nanoboost:** 3 oz/ac, to speed up defoliation process

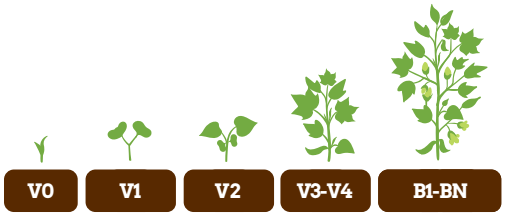
Acorn Development

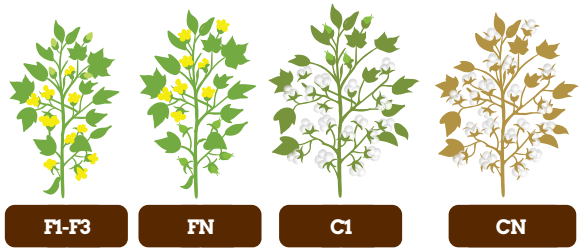
Nauxin: 2 qt/ac
Calcium 3%: 2 qt/ac
9-24-3: 2 gal/ac
Surge XD: 1 qt/ac

Improves soil health & stimulates soil microbial populations

COTTON

Monty's Step-By-Step Process For Maximizing Cotton Yield





MONTY'S RECOMMENDED PROGRAM

Post-Harvest

Humi-Till: 1 gal/ac
Agri-Sweet FG/Agri-N: 1-2 qt/ac
MLC: 1 qt/ac

Residue management soil for next spring. Decreases soil compaction. Increase soil microbial populations.

Also consider:
C795 Plus/Hay-Now: 1-2 qt/a

Maintenance: MLC: 1-2 qt/ac - especially with any liquid N application. **Humihance**: 2 qt/1 ton dry fertilizer, **Surge XD:** 1-2 qt/ac (Can be added to any herbicide/pesticide/fungicide application), **Microhance:** 1-2 qt/ac

An efficient program should be developed to understand when different nutrients are needed and the impact of those nutrients when applied to the soil. Needs for nitrogen are greatest during boll filling, but carryover into harvest is detrimental. Phosphorus is needed all season long, but the ability of roots to extract phosphorus is reduced in cool spring soils, justifying "at planting" fertilizer applications for increased availability. The heaviest demand for potassium and boron occurs during boll filling. Phosphorus, potassium, calcium and magnesium stay where they are placed until that soil zone is disturbed; but nitrogen, boron and sulfur are vulnerable to losses from the root zone prior to plant uptake.

- A soil pH between 5.8–8.0 is needed for good cotton growth, with a more optimum range of 6.0–6.5. Cotton is among the most sensitive crops to low-pH soils.

COTTON Nutrient Deficiencies


Boron

Boron (B) symptoms develop in younger leaves and spread to older growth. Symptoms appear as small chlorotic spots that began to enlarge and coalesce to form white stripes.


Calcium

Calcium (Ca) deficiency appears first on the youngest leaf and spreads to older leaves. Tips of leaves turn pale and began to roll inwards. Leaves may twist back, tear off, or die. The base of the leaves will remain green.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining green.


Magnesium

Magnesium (Mg) appears on the middle leaves as green, yellow with yellow interveinal chlorosis that can turnto brown necrosis.


Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.

Nitrogen (N) deficient plants appear pale-green to yellow with necrosis/chlorosis and appear in older leaves.


Nitrogen

Phosphorus (P) may cause dark green coloration of the leaves and a purple color to the leaves. Older leaves may be dark yellow to orange or brown.


Phosphorus

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins. Sulfur deficiency is characterized pale yellow color, uniform yellowing without necrosis.


Potassium

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.


Sulfur


Zinc

COTTON Success in the Field

26.3%
Lbs/a INCREASE

Cotton Yield

Control	1,895
Monty's Program	2,394

A Lubbock, TX, trial reflect a 26.3% increase in seed cotton Lbs/Acre. Treatment was applied at First Flower Growth Stage using Monty's program of 2-15-15 and Monty's Liquid Carbon. Lint Cotton Lbs/Acre increased by 18.6%.

15.3%
Lbs/a INCREASE

Cotton Yield

Control	972
Monty's Program	1121

Results for a Stoneville, MS, trial show a 15.3% increase in Cotton Lint Lbs/Acre. Monty's program consisted of Monty's Liquid Carbon at 4th Leaf, Pin-Head Square, and Early Bloom Stages.

143 Lbs/a
INCREASE

Cotton Yield

Control	639
Monty's Program	782

Results for a 2nd Stoneville, MS, trial show a 143 Lbs/Acre increase in Cotton Lint Lbs/Acre. Monty's program consisted of Monty's Liquid Carbon at 4th Leaf, Pin-Head Square, Early Bloom, and Early Boll Set Stages.

Cotton crops around the country have seen significant improvement in plant quality, yield, and overall ROI.

Ask your Monty's Trusted Advisor about a program specifically designed for your cotton crops.

PEANUT

Monty's Step-By-Step Process For Maximizing Peanut Yield

VE | V1-V2 | V4-V5 | R1

R2 | R3-R6 | R7-R8 | R6

MONTY'S RECOMMENDED PROGRAM

Pre-Plant

MLC: 2-4 qt/ac
Agri-Sweet FG/Agri-N: 1-2 qt/ac
Nauxin: 1-2 qt/ac
Calcium 3%: 1-2 qt/ac
9-24-3: 2-3 qt/ac

Improves soil health & stimulates soil microbial populations

Vegetative

Nauxin: 1-2 qt/ac
Calcium 3%: 1-2 qt/ac
9-24-3: 2-4 qt/ac
Surge XD: 1 qt/ac
Boron: 1-2 qt/ac

Maximize yield & increase protein content.

Also consider: Nanoboost: 3 oz/ac, to speed up defoliation process

Bloom

Nauxin: 1-2 qt/ac
Calcium 3%: 1 -2 qt/ac
Surge XD: 1 qt/ac
MLC: 1-2 qt/ac

May increase uptake of N application, buffer salt and pH

Also consider: K28: 1-2 qt/ac, **Boron:** 1-2 qt/ac, **Sulfur 15:** 1-2 qt/ac

Maturity

Nauxin: 2 qt/ac
Calcium 3%: 2 qt/ac
9-24-3: 2 gal/ac
Surge XD: 1 qt/ac

Maximize yield

PEANUT

Monty's Step-By-Step Process For Maximizing Peanut Yield

VE | V1-V2 | V4-V5 | R1

R2 | R3-R6 | R7-R8 | R6

MONTY'S RECOMMENDED PROGRAM

Post-Harvest

Humi-Till: 1 gal/ac
Agri-Sweet FG/Agri-N: 1-2 qt/ac
MLC: 1-2 qt/ac

Residue management for next spring decreases soil compaction and increases soil microbial populations

Also consider: C795 Plus/Hay-Now: 1-2 qt/ac

Maintenance: In addition to each Nitrogen application, add: **MLC:** 1-2 qt/ac, **Humihance:** 2 qt/1 ton dry fertilizer, **Surge XD:** 1-2 qt/ac (Can be added to any herbicide/pesticide/fungicide application), **Microhance:** 1-2 qt/ac

Certain peanut diseases can greatly reduce both quality and yield. Most of these specific diseases can be controlled by using good sanitation practices and cultural practices that lead to vigorous plant growth. Employ good crop rotation practices. Small grains are the best crops to precede peanuts, except where crown rot has been a problem. Cotton is a poor crop with which to rotate peanuts. Peanuts should not follow potatoes or other vegetable crops in which diseases common to peanuts have been present. Heavy soils with high clay content should not be planted to peanuts for more than two consecutive years.

- Peanuts grow best in loose, well-drained, sandy loam with a slightly acidic soil with a pH range of 6.0–6.5.
- Avoid poorly drained and hard clay soil.
- Shortly after harvest, turn under as much of the crop residue as practical.
- Test the soil for nematodes, and treat with a nematicide if a problem exists.
- Obtain a soil analysis and fertilize accordingly.

PEANUT Nutrient Deficiencies


Boron

Boron (B) symptoms develop in younger leaves and spread to older growth. Symptoms appear as small chlorotic spots that began to enlarge and coalesce to form white stripes.


Calcium

Calcium (Ca) deficiency appears first on the youngest leaf and spreads to older leaves. Tips of leaves turn pale and began to roll inwards. Leaves may twist back, tear off, or die. The base of the leaves will remain green.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining green.


Magnesium

Magnesium (Mg) appears on the middle leaves as green, yellow with yellow interveinal chlorosis that can turnto brown necrosis.


Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.

Nitrogen (N) deficient plants appear pale-green to yellow with necrosis/chlorosis and appear in older leaves.


Nitrogen

Phosphorus (P) may cause dark green coloration of the leaves and a purple color to the leaves. Older leaves may be dark yellow to orange or brown.


Phosphorus

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins.


Potassium

Sulfur (S) deficiency is characterized pale yellow color, uniform yellowing without necrosis.

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.


Sulfur


Zinc

Peanut crops around the country have seen significant improvement in plant quality, yield, and overall ROI.

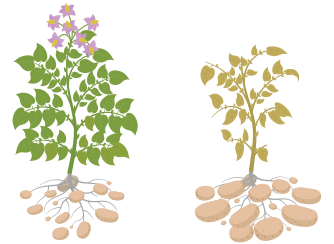
Ask your Monty's Trusted Advisor about a program specifically designed for your peanut crops.

- Peanuts grow best in loose, well-drained, sandy loam with a slightly acidic soil with a pH range of 6.0–6.5.
- Avoid poorly drained and hard clay soil.
- Refer to the table to the right to understand the amount of nutrients removed by producing 4,000 lbs/ac of peanuts.
- Shortly after harvest, turn under as much of the crop residue as practical.
- Test for nematodes, and treat with a nematicide if a problem exists.
- Obtain a soil analysis and fertilize accordingly.

POTATO

Monty's Step-By-Step Process For Maximizing Potato Yield

V1-V2 | V3-V4 | V7-V10



R1 | R6

MONTY'S RECOMMENDED PROGRAM

Pre-Plant

MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac
Microhance: 1-2 qt/ac
Calcium 3%: 1-2 qts/ac
9-24-3: 2-3 gal/ac

Improves soil health & stimulates soil microbial populations

Sprout Development

MLC: 1-2 qt/ac
Microhance: 1-2 qt/ac
Calcium 3%: 1-2 qt/ac
Surge XD: 1 qt/ac

Maximize yield & increase specific gravity. Increase uptake of all nutrients, buffering salt, pH, and CEC

Vegetative

Microhance: 1-2 qt/ac
Calcium 3%: 1-2 qt/ac
Surge XD: 1 qt/ac
K28: 1-2 qt/ac
Boron: 1-2 qt/ac
9-24-3: 2-4 qt/ac

Maximize yield & increase specific gravity. Increase uptake of all nutrients, buffering salt, pH, and CEC

Tuber Initiation

Calcium Plus: 2-4 qt/ac
Boron: 1-2 pt/ac
K28: 2-4 qt/ac

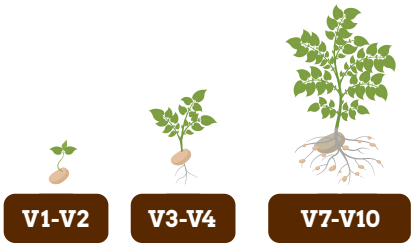
May increase uptake of N application, buffer salts and pH

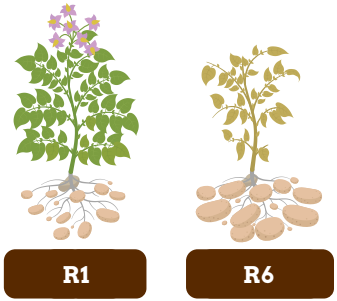
Maturation

Nanoboost: 3 oz/ac to speed up defoliation process

POTATO

Monty's Step-By-Step Process For Maximizing Potato Yield





MONTY'S RECOMMENDED PROGRAM

Maintenance:
MLC: 1-2 qt/ac & **Agri-Sweet FG:** 1-2 qt/ac - Will assist in loosening dirt being held on potatoes
Humihance: 2 qt/1 ton dry fertilizer
Surge XD: 1-2 qt/ac: Can be added to any herbicide/pesticide/fungicide application

Soil Type and pH:
- Potatoes grow best in loose, well-drained, non-crusting, sandy loam or loam soils with high organic matter content and pH between 5.5 and 6.5.

Soil Temperature:
- Seed pieces can germinate when soil temperatures are cool (less than 55ºF).

Bed Spacing:
- Bed spacing of 48" allows for a balance of workability and yield potential.
- 60" beds provide for ease of field operations, but may reduce yield potential.
- Potatoes grow best planted in a single line per row to allow for "hilling" to ensure that potatoes are covered with soil. Potatoes exposed to sunlight turn green.

Plant Spacing within Row:
- 8–12" between plants in the row. Closer spacing will result in smaller tubers.

Planting Size and Depth:
- Use 1.5–3 ounce seed pieces with at least 2 "eyes."
- Place seed pieces 2–4" deep.

POTATO Nutrient Deficiencies


Boron

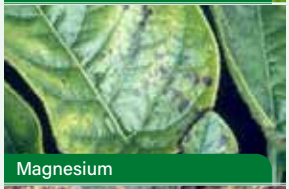
Boron (B) symptoms develop in younger leaves and spread to older growth. Symptoms appear as small chlorotic spots that began to enlarge and coalesce to form white stripes.


Calcium

Calcium (Ca) deficiency appears first on the youngest leaf and spreads to older leaves. Tips of leaves turn pale and began to roll inwards. Leaves may twist back, tear off, or die. The base of the leaves will remain green.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining green.


Magnesium

Magnesium (Mg) appears on the middle leaves as green, yellow with yellow interveinal chlorosis that can turnto brown necrosis.


Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.

Nitrogen (N) deficient plants appear pale-green to yellow with necrosis/chlorosis and appear in older leaves.


Nitrogen

Phosphorus (P) may cause dark green coloration of the leaves and a purple color to the leaves. Older leaves may be dark yellow to orange or brown.


Phosphorus

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins. Sulfur deficiency is characterized pale yellow color, uniform yellowing without necrosis.


Potassium

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.


Sulfur


Zinc

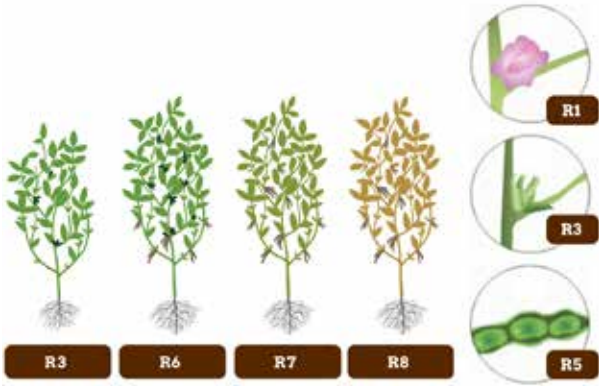
Potato crops around the country have seen significant improvement in plant quality, yield, and overall ROI.

Ask your Monty's Trusted Advisor about a program specifically designed for your peanut crops.

- Potatoes grow best in loose, well-drained, non-crusting, sandy loam or loam soils with high organic matter content and pH between 5.5 and 6.5.
- Seed pieces can germinate when soil temperatures are cool (less than 55ºF).
- Bed spacing of 48" allows for a balance of workability and yield potential.
- Potatoes grow best planted in a single line per row to allow for "hilling" to ensure that potatoes are covered with soil.
- 8–12" between plants in the row.
- Use 1.5–3 ounce seed pieces with at least 2 "eyes."
- Place seed pieces 2–4" deep.

SOYBEAN

Monty's Step-By-Step Process For Maximizing Soybean Yield



MONTY'S RECOMMENDED PROGRAM

Pre-Plant

MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac

Improves soil health and stimulates soil microbial populations

Planting

Premium Blend: 2-3 gal/ac
9-24-3: 2-3 gal/ac
Multiplicity: 8 oz/ac
Agri-N: 2-4 qt/ac
11-26-0-1S: 2-3 gal/ac

Benefits early soybean development Increases stand establishment

VE-V5

Nauxin: 1-2 qt/ac
Surge XD: 1 qt/ac
Sulfur 15: 1-2 qt/ac
K28: 1-2 qt/ac
CoMoB: 1-2 pt/ac

Maximize yield & increase specific gravity. Increase uptake of all nutrients, buffering salt, pH, and CEC

Foliar: 9-24-3: 2-3 gal/ac, **MLC:** 2-4 qt/ac

Y-Drop: 9-24-3: 2-3 gal/ac, **MLC:** 2-4 qt/ac, **11-26-0-1S:** 2-3 gal/ac, **Agri-Sweet FG:** 2-4 qt/ac

Also consider: Nanoboost: 3 oz/ac to speed up defoliation process

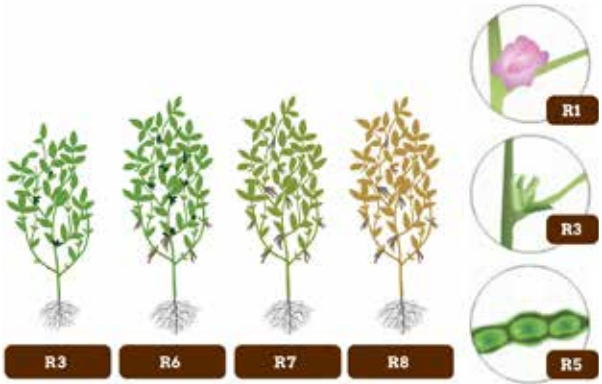
R1-R2

Midnight: 1-2 qt/ac
Agri-Sweet FG: 1-2 qt/ac
Alternative:
Microhance: 1-2 qt/ac

Increase number of blooms. Yield can be influenced during each of these following reproductive stages by applying MLC, Surge XD, Agri-Sweet, and Microhance

SOYBEAN

Monty's Step-By-Step Process For Maximizing Soybean Yield



MONTY'S RECOMMENDED PROGRAM

R3

Surge XD: 1 qt/ac
Sulfur 15: 1-2 qt/ac
K28: 1-2 qt/ac
Agri-Sweet FG: 1-2 qt/ac

Increase number of pods per node. Increase in size and test weights Yield can be influenced during each of these following reproductive stages by applying MLC, Surge XD, Agri-Sweet, and Microhance

Yield can be influenced during each of the reproductive stages by applying MLC, Surge XD, Agri-Sweet FG, and Microhance.

Post-Harvest

Humi-Till/Breakdown: 3-4 qt/ac
MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac

Residue management for next spring decreases soil compaction and increases soil microbial populations

Maintenance:
Surge XD can be added to any maintenance and/or micro-nutrient application to increase efficiency of application.
Calesco can be added to all foliar applications to minimize insoluble solids – preventing sprayer clogging and promoting uniform application rates.

- For optimum soybean growth, soil pH should be between 6 and 6.5
- High-yielding beans remove substantial nutrients from the soil, more so compared to wheat, corn and sorghum. For example, refer to the table at right to understand the amount of nutrients to produce one acre of beans and the nutrients removed from harvesting one acre.

SOYBEAN Nutrient Deficiencies


Boron

Boron (B) symptoms develop in older leaves and become necrotic at the leaf tip, margins, and between the leaf veins.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining dark green. Symptoms appear first on younger leaves.


Magnesium

Magnesium (Mg) deficiency first shows up in older leaves turning pale green, followed by interveinal chlorosis. As magnesium deficiency progresses, reddish and purple spots appear on corn leaves.


Manganese

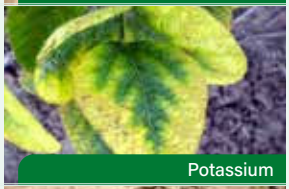
Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.


Nitrogen

Nitrogen (N) deficient plants appear pale-green to yellow with, necrosis/chlorosis start at the leaf tip to the midrib. Symptoms advance from leaf tip towards base.


Phosphorus

Phosphorus (P) deficiency may cause dark green coloration of the leaves, dark yellow chlorosis and a purple color to the leaves. These symptoms occur first on older leaves.


Potassium

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins.


Sulfur

Sulfur (S) deficiency is characterized by spale green/ yellow color, uniform yellowing without necrosis. Symptoms begin as lesions, marginal leaf tips or broad bands of chlorotic tissue or yellowing, veins are not prominent.


Zinc

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.

SOYBEAN Success in the Field

$43.93
ROI INCREASE

Soybean Yield

Control	72
MLC	76

Monty's Liquid Carbon (MLC) increased ROI and yield by an average of 3.8 bu/A. An average ROI of $43.93 was achieved with a 1 qt/A application of MLC in-furrow.

11 bu/a
INCREASE

Soybean Yield

Control	75
Nauxin	86

In this 2021 trial in Madison, VA, Monty's program utilizing Nauxin out performed control by 11 BPA.

$70.14
ROI INCREASE

Soybean Yield

Control	65
Midnight	71

Split Midnight foliar applications increases soybean yield and ROI. Midnight application alone increased yield by 6.4 bu/A, with the highest increase from Midnight + Surge XD increasing yield by 8.6 bu/A. An average ROI from foliar Midnight application was $79.83 per acre.

102 bu/a
INCREASE

Soybean Yield

Control	41
Monty's Program	143

Premium Blend, Microhance, K28, Sulfur 15, Agri-N, Midnight, BioStrain

In this Hamstead, MD, trial, Monty's program produced a 102 BPA increase over control.

Figure 1: A soybean field in north Georgia outside of Cleveland. 2 qts MLC were used at planting. 1 qt K28 and 1 qt Microhance applied at 1' tall stage. Beans are approximately 30" tall. Very thick stand.

Figures 2 & 3: Kevin Kalb, Multi-Time NCGA Winner and current star of Live To Farm, reviewing the status of his soybeans as part of his Monty's-based program.

Figure 4: Monty's Liquid Carbon applied in-furrow (Right) increases plant height, vigor, and root mass compared to the untreated (Left).


Figure 1

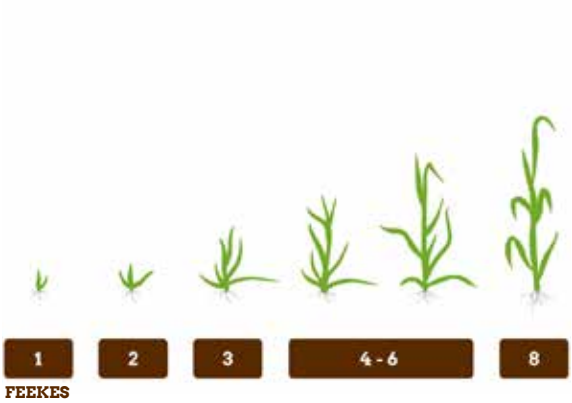

Figure 2

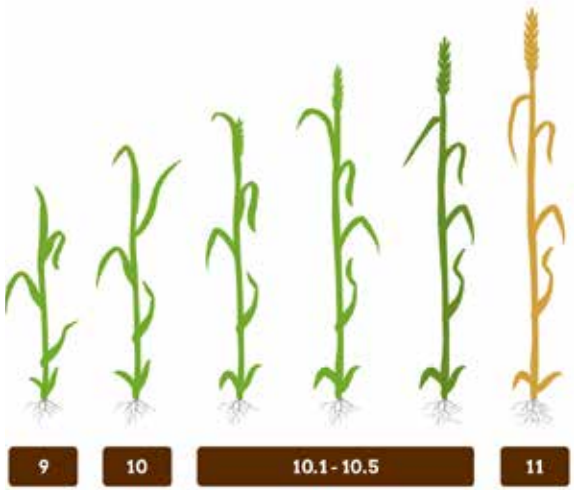

Figure 3


Figure 4

WHEAT

Monty's Step-By-Step Process For Maximizing Wheat Yield





MONTY'S RECOMMENDED PROGRAM

Pre-Plant/Planting

MLC: 2-4 qt/ac
Agri-Sweet FG: 1-2 qt/ac
Nauxin/Microhance: 1-2 qt/ac

Improves soil health and stimulates soil microbial populations

Feekes 2-3

Nauxin/Microhance: 1-2 qt/ac
Surge XD: 1 qt/ac
Agri-N: 2-4 qt/ac
Sulfur 15: 1-2 qt/ac

Maximizes yield and increases protein content

Feekes 4-5

1st N Application:
MLC: 1 qt/ac
Agri-Sweet FG: 1 qt/ac

May increase uptake of N application, buffer salts and pH

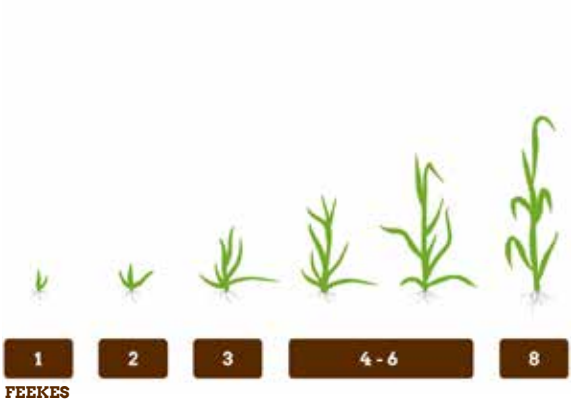
Feekes 9

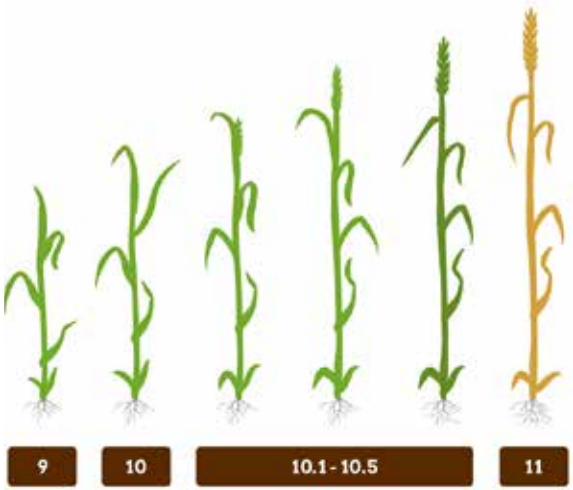
2nd N Application:
MLC: 1 qt/ac
Agri-Sweet FG: 1 qt/ac

May increase uptake of N application, buffer salts and pH

WHEAT

Monty's Step-By-Step Process For Maximizing Wheat Yield





MONTY'S RECOMMENDED PROGRAM

Feekes 10-10.5

Nauxin: 1-2 qt/ac
Surge XD: 1 qt/ac
Agri-N: 2-4 qt/ac
Sulfur 15: 1-2 qt/ac
K28: 1-2 qt/ac

Maximizes yield

Post-Harvest

Humi-Till/Break-down: 1 gal/a
Agri-Sweet FG: 1-2 qt/a
K28: 1-2 qt/ac

Residue management soil for next Spring. Decreases soil compaction. Increases soil microbial populations

Maintenance:
In addition to each Nitrogen application, add: **MLC:** 1-2 qt/ac, **Humihance:** 0.5 gal/1 ton dry fertilizer, **Surge XD:** 1-2 qt/a: Can be added to any herbicide/pesticide/fungicide application. Also consider: **Nanoboost:** 3 oz/ac to maximize wheat goal

- For optimum wheat growth, soil pH should be between 6.0 and 6.5.
- Wheat removes nutrients from the soil. If these nutrients are not replaced, the plant-available soil nutrient levels and soil fertility will be reduced.
- Refer to the table to the right to understand the amount of nutrients removed by producing 80 bu/a of wheat.

WHEAT Nutrient Deficiencies


Boron

Boron (B) symptoms develop in younger leaves and spread to older growth. Symptoms appear as small chlorotic spots that began to enlarge and coalesce to form white stripes.


Calcium

Calcium (Ca) deficiency appears first on the youngest leaf and spreads to older leaves. Tips of leaves turn pale and began to roll inwards. Leaves may twist back, tear off, or die. The base of the leaves will remain green.


Iron

Iron (Fe) deficiency is characterized by interveinal chlorosis of the leaves with the leaf veins remaining green.


Magnesium

Magnesium (Mg) appears on the middle leaves as green, yellow with yellow interveinal chlorosis that can turnto brown necrosis.


Manganese

Manganese (Mn) deficiency will occur in patches throughout the field. Plants are stunted and symptoms appear as yellowing in the younger leaves, yellow striping of leaves and whitish to colorless spots.

Nitrogen (N) deficient plants appear pale-green to yellow with necrosis/chlorosis and appear in older leaves.


Nitrogen

Phosphorus (P) may cause dark green coloration of the leaves and a purple color to the leaves. Older leaves may be dark yellow to orange or brown.


Phosphorus

Potassium (K) deficiency appears as pale green plants that appear wilted or limp. Symptoms appear in the oldest leaves and have bright yellow chlorosis and brown necrosis along the margins.


Potassium

Sulfur (S) deficiency is characterized pale yellow color, uniform yellowing without necrosis.

Zinc (Zn) deficiency symptoms appear as pale green plants with localized light-yellow chlorosis that can turn into brown/gray necrotic lesions. Plants can be stunted.


Sulfur


Zinc

WHEAT Success in the Field

17 bu/a
INCREASE

Wheat Yield

Control	77
MLC	94

Chart indicates the difference in bushels when Monty's Liquid Carbon is applied. NC State University trials showed an increase of more than 16 bushel.

16 bu/a
INCREASE

Wheat Yield

Control	50
MLC	68

Another NC State University trial showed a 16 BPA increase over control utilizing Monty's program.

13.3%
bu/a INCREASE

Wheat: High-Yield

Control	64.3
Monty's Program	76.1

A NC State University trial showed Monty's program outperformed control yield by over 13%.

36.1%
TILLER COUNT INCREASE

Wheat - Tiller Count

Control	52
MLC	70

NC State University trials showed a tiller count increase of 18 BPA - a 34.6% increase!

Figure 1: 26 gallons of 28% UAN applied with normal burn to leaves (Left). 26 gallons of UAN with 1 quart/acre of Monty's Liquid Carbon - no burn.

Figure 2: Monty's program (Top) vs control (Bottom).

Figure 3: Monty's Liquid Carbon applied the last two years (Right).

Figure 4: Close-up of wheat using Monty's Liquid Carbon.

Monty's activated humics can improve your wheat yield by...

- Promoting fall tillers during the critical first 60 days of development
- Assisting the transfer of phosphorus and micronutrients from the soil to the plant
- Applying the right concentration of humic substances to maximize biological, geological, and chemical impact
- Creating more healthy root mass and stimulating microbial activity in soil
- Helping break up compacted soil and enhancing water retention


Figure 1


Figure 2


Figure 3


Figure 4

Soil & Tissue Sampling

Soil and tissue testing throughout the growing season is vital to the success of a high yield program. These are Monty's general recommendations. To maximize your testing program, please contact your Monty's representative.

SOIL SAMPLING RECOMMENDATIONS

Soil samples can be taken by grid or soil zones. Your sample should consist of a composite of 15 subsamples taken randomly at a depth of 4-6 inches from across the sample area. The sample needs to be mixed well to be representative of the soil conditions.

Soils that can be tested less often: If the soil has high CEC, it will hold cation nutrients better and the pH will remain constant over longer periods of time. We suggest testing throughout the growing season and at the end of the harvest for planning.

Soil that should be frequently tested: Soil with low CEC (less than 7), some cations such as potassium (K+), magnesium (Mg++), and ammonium (NH4+) have the ability leach through the root zone, so testing more often to find nutrient deficiencies is essential. When fertility levels are low, soil samples should be taken more frequently to insure best utilization of added nutrients.

The key is consistency and getting the information back in time to use it. We encourage sampling at harvest so you may plan properly for the next growing season. While factors such as weather and crop rotation can affect soil test results, these differences are generally small and reliable information can still be obtained regardless when sampling is done.

For general practices: Additional fall or spring sampling can be done for fertilizer planning and application purposes. Pre-season and post-harvest sampling each season provides beneficial data to maximize yield potential.

TISSUE SAMPLING RECOMMENDATIONS

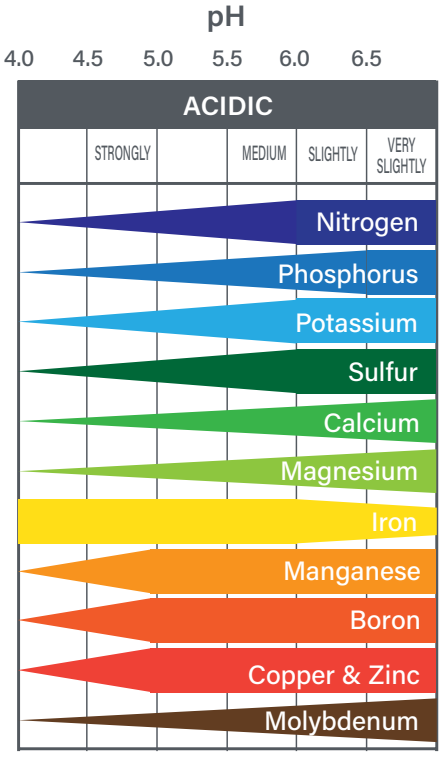
Timing: To achieve the highest yields possible, we encourage tissue sampling weekly throughout the season. Many high-yielding growers depend on weekly tissue testing to help address their deficiencies more quickly.

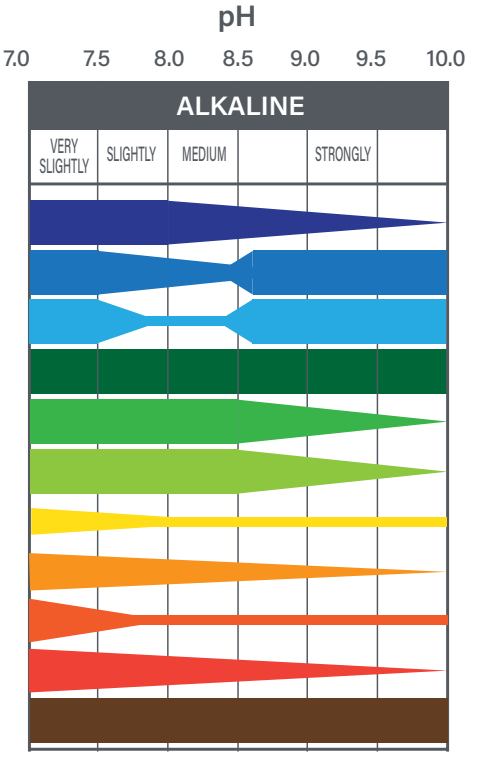
Plant tissue to sample: Taking the third or fourth leaf below the most recent growth should provide information for you to make the best decisions. For more crop specific sampling, contact your tissue sampling lab.

Storing and shipping: Store the sample properly and remove soil or other debris that would interfere with tissue analysis and results. Problem areas or areas of interest should be sampled separately. All samples should be stored in a paper bag in a cool place and properly labeled. All samples should be sent to the lab immediately to prevent any decay or damage to your sample that could cause your tissue results to be inaccurate.

Give yourself adequate time to review the test results and plan the program before making fertilizer applications. Talk to your Monty's representative about the best soil and issue testing program for you.

NUTRIENT AVAILABILITY BASED ON PH



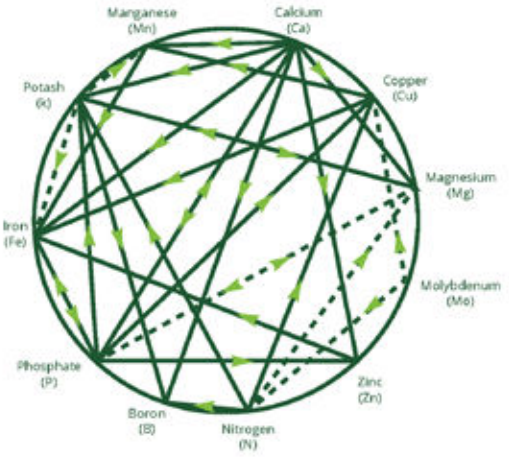


NUTRIENT ROLES

	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Magnesium (Mg)	Sulfur (S)	Calcium (Ca)
Nodulation/Nitrogen Use	✓				✓	✓
Photosynthesis	✓		✓	✓	✓	
Disease Resistance			✓		✓	✓
Abiotic Stress Tolerance			✓			✓
Carbohydrate Production		✓	✓	✓		
Protein Production	✓			✓	✓	
Oil Production				✓	✓	
Vegetative Growth	✓	✓	✓			
Hormone Metabolism				✓		
Root Growth		✓				
Energy Transfer		✓		✓	✓	
Nutrient Uptake		✓	✓	✓		
Water Usage			✓			✓

	Boron (B)	Copper (Cu)	Chlorine (Cl)	Iron (Fe)	Zinc (Zn)	Nickel (Ni)	Manganese (Mn)	Molybdenum (Mo)	Cobalt (Co)	Silicon (Si)	Selenium (Se)	Sodium (Na)
Nodulation/Nitrogen Use				✓		✓			✓			
Photosynthesis		✓	✓	✓	✓		✓			✓	✓	
Disease Resistance	✓	✓	✓	✓			✓			✓	✓	
Abiotic Stress Tolerance							✓	✓				
Carbohydrate Production							✓					
Protein Production					✓			✓				
Oil Production												
Vegetative Growth	✓	✓	✓									
Hormone Metabolism		✓										
Root Growth	✓											
Energy Transfer		✓		✓								
Nutrient Uptake	✓		✓									
Water Usage			✓									✓

MULDER'S CHART



ANTAGONISM
Decrease in availability to the plant of a nutrient by the action of another nutrient (see direction of arrow).

STIMULATION
An increase in the need for a nutrient by the plant because of the increase in the level of another nutrient.

Mulder's Chart guides agricultural practices by moving from hands-on experience to abstract understanding. Farmers start with practical fieldwork, progress to recognizing visual patterns, interpret symbolic data like weather forecasts, and finally apply abstract knowledge such as scientific principles for informed decision-making, enhancing productivity, and sustainability.

FLOW UNITS

Flow Units					
1 Gallon/ Minute (cu ft/min)	0.00223 cu ft /sec	0.00221 ac in /hour	0.00442 ac ft /day	1 ac /450 hours	1 ac ft /226.3 days
1 Cubic Foot/ Minute (cu ft/min)	450 gal /hr	1 ac in /1 hour	1 ac ft /12 hours	2 ac ft /24 hours	
1 Gallon/ Minute (cu ft/min)	695 gal /hr	1.547 cu ft /sec			

LENGTH OF ROW EQUAL TO 1/1000TH ACRE

Length Of Row Equal To 1/1000th Acre	
Row Width (Inches)	**Length of Single Row Equal to 1/1,000th of an Acre**
6	87 Feet, 1 Inch
7	74 Feet, 8 Inches
8	65 Feet, 4 Inches
10	52 Feet, 3 Inches
15	34 Feet, 10 Inches
20	26 Feet, 2 Inches
28	18 Feet, 8 Inches
30	17 Feet, 5 Inches
32	16 Feet, 4 Inches
36	14 Feet, 6 Inches
38	13 Feet, 9 Inches
40	13 Feet, 1 Inch

COMMODITY WEIGHT CONVERSION

Commodity Weight Conversions		
Commodity (1 bushel)	**lb**	**kg**
Alfalfa	60	27.22
Barley	48	21.77
Buckwheat	48	21.77
Canola	50	22.68
Corn	56	25.4
Flax	56	25.4
Lentils	60	27.22
Millet	50	22.68
Mustard	50	22.68
Oats	34	15.42
Peas	60	27.22
Rye	56	25.4
Sorghum	56	25.4
Soybean	60	27.22
Sunflower	30	13.61
Tomato	60	27.22
Wheat	60	27.22

CATION EXCHANGE CAPACITY (CEC)

Cation Exchange Capacity (CEC)	
Soil Type	**Approx. CEC Range Meq/100g**
Sand, Loamy Sand	1-4
Sandy Loam	3-8
Silt Loam	6-20
Silty Clay Loam	15-30
Clay	20-40
Muck & Peat	30-80

TEST WEIGHT

Test Weight			
Crop	**lbs**	**% Moisture**	**Factor**
Corn	56	15	109.815
Soybeans	50	15	100.138
Yield Calculations for Corn & Soybeans			
Bu/Ac = (100-% moisture) x lbs of grain x (factor)/Harvest length (ft)/Harvest width (in)			

Corn Example: 30" rows, 2,000' length, 6 rows: Bu/Ac = (100-15) x 6,700 x 109.815/2,000/30/6=173 bu/ac@15% moisture

SALT INDEXES OF FERTILIZERS

Salt Indexes Of Fertilizers		
Material Salt Index	**Salt Index Per**	**Unit of Plant Food**
28% UAN	63	2.25
30% UAN	67.5	2.25
30% UAN	67.5	2.25
34% Ammonium Nitrate	104	3.06
46% Urea	75	1.63
82% Anhydrous Ammonia	47	0.57
28% CoRon Nitrogen	36	1.29
21% N - 24% S Am Sulfate	69	3.29
12% N - 26% Thio Am Sul	90.4	7.53
10% N - 34% P	20	2.00
18% N - 46% P - Dap	34	1.89
11% N - 52% P - Map	30	2.73
52% P - 355 K - Mono Pot P	8.4	0.16
62% K pot Chloride 47%	120	1.94
50% K - 18% S pot Sulfate	42.6	0.85
25% K - 17% S Pot ThioSulfate	68	2.72
3-18-18	8.5	2.83
6-24-6	11.5	1.92
4-10-10	27.5	6.88
7-21-7	27.8	3.97

REFERENCE CHARTS

Conversions & Measurements

LIQUID VOLUME MEASURE

Liquid Volume Measure (US)					
1 Milliliter (ml)	0.03 fl oz	0.001 l			
1 Fluid Ounce (fl oz)	6 tsp	2 tbs	29.57 ml		
1 Cup (c)	8 fl oz	16 tbs	236.58 ml		
1 Pint (pt)	16 fl oz	2 c	946.35 ml		
1 Quart (qt)	32 fl oz	4 c	2 pt	946.35 ml	0.9463 l
1 Liter (l)	33.814 fl oz	2.11 pt	1.05 qt	1,000 ml	0.26 gal
1 Gallon (gal)	128 fl oz	8 pt	4 qt	3,785.41 ml	3.785 l
1 quart/25 gallons = 1.28 fl oz/1 gal					

DRY VOLUME MEASURE

Dry Volume Measure					
1 Dry Pint (dry pt)	33.60 cu in				
1 Dry Quart (dry qt)	67.2 cu in	2 dry pt	0.0199 cu ft		
1 Peck	537.61 cu in	16 dry pt	8 dry pt	0.31 cu ft	
1 Cubic Foot (cu ft)	1,728 cu in	51.3 dry pt	25.71 dry pt	3.21 peck	0.804 bu
1 Bushel (bu)	2,150.42 cu in	74.47 dry pt	32 dry pt	4 peck	1.24 cu ft

SQUARE MEASURE

Square Measure		
1 Square Inch (sq in)	6.45 sq cm	
1 Square Foot (sq ft)	929.03 sq cm	144 sq in
1 Square Yard (sq y)	1,296 sq in	9 sq ft
1 Square Meter (sq m)	10.76 sq ft	1.196 sq y
1 Acre (ac)	43,550 sq ft	0.405 ha
1 Hectare (ha)	107,639 sq ft	2.471 ac
1 Square Mile (sq mi)	640 ac	258.99 ha

LINEAR MEASURE

Linear Measure				
1 Foot (ft)	30.48 cm	12 in		
1 Yard (yd)	36 in	3 ft	.91 m	
1 Meter (m)	39.37 in	3.28 ft	100 cm	.001 km
1 Kilometer (km)	3,280.84 ft	1,093.61 yd	1,000 m	0.6214 mi
1 Mile (mi)	5,280 ft	1,760 yd	1,609.34 m	1.609 km

WEIGHT EQUIVALENT

Weight Equivalent			
1 Ounce (oz)	28.349 g		
1 Pound (lb)	16 oz	453.59 g	0.454 kg
1 Kilogram (kg)	35.27 oz	1,000 g	2.204 lb
1 Ton (U.S.) (t)	2,000 lb	907.19 kg	
1 Metric Ton (mt)	2,204.6 lb	1,000 kg	

1 part per million = 1 milligram/kilogram

CALIBRATION EQUATION FOR LIQUID APPLICATIONS

Calibration Equation For Liquid Applications

$$GPA = \frac{GPM \times 5940}{MPH \times W}$$

$$GPM = \frac{GPA \times MPH \times W}{5940}$$

$$OPM = GPM \times 128$$

$$MPH = \frac{\text{Feet Traveled} \times 60}{\text{Seconds to Travel} \times 88}$$

$$W = \frac{\text{Row Spacing in Inches}}{\text{\# Nozzles / Row}}$$

$$\text{Amount of Product} = \frac{\text{Amount of Active Ingredients} \times 100}{\text{\% Active Ingredients}}$$

$$\text{Lbs of Active Ingredients Per Acre} = \frac{\text{Formula Rate}}{\text{Acre}} \times \frac{\text{Lbs Active Ingredients}}{\text{Formulation}}$$

GPA= Gallon per acre
GPM= Gallon per minute
OPM= ounces per minute
MPH= miles per hour

A.I.= active ingredients
W= width; nozzle spacing (inches) broadcast, or band width (band spraying), or for directed or drop nozzle spraying (inches).

Note: Pressure should only be used to make minor, not major, changes in rate due to nozzle wear and other factors. Doubling the ground speed of a sprayer reduces the GPA by half. Doubling the effective spray width per nozzle decreases the GPA by half.

RATES FOR MAXIMUM RETURN TO N

Rates For Maximum Return To N (MRTN) For Corn After Soybeans

N Cost Per Lb	Corn Grain Prices Per Bushel							
	$2.00	$2.50	$3.00	$3.50	$4.00	$4.50	$5.00	$5.50
	MRTN Rate (Lbs N/A							
$0.30	160	165	169	171	173	175	175	176
$0.40	144	152	158	161	164	167	169	170
$0.50	152	159	163	166	169	170	172	173
$0.60	135	145	152	157	160	163	165	167
$0.70	127	139	147	152	156	159	162	164
$0.80	119	132	141	147	152	156	159	161
$0.90	111	126	135	143	148	152	155	158
$1.00	102	119	130	138	144	148	152	155
$1.10	94	112	124	133	140	145	149	152

Recommendations based on field research conducted throughout Indiana 2006-2008. These rates assume N management practices that minimize the risk of early-season N loss.

GROWING DEGREE DAY (GDD)

Growing Degree Day (GDD)

$$GDD = \left(\frac{\text{Daily High Temp (F°)} + \text{Daily Low temp (F°)}}{2}\right) - (50F°)$$

P & K CONVERSIONS

P & K Conversions

1 lb of phosphate (P_2O_5) = 0.43 lb of phosphorus (P)
1 lb of potash (K_2O) = 0.83 lb of Potassium (K)

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