Ethephon 2

Plant Regulator

PEEL HERE
TO OPEN

For Commercial or Agricultural Use Only
Not for Residential Use

ACTIVE INGREDIENT:	
Ethephon [(2-chloroethyl)phosphonic acid]*	21.7%
INERT INGREDIENTS:	78.3%
Total:	100.0%

*Contains 2 pounds ethephon per gallon

See inside booklet for additional precautionary statements.

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.)

For Product Use Information, call 1-866-761-9397

Manufactured for:
Arysta LifeScience North America, LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513
101881—041912

EPA Reg. No. 66330-262
EPA Est. No. 70815-GA-001
AD08232010R1

Net Contents: 1 Gallon

Arysta LifeScience

FIRST AID	
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15–20 minutes. • Remove contact lenses, if present, after the first 5 minutes then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15–20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth to mouth. • Call a poison control center or doctor for further treatment advice.

HOTLINE NUMBER

EMERGENCY TELEPHONE NUMBERS: Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE: Call PROSAR at 1-866-303-6952 or 1-651-632-8946 if calling from outside the U.S.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accidents call CHEMTREC at 1-800-424-9300 or 1-703-527-3887 if calling from outside of the U.S.

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.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Causes irreversible eye damage and skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes on skin or on clothing. Avoid breathing spray mist. Avoid contamination of food.

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:

- long-sleeved shirt and long pants
- chemical resistant gloves made of any waterproof material such as polyvinyl chloride, nitrile rubber, or butyl rubber gloves
- shoes plus socks and chemical resistant footwear
- protective eyewear.

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.

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

USER SAFETY RECOMMENDATIONS

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

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 2 other than as described on this label is prohibited. Do not exceed the rate of Ethephon 2 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 should be avoided.

Do not plant another crop within 30 days after treatment.

Do not apply Ethephon 2 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 determine 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 ¾ of the length of the fixed wingspan or rotor diameter.

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 should 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 ¾ of the length of the fixed wingspan or rotor diameter 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 must 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.

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.

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 material 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: Nonrefillable container. Do not reuse or refill this container. Triple rinse (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. 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.

This Product:

Encourages faster coloration and maturity of APPLES, GRAPES, PEPPERS, and TOMATOES.

Loosens APPLES, CHERRIES, and WALNUTS for an earlier and more efficient harvest.

Encourages earlier, uniform coloring of mature FLUE-CURED TOBACCO.

Encourages fruit abscission (slipping) in CANTALOUPES.

Augments hardiness in dormant fruit buds and helps to delay the spring bloom of SWEET CHERRIES in the Pacific Northwest.

Accelerates the loosening and ripening of BLACKBERRIES.

Minimizes lodging in WHEAT and BARLEY.

Eliminates leafy mistletoe from ORNAMENTAL DECIDUOUS TREES and dwarf mistletoe from ORNAMENTAL CONIFERS.

Removes unwanted fruit on APPLE, CRABAPPLE, CAROB, and OLIVE trees.

GENERAL INFORMATION

Contact your Extension Pomologist, Farm Advisor, Horticultural Specialist or Arysta LifeScience 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 should not be used with additives.

Upon mixture, this product should 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 should 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 should 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 should be carefully rinsed with water and detergent.

TOBACCO
(Flue-Cured Only)
(Not for use in California)

A foliar spray of Ethephon 2 promotes early, uniform “yellowing” of mature tobacco. Ethephon 2 reduces curing time, allowing more efficient use of curing barn space, and increased control over harvest schedules.

Ethephon 2 increases the capacity of the curing barn by shortening the curing time and allows adjustments in harvest schedules. Ethephon 2 can be used as a directed spray to the bottom or middle portion of the tobacco plant or as an over-the-top spray. Ethephon 2 is not intended or recommended for use on immature tobacco.

Crop Situation	Ethephon 2 Pt/A	Specific Directions
Directed Spray Application	4	Use drop nozzles. Choose TG or OC spray tips designed to apply 50–60 gpa at 35–40 psi and at tractor speed of 2–3 mph. Use 2 nozzles per row; one on each side of the row dropped low enough to direct the spray to the leaves to be ripened and harvested. Thorough spray coverage is essential. With a directed spray, be sure to harvest all leaves with 20% or more yellowing.
Over-The-Top Application	4 to 8	Treat only when leaves remaining on the stalk are mature. To ensure remaining leaves are mature, test spray several tobacco plants as described under the section "Application Timing." Use the lower rate in a normally mature crop when experience indicates that minimum ripening inducement is required. Use the higher rate when the crop is heavy and has a tendency to be more rank or when temperatures are lower than normal. Always test spray to determine if the tobacco is mature enough to respond to treatment with Ethephon 2. Apply over-the-top Ethephon 2 spray as a fine mist using three nozzles (one nozzle tip over the center of the plant, and one on each side) to assure all leaves are covered thoroughly, similar to the application pattern of systemic sucker control agents. Use a spray pressure of 40 to 60 psi.

RESTRICTIONS

Do not apply Ethephon 2 to immature leaves as this can result in unsatisfactory coloring, weight loss and reduced leaf quality.

Do not allow the crop to over ripen in the field after using Ethephon 2, since this may cause some reduction in yield and quality.

Do not treat before anticipated major storm which could prevent harvest and result in crop loss.

Do not apply Ethephon 2 if rain is expected within 6 hours.

Do not harvest tobacco treated with Ethephon 2 sooner than 2 days after application.

Follow use rates listed above for labeled uses.

Do not exceed 8 pints of this product (2 lb ethephon) per acre per year.

APPLICATION TIMING

Successful results with Ethephon 2 call for treatment when leaves are mature, not overly rank green when sprayed. To easily determine the proper treatment timing and the number of leaves per stalk ready for harvest, test spray several plants in more than one location in each field and observe the response. Mature leaves will begin to yellow in 24 to 72 hours. Test leaves that fail to yellow in 72 hours are not mature and are not ready for Ethephon 2 treatment. Wait a few days to permit further natural maturing, then make another test spray or "maturity" check.

Determine acres to treat by first confirming the number of leaves per plant that will color, then use barn capacity to calculate the number of acres to treat.

A test spray can be prepared by mixing 4 teaspoons of Ethephon 2 in 1 quart of water. Apply about 1 ounce to each test plant covering all leaves with a fine mist. Ethephon 2 will not color immature leaves.

To avoid quality loss and/or possible leaf drop, harvest any yellowed leaves prior to application. Use lower rates under most conditions. Limit use of higher rates to cool (below 65°F at the time of treatment) slow ripening conditions.

WHEN TO HARVEST

All mature, sprayed leaves will begin to color within 24 to 72 hours after Ethephon 2 application. The yellowing process is weather dependent; cool weather will delay, while hot, sunny weather can speed up the process. Harvest treated tobacco when leaves have reached the desired color intensity.

Harvest can commence 48 hours after Ethephon 2 application. To determine harvest timing and avoid quality loss or leaf drop, closely monitor treated crop and weather conditions.

CURING Ethephon 2 TREATED TOBACCO

Curing procedures are as much an art as a science and each cure must be judged on the basis of tobacco condition, interval between treatment and harvest, weather and type of curing facility before prescription temperature and ventilation schedules can be established. To obtain maximum quality, care must be taken to observe and control the curing process closely, especially during the late "coloring" and early "drying" stages of the leaf.

Ethephon 2 treated tobacco will have started the coloring process when harvested, reducing the time required in the coloring phase of curing. Treated tobacco should be dried faster. If tobacco leaves are green or contain some green when harvested, it may be necessary to color them for a few hours. If the leaves are completely yellow, temperature and ventilation must be adjusted in a manner to dry the tobacco as fast as possible without scalding. Once the leaf is dried (¾ dry), you should follow normal procedures for curing. Since Ethephon 2 treated leaves cure faster, treated and untreated leaves should not be cured together in the same barn.

TOMATOES

PROCESSED: Recoverable fruit yield from a once-over harvest may be increased by a foliar spray of this product, which will concentrate and speed up the ripening of tomatoes. Ripening will begin earlier and mature plant ripening will converge. This will concentrate maturity in the plants, allowing the higher yield of ripe tomatoes in a once-over harvest. In addition, this will help to prolong the normal harvest season and assist in harvest scheduling and product handling.

FRESH MARKET TOMATOES IN CALIFORNIA: Early marketable fruit yields may be increased by a foliar spray of this product, which will speed up the ripening of tomatoes.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
PROCESSED TOMATOES: 1) WARM TEMPERATURES OR 2) EARLY TO MID-SEASON	1 ¼ to 3 ¼	This product should be applied when 5–15% of the tomato fruit in the treatment area, including breakers, are pink and red in color and there are enough mature green tomato fruit to create the desired amount of harvest. When temperatures are over 85°F, this product can be effective at rates as small as 1 ¼ pt/A. It is necessary to maintain thorough coverage of the fruit and foliage. As a result, spray volumes and aerial or ground equipment should be chosen to maximize coverage. Please note, however, that overlapping spray nozzle patterns or swaths may result in overdosing and, as a result, extreme injury to foliage. When applying the spray band over the row, be sure to reduce the application rate in proportion to the actual treatment area. The treatment area should be closely monitored and crops should be harvested once proper maturity is reached.	Generally, this product should be applied when the preferred amount of tomato fruit is mature and of a marketable size. Before applying this product, the treatment area should be observed closely, including by sampling plants to determine the crop's stage of growth and degree of maturity. While fruit size may be an indicator of maturity, it is not enough: sample plants, including breakers, should be weighed, sorted and color determined. The stage for treatment will vary based on Crops. Using the specific directions on this label, Crops may be determined during regular observations of the area to be treated. After treatment and before harvest, normal cultural practices should be observed. For an optimum yield of high-quality fruit, it is necessary for harvest to be well-timed. As a result, it is recommended that application timing be coordinated with delivery schedules of the processor. If the treatment area shows signs of inconsistent plant vigor as a result of cultural practices or soil conditions, contact your local Arysta LifeScience representative, Farm Advisor or Extension Horticulture Specialist for advice on correct use of this product and for temperature-specific rates of fruit ripening, as allowed under the timing and rate limitations on this label.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
PROCESSED TOMATOES: 1) COOL TEMPERATURES OR 2) LATE SEASON OR 3) COASTAL CROPS	3 ¼ TO 6 ½	This product should be applied when 5–30% of the tomato fruit in the treatment area, including breakers, are pink and red in color and there are enough mature green tomato fruit to create the desired amount of harvest. For optimum efficacy, this product should be applied when 5–15% of the tomato fruit in the treatment area, including breakers, are pink and red in color. For dense vegetative growth or at cooler nighttime temperatures (less than 65°F), the higher rate of this product should be used. It is necessary to maintain thorough coverage of the fruit and foliage. As a result, spray volumes and aerial or ground equipment should be chosen to maximize coverage.	Crop should be harvested at time of suitable maturity. Fruit may ripen earlier at temperatures above 90°F. Natural color development may be slowed at temperatures below 65°F, delaying the time of harvest.
FRESH MARKET TOMATOES IN CALIFORNIA	1 ¼ to 5	This product should be applied when the preferred amount of tomato fruit is mature and of a marketable size. This time is usually 3–6 days prior to harvest. Treated crops will only yield one harvest. It is necessary to maintain thorough coverage of the fruit and foliage. As a result, spray volumes and aerial or ground equipment should be chosen to maximize coverage. For dense vegetative growth and at cooler temperatures (generally under 85°F), the longer pre-harvest interval and higher rate of this product should be used on late season crops. When temperatures are over 85°F, this product can be effective at rates as small as 1 ¼ pt/A. In addition, this lower rate may reduce damage to the foliage of certain sensitive varieties, as noted below.	Check treated fruit frequently and harvest at desired maturity. When programming harvest, spray a different block each day and harvest blocks daily in the same sequence.

RESTRICTIONS

Because this product is unable to cause immature green fruit to ripen, it should not be applied prior to the development of enough green fruit to produce the necessary harvest size.

After treatment, some foliage may appear aged or yellowed.

This product should not be applied to plants that are under stress because of drought, disease, insect pressure or soil conditions or with inferior root systems. Such application, particularly under high temperatures, may cause foliage cover to quickly diminish, resulting in a higher chance of sunburn and sun scald.

This product should not be applied when expected temperatures at the treatment area are going to remain above 105°F.

Sensitive plant varieties should not be treated during sustained times of temperatures over 100°F. Under these conditions, the lower rate should be used. Some examples of plant varieties that are most sensitive to foliar damage include VF 10, VF 315, VF 145, 21–4, and 13L.

Tank mixing of this product with spray adjuvants, sun protection whiteners, sun protection products or any other additives is prohibited.

This product should not be applied to an area greater than can be harvested within 2–3 days.

This product should not be applied to plant varieties particularly susceptible to rapid softening or shattering when ripe.

Do not use on greenhouse tomatoes.

Pre-harvest interval is three (3) days.

Per year, do not apply more than 6.5 pt (1.63 lb ethephon) of this product per acre.

BLUEBERRIES

This product, when applied as a foliar spray, will contribute to an easier and more efficient harvest by concentrating blueberry maturity. In addition, growth of black barrenberry (Aronia melanocarpa) flowers and/or fruit growing in Maine lowbush blueberry fields will be slowed through use of this product in a foliar spray, lowering the amount of unwanted fruit harvested with the desired crop.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
FRUIT COLOR ACCELERATION AND MATURITY CONCENTRATION TREATMENT (Cultivars Bluecrop, Weymouth, Jersey, Rancocaas, Rubel, Bluetta, Erliblue, Wolcott, Croatan, Murphy, Angola, Morrow, Garden Blue, Trifblue and NC901)	4 to 8	This product should be applied as a foliar spray at a rate of 4–8 pt/A and when air temperatures are between 60°F and 90°F. Spray volume should be 150–200 gal/A. Use the higher spray volume and rate on large or dense foliage bushes or when temperatures are cool. It is necessary to maintain thorough coverage of the fruit and foliage. Use of a wetting agent is recommended to assist in the uniform wetting of crops. For example, Triton B-1956 can be applied at 0.5 pts per 100 gal or X-77 at 2.0 pt per 100 gals.	First Harvest Concentration: This product should be applied when 15–20% of the berries in the treatment area are blue. Final Harvest Concentration: This product should be applied following first or second picking. Within one to two weeks following application, blueberries generally have reached proper coloration, indicating maturity and time for harvest. Because this product accelerates maturity, internal and external fruit quality should be observed daily to determine picking time. Please note that this product may cause greater acceleration of fruit color than internal ripening. The time for fruit ripening will shorten under higher temperatures (at least 90°F). This product may cause a slight decrease of acidity, fruit size, and soluble solids, as well as a greater number of fruit with stems.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
CONTROL OF BLACK BARRENBERRY IN LOW BUSH BLUEBERRIES IN MAINE	4 to 8	This product should be applied at a rate of 4–8 pt/A. GROUND APPLICATION: Apply in roughly 100–200 gal/A. AERIAL APPLICATION: Apply in roughly 10 gal/A. It is necessary to maintain thorough spray coverage. Use of a wetting agent is recommended to assist in the uniform wetting of crops. For example, X-77 can be applied at 0.1% of the spray volume.	When black barrenberries reach 90–100% petal fall, the lower rates of this product should be applied. Once black barrenberry fruit reaches a diameter of ⅛–3⁄16 in., use the higher rates. This stage is usually reached 7–10 days following the blueberry crop reaching this stage. Once blueberry fruit is ripe, it should be harvested. Usually, blueberries should be ripe 6–8 weeks following treatment.

RESTRICTIONS:

Premature crops and extreme steminess may result from application of this product to cultivars not listed above.

Per season, a maximum of one application may be made.

A second application for the purposes of maturity concentration or fruit color acceleration is not permitted when using to control barrenberries in Maine.

Diminished fruit yield and defoliation may occur if plants under extreme heat or drought conditions are treated.

Per year, do not apply more than 8 pt (2 lb ethephon) of this product per acre.

CHERRIES

Except California

This product, when applied as a foliar spray, will help to accelerate uniform ripening and loosen fruit, thereby decreasing the mechanical shaking force needed during harvest. This contributes to fruit quality, yield size, harvest efficiency, minimizes injury to trees. DO NOT USE ON CHERRIES IN CALIFORNIA.

Pacific Northwest Sweet Cherries: Dormant bud hardiness is increased and bloom is delayed when a fall application of this product is made.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
TART CHERRIES	1	It is necessary to maintain thorough spray coverage. As a result, this product should be applied as a dilute spray in plenty of water. Planting density, tree size and the application equipment will determine the optimal spray volume.	Pre-harvest intervals will increase when using lower rates.
	⅔ to 1	Apply as a concentrate spray. For best results, ensure uniform coverage when using a spray volume of less than 100 gal/A.	
SWEET CHERRIES (varieties such as Windsor, Napoleon-Royal Anne, Emperor Francis)	3 to 4	It is necessary to maintain thorough spray coverage. As a result, this product should be applied as a dilute spray in plenty of water. Delivery type, tree size and the application equipment will determine the optimal spray volume. Application to yellow-colored or light varieties should use the lower rates.	
	2 to 3	Apply as a concentrate spray. For best results, ensure uniform coverage when using a spray volume of less than 100 gals/A.	
INCREASED DORMANT FRUIT BUD HARDINESS AND DELAYED SPRING BLOOM (Sweet Cherries in the Pacific Northwest)	3	Treat in first two weeks of September.	A fall application of Ethephon 2 will increase fruit bud hardiness by decreasing the chance for winter injury and delaying bloom by 3 to 5 days which may help avoid frost injury. Treatment of early flowering varieties may delay bloom to better coincide with pollination from other varieties.

RESTRICTIONS

Not for use on cherries in California.

Early treatment may result in unwanted premature fruit drop with attached stems.

Treatment may result in cherry tree gummosis, especially when subjected to high temperatures during and after treatment.

Tree damage may occur if trees are treated in the year following exposure to severe gummosis.

Excessive gummosis may result if this product is applied to trees that have been exposed to extreme conditions of stress such as drought, disease pressure, winter injury or low vigor. Gummosis will be intensified by periods of drought or high temperatures.

Orchards should be irrigated, if feasible, to prevent gummosis caused by drought stress.

Pre-harvest interval is seven (7) days.

Treatment should occur at temperatures between 60–85°F and should not be made at temperatures over 85°F.

Application should be made once all fruit on the tree (including interior fruit) is in stage 3. This can be determined by observing the change of ground color from bright green to yellow and rapid increases in size.

It is necessary to maintain uniform spray coverage. Otherwise, tip dieback and gummosis may result from erratic application of this product.

After treatment, you may observe some early yellowing and drop of leaves.

Fall Bud Hardiness Treatment: You may observe a decrease in individual fruit size and minor gummosis following this treatment.

Per year, do not apply more than 4 pt (1 lb ethephon) of this product per acre.

GRAPES

For Use Only in Arizona and California

Table grapes in Arizona and California: This product will accelerate uniform development of color on certain varieties of table grapes such as Cardinal, Emperor, Flame Seedless, Red Malaga, Queen and Tokay. This contributes to harvest efficiency of quality fruit.

Raisin Production: This product, when applied as a foliar spray, will accelerate maturity of Thompson Seedless grapes. This will result in raisins of higher quality, lower acids and increased sugars.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
TABLE GRAPES (i.e. Cardinal, Flame Seedless, Red Malaga, and Queen)	½ to 2	This product should be applied at the point of 5–30% berry coloration. When temperatures are over 85°F, this product can be effective at rates of ½ to 1 pt/A. Use the higher rates when temperatures are cool, but higher than 65°F. Conventional ground sprayers should be used to uniformly apply this product to fruit clusters and vines, using an adequate amount of water.	Fruit should be harvested at time of suitable quality and maturity. To determine proper time for harvest (usually at least two weeks following application), observe fruit coloration, acidity and sugar content. Be sure to harvest before coloration becomes too dark. If needed, confer with your Farm Advisor or Extension Viticulturist for local practices with this product.
TOKAY GRAPES	1 to 2	This product should be applied at the point of 5–15% berry coloration. Conventional ground sprayers should be used to uniformly apply this product to fruit clusters and vines, using an adequate amount of water.	
RAISIN PRODUCTION (Thompson Seedless)	1 to 2	This product should be applied at the point of 5–30% berry coloration or as a foliar spray at 5% berry softening. Conventional ground sprayers should be used to uniformly apply this product to fruit clusters and vines, using an adequate amount of water.	This product, when applied as a foliar spray, will accelerate maturity of Thompson Seedless grapes. This will result in raisins of higher quality, lower acids and increased sugars. If needed, confer with your Farm Advisor or Extension Viticulturist for local practices with this product.

RESTRICTIONS

Table Grapes

Because the number of cracked fruit may increase, use of rates in excess of 1 pt/A is not recommended except when grapes are subject to poor weather conditions or a past history of difficult coloration.

Application of this product may cause softening of berries. Take this into consideration when determining proper storage.

Tokay grapes should not be stored.

Pre-harvest interval is fourteen (14) days.

Per year, do not apply more than 2 pt (0.5 lb ethephon) of this product per acre.

Raisin Production (Thompson Seedless)

To determine proper time for harvest, observe acidity and sugar content.

This product should not be applied to grapes exposed to moisture stress or insect pressure.

Per year, do not apply more than 2 pt (0.5 lb ethephon) of this product per acre.

APPLES

This product, when applied as a foliar spray, will help to accelerate uniform ripening and loosen fruit, thereby decreasing the mechanical shaking force needed during harvest. This contributes to fruit quality, yield size, harvest efficiency, and minimizes injury to trees. This product will accelerate ripening and red coloration when applied along with FRUITONE® N to control pre-harvest drop. This product will contribute to formation of flower buds and restrict vegetative growth when applied to young trees.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
FRUIT LOOSENING 1. VARIETIES MATURING IN EARLY TO MID-SEASON (maturing with McIntosh or earlier) 2. LATE MATURING VARIETIES IN THE EASTERN UNITED STATES (maturing later than McIntosh)	2 ½ 5	This product should be applied 7–14 days before expected normal harvest time. It is necessary to maintain thorough spray coverage. As a result, this product should be applied as a foliar spray in plenty of water. Tree size and the application equipment will determine the optimal spray volume. Fruit treated with this product will reach picking time faster; as a result, check fruit maturity daily.	Different uses of this product as specifically directed will encourage: 1) Uniform coloration and ripening while not contributing to loosening, 2) development of flower buds on young trees, 3) fruit loosening, and/or 4) thinning and return bloom. This product should be applied at temperatures between 60°F and 90°F, except under the conditions of rising temperatures, you may treat at 50°F. Pre-harvest intervals will increase when lower temperatures are present. Warm daytime conditions will hasten loosening and ripening of fruit; however, color response will be diminished. Overripe fruit on trees should not be tolerated as such fruit may soften earlier once harvested. Be sure to check maturity and quality of any fruit to be sold at a fresh market. While fruit color may be an indicator of maturity, it is not enough: internal maturity should also be checked using a pressure gauge or other method. This product should not be applied to an area greater than can be harvested within 1–2 days. Fruit in good condition can be stored in cold-air storage.
PROMOTION OF UNIFORM RIPENING AND COLORING OF RED VARIETIES WITHOUT LOOSENING 1. VARIETIES MATURING EARLY TO MID-SEASON (maturing with McIntosh or earlier). 2. LATE MATURING VARIETIES (maturing later than McIntosh)	 1 to 4 2 to 4	This product should be applied with a pre-harvest drop control chemical registered for use on apples (e.g., FRUITONE® N) as a foliar spray. Observe all directions on both product's labels. Treatments should begin 2–3 weeks prior to the normal harvest time and 1–2 weeks prior to preferred harvest time. It is necessary to maintain thorough spray coverage. As a result, this product should be applied as a dilute spray in plenty of water. Type of delivery, tree size and the application equipment will determine the optimal spray volume. For apples to be stored, use the lower rate.	Check with your local extension Pomologist or Horticulturist and the pre-harvest drop control chemical's label for best local practices.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
THINNING AND RETURN BLOOM 1. Majority of Varieties 2. Varieties Such as Golden Delicious that Are Difficult to Thin	 1 ½ to 4 3 to 6	This product should be applied 10–20 days following full bloom. You may mix this product with the following insecticides to promote thinning: AMID-THIN®W, SEVIN® brand 4F Carbaryl Insecticide, SEVIN® brand 80 WSP Carbaryl Insecticide, SEVIN® brand 80 S Carbaryl Insecticide or SEVIN® brand XLR Plus Carbaryl Insecticide. When using these products together, you must abide by the most restrictive label guidelines. Do not exceed any label's recommended dosages. This product may not be mixed with other products whose labels prohibit such mixtures. Consult local extension recommendations. Optimal application efficacy may be reached by the addition of a non-ionic surfactant. In areas of water alkalinity, product efficacy can be increased by buffering the spray solution to a pH of 3–5. It is necessary to maintain thorough spray coverage	It may be difficult to regulate cropping from one season to the next. Extreme alternate bearing may develop in a subsequent year if a large number of lateral buds and spurs bloom in one season. This product should be used alone or together with AMID-THIN® W or one of the SEVIN® products listed under Specific Directions to defeat this disorder. Such an application should occur 7–21 days following full bloom. The necessary amount of thinning and your orchard's biennial history of bearing will determine which treatment program should be used. On Red Delicious trees (especially those subject to stress) or trees treated with the higher rates, you may observe a decrease in fruit size and "type".
FLOWER BUD DEVELOPMENT TREATMENT 1. NONBEARING TREES 2. BEARING TREES	 2 to 8 ½ to 3	Trees should be treated uniformly and thoroughly up until runoff. Trees with greater vigor will require the higher rate. This product should be applied 2–4 weeks following full bloom. Treatments should be delayed until after June drop and six weeks following full bloom to help prevent fruit thinning.	This product should be applied as a foliar spray to non-bearing trees 2–4 weeks following bloom to promote the development of flower buds. Decreased fruit and yield size as well as thinning of fruit may result during the year of treatment; however, flowering should increase the following Spring. Before using this treatment, ensure the trees to be treated are large enough to be able to support a crop of apples.

RESTRICTIONS

Decreased fruit and yield size as well as thinning of fruit may result from use of this product.

This product should not be used on trees with lowered strength, as it may result in excessive growth reduction. Double coverage should be avoided.

Because return bloom and thinning may be influenced by environmental conditions, testing any one program on a small batch of trees at first is recommended.

Newly-bearing young trees may be at risk of a reduction in fruit size and unwanted fruit thinning.

It is necessary to maintain thorough coverage of the fruit and foliage. Use of a wetting agent is recommended to assist in the uniform wetting of crops.

Grazing or feeding of cover crops to livestock is prohibited.

Pre-Harvest interval is seven (7) days.

When making application to accelerate maturity, a decrease in fruit size may result, particularly when fruit is small when treated.

Decreased fruit size and quality may occur if treatment is made more than three weeks prior to the normal planned time for harvest.

Per year, do not apply more than 8 pt (2 lb ethephon) of this product per acre.

WALNUTS

THIS USE IS FOR WALNUTS IN CALIFORNIA ONLY. This product, when applied as a foliar spray, will help to loosen walnuts, thereby decreasing the mechanical shaking force needed during harvest. This contributes to better hull removal, yield size (from a once-over harvest), harvest efficiency, and earlier harvest.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
USE IN CALIFORNIA	3 to 5	For spray concentration recommendations, see the chart below. Optimal results will occur when spray concentrations are between 200–900 ppm. Higher rates should be used during low humidity or temperatures. Pre-harvest intervals will decrease when using higher rates. Application should be made at temperatures between 60–95°F for optimal results. Applications at temperatures above 90°F and low humidity may be less effective due to spray evaporation. This product should be applied using equipment giving the highest spray penetration to provide thorough uniform coverage of walnut hulls. This is necessary to achieve optimal nut loosening and hull split. When the size of the tree inhibits optimal spray penetration, use of large air carrier sprayers or volume sprayer attachments is recommended.	Walnuts are mature when the packing tissue between kernel halves completes browning. Collect nut samples from throughout the tree canopy when determining percent nut maturity. <u>Advancing Harvest:</u> This product should be applied when maturity has been achieved by 95–100% of the nuts. Harvest should be made as soon as sufficient hullability occurs. Depending on weather conditions and variety of walnut, this usually happens approximately 10–16 days following application. Inspect regularly. Second shake should occur 10–12 days following the first. <u>Once Over Harvest:</u> Maturity and the chance for a once over harvest will be influenced by weather and growing conditions, as well as the variety of nut. Local fieldmen or Farm Advisors should be consulted to determine whether a once over harvest will be available. Treatments to mature walnuts should begin 10 days prior to the normal harvest time and 7–12 days prior to preferred harvest time.

RESTRICTIONS

Quality may be diminished if application is made prior to the packing tissue brown (mature) stage.

Application of this product may cause some leaf drop.

Trees which are moisture-stressed, diseased, or have low vigor should not be treated as excessive leaf drop may result.

Twig dieback, extreme defoliation, diminished catkin formation or other tree injuries may occur if higher-than-recommended rates are applied. Be sure to measure accurately.

Pre-harvest interval is five (5) days.

Per year, do not apply more than 5 pt (1.25 lb ethephon) of this product per acre.

Spray Preparation Chart

Application Rate		Spray Volume (Gallons/A)				
		100	200	300	400	500
Pt/A	Lb/A	Concentration (ppm)				
3	0.75	900	450	300	—	—
4	1.00	—	600	400	300	—
5	1.25	—	750	500	375	300

PEPPERS

This product, when applied as a foliar spray, will accelerate uniform coloration and ripening, resulting in better handling and packing efficiency.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
PEPPERS	1 ¼ to 4	It is necessary to maintain thorough coverage of the fruit and foliage. As a result, spray volumes and equipment should be chosen to maximize coverage. If plants are strongly growing, subject to temperatures lower than 65°F, or have dense foliage, the higher rate should be used. Spray Volume: Rates between 1 ¼ and 2 pt should be applied in 20 gal/A. Rates between 3 and 4 pt should be applied in 40 gal/A. Use of less than 40 gal/A at the higher rate under hot and dry weather may result in foliage burn. Application Timing: -Bell peppers: 10% of fruit have red or chocolate coloration. -Chili and pimento peppers: 10–30% of fruit have red or chocolate coloration. -Application should not be made until enough green fruit exists for a sufficient yield. This product will not ripen immature, green fruit.	Crop is to be harvested at optimum maturity, generally 14 or more days after treatment. Maturity should be determined by sampling several field locations. Early application or application when there is a shortage of mature, uniform, green fruit (as a result of variable soil cultural practices or split fruit set) may result in a decrease in total yield.

RESTRICTIONS

If average temperatures are anticipated to persist at or above 95°F, treatment should be avoided. Treatments should not be made at temperatures above 100°F. Such treatments will cause additional foliage yellowing, immature fruit abscission, ripening and defoliation.

Treatments should also not be made if average temperatures are anticipated to persist below 60°F as such conditions may diminish product efficacy.

Application of this product may cause minor leaf aging and yellowing.

Pre-harvest interval is five (5) days.

Per year, do not apply more than 4 pt (1 lb ethephon) of this product per acre.

ATTENTION: Tank-mixing of this product with desiccants containing sodium chlorate may create hypochlorous acids under some conditions. Such acids will emit toxic chloride fumes if heated.

BLACKBERRIES

USE PERMITTED IN OREGON AND WASHINGTON ONLY. This product, when applied as a foliar spray, will promote uniform maturity and loosen fruit, thereby decreasing the mechanical force needed during harvest. This contributes to fruit quality, yield size, harvest efficiency, and minimizes injury to canes.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
APPLICATION IN OREGON AND WASHINGTON (Cultivars Chehalem Thornless and Evergreen)	5 to 8	This product should be applied: 1) As a foliar spray, 2) at temperatures between 60–90°F, 3) more than three days before the planned harvest date, and 4) when it is not to rain within the next 24 hours. Uniform and thorough wetting of the fruit and foliage is necessary.	This product can be used early in the harvest season to decrease the number of pickings or later in the harvest season for a final once-over picking.

RESTRICTIONS

Because of the potential for significant fruit drop, this product should not be applied to more fruit than is possible to harvest within three days.

This product should be used only as directed and on strong, healthy plants. Improper use or use on diseased or otherwise damaged plants will result in a decrease in berry size.

Pre-harvest interval is three (3) days.

Per year, do not apply more than 8 pt (2 lb ethephon) of this product per acre.

CANTALOUPES

ONLY FOR USE IN ARIZONA, CALIFORNIA AND TEXAS: This product, when applied as a foliar spray, encourages fruit abscission (slipping). This leads to more efficient harvests.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
ARIZONA, CALIFORNIA, TEXAS	3	For uniform abscission, it is essential to have thorough spray coverage. Ground and aerial applications should be made in a minimum of 40 and 10 gal/A, respectively. Aerial application is allowed only in Texas. While the precise pre-harvest interval will differ based on temperature, you should be ready for harvest of abscised fruit within 2–5 days following application. Harvest schedules should be planned with your packer and/or shipper.	For more specific directions under varying temperature and moisture conditions, consult your Extension Horticulturist or Farm Advisor for his experience with Ethephon 2 in your area. This product's effects will accelerate when fruit is subjected to high temperatures. Please note that timing of applications of this product may differ each season. Do not apply this product before fruit is of marketable quality (as determined by flesh color and level of soluble solids) as these traits will not improve after application. Fruit should be picked once it is of marketable quality as quality will diminish if fruit is left in the field. As a result, fields should be examined frequently. Vines may exhibit rapid aging or yellowing after application. Do not apply to plants with low vigor. A 30-day plant-back interval is required.

RESTRICTIONS

Do not apply this product at low nighttime temperatures (below 60°F).

This product should not be applied to fields whose fruit are at less than 10% soluble solids.

This product should be applied only if the target fields' vines are healthy, fruit are of marketable quality (in both internal flesh color and soluble solids) and have a relatively uniform fruit set.

Pre-harvest interval is two (2) days.

Per year, do not apply more than 3 pt (0.75 lb ethephon) of this product per acre.

PINEAPPLE AND SUGARCANE

PINEAPPLE FLOWER INDUCTION: Application of Ethephon 2 will induce uniform flower initiation of pineapple plants.

PINEAPPLE MATURITY CONCENTRATION: Application of Ethephon 2 will stimulate uniform shell color of pineapple fruit.

SUGARCANE FLOWER PREVENTION: A foliar spray of Ethephon 2 will reduce or prevent flowering of sugarcane.

SUGARCANE BIOMASS INCREASE: Ethephon 2 application to prevent flowering can result in increased biomass accumulation and increased recoverable sugars.

Crop	Ethephon 2 (Pt/A)	Timing of Application	Instructions	Comments
PINEAPPLE Flower Induction Ethephon 2 applied to pineapple plants will stimulate uniform initiation of flowering.	4 to 8	"Bearing age" about 12 months after planting. Generally about 6 months prior to desired harvest	Proper rate will vary with local growing conditions, varieties, plantation management practices and time of year. Use the higher rate where earlier harvest is desired. Apply when pineapple foliage is dry.	Do not graze pineapple forage treated with Ethephon 2. Do not harvest pineapples treated with Ethephon 2 sooner than 2 days after the last application.
PINEAPPLE Maturity Concentration Ethephon 2 application will stimulate uniform shell color development.	2 to 8	When the first fruit begin to change color.	Use a broadcast spray, thoroughly cover both foliage and fruit. Use the higher rate during periods of cool or cloudy weather when normal ripening has slowed.	
SUGARCANE (for use in Hawaii only) Flower Prevention Ethephon 2 application will prevent or reduce flowering and pithy tissue formation. Biomass Increase Ethephon 2 used to prevent flowering can also result in increased biomass accumulation and recoverable sugar yield.	2	Just prior to flower initiation.	Apply by fixed wing aircraft or helicopter using equipment designed to give uniform coverage. Actual biomass increase will be affected by the time between treatment and harvest. Consider anticipated recoverable sugars as well as biomass to determine optimum harvest date.	Apply no less than 7 gallons of spray mixture per acre. Do not harvest sugarcane treated with Ethephon 2 sooner than 2 months after the last application. Do not graze sugarcane forage treated with Ethephon 2.

RESTRICTIONS

* For pineapple do not exceed 12 pt of this product (3 lb ethephon) per acre per year.
* For sugarcane do not exceed 2 pt of this product (0.50 lb ethephon) per acre per year.

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, insects 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

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 barely 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 gal/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 gal/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 gal/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 pt/A rate should be used on more responsive varieties. Per year, do not apply more than 2 pt (0.5 lb ethephon) of this product per acre. Pre-harvest interval is forty (40) days.

RECOMMENDED BARLEY AND WHEAT APPLICATION RATES

CROP	ANTICIPATED LODGING PRESSURE			COMMENTS
	MODERATE	HEAVY	SEVERE	
	APPLICATION RATE (PT/A)			
Barley (Spring and Winter Seasons)	1	1 to 1 ½	1 ½ to 2*	The 2 pt/A rate may be necessary for use on certain vigorously growing tall varieties.
Winter Wheat	1	1 to 1 ½	1 ½ to 2*	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	1	1	1 ½	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 **	1	1	1	

RESTRICTIONS

* 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	2nd Node Detectable	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	

MISTLETOE REMOVAL

DWARF AND LEAFY MISTLETOE REMOVAL: A foliar spray of Ethephon 2 will remove dwarf mistletoe shoots in ornamental conifers and leafy mistletoe from ornamental deciduous trees.

Crop	Ethephon 2 (Pt/A)	Instructions	Comments
DWARF MISTLETOE ON ORNAMENTAL CONIFERS	2 pt per 20 gal	Apply as a foliar spray to dwarf mistletoe shoots before mistletoe seed dispersal. For effective removal, all mistletoe shoots must be sprayed to wet. Use of a nonionic surfactant at recommended rates may increase effectiveness. Treat any mistletoe regrowth before seed dispersal.	Applications made in conjunction with sylvicultural mistletoe management will prevent spread of the mistletoe parasite to other parts of the tree and other trees.
DOUGLAS FIR, ORNAMENTALS	1 pt per 20 gal		Mature needle drop, that normally occurs in the fall, may be hastened by the use of Ethephon 2. Applications of higher rates on Douglas fir may result in excessive needle drop.
LEAFY MISTLETOE ON ORNAMENTAL DECIDUOUS TREES	4 pt per 20 gal	Make applications after fall leaf drop through mid-winter. For effective removal, all mistletoe shoots must be sprayed to wet. Use of a nonionic surfactant at recommended rates may increase effectiveness. Any mistletoe regrowth should be treated during the labeled application window.	Large mistletoe infections and mistletoe found in mesquite may be difficult to control with a single application and retreatment may be necessary.

FRUIT ELIMINATION
(Ornamental Use Only)

UNDESIRABLE FRUIT ELIMINATION: A foliar spray of Ethephon 2 will reduce or eliminate undesirable fruit development on apple, crabapple, carob and olive trees.

Crop	Ethephon 2	Instructions	Comments
APPLES, CRABAPPLES	8 to 12 fl oz per 20 gal	Apply as a foliar spray at the flower bud to full bloom stage, prior to fruit set. Wet foliage thoroughly. Over application of Ethephon 2 can result in excessive leaf drop and/or tree defoliation. Use higher rates when temperatures are cool.	Application must be made before fruit set for best results. Do not treat weak trees or trees under stress (drought, insect or disease damaged trees) as excessive leaf drop or twig drop can result. Some leaf drop or temporary leaf yellowing may occur after treatment. Do not use on small red fruited varieties of crabapple as fruit elimination will not be satisfactory.
CAROB (Ceratonia siliqua)	6 fl oz per 20 gal	Apply as a foliar spray. Wet all foliage thoroughly. Amount of spray will depend on tree size.	
OLIVE (Olea auropaea)	12 fl oz per 20 gal		

TURF (Do not use in California for Seedhead suppression.)

Ethephon 2 is a plant growth regulator that may be used to suppress the formation of seedheads of various plants including Poa annua and white clover. It may also be used to suppress the growth of certain cool season grasses. Ethephon 2 is foliarly absorbed and is most effective on actively growing healthy turf. For best results, apply in sufficient volume of water to provide uniform coverage. Use of spreader/sticker with an application of Ethephon 2 is not necessary.

Ethephon 2 is rainfast within 2 hours. Do not allow entry into treated area until Ethephon 2 has dried. For maximum performance, delay mowing until the day after application.

Precautions and Restrictions:

- Do not treat turfgrass with poor root systems or growing under stress due to poor soil conditions, drought, disease, or insect damage.
- Do not use Ethephon 2 in areas where excessive thatch has accumulated.
- Scalping may occur on creeping bentgrass cultivars after more than 2 applications of Ethephon 2 for Poa seedhead suppression.
- Ethephon 2 has been used successfully on many bentgrass cultivars. Tolerance testing should be done in new cultivars before extensive use.
- Do not exceed a maximum of 30 fl oz of Ethephon 2 per 1,000 sq ft per year.
- Do not mix with ammonium thiosulfate. This tank mix may result in the formation of toxic fumes.

Seedhead Suppression: Foliar application of Ethephon 2 will provide suppression of *Poa annua* and white clover seedheads. Make the initial application prior to the emergence of new seedheads. A period of 2–3 weeks after application is required for maximum performance. Repeat applications may be made to predominately *Poa annua* or white clover sites as needed, but not less than two weeks after the previous application.

APPLICATION	SITES	RATE	SPRAY VOLUME
***Poa annua* and White Clover Seedhead** **Suppression Reapplication interval:** 2 weeks or greater for all labeled grasses	Golf course turf including Greens, Tees, Fairways, and Roughs Commercial Turfgrasses including Bentgrass, Kentucky Bluegrass, Perennial Ryegrass, Tall and Fine Fescue, and Bermudagrass	5 fl oz/1,000 sq ft	1.0–2.0 gal/1,000 sq ft

Tank Mixture with Products containing the active ingredient Trinexapac-Ethyl:

Tank mixtures of Ethephon 2 at 5 fl oz/1,000 sq ft and trinexapac-ethyl-containing products at 0.125 or 0.25 fl oz/1,000 sq ft can be used to promote seedhead suppression as well as turfgrass quality. Multiple applications of the tank mix combination may be needed. The number of applications must not exceed recommendations for rates or timings for either product applied once. Follow the recommendation on each product label for the most restrictive application interval for each turfgrass. Application of this tank mixture during frost periods may cause temporary turf discoloration.

Growth Suppression: An application of Ethephon 2 slows the growth of turfgrasses, thus reducing the required frequency of mowing and the volume of clippings collected. For best turfgrass growth regulation,

apply Ethephon 2 when daytime air temperatures are 65°F and rising. Ethephon 2 should only be applied once turfgrass mowing heights have been established for the season. Avoid multiple applications of Ethephon 2 in areas where excessive thatch has accumulated.

APPLICATION	SITES	RATE	SPRAY VOLUME
Turfgrass Growth Regulation Reapplication intervals: • Kentucky Bluegrass—7 weeks • Perennial Ryegrass—7 weeks • Tall/Fine Fescue—4 weeks • Bentgrass—4 weeks	Golf course turf including Greens*, Tees*, Fairways, and Roughs Commercial Turfgrasses Including Bentgrass, Kentucky Bluegrass, Perennial Ryegrass, Tall and Fine Fescue	5 fl oz/1,000 sq ft	1.0–2.0 gal/1,000 sq ft

*Do not use in California on greens or tees unless accompanied by supplemental labeling.

NOTE: Since Ethephon 2 is an acidic product, prolonged exposure to spray deposits will damage acrylic plastics, certain paints and metals. Thoroughly rinse all exposed acrylic-plastic materials and painted

surfaces with a detergent and water within one hour after exposure to spray deposits.

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.