

Agricultural Product Guide



LOOK TO KALO FOR SOLUTIONS

Since 1932, KALO has served seed care professionals, agricultural growers and turf managers by providing solutions to challenges that custom applicators, growers, and turf managers face with the utilization of plant protection products.

KALO supplies customers with a complete line of adjuvant and specialty products that cover a broad range of uses.

We provide innovative technical support encompassing formulation development, packaging, label design, shipping and order fulfillment operations.



Since 1932, KALO has been helping growers and turf managers operate more efficiently.



The information used in this product guide is thought to be reliable. Consult plant control and adjuvant product labels to confirm use recommendations.

> ALWAYS READ AND FOLLOW ALL DIRECTIONS ON THE PRODUCT LABEL AND THE LABEL OF THE PESTICIDE BEING USED.

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Antifoamer

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$\operatorname{Tronic} \bullet \bullet \bullet \bullet \bullet \star \bullet $	TERMINOLOGY
CDPR Registered	Mathematical Approved for use with Engenia™
◆WSDA Registered	…Approved for use with Enlist One [®]
★CPDA Certified	\mathcal{O} Approved for use with Enlist Duo®
CDFA Approved	✗ …Approved for use with FeXapan [®]
Contains Quantum Technology	…Approved for use with XtendiMax®
	DRA for use with XtendiMax®

CONVERSION TABLES

How to Calculate Liquid Nutrients Formula Examples: Nutrients per gallon of product

Weight per gallon × % nutrient = lbs. nutrient 18-3-6 10.33 lbs. per gal. × 18% nitrogen = 1.9 lbs. nitrogen per gallon 1.9 lbs. nitrogen per gal. ÷ 128 oz. = 0.0148 lbs. nitrogen per ounce

Liquid Conversions								
Gals	Qts	Pts	Ozs	Cups	Tbl	Tsp	Mis	Ltrs
1	4	8	128	16	256	768	3,480	3.785
	1	2	32	4	64	192	960	0.946
		1	16	2	32	96	480	0.473
			1	1/8	2	6	30	0.030
				1	16	48	240	0.240
					1	3	15	0.015
						1	5	0.005

Parts Per Million

One part per million is one pound in a million pounds. 120,000 gallons of water equals 1,000,000 pounds (constant). To calculate ppm use this formula:

> Pounds of Ingredients Used × 120,000 = ppm Gallons of Water Treated

Aroa

Alta	Dry weight measure
Alea 1 sq. foot = 144 sq. inches 1 sq. yard = 9 sq. feet 1 sq. meter = 10.76 sq. feet 1 sq. meter = 1.20 sq. yards 1 sq. mile = 2.59 sq. kilometers	1 gram = 0.035 ounces 1/2 ounce = 14.17 grams 1 ounce = 28.35 grams 3 ounces = 85.05 grams 3.75 ounces = 106.31 grams
1 sq. mile = 640 acres	4 ounces = 113.4 grams
1 sq. mile = 259 hectares	8 ounces = 226.8 grams
1 sq. kilometer = 0.386 sq. miles	12 ounces = 340.19 grams
1 sq. kilometer = 247.10 acres	16 ounces = 453.6 grams
1 sq. kilometer = 100 hectares	0.5 pounds = 226.8 grams
1 acre = 43,560 sq. feet	1 pound = 453.6 grams
1 acre = 4,840 sq. yards	1 kilogram = 2.20 pounds
1 hectare = 2.47 acres	- '

CONVERSIONS • CONVERSIONS • CONVERSIONS • CONVERSIONS • CONVERSIONS CONVERSIONS **Dry Weight Measure** 1 gram = 0.035 ounces1/2 ounce = 14.17 grams 1 ounce = 28.35 grams3 ounces = 85.05 grams

Adjuvants can greatly increase the effectiveness of your sprays, but no single adjuvant can perform across the board for all crops and all pesticides. Use this chart to select the KALO adjuvant that is right for your needs.

	FUNCTION	KALO PRODUCT
80/20 Spreader Activator		80% Nonionic Surfactant
Nonionic	90/10 Spreader Activator	90% Nonionic Surfactant • Bio-90 • Octane 90 • Pure & Simple 90% • Regulaid • Tronic
Activator	AMS/Nonionic Surfactant	AMS/NIS • One-Ap XL • Restore • Synfactant
	Organosilicone Blend	Cadence
	Penetrant	Citrix
	Crop Oil Concentrate	Crop Oil Concentrate
Oil	Standard Methylated Seed Oil	Hi-Surf MSO • Methylated Seed Oil • Modified Vegetable Oil • Momenta
Activator	MSO/Organosilicone Blend	Clarion
	Oil Replacement	CenterPoint • Sav-Oil • Tronic • Variant
	Acidifying Adjuvant	Capstar • Cruzado • Fraction • Restore
	Ammonium Sulfate	AMS Standard • Fraction • One-Ap XL • Restore • Spectra AMS • Spectra Max Tank Mix • Spray-Start
Spray Modifier	Water Conditioning Agent	AMS/NIS • Cruzado • Fraction • Leeway • Leeway II • Leeway Ultra • Restore • Spectra AMS • Spectra Max Tank Mix • Threshold
	Spreader-Sticker	Bio-Film Extra • Mainstay
	Drift Control and Deposition	AeroStar • Avant Xtra • Drift-X • Check-Point • Check-Point Extra • Leeway II • Mainstay • One-Ap XL • Spectra Max Tank Mix • Spray-Start
	Defoamer	Anti-Foam
	Foam Marking Agent	Benchmark • Benchmark HT • Fomark
Utility	Tank Cleaner	D-Act • K-Klean • Tank Cleaner • Turbo-Cleanse
	Compatibility Agent	Compex • Compex Extra
	Manufacturing Concentrate	Spectra Max Tech
Soil Surfactant	Soil Surfactant	Gravitate • Rain-Check • Root-Juice • Stratum • Variant • Water-Rite • Water-Rite FC
Inoculant	Inoculant for Soybeans	Legacy • Vigor



ABOUT AGRICULTURAL ADJUVANTS

DIFFERENT FUNCTIONS OF ADJUVANTS

What are agricultural adjuvants?

Agricultural spray adjuvants have been known in various sections of the world as wetting agents, spreaders, stickers, or surfactants. The dictionary defines "adjuvant" as a "substance added to a prescription to aid the operation of the main ingredient."

A spray adjuvant performs this function in improving the safety and effectiveness of an agricultural chemical application. It has been discovered that significant improvement in the performance of many foliage applied herbicides is possible when certain surfactants are included in the spray solution, firmly establishing at least one role of the agricultural spray adjuvant in improving the efficiency of agricultural chemicals.

The proper use of spray adjuvants can contribute substantially to safer and more effective pest control, and understanding their many properties and functions is important to their proper use. Although a single adjuvant may provide more than one of the properties, no single adjuvant can provide them all. As a result, there are a variety of spray adjuvants available which have been formulated to encompass those functions which are important to a particular type of application.

What different functions do adjuvants have?

• Wetting of foliage and/or pest. Adequate wetting is required to provide good retention and coverage of the spray solution. A suitable adjuvant, at the proper concentration, will provide improved wetting of the plant or pest surface.

• Modifying rate of evaporation of spray. The need for reducing the rate of evaporation of a spray solution applied at 2-3 gallons per acre in a hot dry area is obvious. The need, however, may be equally great in the application of a concentrate spray in an orchard. Once the spray has been applied, it may be desirable to have the spray dry as rapidly as possible. Both functions can be performed by a proper adjuvant.

• **Improving weatherability of spray deposit**. Resistance to heavy dews, rainfall, and sprinkler irrigation can mean the difference between successful control and failure of an application. The proper adjuvant can greatly improve the weatherability of the spray deposit under these conditions.

- Enhancing penetration and translocation. Many chemicals perform most effectively when they have been absorbed by the plant and transported to areas other than the point of entry. "Systemic" pesticides have this ability. Their absorption can be enhanced and certain non-systemic chemicals can be made to penetrate plant cuticles through the use of a suitable adjuvant.
- Adjusting pH of spray solution and deposit. Many pesticides (primarily organic phosphates and some carbamates) degrade rapidly under even mildly alkaline conditions found in some natural waters and on certain leaf surfaces. Buffering adjuvants can prolong the effective life of alkaline sensitive chemicals under these conditions.
- **Improving uniformity of deposit**. It is well accepted that, with non-systemic pesticides, the quality of performance of a pesticide can be no better than the quality of the spray deposit. This is particularly true of most fungicides which require complete and uniform coverage. The proper adjuvants can provide this kind of coverage.
- **Compatibility of mixtures**. With the savings in labor costs to be obtained from doing more than one job with a single application, the effort is made frequently to mix various combinations of pesticides, and pesticides with liquid fertilizers, in the same spray tank for simultaneous application. The resulting compatibility problems can frequently be corrected with the proper adjuvant.
- **Safety to crop.** Phytotoxic chemicals can harm the crop which we are trying to protect. The hazard can be increased through the use of the wrong adjuvant or substantially reduced through the choice of a proper one.
- **Drift reduction**. The use of special viscosity building or droplet altering adjuvants applied through nozzles, often from conventional aerial or ground equipment, is one of the most promising approaches to drift reduction.



IT'S ALL ABOUT THE WATER!

97% of the world's water is contained in saltwater bodies, and another 2% is frozen in the polar ice caps, leaving only 1% of the world's fresh water supply available for domestic, industrial and agricultural uses. Water sustains our lives, fuels our environment, and is clearly one of our most precious natural resources.

In the business of crop and plant protection, water is the engine that drives the delivery systems of nutrients and plant protection inputs. Without water, it would be impossible to efficiently apply protecting sprays and deliver nutrients that dramatically contribute to our industry's ability to meet the growing demands of our hungry world.

A typical spray droplet is 98% water or more, and yet we often fail to consider and understand the quality of water being used in our spray operations. By the time an EPA registered

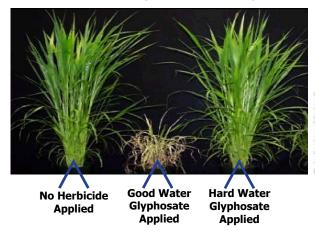


<u>Where The Earth's Water Is</u> 97% — Salt-Water Bodies 2% — Polar Ice Caps 1% — Available For Use

plant protection product reaches the market, the manufacturer of that product has invested millions of dollars and as many as 10 years of resources in development and commercialization. Even so, the most diligent and advanced development of new plant protection technology can all be for not if the water used in the spray operation is not of the good quality and suitability for application.

MINERALS IMPACT SPRAY PERFORMANCE

Hard water minerals antagonize herbicide performance.



Water hardness is associated with increased levels of solubilized minerals contained in spray water. Calcium, magnesium, and iron are each considered "hard water" minerals that can have negative impact on spray performance. These minerals impact performance by interacting with crop protection products, antagonizing the ability of the pesticide to perform. The world's leading herbicide, glyphosate, is susceptible to antagonism from hard water minerals.

Opposites Attract - Glyphosate is antagonized by hard water minerals when cationic (positively charged) calcium, magnesium, and iron minerals in hard water seek out and attract anionic (negatively charged) glyphosate herbicide mixed into spray solution. This antagonistic connection is made immediately when glyphosate herbicide is mixed into "hard water" spray solution, rendering the resulting spray mixture less effective.



DETERMINING SPRAY WATER QUALITY

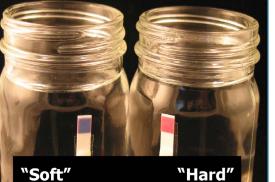
SPRAY WATER pH AND HARD WATER

THE CHALLENGE OF DETERMINING SPRAY WATER QUALITY

A significant challenge in managing spray water quality is that many of the negative factors associated with poor quality water cannot be seen. While an observant operator can easily detect impurities such as dirt and grime or other insoluble materials, factors like pH and the presence of hard water minerals cannot be visually observed.

Additionally, water quality varies from season to season and source to source. Even water sources managed under the operation of public utilities can vary in pH and hardness throughout the season. Managing spray water quality first requires determination of water quality and then utilizing technology to manage the spray operation.

Poor

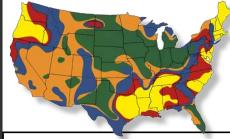


Although both of these water samples appear to be the same and of high quality, the sample on the right is substantially lower in quality with 200 ppm of water hardness compared to the soft water sample on the left.

Adjuvants are products added to the spray tank for the purpose of modifying and enhancing the spray solution. Spray water quality can be managed with the use of spray adjuvants to adjust pH and mitigate the antagonism of hard water minerals. Spray adjuvants that reduce the pH of spray solution are called acidifiers; others that adjust and hold spray pH to a desired level are called spray buffers.

Many different types of adjuvant products are available for managing spray pH and hard water minerals, these adjuvant products are generally called spray conditioners. Spray conditioners perform by offering hard water calcium, magnesium, and iron; a more attractive connective site in the spray tank solution than the pesticide being mixed and sprayed

Water conditioning adjuvants do not remove the hard water minerals from the spray solution, but rather tie them up to prevent and mitigate pesticide antagonism.



U.S. Water Hardness Map

This U.S. map represents average hardness of an area. Your water quality may differ.		
Less Than 3 gpg	Slightly Hard	
3 to 7 gpg	Moderately Hard	
7 to 10 apa	Hard	

7 to 10 gpg

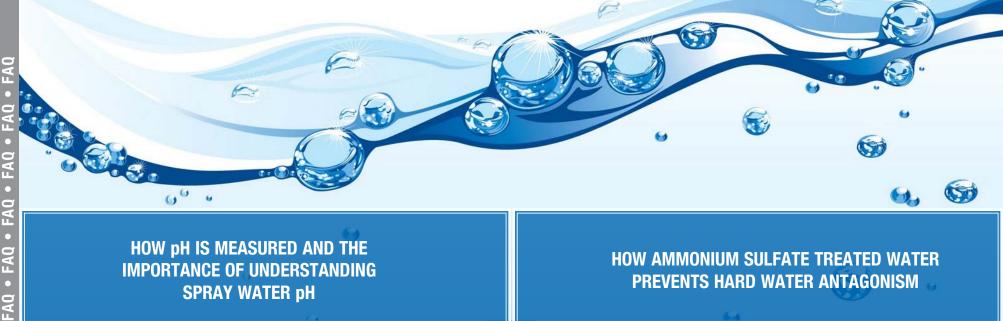
10 to 14 gpg

Over 14 gpg

Extremely Hard

Good

К



HOW pH IS MEASURED AND THE **IMPORTANCE OF UNDERSTANDING SPRAY WATER pH**

pH is a measure of water alkalinity represented on a logarithmic scale of 0 to 14. Water with pH greater than 7.0 is considered alkaline while water less than 7.0 pH is described as acidic. Some pesticides, mostly insecticides, miticides and fungicides, are broken down chemically by high pH water. This degradation is called alkaline hydrolysis. Some pesticides are sensitive to loss in low pH water; this degradation is called acid hydrolysis.

Accordingly, it is important to have a general understanding of the spray water pH and the sensitivity of pesticides to it. In general, a pH of 5.0 to 6.5 (slightly acidic) is optimum for most spray applications.

Pesticide breakdown can be measured in terms of halflife. For example, if a pesticide is 100% effective when first added to a spray solution and has a half-life of 30 minutes, the effectiveness of that particular pesticide is cut in half every 30 minutes.

This chart provides examples of pesticide half-life and the impact of spray pH on the performance of these pesticides:				
	pH 9	pH 7	pH 5	
Betamix (herbicide)	10 min.	17 hrs	60 days	
Captan (fungicide)	2 min.	3 hrs	10 hrs	
Carzol (insecticide)	3 hrs	14 hrs	-	
Dithane (fungicide)	4 hrs	17 hrs	20 days	
Furadan (insecticide)	78 hrs	40 days	-	
Guthion (insecticide)	12 hrs	-	60 hrs	
Kelthane (miticide)	1 hr	5 days	20 days	
Orthene (insecticide)	3 days	17 days	-	
Sevin (insecticide)	24 hrs	10 days	-	

Examples Liquid drain cleane =14)13 Bleaches, oven cleaner, ly (pH=13.5) 12 Increasing Alkalinit Ammonia solution (pH=10.5-11.5) Baking soda (pH=9.5) Sea water (pH=8) Blood (pH=7.4) - Neutra Milk, urine, saliva (pH=6.3-6.6) Black coffe (pH=5) Grapefruit juice, soda tomato juice (pH=2.5-3.5) Lemon juice, vinega Battery acid, hydrochloric acid

HOW AMMONIUM SULFATE TREATED WATER **PREVENTS HARD WATER ANTAGONISM**

AMMONIUM SULFATE DISRUPTS HARD WATER ANTAGONISM OF HERBICIDES, FUNGICIDES, AND INSECTICIDES

C₃H₈NO₅P-

Ammonium sulfate disrupts hard water antagonism and conditions spray water in two ways:

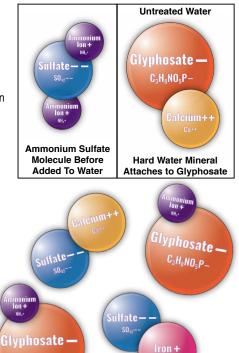
First: The weakly bonded ammonium ion disassociates from the sulfate, leaving the double-negative sulfate wide open for attraction to the double-positive hard water minerals; such as calcium, magnesium, and iron.

Second: The disassociated single-positive ammonium ion is attracted to the singlenegative glyphosate molecule, becoming more readily accessible to targeted plant.



AMS treated water prevents hard water mineral antagonism of glyphosate.

Ammonium ion attaches to glyphosate for enhanced uptake.



FAQ • FAQ •

FAQ •

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TIPS FOR TANK MIXING SUCCESS

CONDUCTING A JAR TEST FOR COMPATIBILITY

Proper mixing of crop protection products is critical to ensure the products are applied uniformly. Mixing can sometimes make the difference between acceptable and unacceptable performance.

DALES is an acronym for tank mixing order of dry products: Dry - Agitate - Liquids - ECs - Surfactants

WALES is an acronym for tank mixing order of liquid products: Wettables - Agitate - Liquids - ECs - Surfactants

These acronyms have been around for some time and have served the industry well over the years.

Unless otherwise specified by directions on the pesticide manufacturer's label, the following tank mix sequence more accurately addresses newer formulations.

- 1. Water. Fill the spray tank 1/3 to 1/2 full with clean water and start the agitation.
- 2. Water-soluble bags (WSB) Water-soluble granules (SG) Water-dispersable granules (WG, XP, DG) Some product labels will require pre-slurry.
- 3. Wettable powders*(WP)
- 4. Water-based suspension concentrates (SC) Water-soluble concentrates (SL)
- 5. Suspoemulsions (SE) Oil-based suspension concentrates (OD)
- 6. Emulsifiable concentrates (EC) ${\mbox{ \bullet Surfactant } {\mbox{ \bullet Oils } {\mbox{ \bullet Adjuvants } {\mbox{ \bullet Soluble fertilizers } {\mbox{ \bullet Drift retardants } }}$
- 7. Continue filling with remaining water.

TIPS

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- Before mixing, make sure all spray mixing and application equipment is thoroughly cleaned.
- Slowly pour dry products into the spray mix at the point of maximum agitation.
- Maintain good agitation at all times, until the contents of the tank are sprayed.
- If mixture is allowed to settle, thorough agitation is recommended before spraying is resumed.
- If refilling a partially full tank, take care to avoid exceeding the recommended use rate for the product.
- Screen size in line strainers should be no finer than 50 mesh.
- If using AMS for a water conditioner, add the AMS after the dry products have been completely dispersed in the spray tank solution.

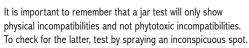
TESTING FOR PRODUCT COMPATIBILITY IS IMPORTANT!

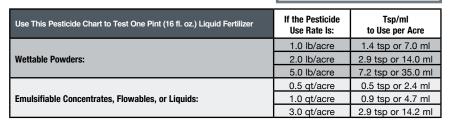
Since formulations sometimes change and are not all created equally, users should perform a jar test to determine the physical compatibility of the products being introduced into the spray tank and to determine water volume proportional to the water volume of the planned spray tank. Refer to the tank mixing sequence shown on prior page.

NOTE: If the tank mix is not compatible, a higher water volume, reduced rate of tank mix partners, reduced number of tank mix partners or a compatibility agent (such as KALO's Compex or Compex Extra) may be needed.

JAR TEST INSTRUCTIONS

Pour 1 pint of water into a 1 quart jar. Add the correct proportion of fertilizer and wettable powders to the water and ensure that the materials are uniformly mixed. Add aqueous components individually, again ensuring each is mixed uniformly. Add EC compounds last. Invert (DO NOT SHAKE) the jar 10 times to mix, and let stand for at least one hour. Inspect for unusual signs such as participates, clumping or layering in the mixture.





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This photo shows an example of an

improperly mixed crop protection

product. Following the proper mixing

sequence and testing for compatibility

with a jar test is highly recommended.

CROPPING SYSTEMS BY BASF, CORTEVA AGRISCIENCE & BAYER

Phenoxy Herbicides- 2,4-D and Dicamba Approved Adjuvants

Weed resistance (mainly broadleaf resistance) to glyphosate has been widely documented. BASF, Corteva Agriscience and Bayer have USDA and EPA approved cropping systems to combat and control resistant weeds.

Engenia[®] Engenia[®] by BASF

Herbicide

BASF has a bapma salt dicamba formulation for the Xtend® cropping system called Engenia. Engenia is a dicamba only formulation that can be tank mixed with glyphosate.

- Engenia requires a non-AMS water conditioner
- Engenia requires a pH of 5.5 or greater
- Engenia can only be used with approved drift reduction agents
- Engenia may be volatile
- For a list of approved adjuvants, nozzles and pesticides for Engenia, visit: www.EngeniaTankMix.com

XTENDIMAX XtendiMax[®] by Bayer VaporGrip.

Bayer recently incorporated one component of the three enzymes into the genome of soybean, cotton and other broadleaf crop plants, making them resistant to dicamba. Bayer has marketed their dicamba resistant crops under the brand name XtendiMax® crop system. Bayer's dicamba formulation is based off dicamba diglycolamine salt (which is the same dicamba formulation as Clarity®) with some modification to reduce vapor drift/volatility movement to off-target areas.

- XtendiMax requires a non-AMS water conditioner
- XtendiMax requires a pH of 5.5 or greater
- XtendiMax can only be used with approved drift reduction agents
- XtendiMax may be volatile
- For a list of approved adjuvants, nozzles and pesticides for XtendiMax, visit: www.XtendiMaxApplicationRequirements/Pages/tankmix.aspx

NEW CROPPING SYSTEMS BY BASF, CORTEVA AGRISCIENCE & BAYER



COLEX.D[®] technology

HEPRICIDE

Enlist One® & Enlist Duo® by Corteva **Agriscience**

Enlist One is a herbicide that contains Colex-D[®], a new formulation of 2.4-D choline. Enlist Duo is a herbicide that contains Colex-D[®] and glyphosate. Corteva Agriscience genetically modified maize and soybeans resistant to 2,4-D choline and glyphosate have been approved in the United States and Canada. Enlist One and Enlist Duo have been approved by the EPA.

- Enlist One/Duo can utilize an AMS or non-AMS water conditioner
- Enlist One/Duo has no pH restrictions
- For a list of approved adjuvants, nozzles and pesticides for Enlist One/Duo, visit: www.Enlist.com/en/Approved-Tank-Mixes.html

FeXapan°

FeXapan[®] by Corteva Agriscience

Plus VaporGrip[®] Technology HERRICIDE

Control herbicide-resistant broadleaf weeds

• Low volatility dicamba herbicide

• For a list of approved adjuvants, nozzles and pesticides for FeXapan, visit: www.Corteva.us/Products-and-Solutions/Crop-Protection/FeXapan/Tank-Mix-Partners.html

KALO has a broad offering of water conditioning and drift control products that fit these markets. For listings of KALO adjuvants that are approved for these technologies, look for the Engenia, XtendiMax, Enlist One, Enlist Duo or FeXapan logos within the product pages of this guide.

Engenia is a registered trademark of BASF Corporation. Clarity is a registered trademark of BASF Corporation. XtendiMax and VaporGrip are registered trademarks of Bayer. Enlist One, Enlist Duo, FeXapan and Colex-D are registered trademarks of Corteva Agriscience.

80% Nonionic Surfactant.

AND ANTIFOAMING AGENT

Principal Functioning Agents	
1,2,3-Trihydroxypropane, Diethylene Glycol, Alkylphenol Ethoxylate	Ι

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

80% Nonionic Surfactant improves the effectiveness of certain post emergent herbicides, desiccants, defoliants, insecticides, fungicides, acaricides, and miticides to enhance activity.

80% Nonionic Surfactant improves performance of the active spray ingredients by providing more uniform distribution and better wetting of the plant surface.

For ground, air, and aquatic* use applications.

*NOT FOR USE ON AQUATIC SITES IN THE STATE OF WASHINGTON!



80.0%

USE RATES	
Post Emergence Herbicides	2 to 6 pints per 100 gallons (0.25% to 0.75% v/v) spray solution
Fungicides	6 to 10 fl. oz. per 100 gallons
Insecticides	6 to 10 fl. oz. per 100 gallons
Acaricides	6 to 10 fl. oz. per 100 gallons
Aquatic	Apply at rate recommended as instructed by pesticide label.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with

Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

<u>ADJUVAN</u>

6

OUID ADJUV

DUID ADJUVANT •

90% Nonionic Surfactant.

AND ANTIFOAMING AGENT

1.2.3 Propagatrial Diothylang Glycal Alkylahanal Ethoxylata	Principal Functioning Agents	
1,2,3-i Topanethol, Diethylene diycol, Akylphenol Ethoxylate	1,2,3-Propanetriol, Diethylene Glycol, Alkylphenol Ethoxylate	90.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

90% Nonionic Surfactant improves the effectiveness of certain post emergent herbicides, desiccants, defoliants, insecticides, fungicides, acaricides, and miticides to enhance activity.

90% Nonionic Surfactant improves performance of the active spray ingredients by providing more uniform distribution and better wetting of the plant surface.

For ground, air, and aquatic* use applications. *NOT FOR USE ON AQUATIC SITES IN THE STATE OF WASHINGTON!





USE RATES	
Post Emergence Herbicides	1 to 4 pints per 100 gallons (0.125% to 0.5% v/v) spray solution
Fungicides	4 to 8 fl. oz. per 100 gallons
Insecticides	4 to 8 fl. oz. per 100 gallons
Acaricides	4 to 8 fl. oz. per 100 gallons
Aquatic	Apply at rate recommended as instructed by pesticide label.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

AeroStar.

PENETRANT / DRIFT REDUCTION AGENT / DEPOSITION AID

Principal Functioning Agents	
Modified vegetable oil, olgometric terpene resin, alcohol alkoxylate	100.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

AeroStar is a deposition and drift management agent specifically designed to suppress off-target drift of spray applications.

AeroStar improves the uniformity and density of spray droplets and is particularly beneficial in aerial applications.

AeroStar maximizes deposition by increasing droplet size and maintaining a more uniform spray pattern.

AeroStar can be used with air assist and conventional spray nozzles.



USE RATES FOR GROUND AND AERIAL		
Tank Mixing and Direct Injection Rates for Herbicides, Fungicides and Insecticides:Add 1 to 2 quarts (0.25% - 0.5% v/v) per 100 gallons.		
Direct Injection	AeroStar can be applied through injection systems when added to one of the system's chemical injection tanks. An in-line mixing chamber is recommended. 1) add AeroStar to the chemical injection tank; 2) pump the correct amount of AeroStar into the line; 3) pump the proper amount of water, pesticide, fertilizer and other adjuvants into the line, for mixing with AeroStar and chemicals, before going into the spray boom.	

AMS/NIS

WATER CONDITIONING AGENT / NONIONIC SURFACTANT

Principal Functioning Agents		
Ammonium Sulfate, Alkyl Polyglycoside, Polydimethylsiloxane	49.9%	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

AMS/NIS is a premium blend of ammonium sulfate and nonionic surfactant formulated to optimize glyphosate and other herbicide activity.

AMS/NIS optimizes herbicide performance by preventing hard water mineral antagonism of spray mixtures while providing faster wetting and spreading of spray droplets to enhance herbicide movement through the targeted plant surface.

AMS/NIS enhances spray coverage, biological activity and absorption of herbicide product labels that recommend the use of ammonium sulfate and/or nonionic surfactants.

Not approved for aquatic use.



USE RATES

Specific use rates will vary with conditions such as water hardness, application method, equipment, and weather. Follow pesticide label directions. Do not add this product at a rate which exceeds 5% of finished sprav volume.

Gals of AMS/NIS per 100 Gals	Qts of NIS per 100 Gals	Lbs of AMS per 100 Gals
1.25 gallons	1 quart	4.25 pounds
2.50 gallons	2 quarts	8.50 pounds
5.00 gallons	4 quarts	17.0 pounds

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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DEPOSITION/DRIFT REDUCTION AGENT / NONIONIC SURFACTANT / PENETRANT

Principal Functioning Agents

Polyoxyethylene Sorbitan Fatty Acid Ester, Soybean Oil Ethoxylate, Copolymer of Alpha- and Beta-Pinene

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Avant Xtra is a tank mix adjuvant formulated to provide optimal pesticide spray performance by enhancing deposition of the spray application.

Avant Xtra suppresses off-target drift of spray applications by providing a more uniform pattern and velocity of the spray droplets.

Avant Xtra can be used with air assist and conventional spray nozzles.

Avant Xtra can be used with herbicides, including desiccants, insecticides, fungicides and plant-growth regulators, in keeping with pesticide label recommendations.

Avant Xtra maximizes pesticide performance by improving spray coverage and through enhanced retention and infiltration of the targeted leaf surface. Avant Xtra will not eliminate all drift.



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100.0%

Avant Xtra can be applied through injection systems when added to one of the systems's chemical injection tanks. An in-line mixing chamber is recommended.

Not approved for aquatic use.

<u>Quid adjuvant • Liquid</u> Adjuvant • Liquid Adjuvant • Liquid Adjuvant • Liquid Adjuvant

Avant Xtra contains Quantum technology, an innovative, vegetable oil-derived surfactant that delivers enhanced penetrating properties and assists with translocation of active ingredients throughout the targeted plant.

For Use In WASHINGTON

GROUND AND AERIAL USE RATES		
Tank Mixing and Direct Injection Rates:	Add 1 to 2 quarts (0.25% - 0.5% v/v) per 100 gallons.	
Direct Injection:	Avant Xtra can be applied through injection systems when added to one of the system's chemical injection tanks. An in-line mixing chamber is recommended. 1) add Avant Xtra to the chemical injection tank; 2) pump the correct amount of Avant Xtra into the line; 3) pump the proper amount of water, pesticide, fertilizer and other adjuvants into the line, for mixing with Avant Xtra and chemicals, before going into the spray boom.	

CALIFORNIA

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with.

Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Bio-90.

NONIONIC SURFACTANT / ANTIFOAMING AGENT / HUMECTANT

Principal Functioning Agents	
Branched Alkyl Phenol Ethoxylate, Propylene Glycol, Tall Oil	90.0%
Constituents Ineffective	10.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Bio-90 is a nonionic surfactant formulated for increasing the efficacy of various agricultural and horticultural spray applications.

Bio-90 should be used where wetting and uniform coverage of the spray is required.

Bio-90 improves the performance of the active spray ingredients by giving more uniform distribution and better wetting of the plant surface.

Bio-90 is intended for use with pesticides that are labeled for agricultural and non-agricultural uses. Some pesticide labels recommend a higher or lower surfactant use rate for optimum efficacy. Follow the pesticide label directions when this occurs.

Bio-90 can be used with most insecticides, fungicides, herbicides, defoliants and desiccants to improve the performance of the active spray ingredients by giving more uniform distribution and better wetting of the plant surface.

Bio-90 is a broad-spectrum adjuvant specifically designed for optimum activity enhancement when used with a wide range of pesticides and solvents such as water, aromatics, alcohol and alphatics.

Not approved for aquatic use.



USE RATES

Do not add this product at a rate which exceeds 0.375% of the finished spray volume.

Herbicides	1 to 3 pints per 100 gallons	Improves the performance o the active spray ingredients by giving more uniform distribution and better wetting of the plant surface.	
Fungicides	3 to 8 fluid ounces per 100 gallons		
Insecticides	3 to 8 fluid ounces per 100 gallons		
Defoliants & Desiccants	1 to 2 pints per 100 gallons		
Acaricides	3 to 8 fluid ounces per 100 gallons	0 gallons	
Wettable Powders, Water Soluble Materials, Emulsifiable Products	Add Bio-90 in water after a good mixture is formed. Refer to the herbicide label for recommended surfactant rates.		
For Use With Glyphosate Herbicides			

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100.0%

Bio-Film[®] Extra

SPREADER-STICKER ADJUVANT

Principal Functioning Agents	
Alkylphenol, Hydroxyl-polyoxyethylene, Polymerized Resins and Fatty Acids, Paraffin Base Petroleum Oil	100.0

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Bio-Film Extra is a self-emulsifiable, nonionic spreader-sticker adjuvant intended for use with most plant protection products in which the label permits the use of a spreader-sticker.

Bio-Film Extra is compatible in spray solutions with most commercial plant protection products and foliar feed micronutrients.

A thin coating of Bio-Film Extra forms an elastic film and bonds the accompanying tank mix product to the plant foliage. This enhances the efficiency of the spray application and minimizes loss through rainfall or irrigation run-off.



Not approved for aquatic use.

	For Use In CALIFORNIA	
USE RATES		
Observe spray patterns and adjust the amount of Bio-Film Extra as needed.		
Fungicides 4 to 16 fl. oz. per 100 gallons of spray mix		
Acaricides 4 to 16 fl. oz. per 100 gallons of spray mix		
Insecticides 4 to 16 fl. oz. per 100 gallons of spray mix		
Aerial Application 4 to 16 fl. oz. depending on usage and spray equipment		

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Cadence...

HUMECTANT / NONIONIC SURFACTANT / WETTING AGENT / DEFOAMING AGENT

Principal Functioning Agents

Diethylene Glycol, Polyether-Polymethylsiloxane-Copolymer,	
Alkylphenol Ethoxylate, Dimethylpolysiloxane	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Cadence is a surfactant based on organomodified siloxane technology for use in water-based pesticide formulations. Careful observation of spray application is recommended to determine proper and efficient pesticide application. This will optimize the pesticide and surfactant load levels. While Cadence has been proven to

be a highly efficient surfactant; timing, weather conditions, methods of application, crop conditions, and/or mixture with other chemicals not specifically recommended are beyond the control of the seller. Therefore, the user should carefully observe spray deposits, rate efficiencies, compatibilities and effectiveness in initial application and adjust the adjuvant rates accordingly.

Not approved for aquatic use.

CONTAINS NON-PLANT FOOD INGREDIENTS



USE RATES

As A Spray Adjuvant With Herbicide	16 fl. oz. per 100 gallons, or 1.6 fl. oz. per acre using a 10 gallon per acre spray rate	
As An Adjuvant with Herbicides, Micronutrients or Defoliants	6 to 16 fl. oz. per 100 gallons of spray solution	
As An Adjuvant with Insecticide, Miticides or Fungicides	6 to 12 fl. oz. per 100 gallons of spr	ay solution
For Use with Aerial Applications	12 to 16 fl. oz. per 100 gallon of spr	ay solution
As A Soil Wetting Agent (Such as Golf Course Tees and Greens)	0.1% v/v, or use the following spray rates per 1,000 square feet: 1/8 fl. oz. in 1 gallon of water; or 1/5 fl. oz. in 1.5 gallons of water; or 1/4 fl. oz. in 2 gallons of water	
For Large Turf Areas (Such as Golf Fairways): Boom Sprayers	0.05% to 0.1% v/v concentration, or 6 to 13 fl. oz. per 100 gallons of tank mix/water	
Injection Through Irrigation	1,000:1 To accommodate 100:1 proportioners, mix a 10% solution of Cadence and water and inject at 100:1	Adjust proportioning valve to inject at the ratio 1:1000, based on weekly application.
As a Mulch, Peat or Potting Soil Wetting Agent	0.05% to 0.1% v/v concentration, or 6 to 13 fl. oz. per 100 gallons	Repeat as needed.
As a Dew Control Agent	0.1% v/v concentration, or 13 fl. oz. (approx.) per 100 gallons of water every 7 to 10 days	Will prevent dew formation on turf areas such as tees and greens. Apply with a boom sprayer or hand sprayer.
For Use with Liquid Fertilization	6 to 13 fl. oz. per 100 gallons of mix	

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Capstar.

SURFACTANT / DRIFT REDUCTION / DEPOSITION AID / ACTIVATOR / ACIDIFIER

Principal Functioning Agents	
Oxirane, 2-Methyl-, Polymer with Oxirane, Mono(2 Ethylhexyl) Ether, Alcohol Ethoxylate Phosphate Ester, Soybean Oil, Ethoxylated	82.48%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Capstar is a unique tank mix adjuvant formulation containing water conditioners, surfactants, activators, deposition, acidifying agents and antifoam.

Capstar reduces the antagonistic effects of hard spray water.

Spray water containing dissolved minerals can have a negative impact on herbicide efficacy. Capstar's specialized formulation will lower the pH of the spray solution which helps increase the effectiveness of weak acid herbicides such as glyphosate.

Capstar suppresses off-target drift and enhances canopy penetration by providing a more uniform spray pattern, thereby increasing spray deposition and coverage of targeted surfaces.

Capstar contains a nonionic surfactant system to optimize wetting and spreading of the spray droplet. Capstar slows spray droplet drying time to minimize droplet evaporation and improve absorption during low humidity conditions.

Capstar contains antifoam to reduce troublesome foam.

Do not use Capstar with sulfonamide herbicides or sulfonylurea herbicides or other mixtures that cannot tolerate low pH levels.

USE RATES

Always read and follow adjuvant use instructions found on the pesticide label before using. For use with pesticides registered for use for agriculture, forestry, industrial municipal, non-cropland and right-of-way.

General Use Rates: 2 quarts (0.5% v/v) to 3 quarts (0.75%) in 100 gallons of spray water.

For enhanced deposition and drift suppression, use the higher rate.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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CenterPoint.

HIGH SURFACTANT OIL CONCENTRATE / DEPOSITION AID / PENETRANT

Principal Functioning Agents	
Methylated Soybean oil, Ethoxylated Sorbitan Fatty Acid Ester, Branched Alkyl Phenol Ethoxylate	96.2%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

CenterPoint is a unique, highly concentrated methylated seed oil based spray adjuvant developed to maximize effectiveness of postemergence herbicides.

CenterPoint suppresses off-target drift by providing a more uniform spray pattern and reduces driftable fines.

CenterPoint is a patent-pending formulation that further maximizes pesticide performance by enhancing active ingredient droplet retention on the targeted surface.

Use CenterPoint when the accompanying pesticide label recommends use of a methylated seed oil adjuvant.



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CenterPoint contains Quantum technology, an innovative, vegetable oil-derived surfactant that delivers enhanced penetrating properties and assists with translocation of active ingredients throughout the targeted plant.

JSE RATES

CenterPoint can be used with air-assist and conventional spray nozzles.

General Use Rates: 2 to 4 quarts per 100 gallons of spray water.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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PENETRANT / WETTING AGENT / SPREADER

Principal Functioning Agents		
Alcohol Alkoxylate, Sodium Laureth Sulfate	12.15%	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Citrix is intended for use with products registered for agricultural, horticultural, turf, ornamental, industrial and non-crop use as a tank mix adjuvant.

The unique surfactant chemistry provides enhanced wetting and absorption of nutrient and crop control tank mix partners that recommend the addition of an adjuvant to improve performance.

Use Citrix for superior spray application spreading, penetration and uniform distribution of the spray application.

The nonionic surfactant component in Citrix assists with the spreading and infiltration of the spray deposit.

Citrix may be used with most herbicides, fungicides, insecticides, plant growth regulators, defoliants, and fertilizer products in keeping with instructions on the accompanying crop protection or fertilizer label.



USE RATES	SE RATES			
Herbicides, Insecticides, Desiccants:	25 to 64 fluid ounces per 100 gallons of water.	Use higher rates on wee surfaces that are hard to		
Plant Growth Regulators:	5 to 10 fluid ounces per 100 gallons of water.			
Insecticides, Fungicides, Miticides, Foliar Nutrients:	Air-assisted sprayer & conventional sprayer in field and row crops: 25 to 64 fluid ounces per 100 gallons of water.	ULV equipment such as aerial, electrostatics, foggers and misters: 25 to 64 fluid ounces per 100 gallons of water.	Chemigation* through irrigation systems such as drip, microjet, sprinklers or pivot: 10 to 20 fluid ounces per acre. *Not approved in CA.	
PRECAUTIONS:	Do not apply to fruiting stages of pome fruit, cherries, table grapes or other sensitive or stressed crops without first consulting your distributor or representative. Test for compatibility when combining in tank mixes with EC products, copper and/or chlorpyrifos on sensitive crops.			
NOTE:	Citrix reduces dew formation for up to 7 days and therefore may increase the risk of frost damage in frost prone areas.			

MODIFIED VEGETABLE OIL / NONIONIC SURFACTANT	ertifi
Principal Functioning Agents	\sim
Methyl Soyate, Methylated Silicones, Ethoxylated Castor Oil	1(
Principal Functioning Agents	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Clarion is a unique blend of highly refined and modified spray oil and nonionic organosilicone.

Clarion's unique chemistry allows for enhanced wetting and absorption of those pesticides or products recommending the addition of a spray adjuvant to improve performance.

The addition of Clarion to a spray tank solution will improve a spray application by physically modifying the wetting and spreading

characteristics, the result being a more uniform spray deposit. Observe the initial application to insure thorough coverage without excessive runoff of the spray.

Not approved for aquatic use.



GROUND AND AERIAL USE RATES

Clarion is intended for use with pesticides that are labeled for agricultural and non-agricultural uses. The use of Clarion can increase pesticidal activity where the following factors occur, but is not limited to: 1) Low humidity and high temperatures; 2) Low water volume rates of less than 15 gallons per acre; and 3) when target species are larger than the label recommendations at time of application. For optimum results, spray mixes containing KALO Clarion should be applied within 36 hours.

Ground Rate	3 to 5 pints per 100 gallons
Aerial Rate	6 to 16 pints per 100 gallons
NOTE:	The application rates on this label are based on pesticides recommending the use of a nonionic surfactant. Rates of this product may be increased or decreased for optimum results. Follow pesticide labeling for proper recommendations. Before using Clarion where a nonionic surfactant may not be recommended, the user or applicator advisor must have experience with the combination or must have conducted a phytotoxicity trial.

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Clarion

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Crop Oil Concentrate...

CONTAINS PETROLEUM DISTILLATES

	Certified
Principal Functioning Agents	
Paraffinic Petroleum Oil, Tall Oil Fatty Acids, Alkylphenol Ethoxylates	99.0%
Surfactant Content	16.0%
Unsulfonated Oil Residue (UR) Value	92.0% Minimum

All ingredients are exempt from the requirement of a tolerance under 40 CFR 18

Crop Oil Concentrate is a blend of a surfactant and a non-phytotoxic superior type of agricultural spray oil designed for use with a broad range of postemergence herbicides as well as desiccants, defoliants, and other pesticide uses.

Crop Oil Concentrate increases the activity of herbicides and, therefore, care should be exercised when herbicide spray containing Crop Oil Concentrate is applied to new varieties

or highly inbred lines not previously treated with spray tank adjuvants. Use caution when applying with herbicides.

Crop Oil Concentrate may increase the effectiveness of the spray

mixture. If mixture has not been used before, it is recommended that small test areas be treated before undertaking large-scale application.

Not approved for aquatic use.



CPDA

GROUND AND AERIAL USE RATES			
	Aerial Application	1 to 3 pints in 2 to 15 gallons of water	
Ground Application		1 to 8 pints in 15 to 100 gallons of water	

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Cruzado...

WATER CONDITIONING AGENT / ACIDIFIER / HUMECTANT / SURFACTANT

Principal Functioning Agents				
Urea.	Glvcerin.	Polvoxvethvlene	Tallow Amine.	Sulfuric Acid

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Cruzado is a water conditioner and pH modifying adjuvant specifically used as a tank mix additive for glyphosate and other pesticides that are susceptible to antagonism from hard water minerals such as calcium, iron, manganese and other impurities.

Cruzado prevents hard water mineral antagonism and improves absorption into plants to enhance efficacy on difficult to control weeds.

Cruzado should be used with spray mixes that are registered for agricultural, horticultural, turf, ornamental, industrial and non-crop use.

Not approved for aquatic use.



74.45%

USE RATES

For all Applications: Do not substitute Cruzado for water required by the label. Spray equipment should be rinsed thoroughly after use. Unless instructed otherwise by pesticide label, always add Cruzado first to the spray water. NOTE: Read and follow all pesticide label directions. Do not use where the pesticide label specifically prohibits the use of an adjuvant. If the pesticide label neither recommends nor prohibits an adjuvant, the applicator must have previous experience with the adjuvant/pesticide spray mixture or should apply a small test area before making large scale applications. The addition of an adjuvant to spray mixtures may cause phytotoxicity to susceptible crop and vegetation. Care should be exercised when using on new varieties or crops not previously treated with Cruzado. Do Not Use Cruzado With Sulfonylurea Herbicides. After water hardness has been determined, use the following rates:

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If water hardness is less than 200 ppm	Use 0.25% v/v (1 quart) of Cruzado per 100 gallons of spray mixture.		
If water hardness is between 200-500 ppm	Use 0.50% v/v (2 quarts) of Cruzado per 100 gallons of spray mixture.		
If water hardness is greater then 500 ppm	Use 1.0% v/v (1 gallon) of Cruzado per 100 gallons of spray mixture.		
Cruzado may be used with pesticides that may benefit from its water conditioning and properties.			

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Drift-X[®]

DEPOSITION AGENT / DRIFT REDUCTION AGENT

Principal Functioning Agents

Soybean oil, octadecanoic acid, 12-hydroxy-homopolymer, ester with alpha,alpha',alpha''-1,2,3-propanetriyltris[omega-hydroxypoly(oxy-1,2-ethanediyl)], poly(oxy-1,2-ethanediyl), alpha-(1-oxo-9-octadecenyl)-omega-hydroxy-(Z)-

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Drift-X is a proprietary drift management adjuvant that is easy to use and does not require any special mixing or handling.

When used properly, Drift-X reduces spray drift and enhances deposition by improving canopy coverage and penetration, reducing droplet bounce, and minimizing formation of small droplets that may be prone to off-target drift or evaporation.

Drift-X improves spray coverage and reduces drift and evaporation of herbicides, defoliants and desiccants being applied by ground or air applications.

Note: Spray drift reduction is dependent upon many factors including equipment and weather conditions. For proper management of spray drift, all factors including nozzle type and configuration, boom height, wind speed and direction, humidity and temperature must be taken into consideration.

Drift-X may be used with flat fan, hollow cone, and coarse spray nozzles. It is suitable for use with the latest nozzle technology including air inclusion, air induction, and venturitype air induction nozzles.



Approved Use In CALIFORNIA

GROUND AND AERIAL USE RATES			
Use Rate For Drift Management and Deposition:	Spray Volume	Rate of Drift-X	
	<10 GPA	2-3 oz/acre	
	10-25 GPA	3-4 oz/acre	
For Spray Volumes Greater Than 20 GPA:	Use at a rate of 0.25% v/v (1 quart per 10 gallons of spray solution). Do not exceed a us rate of 1% v/v.		

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Hi-Surf MSO

MSO / SURFACTANT BLEND

Principal Functioning Agents	
Methylated Seed Oil and Surfactant Blend	99.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Hi-Surf MSO is a nonylphenol-free, highly active methylated seed oil and surfactant blend adjuvant that delivers superior wetting, spreading and leaf cuticle penetration characteristics.

Hi-Surf MSO may be used with pesticide products containing label instructions recommending use of methylated seed oils or high surfactant oil adjuvants.

Hi-Surf MSO improves herbicide efficacy by modifying the wetting and deposition characteristics of the spray solution resulting in a more even and uniform spray deposit.

Hi-Surf MSO's enhanced surfactant content allows lower use rates than standard oil activator spray adjuvants.

Care must be taken when treating sensitive crops, particularly during periods of drought stress, high temperatures and high humidity.



USE RATES	
Ground, Aerial, Low Volume, CDA:	4 to 6 pints per 100 gallons of spray solution, or 0.50% to 0.75% v/v.
Difficult To Control Weed Populations:	8 pints per 100 gallons (1.0% v/v).
Do not exceed the accompanying pesticide label recommendation for tank mix adjuvants	

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

DRA FOR USE Xtendi Max®

Leeway

BUFFERING AGENT / NONIONIC SURFACTANT / HUMECTANT

Principal Functioning Agents

Trisodium Citrate Dihydrate, d-Glucopyranose, Oligomeric, C9-11-Alkyl Glycosides, Monocarbamide Dihydrogen Sulfate

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Leeway is a water conditioning agent formulated to enhance pesticide performance by modifying the hardness of spray water.

Leeway imparts a neutral pH.

Leeway can eliminate antagonism of the spray tank caused by hard water minerals such as calcium, iron and magnesium.

The surfactant ingredient in Leeway improves spray droplet spreading and penetration into the targeted leaf surface.

Leeway provides humectancy to spray droplets resulting in a slower drying time for enhanced uptake of active ingredients.

Leeway can be used for a wide range of pesticide and nutrient spray mixtures when accompanying labels recommend water conditioners and spreaderwetter adjuvants.

For use with herbicides registered for use for agriculture, forestry, and industrial, municipal, ornamental, right-of-way, turf, non-cropland and other uses.



GROUND, AERIAL AND CDA USE RATES

Prior to using Leeway, the user or application advisor must have experience with the combination of active ingredients or must have conducted a phytotoxicity trial.

Use 2 to 4 quarts per 100 gallons of spray mixture (0.5% v/v to 1.0% v/v) when
used in place of ammonium sulfate.

Do not use this product at a rate to exceed 2.5% v/v of finished spray tank mixture.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Leeway II.

WATER CONDITIONING AGENT / NONIONIC SURFACTANT / HUMECTANT / DRIFT REDUCTION AGENT

Principal Functioning	Agents	
risodium Citrate Dihvdrate.	Alkyl Polyglucoside C9-11.	Diethylene Glycol

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Leeway II is a drift reduction and water conditioning agent formulated specifically for XtendiMax[®], Engenia[®] and FeXapan[™] tank mixes to reduce off-target drift.

Leeway II imparts a neutral pH.

Leeway II can eliminate antagonism of the spray tank caused by hard water minerals such as calcium, iron and magnesium.

The surfactant ingredient in Leeway II improves spray droplet spreading and penetration into the targeted leaf surface.

Leeway II provides humectancy to spray droplets resulting in a slower drying time for enhanced uptake of active ingredients.

Leeway II can be used for a wide range of pesticide and nutrient spray mixtures when accompanying labels recommend water conditioners and spreader-wetter adjuvants.



GROUND, AERIAL AND CDA USE RATES

For use with herbicides registered for use for agriculture, forestry, and industrial, municipal, ornamental, right-of-way, turf, non cropland and other uses. Prior to using Leeway II, the user or application advisor must have experience with the combination of active ingredients or must have conducted a phytotoxicity trial.

Ground/Aerial for Water Conditioning/Buffering:	Use 1 to 4 quarts per 100 gallons of spray mixture.
As a Drift Reduction Agent for XtendiMax, Engenia and FeXapan Tank Mixes:	Use 5 pints (minimum) to 8 pints (maximum) per 100 gallons in the spray mixture.

Do not use this product at a rate to exceed 1% v/v of finished spray tank mixture.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with.

Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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34.75%

35

Leeway Ultra.

WATER CONDITIONER / PENETRANT

Principal Functioning Agents	
Tripotassium Citrate, Amine Alkoxylates, Alcohol Phosphates	56.4%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Leeway Ultra is a blend of water conditioning agents and surfactants formulated for use with a broad range of pesticide and nutrient spray mixtures.

The water conditioning ingredients in Leeway Ultra work to reduce hard water mineral antagonism of pesticide spray mixtures.

Leeway Ultra improves pesticide performance by modifying the wetting and deposition of spray applications for more uniform coverage.

Leeway Ultra is particularly effective with glyphosate-type herbicides that respond favorably to water conditioners and enhanced absorption of the targeted plant tissue.

Note: Spray application performance can be influenced by environmental factors, spray volume, spray pressure, companion tank mix products, spray equipment, weed or pest pressures and other factors.

Leeway Ultra is recommended for use with pesticides registered for use for agriculture, forestry, industrial, municipal, ornamental, right-of-way, turf, noncropland and other uses.

Leeway Ultra can be applied by ground sprayers, CDA or aerial spray equipment.



GROUND, AERIAL AND CDA USE RATES

Ground/Aerial/CDA Use Rates: 2 to 8 pints per 100 gallons of spray mixture.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Mainstay

STICKER / DEPOSITION AID / SPREADER / SURFACTANT / COMPATIBILITY AGENT

Principal Functioning Agents (CA Only)		
Alkyl Polyoxyethylene Ethers, Polymerized Resins, and Triethanol Amine Salts of Oleic Acid (TOFA derived)	20.7%	dpr
Petroleum Distillates	2.5%	Approved For Use In CALIFORNIA

Principal Functioning Agents (WA and all other states...except CA)

Polyethylene Glycol Nonylphenyl Ether, Methanal Propylene Oxide p-Nonylphenol Polymer, Triethanolamine	21.5%	WSDA
Petroleum Distillates	2.5%	Approved For Use In WASHINGTON

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Mainstay is a water dispersible, nonionic spreader-sticker adjuvant that is formulated to improve the efficiency of a variety of pesticides by increasing droplet spreading and adhesion onto leaf surfaces. Mainstay enhances efficacy of herbicide, insecticide and fungicide spray applications. Mainstay works by reducing water surface tension to increase coverage while forming a protective film to adhere active ingredients to the plant surface. Mainstay improves spray droplet deposition and suppresses off-target drift by producing a more uniform droplet spray pattern. The sticking properties in Mainstay help to reduce tendency for wash-off of the spray deposit caused by light rainfall or irrigation. Not approved for aquatic use.



USE RATES

If the pesticide label does not specifically recommend, yet does not prohibit, the use of a spreadersticker adjuvant, the applicator should conduct an advance phytotoxicity test using a small volume of tank mix combinations to confirm compatibility and plant safety. Mainstay may be used by ground or air applications.

Defoliants, Desiccants, Herbicides	1 to 4 pints		
Fungicides, Acaricides, Insecticides	1/4 to 2 pints		
Wettable Powders	1/2 to 3 pints	Per 1	
In Concentrated or Diluted Spray Applications	Allow enough Mainstay to allow for uniform wetting and deposition onto leaf surfaces without unnecessary run-off.	gallor spray r	
For Field Crop Applications	1/4 to 2 pints per acre		
For Drift Suppression	At least 2 pints to minimize off-target spray drift.		
Note:	Mainstay will not eliminate spray drift. Off-target drift hazard vary with the type of pesticide and application conditions. Mainstay improves spray deposition and suppresses drift b producing a more uniform spray pattern.		

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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00 ns mix

32.0%

Modified Vegetable Oil

MODIFIED VEGETABLE OIL CONCENTRATE AND ANTIFOAMING AGENT

Principal Functioning Agents

Methyl Soyate, Polyethylene Glycol Nonylphenyl Ether, Methylated Silicones

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Modified Vegetable Oil (MVO) is a unique blend of highly refined and modified spray oil and superior nonionic surfactants.

MVO's chemistry allows for superior wetting and absorption of those pesticides or products which labels recommend the addition of a spray adjuvant to improve coverage.

The addition of MVO to a spray tank solution will improve a spray application by physically modifying the deposition and wetting characteristics of the spray solution, the result being a more uniform spray deposit.

The use of MVO can increase pesticidal activity where the following factors occur, but is not limited to:

1. When used in areas of the country with low relative humidity and high temperatures.

2. When target species are larger than label recommendations at time of application.

Not approved for aquatic use.

per acre



98.1%



USE RATES

Typical Use Rate

A compatibility test is recommended prior to use. For optimum results, spray mixes containing MVO should be applied within 36 hours. Higher rates may be required on hard to control weeds or weeds which are under stress.

> 1.5 to 2 pints The 2.0 pints per acre rate may be required if weed populations are extreme or if plants are stressed at the time of treatment

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Momenta_m

UAN FERTILIZER / METHYLATED BLEND

Principal Functioning Agents	
UAN Fertilizer, Methylated Vegetable Oil, Alkyl Phenol Ethoxylate, Tallow Amine Ethoxylate, Polydimethylsiloxane	100.0%
All ingredients are exempt from the requirement of a tolerance under 40 CFR 180	

UAN

Total Nitrogen (N) 7.75%...Ammoniacal Nitrogen, 7.75%...Nitrate Nitrogen, 16.5%...Urea Nitrogen

Momenta is a blend of UAN fertilizer and methylated seed oil (MSO) tank mix adjuvant for use with Kixor® (saflufenacil) technology.

Momenta can be used as a single tank mix additive to ensure full compliance with Kixor technology tank label instructions.

Momenta meets the specifications for UAN and MSO tank mix additives as indicated by the herbicide product label.

Momenta also contains a unique surfactant component that effectively enhances glyphosate activity for burndown applications.

The methylated seed oil components will modify deposition and wetting characteristics to improve spray coverage.

Momenta provides the convenience of a single adjuvant to optimize Kixor herbicide performance.

KIXOR is a registered trademark of BASF Corporation

USE RATES		
Always read and follow the label of the tank mix herbicides before using Momenta.		
Use Rate:	Use at 2.5 gallons per 100 gallons of spray solution, or 2.5% v/v $$	
If Spray Rate is >12.5 GPA:	Use a minimum of 1 pint of Momenta per acre	
When used at the full label rate, Momenta provides UAN at 1.25% v/v and MSO at 1% v/v.		

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant. 39

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Octane 90.

SPREADER / ACTIVATOR / HUMECTANT / ANTIFOAMING AGENT

Principal Functioning Agents	
Ethoxylated Fatty Acid Methyl Esters, Hexylene Glycol, Tall Oil	90.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Octane 90 is derived from natural resources and is a general purpose, nonionic spreader activator formulated to maximize the effectiveness of pesticides.

Octane 90 is a unique, nonyl-phenol ethoxylate (NPE) free nonionic surfactant using new, unique surfactant technology.

Octane 90 provides guick wetting, uniform droplet spreading, penetration and retention on leaf and stem surfaces.

Octane 90 is a new alternative to traditional nonionic surfactants.

Surface tension reduction comparable to traditional alcohol ethoxylate surfactants.

Aquatic use pending.



USE RATES

Octane 90 is compatible with most fertilizers and pesticides. If the desired mixture has not been used previously, conducting a jar test for confirm compatibility is recommended. Read and follow the precautions, restrictions and recommendations on the labels of pesticides used with Octane 90.

Typical Use Rate 1 to 2 quarts per 100 gallons (0.25% to 0.50% v/v)

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Pure & Simple 90%

HUMECTANT / NONIONIC SURFACTANT

1,2,3-Propanetriol, Diethylene Glycol, Branched Alkylphenol Ethoxylate	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Pure & Simple 90% improves the effectiveness of certain post emergent herbicides, desiccants, defoliants, insecticides, fungicides, acaricides, and miticides to enhance activity.

Pure & Simple 90% improves performance of the active spray ingredients by providing more uniform distribution and better wetting of the plant surface.

NOT FOR USE ON AQUATIC SITES IN THE STATE OF WASHINGTON!



USE RATES		
Post Emergence Herbicides	1 to 4 pints per 100 gallons (0.125% to 0.5% v/v) spray solution	
Fungicides	4 to 8 fl. oz. per 100 gallons	
Insecticides 4 to 8 fl. oz. per 100 gallons		
Acaricides	4 to 8 fl. oz. per 100 gallons	
Aquatic	Apply at rate recommended as instructed by pesticide label.	

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Regulaid

NONIONIC SURFACTANT FOR USE WITH GROWTH REGULATORS

Principal Functioning Agents	
2-Butoxyethanol, Poloxalene, Monopropylene Glycol	90.6%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Regulaid is a nonionic spreader-activator for use in improving the effectiveness of foliar applied plant growth regulators or streptomycin applications.

Regulaid provides superior wetting of the spray solution, uniform spray coverage and improved foliar penetration.

Not approved for aquatic use.

USE RATES Pints per 100 Gallons Mls per 100 Liters 125 to 250 ml Apogee® 1 to 2 pints Ethephon, Ethrel 2 pints 250 ml Maleic Hvdrazide 250 to 375 ml 1 to 3 pints NAA or Amide Sprays 2/3 pint 85 ml NAA plus Carbaryl 1/2 pint 65 ml NAD 1 pint 125 ml Streptomycin 1 to 2 pints 125 to 250 ml Thinex™ 1 to 2 pints 125 to 250 ml Wilthin™ 1 to 2 pints 125 to 250 ml

The most effective rate will vary with temperature and humidity at the time of application. The lower rate will normally be required under conditions of high humidity and the higher rate range is suggested under arid conditions. The above use recommendations are considered to be adequate for most uses. Since many factors such as heat, humidity, wind conditions and equipment performance can influence performance, the user should always follow label directions of the product to be tank mixed with Regulaid and consult local agricultural authorities or perform a limited test using this product to determine the optimum use rate for a given application and specific crop.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Restore...

WATER CONDITIONING AGENT AND ACIDIFIER

Principal Functioning Agents	
Ammonium Sulfate, 1,2,3-Trihydroxypropane, Phosphoric Acid	50.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Restore is intended for use with products registered for agricultural, horticultural, turf and ornamental, industrial and non-crop use as a tank mix adjuvant where water conditioning and spray deposition is important.

Restore is formulated to enhance spray coverage and retention of pesticide products that recommend the use of ammonium sulfate or a nitrogen source. Restore contains 2.44 pounds ammonium sulfate per gallon.

Restore improves the efficiency of various post-emergent herbicide sprays by minimizing antagonism of hard metal ions that are frequently present in most spray water sources.

Restore contains a humectant ingredient that works to improve spray deposition and retention thereby improving the ability of agrichemical

sprays to deposit and penetrate targeted surfaces. Water content of spray deposits can be increased which slows drying time and minimizes crystal formation of active ingredients which can impede plant uptake of certain active ingredients.

Not approved for aquatic use.



GROUND AND AERIAL USE RATES			
For Ground and Aerial Applications	2 to 3 quarts per 100 gallons	Use a minimum of 1 pint of Restore per acre when the total spray volume is less than 15 gallons per acre.	

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.



37.0%

Sav-Oil.

LOW USE-RATE CROP OIL REPLACEMENT BLEND OF PETROLEUM OIL AND NONIONIC SURFACTANT

Principal Functioning Agents	
Phytobland paraffinic oil	60.0%
Alkyphenol ethoxylate and tall oil fatty acids 39.04	

All ingredients are exempt from requirements of a tolerance under Title 40 CFR 180 for use on growing crops and raw agricultural commodities. Contains Petroleum Distillates.

Sav-Oil is a nonionic blend of special surfactants and highly refined spray oil that is designed for use with a range of pesticides where an oil adjuvant is recommended.

Sav-Oil works to improve the pesticide application by modifying the wetting and deposition characteristics of the spray solution.

Sav-Oil increases the activity of most herbicides; therefore, care must be taken in treating sensitive crops during periods when plants are subjected to drought stress, high temperature and high humidity.

Sav-Oil is effective when used with air induction nozzles.

When substituting Sav-Oil in place of standard crop oil concentrate adjuvants, refer to conversion table below.

Sav-Oil Equivalent Rates
1 pint per acre
1/2 gallon per 100 gallons
1 to 2 quarts per 100 gallons
1/2 to 1 gallon per 100 gallons

USE RATES

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Sav-Oil can be substituted for traditional 83/17 Crop Oil spray adjuvants at significantly lower use rates. Generally, Sav-Oil will provide equivalent results at one-half the use rate of traditional crop oil concentrate adjuvants.

For General Ground Applications:	2 quarts per 100 gallons (0.5% v/v) of spray solution.
For Spray Volumes Below 12.5 Gallons Per Acre:	1 pint to the acre.
Aerial, Low Volume, CDA:	2 to 8 fl. oz. per acre or follow rate recommendations on the pesticide label if higher rates are required.

DO NOT ADD THIS PRODUCT AT A RATE THAT EXCEEDS 2.5% v/v OF SPRAY VOLUME. Always follow recommendations of the pesticide label if higher rates are required.

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Spectra AMS.

LIQUID AMMONIUM SULFATE AND DRIFT RETARDANT SOLUTION

Principal Functioning Agents
Ammonium Sulfate, Ammonium Nitrate, Phosphoric Acid,
Polyacrylamide & Dimethylpolysiloxane

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Spectra AMS is a highly active ammonium sulfate, drift retardant based solution designed to reduce drift while enhancing herbicide performance by modifying solution pH and water hardness. Spectra AMS contains 3.4 pounds ammonium sulfate per gallon.

The ammoniacal nitrogen in Spectra AMS has been found to promote herbicide (such as glyphosate) uptake in agricultural applications.

Spectra AMS contains a special deposition and water conditioning complex which minimizes drift and contains emollients to keep the spray deposit moist for maximum absorption.

Spectra AMS also contains a pH stable antifoam which helps control foaming during tank mixing.

For use with product registered for agricultural, forestry, industrial, municipal, non-cropland ornamental, rights-of-way and other uses.

Not approved for aquatic use.



USE RATES		
For 8.5 lbs of Ammonium Sulfate per 100 Gallons	2.5 % (2.5 gallons) per 100 gallons solution	
For 17 lbs of Ammonium Sulfate per 100 Gallons	5% (5 gallons) per 100 gallons solution	
For greater deposition enhancement, use the higher range of recommended use rate for this product		



33.9%

Spectra Max Tank Mix.

WATER CONDITIONING AGENT / HUMECTANT

Principal Functioning Agents	
Ammonium Sulfate, Glycerol, Phosphoric Acid	37.3%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Spectra Max Tank Mix contains water conditioning properties and a homogenized deposition agent designed to improve the precision of spray applications and reduce off-target drift. It is suitable for use on both conventional and transgenic crop varieties.

Spectra Max Tank Mix contains 2 pounds ammonium sulfate per gallon.

When used at labeled rates Spectra Max Tank Mix will automatically optimize the angle of the spray pattern, as the spray exits the nozzle, to give maximum coverage of target surfaces while minimizing "pattern fringe" which contains the most driftable particles.

Spectra Max Tank Mix is intended for use as a tank-mix adjuvant where a deposition or drift control agent is required or recommended. Spectra Max Tank Mix may be used when the pesticide label recommends the use of a deposition aid or drift control agent. It is not intended as substitute for surfactants or crop oil concentrates. No product will provide 100% control of harmful spray drift.

Spectra Max Tank Mix technology has been proven to increase glyphosate activity.

This product also contains emollients which may improve absorption of herbicides into leaf surfaces.

Spectra Max Tank Mix also contains buffering and sequestering agents to adjust pH to a neutral range.

The efficacy of Spectra Max Tank Mix and the effects of the spray application may be affected by various environmental factors and the condition and operation of the spray equipment. Periodic

calibration of spray equipment and visual inspection of the spray application may necessitate an adjustment of the adjuvant rate.

When used according to the Directions of Use, Spectra Max Tank Mix is compatible with most pesticides and fertilizers.

Spectra Max Tank Mix technology has been tested on several transgenic crop varieties with no negative effects, and can be considered safe for use on transgenic crops.

Not approved for aquatic use.

GROUND AND AERIAL USE RATES

Ground and Air Rates	Normal Use	2 to 3 quarts per 100 gallons of water
dibunu anu Ali nates	Hard Water	3 quarts per 100 gallons of water

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

Threshold_m

AMMONIUM FREE WATER CONDITIONER / NONIONIC SURFACTANT / HUMECTANT / DRIFT REDUCTION AGENT

Principal Functioning Agents Sodium Tricarbalylate, Alkyl Polyglucoside, 1,2,3-Propanetriol, Polyacrylamide, Poly Dimethylsiloxane

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Threshold is a multi-functional tank mix adjuvant that minimizes hard water mineral antagonism to enhance pesticide performance by modifying hardness of spray water.

Threshold contains a nonionic surfactant that improves spreading and penetration into targeted leaf and stem surfaces.

Threshold provides humectancy to spray deposit resulting in slower drying time to improve uptake of active ingredients.

The drift reduction ingredient in Threshold reduces off-target drift while not adversely effecting pesticide performance.

Threshold can be used with a wide range of pesticide and nutrient spray mixtures such as glyphosate and 2,4-D premixes as well as other tank mix partners with labels that recommend water conditioners and spreader activator adjuvants.



USE RATES

Threshold is compatible with most fertilizers and pesticides. If the desired mixture has not been used previously, conducting a jar test for confirm compatibility is recommended. Read and follow the precautions, restrictions and recommendations on the labels of pesticides used with Threshold.

Typical Use Rate 1 to 2 quarts per 1

e 1 to 2 quarts per 100 gallons (0.25% to 0.50% v/v)

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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Tronic[®]

NONIONIC SURFACTANT

Principal Functioning Agents	
Vegetable Oil Ethoxylate, Tall Oil Fatty Acids	95.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

A Unique Vegetable Derived Nonionic Surfactant and Crop Oil Replacement

Tronic is a premium high concentrate 95% active low-foaming nonionic surfactant which will replace crop oil and modified seed oil concentrates.

Tronic is a unique surfactant which improves the deposition and penetration of active ingredients into the target plant.

Tronic contains free fatty acids to improve rain fastness and wash-off resistance.

Tronic is designed for use with herbicides, insecticides, fungicides, defoliants, desiccants, plant growth regulators, and any other crop protection product where an oil concentrate or a nonionic surfactant is required or recommended. When used according to the Directions for Use, Tronic is compatible with most pesticides and fertilizers.



An integrated antifoaming system helps minimize foam in the spray tank.

The efficacy of Tronic and the effects of the spray application may be affected by various environmental factors and the condition and operation of the sprayer. Periodic calibration of spray equipment and visual inspection of the spray application may necessitate an adjustment of the adjuvant rate.

Tronic contains Quantum technology, an innovative, vegetable oil-derived surfactant that delivers enhanced penetrating properties and assists with translocation of active ingredients throughout the targeted plant.



Approved For Use in CALIFORNIA

GROUND, AERIAL AND AQUATIC USE RATES				
Ground Application	1 to 3 pints per 100 gallons of spray solution		1 to 3 pints per 100 gallons of spray solution	
Aerial Application	4 to 8 fl. oz. per acre	Refer to pesticide label for minimum water volume per acre.		
Aquatic Application	2 to 4 pints per 100 gallons of spray solution			

Read and follow the precautions and directions for use on the product label and the pesticide it is being applied with. Always follow pesticide label directions, acceptable practices and advice from your crop consultant.

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AMS Standard.

DRY AMMONIUM SULFATE

Principal Functioning Agents	
Ammonium Sulfate	99.5%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Sprayable Grade Ammonium Sulfate Tank Mix Adjuvant

AMS Standard is sprayable grade ammonium sulfate that is milled and screened for enhanced solubility.

AMS Standard is an effective water conditioning agent that minimizes hard water mineral antagonism in spray tank mixes.

AMS Standard can be diluted in water up to 34% by weight.

Agitate tank mix water while slowly adding AMS Standard to the water. AMS Standard has been milled and screened to enhance solubility and purity of the products.



ENOUGH AMMONIUM SULFATE TO MITIGATE HARD WATER ANTAGONISM

When diluted in water at maximum capacity, AMS Standard delivers up to 3.4 pounds of solubilized ammonium sulfate per 1 gallon of water. This meets or exceeds most herbicide label AMS recommendations to mitigate hard water antagonism.

Always conduct a jar test in advance of mixing AMS Standard with other tank mix ingredients to ensure compatibility.



Check-Point[®]

WATER CONDITIONING AGENT / DRIFT & DEPOSITION AGENT / ANTIFOAM AGENT DOES NOT CONTAIN AMS

Contains

1,2,3-Propane Tricarboxylic Acid, 2-hydroxy-, Trisodium Salt Dihydrate, Polyphosphoric Acids, Sodium Salt, Sodium Tripolyphosphate, Polyacrylamide Polymer, Dimethylsiloxane

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Check-Point is an AMS free, dry water-soluble water conditioning agent formulated to significantly reduce antagonism from hard water minerals contained in spray water used for agricultural spray solutions. Check-Point can be used with a wide range of crop control products including Dicamba, 2,4-D, glufosinate and glyphosate type herbicides to effectively

condition spray water efficiently at low use rates.

Check-Point sequesters hard water minerals such as calcium, iron and magnesium while imparting a neutral pH to the spray water.

Check-Point contains a drift reduction agent to minimize off-target drift.

Note: Many factors affect spray drift such as spray boom height, nozzle type,

spray pressure, temperature, wind and thermal inversions. Check-Point will not eliminate all drift. Always read and follow pesticide label instructions pertaining to mitigating off-target drift.

Check-Point contains an antifoam agent to minimize the formation of troublesome foam during tank mix agitation.



100.0%

USE RATES

Use Rates 2 pounds per 100 gallons of spray solution

Check-Point[®]**Extra**

DRA FOR INTE Xtendi Max®

WATER CONDITIONING AGENT / NONIONIC SURFACTANT / DRIFT & DEPOSITION AGENT / ANTIFOAM AGENT

DOES NOT CONTAIN AMS

Contains

1,2,3-Propane Tricarboxylic Acid, 2-Hydroxy-, Trisodium Salt Dihydrate,	
Block Polymer of Carbonyl Diamine, Polyoxyethylene Polyoxypropylene,	100.0%
Polyphosphoric Acids, Sodium Salt, Polyacrylamide Polymer, Dimethylsiloxane	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Check-Point Extra is an AMS free, dry water-soluble water conditioning agent formulated to significantly reduce antagonism from hard water minerals contained in spray water used for agricultural spray solutions.

Check-Point Extra can be used with a wide range of crop control products including Dicamba, 2,4-D, glufosinate and glyphosate type herbicides to effectively condition spray water efficiently at low use rates.

Check-Point Extra sequesters hard water minerals such as calcium, iron and magnesium while imparting a neutral pH to the spray water.

Check-Point Extra contains a drift reduction agent to minimize off-target drift. Note: Many factors affect spray drift such as spray boom height, nozzle type,

spray pressure, temperature, wind and thermal inversions. Check-Point Extra will not eliminate all drift. Always read and follow pesticide label instructions pertaining to mitigating off-target drift. Check-Point Extra contains an antifoam agent to minimize the formation of troublesome foam during tank mix agitation.



USE RATES

Use Rates 2 pounds per 100 gallons of spray solution



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Fraction[®]

DRY, WATER CONDITIONING AGENT FOR HERBICIDE SPRAYS

Principal Functioning Agents	
Ammonium Sulfate, 2-Hydroxy-1,2,3-Propanetricarboxylic Acid	98.99%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Fraction is a specially formulated blend of reduced rate water conditioning and sequestering agents intended for use with glyphosate and other herbicide spray applications that recommend the use of ammonium sulfate or nitrogen fertilizer as a tank mix additive. Contains 0.69 pound of ammonium sulfate per pound of Fraction, or 16.56 pounds of ammonium sulfate per 24-pound bag.

Fraction is a spray grade granule that readily goes into solution.

Fraction improves weed control by conditioning and acidifying the water.

Fraction works to maximize herbicide performance by neutralizing antagonism from water impurities such as iron, calcium and magnesium.

Fraction is compatible with all glyphosate formulations and with separately applied drift retardants or nonionic surfactants and is approved for aquatic use.

Fraction is intended for use with products registered for agricultural, horticultural, turf, ornamental, industrial and non-crop uses.

Do not use Fraction if the accompanying tank mix pesticide label

prohibits use of water conditioners or acidifying agents.

USE RATES

For optimum water conditioning, the spray mixture should be used within eight hours.			
For Ground, Air, and Aquatic Applications	3 to 4 pounds per 100 gallons of spray solution		
Hard Water Conditions	Use the higher rate		
When tank mixed with Glyphosates or other Herbicides That Do Not Contain a Surfactant Ingredient	Use the higher rate		
Where Extremely Hard Water Conditions Exist in Conjunction With Difficult to Control Weeds	Additional Fraction or AMS may be required	Fraction can be used as a replacement for ammonium sulfate under most conditions.	

Approved



DRY, WATER SOLUBLE BLEND OF AMMONIUM SULFATE, NONIONIC SURFACTANT, DEPOSITION AID AND ANTIFOAM AGENT

Principal Functioning Agents

Ammonium Sulfate, Block Polymer of Carbonyl Diamine, Polyoxyethylene Polyoxypropylene, Beta-Hydroxy-Tricarboxylic Acid, Polyacrylamide Polymer, Dimethylsiloxane

Principal Functioning Agents

Ammonium Sulfate, Urea,	
Polyoxyethylene Polyoxypropylene Polymer	

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

One-Ap XL is a water soluble blend of ammonium sulfate, nonionic surfactant, deposition aid and antifoam agent.

One-Ap XL is formulated to improve the efficacy of glyphosate-based herbicides and other post-emergence herbicides that recommend ammonium sulfate or nitrogen solution and nonionic surfactant.

One-Ap XL contains nonionic surfactant, to help increase the biological efficacy of herbicides.

The ammonium sulfate in One-Ap XL helps to reduce tank mix antagonism.

The antifoam agent in One-Ap XL reduces the formation of troublesome foam.

One-Ap XL is micronized to aid in solubility and speed of tank mixing.

One-Ap XL is intended for use with pesticides that are labeled for agricultural, forestry, right-of-way and non-cropland use.



98.73%

For optimum performance, the spray mixture must be used within eight hours after herbicide product is mixed with One-Ap XL.

USE RATES

Use One-Ap XL at a range of use rates from 10 to 20 pounds per 100 gallons of spray solution. Do not exceed the maximum use rate for this product.

When Used at the 10 Pound Rate	One-Ap XL provides 8.5 pounds of ammonium sulfate and the equivalent of 1 quart (0.25% v/v) of nonionic surfactant per 100 gallons.	This lower use rate maintains a lower range of polymeric activity for spray deposition.	
When Used at the 20 Pound Rate	One-Ap XL provides 17 pounds of ammonium sulfate and the equivalent of 2 quarts (0.50% v/v) of nonionic surfactant per 100 gallons.	This maximum use rate provides the optimum polymeric activity for enhanced spray deposition.	

Spray-Start[®]

DRY, WATER CONDITIONING AGENT / DRIFT REDUCTION AGENT / DEPOSITION AID AND ANTIFOAMING AGENT

Principal Functioning Agents	
Ammonium Sulfate, Polyacrylamide Polymer, Dimethylpolysiloxane	98.9%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

For use with glyphosates and other post-emergence herbicides.

Spray-Start is designed to improve the efficacy of post emergence herbicides requiring a nitrogen solution or ammonium sulfate adjuvant. Ammonium salts reduce the antagonism of spray water with herbicides.

The antifoam agent in Spray-Start prevents the formation of troublesome foam.

Spray-Start is milled to enhance solubility.

Spray-Start can suppress spray drift and improve deposition by reducing spray fines.

Many factors affect spray drift, such as spray height, nozzle configuration, spray pressure, temperature, wind and thermal inversion.



Spray-Start will not eliminate all drift.

Not approved for aquatic use.



Do not exceed recommended rate as restriction of nozzle pattern may occur. If the herbicide label makes no recommendation for use of ammonium sulfate or nitrogen source, consult local agricultural authorities before use.

Ground Application	9 to 12 pounds per 100 gallons of spray solution	Use the higher rate for enhanced spray deposition.	
The use rate of 9 pounds of Spray-Start per 100 gallons of spray solution will supply 8 1/2 pounds of ammonium sulfate per 100 gallons.			

Synfactant.

DRY, NONIONIC SURFACTANT

	Principal Functioning Agents	
	Block Polymer of Carbonyldiamide Polyoxylated Glycol Adduct	94.0%
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All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

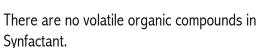
Synfactant is a dry, water soluble nonionic surfactant based on ureasurfactant adduct technology.

Synfactant can be used as a substitute for traditional liquid nonionic surfactants when added as a dry mixture to fertilizers and nutrients or directly applied to liquid tank mixes.

Synfactant is formulated using a proprietary block co-polymer surfactant that forms an inclusion compound with urea.

Synfactant will impart wetting and spreading properties the same as traditional liquid nonionic surfactants at reduced use rates.

Synfactant contains an antifoam ingredient and is micronized for faster dissolution in water.



USE RATES			
For Use With Dry Fertilizers and Nutrients:	Blend Synfactant at 0.5% to 2.0% by weight to achieve desired wetting performance of dry material.	The urea content of Synfactant will provide additional nutrient value to crops, turf and horticulture plants.	
For Use As a Substitute For Traditional Liquid Nonionic Surfactant Tank Mixes:	Always read and follow all label directions, mixing instructions and precautionary statements of the accompanying tank mix partner. Add Synfactant at 12 to 24 dry ounces per 100 gallons of tank mix. 12 dry ounces of Synfactant will replace 16 fluid ounces of the traditional liquid nonionic surfactant.		
If Accompanying Tank Mix Partner Label Does Not Suggest Use Rates:			
When Replacing Traditional Liquid Nonionic Surfactant As a Tank Mix Adjuvant:			

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Rain-Check

Gravitate...

HUMECTANT / HYGROSCOPIC / SURFACTANT BLEND

Nonplant Food Ingredients		
38.0%	Humectants	
17.1%	Alkyl Polyglucoside	
11.9%	Oxirane, Methyl, Polymer With Oxirane	
1.6%	Castor Oil, Ethoxylated	

Gravitate contains an advanced formulation of humectant/hygroscopic compounds blended with a proven soil surfactant technology to provide optimum root-zone moisture management.

The humectant/hygroscopic ingredients in Gravitate, combined with the proven soil surfactant, works in tandem to enhance infiltration of irrigation water and rainfall with the added function of attracting available soil moisture that would otherwise be lost to evaporation.

The surfactant ingredient reduces water surface tension to improve movement of water in the soil profile and distribute the humectant compound to the root-zone. The humectant ingredient forms strong hydrogen bonds with water molecules and improves the proportion of plant available water by extracting moisture from air spaces within the soil matrix.

Gravitate provides extended residual soil wetting action throughout the plant root-zone to extend irrigation cycles and enhance the growing environment for the targeted crop.

Apply Gravitate anytime throughout the growing season on a wide range of agricultural applications.

Prior to adding Gravitate to irrigation tanks containing water conditioners or plant nutrients, conduct a jar test to ensure compatibility.



Gravitate

USE RATES		
For Best Results–Inject Through Irrigation Systems:	Apply at an initial rate of 2 quarts per acre	Subsequent applications should be made at the rate of 1 to 2 quarts per acre to meet the needs of the crop, based on environmental conditions
Conventional Sprayers:	Apply at 2 quarts per acre and follow immediately with an irrigation cycle	Apply subsequent applications at 1 to 2 quarts per acre and irrigate immediately

Rain-Check...

IRRIGATION SOIL SURFACTANT

Nonplant Food Ingredients		
20.0%	1,2,3 Propanetriol	
20.0%	Propylene Glycol	
10.0%	Alcohols, C 12-14-Secondary, Ethoxylated	
7.5%	D-Glucopyranose, Oligomeric, C9-11 Alkyl Glycosides	

Rain-Check is a proprietary blend of soil surfactants specifically formulated to enhance the infiltration and soil penetration of irrigation and rainfall.

Rain-Check provides uniform infiltration and lateral movement of water to enhance soil moisture content and extend required irrigation cycles.

Rain-Check can be applied anytime throughout the growing season.

Rain-Check can be applied through irrigation systems or conventional sprayer.

Do not apply Rain-Check through earthen ditches.

CONTAINS NON-PLANT FOOD INGREDIENTS



USE RATES		
Injection Through Irrigation Systems:	Inject 1 quart per acre through any type of irrigation system.	Subsequent irrigation injection can be made at the rate of 1 pint per acre or increased to meet the demand of the crop or based on environmental conditions.
Conventional Sprayers:	Apply at 1 quart per acre and follow immediately with irrigation cycle to move Rain-Check into the soil.	Apply subsequent applications at 1 pint per acre every 3 to 4 weeks and irrigate immediately. Adjust application timing depending upon climatic conditions and watering requirements.
When Mixed With Other Soil Chemistries:	Mix Rain-Check at a rate of 1 pint per 100 gallons (0.125% v/v) per 100 gallons of spray solution.	

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Stratum

Root-Juice.

SOIL AMENDMENT ADDITIVE FOR DRY FERTILIZER

Nonplant Food Ingredients		
38.0%	C8-22 Alkanoates	
38.0%	38.0% Guerbet Alkoxylate	
17.0%	Coco Derived Oligomeric Glucoside	

Root-Juice enhances naturally occurring soil microbes by providing a food source at the root zone to improve the growing environment for a wide variety of crops.

Microbial activity is linked to soil health and subsequently to plant health through nutrient cycling and beneficial plant relationships.

Through the break-down of organic matter, the microbial biomass initiates the cycling and plant availability of carbon, nitrogen, phosphorus and sulfur.

Root-Juice does not contain laboratory cultivated microbes.

Root-Juice builds the native soil microbes by supplying a food source to assist in achieving nature's natural balance.

Use on a range of crops including: carrots, edible beans, onions, peanuts, tobacco, potatoes, sod production and highly maintained turf.

Root-Juice IFORNIA DEPARTMENT O

USE RATES

Apply 1 gallon of Root-Juice for each ton of dry fertilizer through spray nozzle atomization to ensure that the fertilizer granules are evenly coated with the liquid.

cdta

Root-Juice application to dry fertilizer will reduce dust during handling and transportation

Stratum

SOIL PENETRANT

Principal Functioning Agents	
Ammonium Alkyl Ether Sulfate, Alkylpolyglucoside	53.0%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Stratum is a liquid surfactant that enhances wettability of soils and/or root substrates thereby improving penetration of water and other water soluble materials.

Improved water penetration leads to better water infiltration and minimization of water runoff and evaporation.

Stratum provides increased soil moisture levels helping promote a better growing environment for crops, turf and ornamental plants.

Stratum helps reduce soil crusting thereby making soil tillage easier.

Stratum can be applied by any conventional farm spraying or irrigation injection system including boom sprayer, flood irrigation, center pivot and hand-held sprayers.

Stratum is formulated for use on cultivated or no-till soil, pasture, bare soil, and potting/media mixes.

USE RATES FOR SOIL APPLICATIONS FOR AGRICULTURE			
General Rate:	6 to 12 fluid ounces of Stratum diluted in 15 to 20 gallons of water per acre.		
Sandy Soils:	6 to 10 fluid ounces of Stratum diluted in 5 to 20 gallons of water per acre at least twice per year.		
Heavy Clay Soils:	8 to 12 fluid ounces of Stratum diluted in 15 to 20 gallons of water per acre.		
USE RATES FOR SOIL APPLICATIONS FOR TURF			
General Rate:	Apply Stratum to highly maintained turf areas at a rate of 2 to 6 fluid ounces diluted in 1 to 2 gallons of water per 1,000 square feet; dilution with 2 gallons per 1,000 square feet is preferred.	Use the lower Stratum rate when frequent, weekly applications are being made. Use the higher rate with infrequent applications or when applying product to fine textured, clayey soils.	
Irrigation Injection:	Stratum can be injected into irrigation systems at a rate of 4 to 8 fluid ounces per acre initially, followed by 2 fluid ounces per acre during subsequent irrigations, if needed.		
Soil Mixes or Soil-less Container Mixes:	Apply 30 fluid ounces of Stratum diluted in 10 to 20 gallons of water per 10 cubic yards of mix.		



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Variant

SOIL SURFACTANT / SOIL RETENTION AGENT

Nonplant Food Ingredients		
20.0%	Ethoxylated Triglyceride	
20.0%	Copolymer of Alpha- and Beta-Pinene	

Variant is formulated using QUANTUM[™] Technology to enhance and extend the performance of a range of residual performing herbicide spray applications. This unique blend of vegetable oil derived surfactant and resins keeps more herbicide in the weed germination zone for extended control.

Variant provides improved herbicide performance by increasing the adsorption of soil residual herbicides in the upper soil profile.

Unlike traditional surfactants, Variant provides a higher density of active ingredients and smaller molecular surface area that exhibit an affinity for the herbicide active ingredients.

Polymerized resins and fatty acids found in Variant enhance adsorption to soil and reduce leaching.

Variant will not reduce the performance of contact or systemic herbicides that may be added for burn down of existing weeds.

Use Variant as a stand-alone application or with a wide range of tank mix partners that are formulated for multiple modes of action.

Not approved for aquatic use.



Quantum Technology

USE RATES			
Use rates are determined by the volume of liquid carrier applied per acre.			
GPA Spray Volume	Use Rate Per Acre		
5-10	8 fl. oz.		
10-20	16 fl. oz.		
20-30	24 fl. oz.		
30+	32 fl. oz.		

Water-Rite.

NONIONIC SURFACTANT

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Water-Rite is a unique soil surfactant designed to lower surface tension, improve soil conditions, increase water penetration, and increase water percolation.

Water-Rite can be used either preventatively or curatively as a soil surfactant and does provide extended residual activity.

Early spring applications are more effective followed by repeat applications as needed.

For use on all agricultural crops. Not approved for aquatic use.

Poloxalene, Alkyl Polyglucoside, Vegetable Oil Ethoxylate

CONTAINS NON-PLANT FOOD INGREDIENTS

Principal Functioning Agents

Surfactant Content



USE RATES FOR SOIL MOISTURE MANAGEMENT

Irrigation Systems	Use at 1 to 6 quarts per acre through any type of irrigation system. First application should coincide with first irrigation cycle. A follow-up application of 1 to 6 pints per acre is recommended two weeks after initial application. Continue with 1 to 6 pints per acre every 4 to 6 weeks.	Always use back-flow prevention valve (check-valve) when injecting into irrigation systems.	
Conventional Tank Mix Sprayers	Apply at 2% v/v (2 gallons per 100 gallons) of spray solution and apply at a rate of 1 to 8 pints per acre.	Irrigate following application to move into soil profile. In non-irrigated areas, apply prior to anticipated rainfall.	
Drip or Micro-Sprinkler Systems	Apply 1 to 6 quarts per acre. Apply to coincide with first irrigation cycle. Two weeks after initial application, follow up with a second application of 1 to 6 pints per acre then follow with 1 to 6 pints per acre every 4 to 6 weeks.	The final application of the season should be scheduled with the last full irrigation cycle.	
As a Tank Mix Adjuvant	Use at a rate of 0.25% v/v to 1.00% v/v (1 to 4 quarts per 100 gallons).	Water-Rite can be used with a range of liquid fertilizers and crop control products.	

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Water-Rite FC.

NONIONIC SURFACTANT

Alkylglucoside, 1,2,3-Tri-Hydroxypropane, Polydimethylsiloxane

Principal Functioning Agents (WA and all other states...except CA)

Alkyl Polyglucoside, 1,2,3-Tri-Hydroxypropane

Principal Functioning Agents (CA Only)

Water-Rite FC is a unique, plant derived, nonionic surfactant, formulated to enhance the infiltration and uniform distribution of irrigation water and rainfall in a variety of soil types.

Water-Rite FC will improve irrigation efficiency and increase soil moisture content.

Apply Water-Rite FC through irrigation injection systems or through the use of conventional spray equipment.

For use on all agricultural crops.

Not approved for aquatic use.

CONTAINS NON-PLANT FOOD INGREDIENTS

USE RATES FOR SOIL MOISTURE MANAGEMENT			
For Soil Moisture Management	1 quart per acre of through any type of irrigation system. First application should be made at initial irrigation cycle. A follow-up application of 1 pint per acre is recommended two weeks after initial application. Continue with 1 pint per acre every 4 to 6 weeks.		
Conventional Tank Mix Sprayers	2% v/v (2 gallons per 100 gallons) of spray solution and apply at a rate of 1 to 4 pints per acre.		
As a Tank Mix Adjuvant	0.25% v/v to 0.50% v/v (1 to 2 quarts) per 100 gallons).	Water-Rite FC can be used with a range of liquid fertilizers and crop control products. Always read and follow label directions of the accompanying tank mix product pertaining to the use of an adjuvant.	

Anti-Foam.

ANTIFOAMING AND DEFOAMING AGENT

Principal Functioning Agents	
Polydimethylsiloxane, Silicon Dioxide	10.0

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Anti-Foam is a fast, effective defoamer for use in suppressing foam. Controlling foam reduces filling time and lessens overflow waste. Anti-Foam improves spray performance. The combination of effective ingredients allows for very fast knockdown of troublesome foam if it should occur in the spray tank.



About Antifoaming & Defoaming Agents

How do antifoamers/defoamers work?

Controlling or knocking down foam is a physical process - not chemical. Hydrophobic chemicals (silicone, aluminum stearate, propylene-oxide, etc.) penetrate and physically break bubble walls. Through this process, foam generating chemicals are adsorbed on the bubble surface, thinning the bubble wall, and ultimately cause them to burst or never form.

Antifoamer vs. Defoamer

Antifoam products are designed to be added to the tank mix for the purpose of preventing foam in the spray tank. Defoamer products are designed to knockdown foam once it has developed in the spray tank. Some antifoam products do contain knockdown ability and can be used for both purposes.

Why do some products work so much better than others at controlling and knocking down foam?

Not all products are created equally! The active ingredient in most common antifoamer and defoamer products is dimethyl polysiloxane. Performance can be a function of active ingredient levels and proper use rate - common products contain from 10 to 30% of active ingredient levels and general use rates vary accordingly. Even though most products contain the same active ingredient, the formulations can vary greatly. Well engineered and formulated products can substantially outperform poor products with higher levels of the same active ingredient. Performance is greatly a function of how well the antifoamer and/or defoamer adjuvant emulsifies and reacts in the spray tank.

USE RATES

Shake well before using. Agitation is recommended to aid in dispersion of the various components.		
General Use Rate	1 to 2 fl. oz. per 100 gallons of spray mixture	Add Anti-Foam to the
For Recirculating Sprayers	4 fl. oz. per 100 gallons of spray mixture	spray mixture before the pesticide, or any additional surfactant is added.
If Foam Has Already Occurred	6 fl. oz. per 100 gallons of spray mixture	

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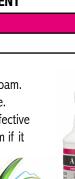


45.15%

44.85%



dpr



Compex[®]

COMPATIBILITY AGENT FOR LIQUID FERTILIZER-PESTICIDE MIXTURES

Principal Functioning Agents	
Alcohol Sulfates	18.8%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Compex is a compatibility agent for direct addition to liquid fertilizers.

Compex should be used where simultaneous application of liquid fertilizer and a pesticide is desired and improved stability of the mixture is required.

Compatibility of liquid fertilizer-pesticide mixtures is essential to insure troublefree, accurate and uniform application.

Crop protection chemicals do not always mix evenly with liquid fertilizers or the components may separate too quickly to make their combined use of practical value.

Incompatibility may be due to pH, concentration and type of certain salts and percentage of water content of the liquid fertilizer.

Compex is effective at improving compatibility and stability of most liquid fertilizer-pesticide mixtures.

Compex is completely soluble in liquid fertilizers such as 28-0-0, 10-34-0, 4-10-10 and 6-18-6.

Because of the wide variety of pesticide and liquid fertilizer combinations possible, the beneficial effects of Compex on compatibility may be tested beforehand by conducting a jar test.

Not approved for aquatic use.



USE RATES

Liquid Nitrogen Fertilizers	1 to 2 pints per 100 gallons of fertilizer, or 0.5 to 1.0 liters/400 liters
Liquid Mixed Fertilizers	2 to 3 pints per 100 gallons of fertilizer, or 1.0 to 1.5 liters/400 liters

Compex[®] Extra

NONIONIC SURFACTANT COMPATIBILITY AGENT FOR LIQUID FERTILIZER-PESTICIDE MIXTURES

Principal Functioning Agents	
Alkyl Polyglycoside, 2-Ethylhexyl Sulfate Sodium Salt	45.3%

All ingredients are exempt from the requirement of a tolerance under 40 CFR 180

Compex Extra is a compatibility agent for direct addition to liquid fertilizers.

Compex Extra should be used where simultaneous application of liquid fertilizer and a pesticide is desired and improved stability of the mixture is required.

Compatibility of liquid fertilizer-pesticide mixtures is essential to insure troublefree, accurate and uniform application.

Crop protection chemicals do not always mix evenly with liquid fertilizers or the components may separate too quickly to make their combined use of practical value.

Incompatibility may be due to pH, concentration and type of certain salts and percentage of water content of the liquid fertilizer.

Compex Extra is effective in improving compatibility and stability of most liquid fertilizer-pesticide mixtures.

Compex Extra is completely soluble in liquid fertilizers such as 28-0-0, 10-34-0, 4-10-10 and 6-18-6.

Because of the wide variety of pesticide and liquid fertilizer combinations possible, the beneficial effects of Compex Extra on compatibility may be tested beforehand by conducting a jar test.

Not approved for aquatic use.



USE RATES	
Liquid Nitrogen Fertilizers	1 to 2 pints, or 0.5 to 1.0 liters/400 liters, per 100 gallons of fertilizer
Liquid Mixed Fertilizers	2 to 3 pints, or 1.0 to 1.5 liters/400 liters, per 100 gallons of fertilizer

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Benchmark.

FOAM MARKING AGENT

Principal Functioning Agents	
Proprietary Blend of Active Foam Agents	100.0%

This foam concentrate is specially formulated to deliver long lasting foam in a range of weather and field conditions.

This highly concentrated formula, when used as directed, will produce a thick, white, highly visible foam. This foam can be used with any foam marker

equipment for fertilizer and pesticide applications, seed planting and general field cultivation.

This product is formulated to handle extreme hard water and high temperature conditions.

Benchmark foam marking agent, when used at proper consistency and foam volume, should be visible for up to 40% longer than traditional foaming agents.

Foam will disappear faster when placed on dry soil under bright sunlight, high temperature and high wind conditions.

USE RATES

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Always thoroughly clean out the foam generator reservoir and lines when changing from one brand of foam marker to another. Use a high quality tank cleaner to remove residues and ensure optimum performance. This product is effective at a range of application rates. The addition of water conditioners is generally not recommended.

Standard Use Rate	1 gallon for every 160 gallons of water, or, 8 fl. oz. for every 10 gallons		
If Foam Colorant Additive Is Being Used	2 fl. oz. for every 1 gallon of solution reservoir capacity	Use highest rate when adding a foam colorant.	
lf Adverse Conditions Exist (High Temperature / Hard Water)	2 fl. oz. for every 1 gallon of solution reservoir capacity		
Hard Water (Up to 1,500 ppm)	This product performs well in hard water up to 1,500 ppm		
If Foam Solution Is Used In Near Freezing Temperatures	2 to 3 fl. oz. of methanol per 1 gallon of foam solution for immediate use	Mixes well in cold water.	
NOTE:	Foam will disappear faster when placed on dry soil under bright sunlight, high temperature and high wind conditions. The concentrate when used at proper consistency and foam volume, should be visible for up to 40% longer than traditional foaming agents.		

Benchmark HT

HI-TEMPERATURE FOAM MARKER CONCENTRATE

Principal Functioning Agents	
Proprietary Blend of Active Foam Agents and Formulation Aids	100.0%

Benchmark HT is specially formulated with a unique blend of high foaming surfactants and foam stabilizers that produces a long lasting foam, particularly under adverse hot and windy application conditions and in hard water.

Benchmark HT produces foam that is resistant to wind allowing the foam ball to be resilient to the degrading effects of moderate wind.

Benchmark HT can be used with any foam marker equipment.

Field tests conducted using Benchmark HT indicate that this versatile formula produces long lasting, heat resistant foam when used with both pressurized and non-pressurized foam marking systems.

Benchmark HT is effective at various dilution rates based on the hardness of the water. Many factors influence how long the foam will last. Foam ball size, colorants, pressure, temperature, humidity, soil type and wind velocity will impact foam life. To insure a good quality foam, be certain to flush and clean the foam generating equipment before use.



USE RATES

For optimum results, always start by putting half of the water needed in the tank, followed by the total amount of needed Benchmark HT, followed by the remaining half of the water needed.

Standard Use Rate	1 gallon per every 100 gallons of water	
Under Soft Water Conditions (less than 300 ppm)	1 gallon per 120 to 160 gallons of water	May provide satisfactory results.
Under Hard Water Conditions (more than 1,000 ppm)	1 gallon per 80 gallons of water	May be preferred for extended foam life.
Whenever a Foam Colorant Additive is Tank Mixed	1 gallon for every 80 gallons of water	
NOTE:	Do not mix Benchmark HT foam marker with any other foam marker concentrate. This formula is a carefully tested blend of foam additives and stabilizers that may not be compatible with other products. Tank mixtures containing different foam concentrates will likely result in poor quality foam.	

SPECIALTY PRODUCT

Fomark[®]

FOAM MARKING AGENT 100:1 CONCENTRATE

Principal Functioning Agents	
Proprietary Blend of Active Foam Agents	100.0%

Fomark is a highly concentrated, complex blend of foaming agents and foam enhancing additives.

Fomark produces a dense, readily visible foam that is designed to be compatible with a wide range of water hardness and temperature conditions.

Designed for use with both pressurized and non-pressurized foam marker equipment, Fomark is ideal for agricultural, turf or soil field marking applications.

Fomark helps eliminate costly gaps and overlaps which can occur during the application of fertilizers or pesticides.

Fomark is economical to use and is the quality standard by which most foam marking agents are judged.

Color additives, such as KALO's Foam-Dye Red or Blue, can be used with Fomark to enhance visibility.

USE RATES

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Depending upon water hardness and temperature, Fomark may be used at dilutions ranging from 100:1 to 80:1.

For Most Water Conditions	1 gallon for every 100 gallons of water	This dilution rate will normally provide sufficient foam.
For Extremely Hard Water (1,000 ppm hardness or greater)	1 gallon for every 80 gallons of water	The use of foam colorant additives may require the 80:1 use rate.
NOTE:	Best results are achieved when foam generating tanks are clean and free of other chemicals before adding Fomark. Combining foaming agents or use without proper cleaning of equipment may reduce effectiveness.	

Spectra Max Tech.

MANUFACTURING CONCENTRATE

Principal Functioning Agents	
Sodium Polyacrylate-Citrophosphate Glycerol Complex with Siloxane	18.0%
Ammoniated Salt Solution as Formulation Aid*	82.0%

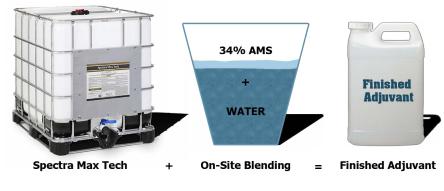
*This product contains equivalent to 1.2 pounds of ammonium sulfate per gallon. All ingredients accepted for use under 40 CFR 180.

Spectra Max Tech is a manufacturing concentrate to be used in the production of Spectra AMS or an equivalent dealer-labeled product.

Spectra Max Tech contains an integrated water conditioning system with an optimized rate of viscosity modifiers.

When blended with the appropriate level of ammonium sulfate solution, the final product is a user-friendly, complete water conditioning system.

Compatible with all glyphosates.



For Manufacturing Use Only Do Not Mix In Spray Tank

USE RATES

Spectra Max Tech is a manufacturing concentrate to be commercially blended with ammonium sulfate solutions. Spectra Max Tech is not to be used as a tank mix adjuvant, and is not for retail sale. Spectra Max Tech must be used in accordance with the Supplemental Manufacturing Procedure Guidelines. Read and follow these guidelines carefully. **Compatible with all glyphosates.**

D-Act[®]

SPRAY SYSTEM CLEANER

Principal Functioning Agents - PART A	
Ferrous Sulfate* *Equivalent to 5.0% Metallic Iron	25.0%

Principal Functioning Agents - PART B

Hydrogen Peroxide (H_2O_2)

D-Act Spray System Cleaner is a dual-action spray system cleaner. D-Act Part A is one component of the system. D-Act Part A must be

combined in spray tank with D-Act Part B in order to be effective.

D-Act is a proprietary technology designed to deactivate Dicamba residues in herbicide spray systems.

NOTE: D-Act is NOT an adjuvant and should only be used per the Directions For Use.

This product is not compatible with, and should not be used in, spray systems that have roller pumps.

DIRECTIONS FOR USE AND USE RATES

IMPORTANT: READ ENTIRE LABEL BEFORE MIXING OR USING. The D-Act spray system cleaner is to be used in the following triple rinse protocol per the pesticide label, which requires the spray system to be cleaned immediately after application of Dicamba.

- After spraying, drain the sprayer (including boom and lines) immediately. Do NOT allow the spray solution to remain in the spray boom overnight prior to flushing.
- 2. Flush tank, hoses, boom and nozzles with clean water. If equipped, open boom ends and flush.
- 3. Remove and rinse all strainers, screens, and filters and reinstall in system.

Prepare the cleaning solution with the D-Act spray system cleaner by adding sufficient water (a minimum of 15% of the tank volume) to the spray tank suitable to provide for proper cleaning. Take care to wash all parts of the tank, including the inside top surface. Turn on the

- recirculation pump. Add the ENTIRE 2.5 gallon jug of D-Act Part A (green label) to the spray tank. DO NOT save a partial jug. Add the ENTIRE 2.5 gallon jug of D-Act Part B (red label) to the spray tank. DO NOT save a partial jug.
- Flush hoses, boom, spray lines and nozzles with the D-Act spray system cleaner solution until spray pattern turns rust color and then shut off flow to the boom. Some dripping from nozzles may occur. Continue tank recirculation for 20 minutes.
- 6. Drain sump, filter and lines.

Rinse the entire spraying system with clean water making sure it sprays through the boom.
The rinse water from all phases of the triple rinse protocol must be disposed of in compliance with local, state, and federal guidelines

K-Klean.

LIQUID TANK AND EQUIPMENT CLEANER

Principal Functioning Agents	
Cleaning Agents in a Proprietary Transparent Emulsion	100.0%

K-Klean is an effective cleaner for metal, fiberglass and plastic spray systems.

K-Klean aids in the removal of dirt, grime, grease, chemical and fertilizer residues from tanks and equipment.

K-Klean helps eliminate rust and scale and keeps costly equipment in ready-to-use condition.



USE RATES

27.0%

K-Klean is effective at dilution rates of up to 1:100.

For Large Volume Sprayers	1 quart will treat 100 gallons of water	Adjust the dilution rate as needed for individual conditions. Circulate treated solution throughout the entire spray system for 5 to 10 minutes. Use a high-pressure sprayer or hose to rinse all interior areas and tank walls. Purge hoses, spray lines and nozzles for at		
For Tanks Or Sprayers (Not Equipped With Hand-Gun or Hose)	1 quart per 100 gallons of water	least one minute. After cleaning, drain system and rinse tanks and spray areas.		
	After spraying, drain tank, hoses and boom completely.			
	Rinse inside of tank of visible residues using approved site for handling pesticides.			
Cleaning Procedures	Fill tank half-full with clean water and add K-Klean at selected rate.			
cleaning Procedures	Agitate and flush the hoses and boom with cleaning solution.			
	Fill with water making sure the tank is completely full and allow to stand for 10 minutes with agitation.			
	Flush the hoses and boom and drain tank completely.			

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Tank Cleaner

DRY TANK & EQUIPMENT CLEANER

Contains

Complex Phosphates, Sodium Sulfate, Sodium Carbonate, Sodium Hydroxide, Monocyclic Terpenes and Nonionic Surfactant

Tank Cleaner is designed for cleaning tanks, lines and nozzles to remove pesticide, herbicide and fertilizer residues.

Tank Clean

Tank Cleaner also removes light rust and dissolves deposit buildups while leaving a protective film that helps prevent corrosion.

Color dye in Tank Cleaner indicates ingredients are still active in solution.

Tank Cleaner leaves a protective film that helps prevent corrosion.

USE RATES				
For Tanks or Sprayers Not Equipped with Hand-Gun or Hose	Fill tank with water first, then add 1 pound per 100 gallons of water	Close valve to spray boom, open by-pass valve and agitate vigorously for 15 minutes. Use hand gun or hose to cleanse inside of tank. Oper spray boom to flush Tank Cleaner and water solution out of tank.		
For Small Sprayer	1 teaspoon per 1 gallon of water	Agitate vigorously, rinse with water, then repeat procedure.		
For Sulfonylurea May require up to 2 pounds per Clean-Out 100 gallons		Some pesticides including, but not limited to, sulfonylurea and phenoxy herbicides (i.e. Classic [®] and 2-4,D respectively) are active at very small amounts. <i>Classic^e is a Reg. Trademark of Corteva</i>		
For Cleaning Fertilizer Equipment Fertilizer Equipment For Cleaner in 50 Equipment For Cleaner in Contact with fertilizer with Tank Cleaner and water solution.		Always flush with water before reuse.		
For Sprayers Being Reused Immediately	Refill tank with 100 gallons of water	Close hand gun valve and empty sprayer through boom nozzles.		
For Sprayers Being Stored	Do not rinse after treatment.	Tank Cleaner leaves a protective film to prevent corrosion.		

Turbo-Cleanse...

POST-SEED TREATING SURFACE CLEANER & STAIN LIFTER

Turbo-Cleanse is effective for cleaning surface stains of seed treatment colorants and grime from application equipment and the treatment area where seed is treated.

Anyone who has ever treated seed knows the frustration of treatment stains on equipment, clothes, floors, and more. Turbo-Cleanse helps lift and remove the persistent stains left behind from a splash or a spill.

Turbo-Cleanse is not recommended on surfaces that are painted or varnished, or acrylic, leather, aluminum, glass, chrome, clear coated, or laminated surfaces.



	USE RATES A	AND DIRECTIONS FOR USE
		FURBO-CLEANSE TO DRY! H BLEACH, AMMONIA OR OTHER CLEANERS CONTAINING THEM!
Surface Cleaning:		Spray, brush or sponge onto dirty surface and allow to penetrate and soak stained areas. After soaking, remove by wiping or water rinsing treated areas.
	Laundry Aid:	Spot treat, or add 1/4 cup per wash-load, to aid with removal of staiins on soiled or stained work clothing.



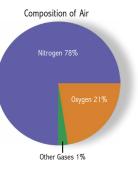
SOYBEAN INOCULATION AND NITROGEN FIXATION

SOYBEAN NUTRIENT DEMAND

The Most Efficient Way To Fertilize Soybeans With Nitrogen

Soybeans need nitrogen to grow just like all other plants. However, soybeans and other legumes, like alfalfa, clover, and peas, can manufacture their own nitrogen through a process called nitrogen fixation.

Nitrogen fixation occurs when a rhizobia bacteria in the soil infect legume plant roots, initiating plant response to nodulate and begin a plant process of pulling needed nitrogen from the air.



Nitrogen Fixation Taking Place



What Happens:

Seedling roots grow and inoculating bacteria multiply.

The bacteria take nitrogen from the air and convert it to nitrogen fertilizer for the plant.

The bacteria colonize root nodules creating a life giving nitrogen rich environment for the plant.

> Formation of nodules on the roots.



Large, dark pink/red nodules indicate active nitrogen fixation is taking place within the plant. This is caused by leghemoglobin in the plant nodules; very similar to hemoglobin in the blood of vertebrates. Dark pink/red means alive and functioning!

Soybean Nutrient Demand

The demand for nutrients depends on the soybean growth stage. Since the soybean seed has high levels of protein, demand for nitrogen is extremely high during seed formation.

	NUTRIENT	-	oncentratio		Tota	al Crop Nutr	rient
		Grain	Straw	TOTAL	50 bu	60 bu	70 bu
	Nitrogen	4.20	1.30	5.50	275	330	385
Primary NPK	Phosphorus	0.40	0.13	0.53	26.5	31.8	37.1
	Potassium	1.25	0.75	2.00	100	120	140
	Calcium	0.20	1.50	1.70	85	102	119
Secondary Nutrients	Magnesium	0.23	0.22	0.45	22.5	27	31.5
	Sulfur	0.20	0.25	0.45	22.5	27	31.5

IMPORTANT!

- Prepare only as much soybean inoculant as will be applied to seed that day.
- DO NOT OPEN PACKAGE UNTIL THE TIME OF APPLICATION.
- Once all components have been mixed, apply to seed within 24 hours. If mixing inoculant in same tank with fungicide or insecticides, apply to seed within 4 hours.
- If mixed in a dedicated inoculant tank, on-seed survival of 95 days or more can be achieved.
- •Seed treatment products are recommended to be applied sequentially for best results.
- Store in a cool place between 40°F (4°C) and 77°F (25°C). Do not allow inoculant to freeze or to be exposed to extreme heat. Avoid frequent temperature fluctuations.
- Store in original packaging only and do not reuse empty package.
- Product is not harmful and may be disposed of by using as irrigation for house plants, bedding plants, gardens, and lawns.
- •NOT A PLANT FOOD INGREDIENT!

Legacy

INOCULATION SYSTEM FOR SOYBEANS

Contains	
Part A - Bradyrhizobium Japonicum	10 billion (1 x 10 ¹⁰) cfu/ml
Dart D. Chitagan Bagad Dia Stimulant plug Extender (EDA //	01420 1)

Part B - Chitosan Based Bio-Stimulant plus Extender (EPA# 91439-1)



FOR SOYBEANS

INOCULANT

SOYBEANS •

NOCULANT FOR SOYBEANS • INOCULANT FOR

The Legacy duo-pak case contains a twopart system:

Super-Concentrated Liquid Inoculant (Part A);
 Chitosan Based Bio-Stimulant (Part B);

When the two parts of the system are combined, the resulting mixture is a ready-to-apply seed inoculant, that should be applied to seed immediately. On-seed survival of bacteria can last as long as 95 days after application. Sequential application of separate seed treatment products is recommended for best results.

When both parts are combined, the resulting mixture is a ready-to-apply live bacteria and bio-stimulant/ extender agent formulated to inoculate 50 units of soybean seed.

Part A – Super Concentrated Liquid Inoculant

10 billion (1x10¹⁰) active Bradyrhizobium japonicum per ml results in superior nodulation and higher yielding soybeans.

Part B – EPA Registered Chitosan Based Bio-Stimulant plus Low Viscosity Rhizobium Extender

Low use rate product contained in the rhizobium extender biological plant immuno-stimulant which triggers a defense response within the plant, leading to the formation of physical and chemical barriers against invading pathogens.

Up to 30% thinner than the leading brands of extender on the market, thus eliminating treatment system problems and bridging or clumping of seed.

Offers excellent time on seed compatibilities.

Directions For Use

IMPORTANT! Prepare only as much LEGACY as will be applied to seed that day. DO NOT OPEN PACKAGE UNTIL THE TIME OF APPLICATION. Once all components have been mixed, it is recommended that this product be applied to seed within 24 hours. If mixed in a dedicated inoculant tank, on-seed survival of 95 days or more can be achieved. Seed treatment products are recommended to be applied sequentially for best results. If mixing LEGACY in same tank with fungicide or insecticides, apply to seed within 4 hours.

Use Rate 2.5 fl. oz. per 100 pounds of seed

Each 2-bladder carton is formulated to inoculate 50 units of soybean seed.

Legacy

Benefits of Legacy

- Increased early season vigor. Stimulates the plant's hormones responsible for root formation, stem growth, fruit formation and development.
- Higher stand counts. An increase in stand count of 12% at 14 DAE.
- Nematode suppression. Protects against attacks by activating genes which produce protease inhibitors. (Auburn University Trials, Dec. 2015)
- Higher yields. Over six Midwest locations demonstrated an increase of 4.8 bushels over the control.

Legacy Mode of Action

Systemic Acquired Resistance (SAR) is a mechanism of plant defense that provides broad spectrum protection against multiple pathogens including both disease and nematodes.

Legacy behaves like a general elicitor, inducing a non-host resistance and priming the systemic acquired immunity within the plant's cellular tissue.

The vasculature provides the excellent channel for transport of systemic signals.

SAR takes 24 to 48 hours to activate the plant responses, and lasts the entire plant growing cycle.

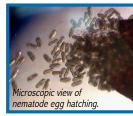
Involves gene activation and transmitted signal of chitinases, B1, 3-glucanases and PR proteins.

LEGACY SEED TREATMENT COMPATIBILITY				
Untreated Seed	Simultaneous	95 Days		
CruiserMaxx® Plus	Simultaneous	80 Days		
CruiserMaxx® Plus + Avicta	Simultaneous	75 Days		
Apron® Maxx XL LS + Maxum 4FS	Simultaneous	70 Days		
Acceleron®	Sequential	60 Days		
Rancona + 1.5 Meta Star	Simultaneous	55 Days		
Trilex® 6000	Simultaneous	45 Days		

LEGACY[™] Protects Against Soybean Cyst Nematode Damage

The EPA registered bio-pesticide in Legacy promotes protection from invading soybean cyst nematodes and is extremely fatal to nematode eggs and larvae.

Yield Loss From Soybean Cyst Nematode Can Exceed 30%



Soybean cyst nematodes (SCN) are microscopic roundworms that infect the roots of soybean and other plants.



SCN is one of the most significant pathogens of soybean. SCN look like small white lemon shaped cysts.



INOCULATION SYSTEM FOR SOYBEANS

Contains	
Part A - Bradyrhizobium japonicum	10 billion (1 x 10 ¹⁰) cfu/ml
Part B - Azospirillum Brasilense	1 billion (1 x 10°) cfu/ml
Part C - Liquid Activator and Stabilizer Synergist	

Vigor is an at-planting-time soybean seed enhancer.

Part B

PGPR

50.72 fl. oz.

bladder bag

Inoculation

Tank

Vigor inoculates and hastens early growth and establishment of the crop, delivers two types of bio-active performance (nitrogen fixing inoculant/plant growth promoting rhizobacteria) has a high level of viable bacteria, has advanced on-seed survival and has yield proven

Part C Synergist 47.33 fl.oz. bladder bag) The tri-pak contains a three-part system. When the three parts of the system are combined, the resulting mixture is a ready-to-apply seed treatment, designed for application at the time of planting or up to 95 days prior to planting.



Directions For Use

IMPORTANT! Prepare only as much VIGOR as will be applied to seed that day. DO NOT OPEN PACKAGE UNTIL THE TIME OF APPLICATION. Once all components have been mixed, it is recommended that this product be applied to seed within 24 hours. If mixed in a dedicated inoculant tank, on-seed survival of 90 days or more can be achieved. Seed treatment products are recommended to be applied sequentially for best results. If mixing VIGOR in same tank with fungicide or insecticides, apply to seed within 4 hours.

Use Rate 3 fl. oz. per 100 pounds of seed

ed Formulated to inoculate 200 units of sovbean seed.

Vigor

Part A – Industry Leading Count of Viable Bacteria

Contains a nitrogen fixing inoculant concentrate.

Vigor for soybeans ultimately delivers living bacteria to the seed that hastens the plant's ability to fix and manufacture the nitrogen it needs to grow.

Vigor is very concentrated so that more viable bacteria can be available for effective inoculation when the plant is ready. Specifically, 1 x 10¹⁰ bacteria cfu/ml means that every milliliter of VIGOR nitrogen fixing product contains 1 billion viable bacteria! As a result, VIGOR for soybeans delivers an industry leading count of viable bacteria to the seed when properly applied and used according to label instructions. In addition to improving the inoculation rate under a broad range of conditions, the concentrated VIGOR product results in a very high number of bacteria delivered per seed regardless of the seed size.

Part B – Plant Growth Promoting Rhizobacteria (PGPR)

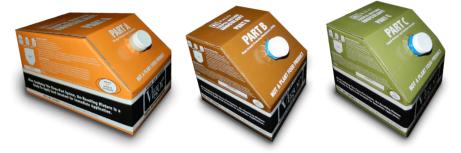
PGPR interacts synergistically with nitrogen fixing bacteria (inoculant) to promote improved nodulation and nitrogen fixation.

Phytohormones produced by the Vigor PGPR, have been shown to promote epidermal-cell differentiation in root hairs that increase the number of potential sites for rhizobial infection, leading to the enhanced nodulation and nitrogen fixation, among many other biological benefits.

Most importantly, Vigor is designed to deliver premium inoculation with the backup coinoculation of PGPR, giving the crop a better start and hastened stand establishment.

Part C – Synergist

Liquid activator and stabilizer Synergist is a nutritional and stabilizing agent for use with the Vigor tri-pak system. Synergist protects and enhances Vigor's nitrogen fixing bacteria (Part) and plant growth promoting bacteria (Part B) to sustain viability of bacteria and extend on-seed stability up to 95 days after inoculation.



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FOR SOYBEANS • INOCULANT FOR SOYBEANS

NOCULANT FOR SOYBEANS • INOCULANT

results.

Part A

litrogen Fixing

Inoculant

202.88 fl. oz.

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PACKAGE SIZES & PALLET CONFIGURATIONS

Product Name	<u>Item No.</u>	<u>Units/Pallet</u>	Pallets/TL
80% NIS	NI8002 NI8030	36 5	23 32
90% NIS	NI9001 NI9002	36 36	24 24
AeroStar	ASTAR02	36	24
AMS/NIS	AMS02	36	22
Anti-Foam	AF1Q	60	N/A
Avant Xtra	AVX01 AVX02 AVX30	36 36 5	24 24 27
Benchmark	BMK01 BMK30	36 5	24 33
Benchmark HT	BMKHT01 BMKHT30	36 5	24 33
Bio-90	BI901Q BI9001 BI9002	60 36 36	N/A 24 24
Bio-Film Extra	BFE01	36	24
Cadence	CADEN1Q CADEN01 CADEN02	60 36 36	N/A 24 24
Capstar	CAP02	36	24
CenterPoint	CP02	36	24
Check-Point	CP20	40	N/A
Check-Point Extra	CPE24	40	N/A
Citrix	CRUZ02	36	24
Clarion	CLAR01 CLAR02	36 36	24 24
Compex	CX01	36	24
Compex Extra	CXE01	36	24
Crop Oil Concentrate	CR02	48	24
Cruzado	CZ02	36	20
D-Act	DACT	36	24
Drift-X	DX02	48	21
Fomark	FM01	36	24
Fraction	FRA24	80	22
Gravitate	GRAV02	36	22
Hi-Surf MSO	HSMS002	36	24
K-Klean	KKLEAN01	36	24
Leeway	LWY02 LWY30	36 5	23 24

PACKAGE SIZES & PALLET CONFIGURATIONS

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Product Name	Item No.	Units/Pallet	Pallets/TL
Leeway II	LWYII02	36	23
-	LWYII265	1	16
Leeway Ultra	LWYU02	36	23
Legacy* Duo-Pak	LEG4CS	45	N/A
Mainstay	MS02	36	24
Modified Vegetable Oil	MV002	48	24
Momenta	MOM02	36	24
Octane 90	OCT02	36	24
One-Ap XL	OAXL45 OAXL00	40 1	24 24
Pure & Simple 90%	PS9002	36	24
Rain-Check	RC02	36	24
Regulaid	RG01 RG02	36 36	24 24
Restore	RES02	36	21
Root-Juice	RJ02	36	24
Sav-Oil	SAV02	36	24
Spectra AMS	SPTAMS02	36	22
Spectra Max Tank Mix	SPMTMIX02	36	22
Spectra Max Tech	SPMTECHOO	1	16
Spray-Start	SS09 SS45	220 40	22 24
Stratum	STRAT02	36	24
Synfactant	SY50	40	22
Tank Cleaner	TC01 TC04	10 10	N/A N/A
Threshold	TH02	36	24
Tronic	TRONIC01 TRONIC02	36 36	24 24
Turbo-Cleanse	AC-TC-IBCAC-TC-160 AC-TC-IBCAC-TC-225 AC-TC-IBCAC-TC-15	108 36 10	
Variant	VAR02 VAR30	36 36	24 34
VIGOR** Tri-Pak	VIGTP	45	N/A
Water-Rite	WR02 WR30	36 5	24 24
Water-Rite FC	WRFC02 WRFC30	36 5	24 24

*Legacy Duo-Pak consists of Part A (50.72 fl. oz.), Part B (11.83 fl. oz.) **Vigor Tri-Pak consists of Part A (156.16 fl. oz.), Part B (115.2 fl. oz.), Part C (67 fl. oz.)

CONFIGURATIONS • CONFIGURATIONS • CONFIGURATIONS • CONFIGURATIONS • CONFIGURATIONS

TERMINOLOGY

Absorption	A process in which one material (the absorbent) takes in and retains another (the absorbate).
Acaracide	A chemical agent used to kill mites.
Acidifier	A material that can be added to spray mixtures to neutralize alkaline solutions and lower pH.
Activator	A material that increases the biological efficacy of agrichemicals.
Active Ingredient	A component of the formulation that produces a specific effect for which the formulation is designed.
Adjuvant	A material added to a tank mix to aid or modify the action of an agrichemical, or the physical characteristics of the mixture.
Alkalinity Agent	A material that can be added to the spray mixture to raise the pH.
Ammonium Sulfate (AMS)	An inorganic salt that is most commonly use as a soil fertilizer. It contains 21% nitrogen and 24% sulfur. In the soil the ammonium ion is released and forms a small amount of acid, lowering the pH balance of the soil, while contributing essential nitrogen for plant growth. It is also used as an agricultural spray adjuvant for water-soluble insecticides, herbicides, and fungicides. There, it functions to bind iron and calcium cations that are present in both well water and plant cells. It is particularly effective as an adjuvant for 2,4-D (amine), glyphosate, and glufosinate herbicides.
Anionic Surfactant	A surface-active agent in which the active portion of the molecule containing the lipophilic segment forms exclusively a negative ion (anion) when placed in aqueous solution.
Antifoaming Agent	A material used to inhibit or prevent the formation of foam.
Buffering Agent	A compound or mixture that, when contained in solution, causes the solution to resist change in pH. Each buffer has a characteristic limited range of pH over which it is effective.
Cationic Surfactant	A surface-active agent in which the active portion of the molecule containing the lipophilic segment forms exclusively a positive ion (cation) when placed in aqueous solution.
Chitosan	A fat-binding fiber found in aquatic crustaceans. It is made by treating shrimp and other crustacean shells with alkali sodium hydroxide. It can be used in agriculture as a seed treatment and bio-pesticide, helping plants to fight off fungal infections.
Colorant	A material used to alter the color of the tank mix.
Compatibility Agent	A surface active agent that allows simultaneous application of liquid fertilizer and agrichemical or two or more agrichemical formulations, as a uniform tank mix, or improves the homogeneity of the mixture and the uniformity of the application.
Crop Oil Concentrate	An emulsifiable petroleum oil-based product containing 15 to 20% w/w surfactant and a minimum of 80% w/w phytobland oil.
Defoaming Agent	A material that eliminates or suppresses foam in the spray tank.
Defoliant	A chemical that causes the foliage to drop from plants.
Deposition Aid	A material that improves the ability of agrichemical sprays to deposit on targeted surfaces.
Dessicant	A desiccant is a substance that absorbs water. It is most commonly used to remove humidity that would normally degrade or even destroy products sensitive to moisture. Silica gel, calcium sulfate, montmorillonite clay, and molecular sieves are commonly used as desiccants.
Drift Control Agent	A material used in liquid spray mixtures to reduce spray drift.
Elicitors	Extrinsic, or foreign, molecules often associated with plant pests, diseases or synergistic organisms.
Emulsifier	A surfactant that promotes the suspension of one immiscible liquid in another.
Extender	A material that increases the effective life of an agrichemical after application.
Fertilizer	Any of a large number of natural and synthetic materials, including manure and nitrogen, phosphorus, and potassium compounds, spread on or worked into soil to increase its capacity to support plant growth.
Foam	A thick chemical froth.
Foaming Agent	A material that increases the volume or stability of the foam formed in a spray mixture.
Fungicide	A chemical substance that destroys or inhibits the growth of fungi.
Glyphosate	A white compound, $C_3H_8NO_3P$, that is soluble in water, used as a broad-spectrum herbicide.
Herbicide	A chemical substance used to destroy or inhibit the growth of plants, especially weeds.

TERMINOLOGY

Humectant	A material which increases the equilibrium water content and increases the drying time of an aqueous spray deposit.
Inhibitor	An agent that slows or interferes with a chemical action.
Insecticide	A chemical substance used to kill insects.
Methylate	To mix or combine with methyl alcohol.
Methylated Seed Oil	A group of specially refined crop oil concentrates derived from a seed oil crop such as cotton,
	soybean, sunflower, or rape.
Micronutrient	A substance, such as a vitamin or mineral, that is essential in minute amounts for the proper growth and metabolism of a living organism.
Methylated Seed Oil (MSO)	Methylated seed oil is a product of the reaction of a fatty acid (derived from seed oils) with methyl alcohol. MSO adjuvants usually contain emulsifiers/surfactants. Their primary use is with post- emergent herbicides, insecticides and fungicides, especially those with systemic action.
Modified Vegetable Oil (MVO)	An oil extracted from seeds that has been chemically modified (for example, methylated).
Modified Vegetable Oil Concentrate	An emulsifiable, chemically modified vegetable oil product containing 5% to 20% w/w surfactant and the remainder chemically modified vegetable oil.
Nematode	A phylum of worms including species parasitic in humans and plants as well as free-living nonparasitic species in soil or water. It includes the intestinal roundworms and filarial roundworms.
Nonionic Surfactant	A surface-active agent having no ionizable polar end groups but comprised of hydrophilic and lipophilic segments.
Parraffinic Oil	A petroleum oil (derived from paraffin crude oil) whose paraffinic carbon type content is typically greater than 60%.
Penetrant	A material that enhances the ability of an agrichemical to enter a substrate or penetrate a surface.
Pesticide	A chemical used to kill pests, especially insects.
рН	A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale commonly in use ranges from 0 to 14.
Protease	Any of a group of enzymes that catalyze the hydrolytic degradation of proteins or polypeptides to smaller amino acid polymers.
Silica	An inorganic compound composed of silicon and oxygen. It is a very high melting solid that is insoluble in water. In commerce, silica is a fine, white powder. Also known as silicon dioxide.
Silicone Surfactant	A surface active agent in which at least 75% (by weight) is derived from organically modified silicone.
Spreader	A material which increases the area that a droplet of a given volume of spray mixture will cover on a target.
Spreader-Sticker	A material that has the properties of both a spreader and a sticker.
Sticker	A material that assists the spray deposit to adhere or stick to the target and may be measured in terms of resistance to time, wind, water, mechanical action, or chemical action.
Surface Tension	A property of liquids arising from unbalanced molecular cohesive forces at or near the surface, as a result of which the surface tends to contract and has properties resembling those of a stretched elastic membrane.
Surfactant	A material that improves the emulsifying, dispersing, spreading, wetting, or other surface-modifying properties of liquids.
Vegetable Oil	\mbox{Oil} extracted from seeds; typically those of corn, cotton, peanut, rapeseed, sunflower, canola, or soybean.
Vegetable Oil Concentrate	An emulsifiable vegetable oil product containing 5 to 20% w/w surfactant and a minimum of 80% w/w vegetable oil.
Water Conditioning Agent	A material that reduces or eliminates the antagonism between a pesticide and ions present in the application water and results in improved bioefficacy.
Wetting Agent	A substance that reduces the surface tension of a liquid, causing the liquid to spread across or penetrate more easily the surface of a solid.

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Read the Conditions of Sale - Warranty and Limitations of Liability and Remedies before using this product. If the terms are not acceptable, return the product, unopened, and the full purchase price will be refunded. The directions of this label are believed to be reliable and should be followed carefully. Insufficient control of pests and/or injury to crop to which the product is applied may result from the occurrence of extraordinary or unusual weather conditions or the failure to follow the label directions or good application practices, all of which are beyond the control of KALO, Inc., the manufacturer or seller. In addition, failure to follow label directions may cause injury to crops, animals, workers or the environment. The Company warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the factors noted above which are beyond the control of the Company. The Company makes no other warranties or representations of any kind express or implied concerning the product, including no implied warranty of merchantability or fitness for any particular purpose, and no such warranty shall be implied by law. The exclusive remedy against the Company for any cause of action relating to the handling or use of this product shall be limited to, at KALO, Inc.'s election, one of the following:

Refund of the purchase price paid by buyer or user for product purchased, or,
 Replacement of the product used

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