

66330-363

04-26-2010

1/17



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

APR 26 2010

Bill Washburn  
Arysta LifeScience North America  
15401 Weston Parkway, Suite 150  
Cary, North Carolina 27513

Subject: Ethephon 3# Plant Regulator  
EPA Registration Number 66330-363  
Decision D425522: the amended label that was submitted  
on December 4, 2009

Dear Mr. Washburn,

The amended master label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, to add wheat and barley, is acceptable, provided that you comply with the following conditions.

1. Make the following changes to the label.

a. In the "ETHEPHON 3# - ALONE" table on page 7, in the "ONE GALLON ETHEPHON 3# TREATS" column for each of the rows an entry has been added that has the general format "(x.xxx lbs. a.i. per acre)" or "(x.xx - x.xx lbs. a.i. per acre)". These additions are unnecessary and must be deleted because the per-acre active ingredient rate for each row in the table is already stated in the "ETHEPHON 3# RATE" column for the active ingredient in the next column to the left and the rates that have been added are incorrect. This situation also points out a pre-existing problem in this column of the table which must be corrected. The

number of pounds of ethephon in a gallon of the subject product (3 pounds of ethephon) divided by the active ingredient rate stated in the "ETHEPHON 3# RATE" column yields the number of treatable acres that should be listed in the "ONE GALLON ETHEPHON 3# TREATS" column for that row of the table. However, the number of acres that are currently listed are actually applicable to a product that contains 2 pounds of ethephon per gallon, not 3 pounds per gallon. Therefore, in the "Hot and dry 80°F or higher" row change the "2.0-2.66 Acres" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "3.0-4.0 Acres". In the "Dry and 75°F to 80°F" row change the "1.33-2.0 Acres" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "2.0-3.0". In the "Cool but above 65°F Or Rank cotton" row change the "1.0-1.66 Acres" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "1.5-2.4 Acres". In this table also change the column header "ETHEPHON 3# RATE" to "ETHEPHON 3# RATE PER ACRE".

b. In the "ETHEPHON 3# - TANK MIX" table on page 8, in the "ONE GALLON ETHEPHON 3# TREATS" column for each of the two rows an entry has been added that has the general format "(x.xxx lbs. a.i. per acre)". These additions are unnecessary and must be deleted because the per-acre active ingredient rate for each row in the table is already stated in the "ETHEPHON 3# RATE" column for the active ingredient in the next column to the left and the rates that have been added are incorrect. This situation also points out a pre-existing problem in this column of the table which must be corrected. The number of pounds of ethephon in a gallon of the subject product (3 pounds of ethephon) divided by the active ingredient rate stated in the "ETHEPHON 3# RATE" column yields the number of treatable acres that should be listed in the "ONE GALLON ETHEPHON 3# TREATS" column for that row of the table. However, the number of acres that are currently listed are actually applicable to a product that contains 2 pounds of ethephon per gallon, not 3 pounds per gallon. Therefore, in the "Dry and 75°F or higher" row change the "2.0-2.66 Acre" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "3.0-4.0 Acres". In the "High soil moisture Or High fertility level Or Rank Cotton" row change the "0.75" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "1.5-4.0 Acres". In this table also change the column header "ETHEPHON 3# RATE" to "ETHEPHON 3# RATE PER ACRE".

c. In the "ETHEPHON 3# - PRECONDITIONER" table on page 8, in the "ONE GALLON ETHEPHON 3# TREATS" column for each of the two rows an entry has been added that has the general format "(x.xx lbs. a.i. per acre)". These additions are unnecessary and must be deleted because the per-acre active ingredient rate for each

row in the table is already stated in the "ETHEPHON 3# RATE" column for the active ingredient in the next column to the left and the rates that have been added are incorrect. This situation also points out a pre-existing problem in this column of the table which must be corrected. The number of pounds of ethephon in a gallon of the subject product (3 pounds of ethephon) divided by the active ingredient rate stated in the "ETHEPHON 3# RATE" column yields the number of treatable acres that should be listed in the "ONE GALLON ETHEPHON 3# TREATS" column for that row of the table. However, the number of acres that are currently listed are actually applicable to a product that contains 2 pounds of ethephon per gallon, not 3 pounds per gallon. Therefore, in the "Hot, dry, above 80°F" row change the "8 Acres" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "12 Acres". In the "Cool, above 65°F Or Rank cotton" row change the "4-8 Acres" entry in the "ONE GALLON ETHEPHON 3# TREATS" column to "6-12 Acres". In this table also change the column header "ETHEPHON 3# RATE" to "ETHEPHON 3# RATE PER ACRE".

d. The third sentence in the "RESTRICTIONS" subsection of the "WHEAT AND BARLEY" section on page 9 starts out "All other products should be field tested in comn...". This does not make any sense and must be clarified.

e. The second to the last sentence in the "USE RATES" subsection of the "WHEAT AND BARLEY" section on page 10 states, "Per year, do not apply more than 2 pints (0.5 lb. ethephon) of this product per acre." The active ingredient rate is correct but the product rate cannot be correct because the subject product contains 3 pounds of ethephon per gallon. Therefore, change this sentence to read "Per year, do not apply more than 1 1/3 pints (0.5 lb. ethephon) of this product per acre."

f. In the "COMMENTS" column for "Barley (Spring and Winter Seasons}" in the table at the top of page 11, change "The 2 pts/A rate may be..." to "A 2 pts/A rate may be...".

2. Submit one copy of your final printed labeling before you release the product for shipment.

17/4

If you have any questions about this letter, please contact John Bazuin at (703)305-7381 or bazuin.john@epa.gov.

Sincerely yours,

*John B. Bazuin, Jr.*  
for

Tony Kish  
Product Manager (22)  
Fungicide Branch  
Registration Division (7504P)

Attachment: Master label stamped "ACCEPTED with COMMENTS"

ACCEPTED  
with COMMENTS  
In EPA Letter Dated

5  
17

# ETHEPHON 3# PLANT REGULATOR

APR 26 2010  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

66330-363

For Agricultural Use Only. Not for Residential Use.

[For Use on Cotton as a Harvest Aid] [Cotton Harvest Aid]  
[For Minimizing Lodging in Barley and Wheat]

**ACTIVE INGREDIENT:**

Ethephon [(2-chloroethyl)phosphonic acid]\* ..... 27.0%

**INERT INGREDIENTS:** ..... 73.0%

**TOTAL:** ..... 100.0%

\*Contains 3 pounds ethephon per gallon.

## KEEP OUT OF REACH OF CHILDREN DANGER PELIGRO

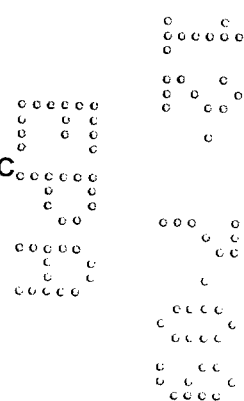
Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID	
IF IN EYES	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes then continue rinsing.</li> <li>• Call a poison control center or doctor for treatment advice</li> </ul>
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact: <b>FOR 24- HOUR EMERGENCY MEDICAL ASSISTANCE CALL: 1-866-303-6952</b> <b>FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300</b>	
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Treat symptomatically, as there is no specific antidote. Additionally, patient may have been exposed to materials other than this product.  This product is an acid; therefore, it is contraindicated to attempt to neutralize it with alkaline materials. Gastric lavage should be undertaken with care to victims of overexposure by ingestion, given the potential for esophageal or stomach perforation.  Due to a potential for pulmonary edema, any patients that have had severe exposure to this product should be kept under medical observation for up to 72 hours.	

See inside booklet for additional precautionary statements

EPA Reg. No. 66330-363  
EPA Est. No. 51036-GA-1  
AD071707  
NET CONTENTS \_\_\_\_\_

Manufactured For:  
Arysta LifeScience North America, LLC  
15401 Weston Parkway, Suite 150  
Cary, NC 27513



**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**DANGER.** Causes irreversible eye damage. Do not get in eyes, on skin or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistance chart.

Applicators and other handlers must wear:

- Goggles, Face shield, Safety glasses with front, brow and temple protection.
- Long sleeve shirt
- Long pants
- Chemical resistant gloves
- Shoes
- Socks

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**USER SAFETY REQUIREMENTS**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROL STATEMENTS**

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**

Wash thoroughly with soap and water after handling. Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**ENVIRONMENTAL HAZARDS**

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

**IMPORTANT:** Use of Ethephon 3# other than as described on this label is prohibited. Do not exceed the rate of Ethephon 3# per acre per year recommended on this label.

**DIRECTIONS FOR USE**

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. READ ENTIRE LABEL BEFORE USING THIS PRODUCT.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulations.

Do not contaminate water used for irrigation or domestic purposes.

Detrimental changes to plant growth, reduced yields, and plant injury may result from spray drift of this product to nearby crops and thus must be avoided.

Do not plant another crop within 30 days after treatment.

Do not apply Ethephon 3# through any type of irrigation system.

### SPRAY DRIFT

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR.

The interaction of many equipment-and-weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they must be observed.

The applicator must be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory below:

### AERIAL DRIFT REDUCTION ADVISORY

#### INFORMATION ON DROPLET SIZE

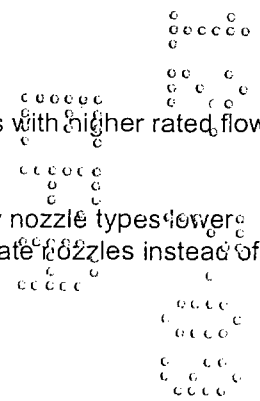
The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (See Wind, Temperature and Humidity, and Temperature Inversions).

#### CONTROLLING DROPLET SIZE

Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Number of nozzles - Use the minimum number of nozzles that provide uniform coverage.



Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.

Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

#### BOOM LENGTH

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

#### APPLICATION HEIGHT

Applications should not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

#### SWATH ADJUSTMENT

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator should compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

#### WIND

Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

#### TEMPERATURE AND HUMIDITY

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

#### TEMPERATURE INVERSIONS

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.



### SENSITIVE AREAS

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

#### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours. The REI is 72 hours in areas where average rainfall is less than 25 inches per year.

Reentry workers must wear:

- Goggles, Face shield, Safety glasses with front, brow and temple protection.
- Coveralls
- Chemical Resistant Gloves
- Shoes
- Socks

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated such as plants, soil or water is coveralls, chemical resistant gloves made of any waterproof material such as Nitrile or Butyl rubber, shoes plus socks, protective eyewear, and chemical-resistant headgear for overhead exposure.

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

### GENERAL INFORMATION

Contact your Extension Pomologist, Farm Advisor, Horticultural Specialist or Micro Flo Company Representative for local recommendations on product spray volume, spray equipment and rates of application for varying weather conditions.

### APPLICATION VOLUMES AND SPRAY COVERAGE

For optimum product efficacy, thorough spray coverage is necessary. This can be influenced by type of spray equipment, spray boom setup, nozzle selection, plant size, canopy density and spray pressure. Depending on these choices, the necessary spray volume will vary. For applications by air in California and Arizona, more than 5 gallons per acre must be used.

### USE PRECAUTIONS

THE MIXTURE OF THIS PRODUCT WITH AMMONIUM THIOSULFATE IS PROHIBITED AS IT MAY CREATE TOXIC FUMES. Other than recommended on this label, this product must not be used with additives.

Upon mixture, this product must be applied as soon as possible; in no case should the spray solution be stored overnight.

Detrimental changes to plant growth, reduced yields, and plant injury may result from spray drift of this product to nearby crops and thus must be avoided. Do not plant another crop within 30 days after treatment.

This product is corrosive. Therefore, spills of concentrated product on the aircraft or other spray equipment must be avoided. Should such contact be made, immediately rinse with water.

**EQUIPMENT CLEANING**

This product is corrosive. As a result, spray deposit exposure will, over a period of time, damage metal, some paints and acrylic plastics. No more than one hour after exposure to spray deposits, these materials must be carefully rinsed with water and detergent.

**COTTON**

A foliar spray of Ethephon 3# will accelerate opening of mature unopened cotton bolls and enhance defoliation which can result in earlier harvest with an increased recoverable yield. Ethephon 3# treatment allows increased efficiency from a once-over harvest.

**SPRAY PREPARATION**

Add 1/2 to 3/4 of the required amount of water to the spray tank. Start agitation. Add the required amount of Ethephon 3#, and the remaining amount of water. Prepare only as much spray solution as can be used on the day of mixing. Do not allow spray solution to stand overnight. Do not spill the concentrated product on spray equipment, or any airplane parts.

ANY SPILLS SHOULD BE RINSED IMMEDIATELY WITH PLENTY OF WATER.

Use of a nurse tank is highly recommended for avoiding possible spills of concentrated formulation on spray equipment or any airplane parts.

**APPLICATION INFORMATION**

Thorough and uniform coverage of cotton leaves and bolls is required for optimum regrowth inhibition and boll opening. Apply as a dilute spray in 10 to 25 gallons of water per acre by ground or 3 to 5 gallons of water per acre by air.

Good agitation in the spray tank is essential and a tank mixture should not be allowed to stand without agitation for more than 5 to 10 minutes. Read and observe all appropriate label use directions and precautions for the defoliant and insecticides used.

**EQUIPMENT CLEANING**

Because of the acidic nature of this product, prolonged exposure to spray deposits will damage acrylic plastics, certain paints, and metals.

Rinse thoroughly with a detergent and water all exposed acrylic plastic-type materials (e.g., aircraft windshields), and painted surfaces within an hour after exposure to spray deposits.

At the end of each day, rinse thoroughly with a detergent and water all the metal parts of the aircraft and the associated spray equipment exposed to the spray deposits.

ETHEPHON 3# - ALONE							
USE	EXPECTED CONDITIONS	ETHEPHON 3# RATE		ONE GALLON ETHEPHON 3# TREATS	SPRAY VOLUME		TIMING
					GROUND	AIR	
ETHEPHON 3#	Hot and dry 80°F or higher	32 - 43 fl.oz. (2-2 2/3 pints)	0.75-1.0 lb. a.i.	2.0-2.66 Acres  (0.375 lbs. a.i. per acre)	10-25 gallons	3-5 gallons	Apply when the number of mature unopened bolls is sufficient to produce the desired crop. See below for test of boll maturity. Treatment uniformly opens bolls 7 to 14 days earlier
	Dry and 75° F to 80° F	43 - 64 fl.oz. (2 2/3-4 pints)	1.0-1.5 lb. a.i.	1.33-2.0 Acres  (0.75 lbs.a.i. per acre)	10-25 gallons	3-5 gallons	Apply when the number of mature unopened bolls is sufficient to produce the desired crop. See below for test of boll maturity. Treatment uniformly opens bolls 7 to 14 days earlier
	Cool but Above 65° F Or Rank cotton	54 - 86 fl.oz. (3 1/3-5 1/3 pints)	1.25-2.0 lb. a.i.	1.0-1.66 Acres  (1.25 – 1.20 lbs. a.i. per acre)	10-25 gallons	3-5 gallons	Apply when the number of mature unopened bolls is sufficient to produce the desired crop. See below for test of boll maturity. Treatment uniformly opens bolls 7 to 14 days earlier

**TANK MIXTURES WITH DEFOLIANTS, DESSICANTS AND INSECTICIDES**

Follow all applicable use precautions and rate per acre recommendations on labels of products applied as tank mixtures or in sequence with Ethephon 3#. In some cases slight reduction in boll opening response has been observed when tank mixes with defoliants were used.

Ethephon 3# can be applied in a tank mix with an EPA approved defoliant for consistent defoliation and regrowth inhibition. Ethephon 3# can also be applied in a tank mix with EPA approved desiccants or herbicides. Tank mixes should be made in accordance with the label that is more restrictive in limitations, restrictions and/or precautions.

**DO NOT MIX WITH DESICCANTS IF COTTON IS TO BE SPINDLE HARVESTED.**

**DO NOT TANK MIX ETHEPHON 3# WITH DEFOLIANTS CONTAINING SODIUM CHLORATE BECAUSE THIS RESULTS IN THE FORMATION OF HYPOCHLOROUS ACIDS WHICH UPON HEATING EMIT TOXIC CHLORINE FUMES.**

ETHEPHON 3# - TANK MIX							
USE	EXPECTED CONDITIONS	ETHEPHON 3# RATE		ONE GALLON ETHEPHON 3# TREATS	SPRAY VOLUME		TIMING
					GROUND	AIR	
ETHEPHON 3# + DEFOLIANT (tribufos, thidiazuron, thidiazuron + diuron) and other EPA approved DESICCANTS.	Dry and 75 °F or higher	32 - 43 fl.oz. (2-2 2/3 pints)	0.75-1.0 lb. a.i.	2.0-2.66 Acres (0.375 lbs. a.i. per acre)	10-25 gallons	3-5 gallons	Apply 4 to 7 days prior to Ethephon 3# boll opening application. To be used as a sequential treatment with, not in place of Ethephon 3# boll opening treatment.
	High soil moisture Or High fertility level Or Rank Cotton	32 - 86 fl.oz. (2-5 1/3 pints)	0.75-2.0 lb. a.i.	1.0-2.66 Acres (0.75 lbs. a.i. per acre)	10-25 gallons	3-5 gallons	Apply 4 to 7 days prior to Ethephon 3# boll opening application. To be used as a sequential treatment with, not in place of Ethephon 3# boll opening treatment.

ETHEPHON 3# - PRECONDITIONER							
USE	EXPECTED CONDITIONS	ETHEPHON 3# RATE		ONE GALLON ETHEPHON 3# TREATS	SPRAY VOLUME		TIMING
					GROUND	AIR	
Preconditioner for defoliation	Hot, dry, above 80°F	11 fl.oz. (2/3 pint)	0.25 lb. a.i.	8 Acres (0.03 lbs. a.i. per acre)	10-25 gallons	3-5 gallons	Apply 4 to 7 days prior to defoliant. Enhances top crop defoliation reducing deterioration of bottom crop and allows for earlier harvest.
	Cool, above 65°F Or Rank cotton	11- 21 fl.oz. (2/3-1 1/3 pints)	0.25-0.5 lb. a.i.	4-8 Acres (0.06 lbs. a.i. per acre)			

**Pretreatment With Defoliants Prior to Ethephon 3# Treatment**

If the cotton is overly rank or laying down in the middles and good spray coverage of the bolls with Ethephon 3# is difficult, a pretreatment with defoliants will be useful to improve boll coverage with Ethephon 3#. Use dosage rates of Ethephon 3# recommended for boll opening. Read and observe all appropriate label use directions and precautions for the defoliant used.

\*\*NOTE: For California and Arizona use a volume of no less than 5 gallons per acre for aerial applications.

**Boll Maturity**

A boll is mature when it is too hard to be dented when squeezed between thumb and fingers, too hard to be sliced with a sharp knife, and when the seed coat becomes light brown in color.

**Use Limitations**

- Do not exceed a maximum of 2.0 lb. ai/A for combined uses of Ethephon 3# (or other ethephon containing products) per acre per year.

- Boll Opening: Do not tank mix Ethephon 3# with a desiccant if the cotton is to be spindle harvested.
- Pre-Condition for Defoliation: Do not tank mix Ethephon 3# with desiccants unless plant desiccation is required. Do not use a defoliant before there are sufficient mature unopened bolls to produce the desired yield (see General Information section on how to test for boll maturity).

**When to Harvest**

Do not harvest cotton sooner than 7 days after a treatment with Ethephon 3#. Observe the treated crop and harvest when optimum boll opening has been reached. Too early harvest might reduce the full advantage of the treatment and too late a harvest may result in reduced quality and loss of lint, which will drop from the plant.

**WHEAT AND BARLEY  
(NOT REGISTERED FOR USE IN CALIFORNIA)**

This product can be applied as a preventative measure in a tank-mix with certain cereal insecticides and fungicides approved for such use. Such a tank mix should not be applied to plants stressed by cold, disease, heat, insect or moisture as a decrease in yield or injury to crops may occur. Application of a tank mix of this product with Tilt® may cause a decrease in yield or flag leaf burn.

Assessment of economics and plant conditions should guide treatments of insecticides and fungicides, which may or may not match with treatment timing of this product.

**RESTRICTIONS**

Ethephon 3# does not require the supplemental use of adjuvants, surfactants or wetting agents in most cases. Ethephon 3# should not be mixed with herbicides or liquid nitrogen solutions such as UAN 28% or 32%.

All other products should be field tested in corn. This product should not be supplemented with adjuvants, surfactants or wetting agents or tank mixed with nitrogen solutions or herbicides.

Do not apply through any type of irrigation system.

Failure to observe label instructions may result in decreased product quality or yield.

Lodging reduction effects may not occur for up to seven days following treatment. Once crops are lodged, this product is not effective.

This product may affect certain disease infestations, such as mildew, rust and Septoria, and should be used in conjunction with a fungicide control program if necessary.

Yield loss may occur if, during or after application, plants are subject to disease, moisture or temperature stress.

Yield loss may occur if this product is applied under non-lodging conditions.

Always follow label temperature restrictions.

Harvest maturity may be delayed 1-4 days and heading by 1-2 days following use of this product. Additional harvest maturity delay may occur if crops are subject to extreme temperatures within five days following treatment.

Extreme temperatures are any under 35° F or above 85° F for non-irrigated crops, or over 90° F in irrigated crops. Because of the potential for maturity delay and, therefore, harvest delays, this product should not be used on late-seeded crops in short-season growing areas.

Secondary tillers may increase following application of this product to certain spring barleys. This may particularly occur if crop is subject to temperature or moisture stress.

Use of this product on Azure barley or Tyler wheat is prohibited.

This product should not be applied when rain will likely occur within six hours.

Grazing or foraging by livestock or cutting for hay or silage are prohibited. Mature straw at normal harvest may be consumed by animals.

A 30-day plant-back interval is required.

**TREATMENT DECISION GUIDE**

Shortly before application of this product, the fields to be treated should be checked to determine the chance lodging will occur. This product should only be applied under these circumstances:

Lodging is anticipated and likely will result in a considerable decrease in grain quality, harvest efficiency, and

recoverable yield.

There is no disease stress or insect pressure on the crop.

There is little to no chance of crop stress following application because of adequate irrigation or soil moisture. Extreme temperature fluctuations (as described above) are not anticipated to occur within five days following application.

Crop is at the proper growth stage: Feekes 8 to 10.

### APPLICATION TIMING

This product should be applied at the point the flag leaf is slightly visible to the boot stage. Apply prior to awn emergence or sheath split. **These visual cues correspond to Feekes-Large Scale 8-10 and Zadok's Code 37-45.** Crop damage and decreased yields may occur if application contacts exposed heads.

### APPLICATION

For best results, post-treatment temperatures should be no less than 60° F. Overlapping sprays should be avoided as yield and rate loss may be exaggerated.

Ground application: Application with conventional ground equipment should be made in at least 7 gals/A of water. Use of flat fan nozzles is suggested. Application with air foil-type equipment or by controlled droplet application (CDA) should be made in at least 5 gals/A of water. Spray boom should be adjusted to drive at moderate speed and at the height of the plant canopy to avoid an uneven application.

Aerial application should be made in at least 3 gals/A of water.

### USE RATES

The application rate will be determined by environmental conditions and lodging pressure. Contact your state extension specialist for local recommendations on rates of application for varying conditions. The 1 pint/A rate should be used on more responsive varieties. Per year, do not apply more than 2 pints (0.5 lb. ethephon) of this product per acre. Pre-harvest interval is forty (40) days.

**RECOMMENDED BARLEY AND WHEAT APPLICATION RATES**

CROP CONDITION	ANTICIPATED LODGING PRESSURE			COMMENTS
	MODERATE	HEAVY	SEVERE	
	APPLICATION RATE (pts/A)			
Barley (Spring and Winter Seasons)	2/3	2/3 to 1	1 to 1 1/3*	The 2 pts/A rate may be necessary for use on certain vigorously growing tall varieties.
Winter Wheat	2/3	2/3 to 1	1 to 1 1/3*	For certain tall straw varieties (e.g., "Roughrider" and "Agassiz"), the listed rates may be unable to control lodging under severe lodging conditions.
Most Spring Wheats	2/3	2/3	1	For certain tall durum wheats (e.g., "Vic"), the listed rates may be unable to control lodging under severe lodging conditions.
Sensitive Variety or High Temperature **	2/3	2/3	2/3	
<b>RESTRICTIONS</b>				
* Application with the 2-pint rate should be restricted to the following anticipated yield-decreasing conditions: 1) very tall varieties that are lodging-prone, 2) cereal types like durum notorious for severe lodging, or 3) irrigated crops that are subject to abnormally severe lodging.				
** This product should not be applied if it is anticipated that anytime during the five days following treatment, temperatures are to go above 85° F for non-irrigated crops or 90° F for irrigated crops.				

**NON-IRRIGATED WHEAT AND BARLEY**

Application of this product to non-irrigated wheat and barley in states West of the Mississippi River is prohibited except West of the Cascade Range in the States of Oregon and Washington.

**IRRIGATED WHEAT AND BARLEY**

To prevent stress on the crop, it is recommended to irrigate prior to and after twenty-four (24) hours following application. Irrigation should continue through the period of grain head filling if weather remains hot and dry. Please note that considerable decreases in yield and plant quality may occur if crop is subject to heat stress and moisture during grain fill and antithesis. As a result, it is imperative to avoid plant stress during these periods when treating with this product.

**GROWTH STAGE CHART**

Growth Class	2 <sup>nd</sup> Node Detect able	Flag leaf Barely Visible	Flag Leaf Ligule Visible	Swollen Boot	First Spikelet Visible	Inflorescence ¾ complete
Feekes-Large Scale	7	8	9	10	10.1	10.4
Zadok's Code	32	37	39	45	50	57
Treatment time advice	Too Early				Too late	

### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

**PESTICIDE STORAGE:** Store pesticide in original container. If container is broken or contents have spilled, follow all precautions as outlined above and clean up immediately. Before starting clean up, put on the appropriate protective clothing such as long pants or coveralls, long-sleeved shirt, appropriate footwear and gloves, and face shield or goggles if needed. Soak up spilled product with an appropriate media such as sand, earth, or clay cat litter and dispose of waste at an approved waste disposal facility.

**PESTICIDE DISPOSAL:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental control Agency, or the Hazardous Waste representative at the nearest EPA Regional office for guidance.

#### CONTAINER DISPOSAL:

**Containers equal to or less than 5 gallons: Nonrefillable container.** Do not reuse or refill this container.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

**Containers greater than 5 gallons: Nonrefillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Offer for recycling, if available, or puncture and dispose of in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**REFILLABLE CONTAINERS: Refill this container with pesticide only.** Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.



**Warranty and Disclaimer Statement**

The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Such risks may arise from weather conditions, soil factors, off-target movement, unconventional farming techniques, the presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of Arysta LifeScience North America, LLC ("Arysta"), and can cause crop injury, injury to non-target crops or plants, ineffectiveness of the product, or other unintended consequences. All such risks shall be assumed by the user or buyer. Arysta warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions. This warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to Arysta, and is subject to the inherent risks described above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ARYSTA DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ARYSTA, MANUFACTURER, AND SELLER DISCLAIM AND SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE, HANDLING, APPLICATION, STORAGE, OR DISPOSAL OF THIS PRODUCT OR FOR DAMAGES IN THE NATURE OF PENALTIES, AND THE USER AND BUYER WAIVE ANY RIGHT THAT THEY MAY HAVE TO SUCH DAMAGES. NO AGENT, REPRESENTATIVE OR EMPLOYEE OF ARYSTA IS AUTHORIZED TO MAKE ANY WARRANTY, GUARANTEE OR REPRESENTATION BEYOND THOSE CONTAINED HEREIN OR TO MODIFY THE WARRANTIES CONTAINED HEREIN.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE TOTAL LIABILITY OF ARYSTA, MANUFACTURER, AND SELLER, SHALL BE LIMITED TO THE PURCHASE PRICE PAID, OR AT ARYSTA'S ELECTION, THE REPLACEMENT OF THE PRODUCT.**