

PM 22

5/15/97

51036-243

Pg 1/36

MAY 15 1997

Lee Tharrington.
Micro-Flo Co.
P.O. Box 5948
Lakeland, FL 33807-5948

Dear Mr. Tharrington:

Subject: Revised Labeling
Ethephon 2#
EPA Registration No. 51036-243
Your Submission Dated February 18, 1997

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

- a. When printing the label assure that the Company Name and Address appear on the front panel.
- b. Move "WARNING" in the Precautionary Statements section to after the heading Hazards to Humans and Domestic Animals.
- c. On the front panel add "ornamental" before apple, crabapple, carob and olives.
- d. If the Precautionary Statements do not appear on the front panel, add a front panel referral statement giving their location on the label.

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

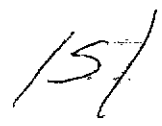
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A stamped copy of the labeling is enclosed for your records.

Please note that further label corrections may be necessary following full review of the toxicology and product chemistry data submitted in response to the Registration Eligibility Decision (RED).

Sincerely,



Cynthia Giles-Parker
Product Manager (22)
Fungicide-Herbicide Branch
Registration Division (7505C)

Enclosure

3/36

ETHEPHON 2#

PLANT REGULATOR

For Commercial or Agricultural Use Only. Not for Residential Use.

For use on Tobacco, Tomatoes, Cherries, Grapes, Apples, Walnuts, Peppers, Blackberries, Cantaloupes, Pineapple, and Sugarcane (Hawaii only), for the removal of Dwarf Mistletoe in Ornamental Conifers and Leafy Mistletoe in Ornamental Deciduous Trees and for the elimination of undesirable fruit on Apple, Crabapple, Carob, and Olive trees.

ACTIVE INGREDIENT:

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

*Contains 2 pounds ethephon per gallon.

KEEP OUT OF REACH OF CHILDREN

WARNING AVISO

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.)

STATEMENT OF PRACTICAL TREATMENT

IF SWALLOWED: Do not induce vomiting. Promptly drink a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

IF ON SKIN: Immediately wash with plenty of soap and water.

IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration. Administer oxygen if necessary. Get medical attention.

IF IN EYES: Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Get medical attention.

NOTE TO PHYSICIAN: No specific antidote is available. All treatments should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred. Victims of severe overexposure, by inhalation, should be kept under medical observation for up to 72 hours for delayed onset of pulmonary edema. In a victim of overexposure by ingestion, careful gastric lavage is required due to the possibility of stomach or esophageal perforation. This material is an acid, but the use of alkaline substances to neutralize it is contraindicated.

EPA Reg. No. 51036-243 EPA Est. No. 51036-GA-1

ACCEPTED
with COMMENTS
In EPA Letter Dated
MAY 15 1997

FEB 24 1997

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

RECD 700P01

51036-243

Manufactured By:
MICRO FLO COMPANY
P.O. Box 5948
Lakeland, FL 33807

PRECAUTIONARY STATEMENTS

WARNING

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

HARMFUL IF SWALLOWED. May cause eye damage. Do not get in eyes. Avoid contact with skin or clothing and do not inhale vapors as this product will irritate skin and mucous membranes. Avoid contamination of food. If taken internally call a physician and promptly drink large quantities of milk, egg white, gelatin solution or if these are not available, large quantities of water.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear long-sleeved shirt and long pants, waterproof gloves, shoes plus socks and 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 170.24(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.

Do not contaminate water used for irrigation or domestic purposes. Avoid spray drift to nearby crops as this product will cause modifications in plant growth. Plant injury or reduced yields may result.

Do not plant another crop within 30 days after treatment.

SPRAY DRIFT

Avoid spray drift. Do not apply when weather conditions may cause drift. Do not allow this product to drift on to non-target areas. Drift may result in illegal residues or injury to adjacent crops and vegetation, in the form of leaf yellowing and defoliation. To avoid spray drift, DO NOT apply aerially when wind speed is greater than 10 mph or during periods of temperature inversions. Use of larger droplet size will also reduce 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 $3/4$ 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 should 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 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).

IMPORTANT: Do not apply Ethephon 2# through any type of irrigation system. Do not use this product for purposes other than those listed on the label. 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.

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, waterproof gloves, shoes plus socks, and 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

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

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent). Then offer for recycling or reconditioning 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.

~~Ethephon 2# HELPS NATURE HELP YOU.~~ Ethephon 2# promotes earlier, uniform coloring of mature FLUE-CURED TOBACCO. Ethephon 2# promotes earlier coloration and maturity of TOMATOES, GRAPES, APPLES, and PEPPERS. Loosens CHERRIES, WALNUTS, and APPLES for earlier, more efficient harvest. Promotes fruit abscission (slipping) in CANTALOUPEs. Increases dormant fruit bud hardiness and delayed spring bloom of SWEET CHERRIES in the Pacific Northwest. Accelerates BLACKBERRY ripening and loosening. Removes dwarf mistletoe from ORNAMENTAL CONIFERS and leafy mistletoe from ORNAMENTAL DECIDUOUS TREES. Eliminates undesirable fruit on APPLE, CRABAPPLE, CAROB, and OLIVE.

GENERAL INFORMATION

~~When Ethephon 2# is applied to plants, the product decomposes within the plant tissue to release ethylene, a naturally occurring plant hormone.~~

For local recommendations on rates, spray volumes (gallons of water per acre), and spray equipment under varying temperature and rainfall conditions consult your Extension Pomologist, Horticultural Specialist, Micro Flo Company Representative or Farm Advisor for his experience with this product in your area.

APPLICATION VOLUMES AND SPRAY COVERAGE

Thorough spray coverage is essential to achieve maximum product effectiveness. Spray coverage is affected by choice of equipment, nozzle selection and spray boom setup as well as spray pressure, plant size and canopy density. For both air and ground applications, it is important to choose an equipment setup that will assure thorough coverage of plant canopy (foliage and fruit). The actual spray volume required will vary with the size and density of the plant canopy and the equipment used. In California and Arizona use a volume of no less than 5 gallons per acre for aerial applications.

USE PRECAUTIONS

DO NOT MIX ETHEPHON 2# WITH AMMONIUM THIOSULFATE. SUCH TANK MIXTURES MAY RESULT IN FORMATION OF TOXIC FUMES.

Mix only the amount of spray you expect to use each day. Do not allow mixed solution to stand overnight.

Avoid spray drift to nearby crops as this product will cause modification in plant growth. Plant injury or reduced yields will result. Do not plant another crop within 30 days after treatment. Do not use Ethephon 2# with additives other than recommended on this label.

Avoid spills of concentrated product on spray equipment or airplane parts.

IMMEDIATELY RINSE ANY SPILLS WITH PLENTY OF WATER AS ETHEPHON 2# IS CORROSIVE.

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 all exposed acrylic-plastic materials and painted surfaces with a detergent and water within one hour after exposure to spray deposits.

TOBACCO.

(Flue-Cured Only)

(Not for use in California)

TOBACCO (FLUE-CURED)

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# PINTS/ACRE	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	<p>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#.</p> <p>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.</p>
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USE LIMITATIONS

- ▶ 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 (3/4 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

TOMATOES (PROCESSED) A foliar spray of Ethephon 2# accelerates and concentrates tomato ripening increasing recoverable fruit yield from a once-over harvest. Ethephon 2# application starts the normal ripening process earlier and increases the rate of ripening of mature green fruit concentrating maturity. Concentrated maturity enables high recoverable yields of ripe tomatoes in once-over harvest. Early concentrated maturity extends the normal harvest season and helps growers schedule harvest and handling more effectively.

TOMATOES (FRESH MARKET IN CALIFORNIA) A foliar spray of Ethephon 2# accelerates tomato ripening increasing the early yields of marketable ripe fruit.

Crop Situation	Ethephon 2# Pints/Acre	Spray Volume Gallons/Acre	Specific Directions	Remarks
PROCESS TOMATOES EARLY AND MID-SEASON CROPS OR WARM CONDITIONS	1 1/4 TO 3 1/4	ground 20-100 air 10-12	Apply when 5% to 15% of the fruit in the field are red and pink (including breakers) and there is sufficient mature green fruit to produce the desired tonnage. Under high temperatures (above 85 F), rates as low as 1-1/4 pints/acre can be effective.	Apply Ethephon 2# when desired tonnage of fruit has reached marketable size and maturity. Check fields closely for stage and degree of uniform maturity prior to application. Sample several plants throughout the field to determine proper spray date. Sort, weigh and calculate the percent fruit which is red and pink, including breakers. Fruit size alone is not an adequate indicator.

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PROCESS TOMATOES	1 1/4 TO 3 1/4	ground 20-100	Thorough coverage is essential. For ground or air application choose equipment and spray volumes that will assure uniform spray coverage of foliage and fruit. Uniform ripening requires uniform spray coverage of foliage and fruit.	Observe specific directions to determine treatment stage for your situation. Walk treated fields frequently to evaluate crop condition. Maintain normal cultural practice between treatment and harvest. Timely harvest is essential for maximum return of high quality fruit. Consult processor representatives concerning delivery schedules and quotas prior to application of Ethephon 2#.
EARLY AND MID-SEASON CROPS OR WARM CONDITIONS		air 10-12	Overdosing from overlapping swaths or spray nozzle patterns can cause severe foliage injury. If bands are sprayed over the row, reduce the amount of Ethephon 2# used in proportion to the area actually treated. Observe treated fields closely and harvest fruit at proper maturity.	Consult your local Micro Flo Co. representative, Extension Horticulture Specialist or Farm Advisor for suggestions on the proper use of Ethephon 2# when fields have variable plant vigor due to differences in soil conditions or cultural practices and for rates of fruit ripening as affected by temperature, within the rate and timing limitations shown on the label.

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PROCESS TOMATOES	3 1/4 3 1/2 TO	ground 20-100 air 10-12	Apply when 5% to 30% of the fruit in the field are red and pink (including breakers) and there is sufficient mature green fruit to produce the desired tonnage. Maximum response is achieved when fruit to be treated is 5% to 15% pink and red. Use the higher rate of Ethephon 2# when nighttime temperatures are cool (below 65°F) or vegetative growth is dense. Thorough coverage is essential. For ground or air application choose equipment and spray volumes that will assure uniform spray coverage.	Harvest at proper maturity. Temperatures above 90°F may cause fruit to ripen sooner whereas temperatures below 65°F retard natural color development and may extend the time between treatment and harvest.
LATE SEASON OR COASTAL CROPS OR COOL CON- DITIONS	6 1/2			

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FRESH MARKET TOMATOES California	1 1/4 to 5	ground 40-100 air 10-12	Apply Ethephon 2# when desired tonnage of fruit has reached marketable size and maturity, generally 3 to 6 days before harvest date. Expect only one harvest from treated areas. Thorough coverage is essential. For ground or air application choose equipment and spray volumes that will assure uniform spray coverage. Use the higher rate and longer preharvest interval on late season crops, when temperatures are cool (generally below 85°F) and foliage is dense. Under high temperatures, rates as low as 1 1/4 pints per acre have been effective while reducing foliage damage particularly on more sensitive varieties - see above.	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.
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Use Limitations

- Do not apply before there is sufficient mature green fruit to produce the desired tonnage. Ethephon 2# will not ripen immature green fruit.
- Some yellowing and general aging of foliage may be observed following treatment.
- Do not treat plants with poor root systems or growing under stress due to poor soil conditions, drought, disease or insect damage. Treatment of weak plants will result in rapid loss of foliage cover increasing sunburn and sun scald potential,

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- especially under high temperature conditions.
- Do not treat when sustained temperatures above 105°F are anticipated.
 - Do not treat sensitive varieties during period when temperatures exceed 100°F. Foliar damage is more severe on certain varieties such as VF 10, VF 315, VF 145, 21-4, and 13L. During periods of high temperatures use the lower rates on sensitive varieties.
 - Do not tank mix with sun protection products, sun protection whiteners, spray adjuvants or other additives.
 - Do not apply Ethephon 2# to more acreage than can be harvested in 2 to 3 days.
 - Do not apply Ethephon 2# to varieties known to soften rapidly or shatter when ripe.
 - Do not use on greenhouse tomatoes.
 - Do not harvest tomatoes treated with Ethephon 2# sooner than 3 days after last application.
 - * Follow use rates listed above for labeled uses. Do not exceed 0.5 pints of this product (1.63 lb. ethephon) per acre per year.

CHERRIES Except California

CHERRIES: A foliar spray of Ethephon 2# loosens fruit and promotes early uniform ripening, and reduces the shaker force needed to mechanically harvest fruit. These effects are important for increasing efficiency, recoverable yields, maintaining fruit quality and reducing tree injury. DO NOT USE ON CHERRIES IN CALIFORNIA: A fall application of Ethephon 2# to sweet cherries in the Pacific Northwest area increases dormant bud hardiness and delays bloom the following spring.

CROP SITUATION	Ethephon 2# Pts/acre	SPRAY VOLUME gal/acre	SPECIFIC DIRECTIONS	REMARKS
TART CHERRIES	Dilute Spray 1 1/2 per 100 gal	300	Apply as a dilute spray with sufficient water for thorough, uniform coverage. generally 300 gallons per acre depending on the type of delivery of sprayer used and size of trees. The optimum spray volume will depend on tree size, planting density and equipment used.	Expect a longer treatment to harvest interval with lower rates.

	Concen- trate Spray 2/3 to 1	50-100	Uniform coverage is essential for optimum response. Concentrate sprays, generally less than 100 gallons per acre, require uniform coverage for optimum response.	
SWEET CHERRIES (variet- ies such as Windsor, Napoleon- Royal Anne, Emperor Francis)	Dilute Spray 3 to 4 2/3 to 1	300	Apply as a dilute spray with sufficient water for thorough, uniform coverage. generally 300 gallons per acre depending on the type of delivery of sprayer used and size of trees. Actual volume will depend on the type of delivery, sprayer used and size of trees. Use low rates on the light or yellow-colored varieties.	
	Concen- trate Spray 2 to 3	50-100	Uniform coverage is essential for optimum response. Concentrate sprays, generally less than 100 gallons per acre, require uniform coverage for optimum response.	
INCREASED DORMANT FRUIT BUD HARDINESS AND DELAYED SPRING BLOOM (Sweet Cherries in the Pacific Northwest)	3	300-400	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.

Use Limitations

- Not for use on cherries in California

- Do not treat too early as this can cause early fruit drop with stems attached.
- Some gummosis of cherry trees is associated with treatment.
- High temperatures during and after application may cause severe gummosis.
- Do not treat trees that had severe gummosis the previous year as tree damage will result.
- Do not apply to trees that are of low vigor or have experienced severe stress (such as winter injury, drought, or disease), since gummosis will be excessive, particularly when high temperatures and/or drought follow treatment.
- If possible, irrigate orchards to prevent drought stress resulting in gummosis.
- Do not harvest cherries treated with Ethephon 2# sooner than 7 days after last application.
- At the time of application, all fruit including those inside the tree canopy, should be in stage 3 as indicated by rapid size increase and the presence of ground color (change from bright green to yellow background color). Treat when air temperatures are between 60 and 85°F. Do not treat when air temperatures exceed 85°F. Uniform coverage is important; concentrated sprays associated with erratic application can result in gummosis and tip dieback.
- Some early leaf yellowing and drop may be noted following application.
- Slight gummosis and individual fruit size reduction may result with fall application bud hardiness treatment.
- * Follow use rates listed above for labeled uses. Do not exceed 4.0 pints of this product (1.0 lb. ethephon) per acre per year.

GRAPES

Only in California and Arizona

GRAPES (Table grapes in California and Arizona): An application of Ethephon 2# promotes early uniform color development on table grape varieties such as Cardinal, Emperor, Flame Seedless, Red Malaga, Queen and Tokay allowing more efficient harvests of quality fruit.

GRAPES (Raisin Production): A foliar spray of Ethephon 2# will hasten maturity of Thompson Seedless grapes resulting in reduced acids, increased sugars and increased raisin quality.

CROP SITUATION	Ethephon 2# Pts/acre	SPRAY VOLUME gal/acre	SPECIFIC DIRECTIONS	REMARKS
TABLE GRAPES (such as Cardinal, Flame Seedless, Red Malaga, and Queen)	1/2 - 2 1-2	ground 50-300	For high temperatures conditions (above 85° F) use lower rates of 1/2 to 1 pint per acre. For low temperatures conditions (but above 65° F) use higher rates. Apply in sufficient water to wet vines and fruit clusters uniformly, using conventional ground sprayers. Treat when 5-30% of berries show color.	Harvest fruit at desired maturity and quality as indicated by sugar content, acidity and color. This is generally two weeks or more after treatment. Watch treated areas closely and harvest before berries become too dark. For more information regarding local experiences with this product on grapes, consult your Farm Advisor or Extension Viticulturist.
TOKAY GRAPES	1-2	ground 25-50 air 20	Treat Tokays when 5-15% of berries show color.	
RAISIN PRODUCTION (Thompson Seedless)	1-2	ground 30-300	Apply as a foliar spray at 5% berry softening. Treat when 5-30% of berries show color.	A foliar spray of Ethephon 2# will hasten maturity of Thompson Seedless grapes resulting in reduced acids, increased sugars and increased raisin quality. For more information regarding local experience with this product on grapes consult your Farm Advisor or Extension Viticulturist.

Use Limitations

Table Grapes

- Rates higher than 1 pint/A may increase the incidence of cracked fruit and should be used only in areas or during weather conditions where grapes have been especially hard-to-color in past seasons.

- Some berry softening is associated with Ethephon 2# treatment of

some varieties which may limit or influence storage considerations.

- Do not store Tokays.
- Do not harvest grapes treated with Ethephon 2# sooner than 14 days after last application.
- * Do not exceed 2 pints of this product (0.5 lb. ethephon) per acre per year.

Raisin Production (Thompson Seedless)

- Do not apply to grapes under stress from insect damage or moisture stress. Observe treated vineyards closely and harvest at proper maturity as determined by sugar and acid levels.
- * Do not exceed 2 pints of this product (0.5 lb. ethephon) per acre per year.

APPLES

APPLES: A foliar spray of Ethephon 2# promotes fruit maturity and loosens apples, making harvest by hand or machine easier and more efficient. Ethephon 2# applied in combination with FRUITONE® N to control pre-harvest drop, stimulates early development of red color and ripening without loosening fruit. Applied to young trees, Ethephon 2# will suppress vegetative growth and promote flower bud formation.

CROP SITUATION	Ethephon 2# Pts/acre	SPRAY VOLUME gal/acre	SPECIFIC DIRECTIONS	REMARKS
FRUIT LOOSENING 1. EARLY AND MIDSEASON MATURING VARIETIES (varieties maturing with McIntosh or earlier) (such as Empire , Walden , Milton , Wealthy and McIntosh)	2 1/2	50-500	Apply a foliar spray to apple trees 7 to 14 days prior to normal anticipated harvest. Use sufficient water for thorough uniform spray coverage. The type of sprayer used and size of trees will effect volume required. Observe fruit daily as the proper picking period is shorter with Ethephon 2# treated fruit than untreated fruit.	Ethephon 2# provides several beneficial responses on apples. Depending on rate and time of application Ethephon 2# will: promote fruit loosening, promote uniform ripening and coloring without loosening, promote thinning and return bloom, and increase flower bud development in young trees. For desired response follow specific directions. Treat when air temperatures are between 60°F and 90°F. However, application may be made at 50°F under rising temperature conditions. If daytime temperatures are warm, color response from Ethephon 2# treatment will be reduced, but ripening and loosening effects will be accelerated. Cool weather may extend the interval between treatment and harvest.
2. LATE MATURING VARIETIES IN THE EASTERN UNITED STATES (varieties maturing later than McIntosh) (such as Cortland , Red Delicious , Rome , Idared and Jonathon)	5	50-500		Do not allow fruit to become overripe on trees. Fruit intended for fresh market must be checked for quality and maturity. Color alone is not an adequate guide for fruit maturity. Use a pressure gauge or other suitable methods for determining internal maturity. Fruit over-matured when harvested and stored may soften sooner than untreated fruit.

				Do not apply Ethephon 2# to more acreage than can be harvested in 1 to 2 days. Treated fruit can be satisfactorily held stored in a controlled atmosphere or regular cold air storage provided fruit is in good condition when put in storage.
PROMOTION OF UNIFORM RIPENING AND COLORING OF RED VARIETIES WITHOUT LOOSENING 1. EARLY OR MID-SEASON MATURING VARIETIES (varieties maturing with McIntosh or earlier).	1 - 4 1/2 1 per 100 gal	200-400	Apply foliar spray of Ethephon 2# and a preharvest drop control chemical registered for use on apples such as FRUITONE® brand N. Use the preharvest drop control product according to label directions. Begin spraying 2 to 3 weeks before normal harvest period and about 1 to 2 weeks before desired harvest date.	Since recommendations for chemical control of preharvest drop vary according to location and variety, follow directions on the FRUITONE® brand N label or consult your local extension Pomologist or Horticulturist for his recommendations.

2. LATE MATURING VARIETIES (varieties maturing later than McIntosh)	2 - 4 1 per 100 gal	200-400	Apply as a normal dilute spray using sufficient water for thorough uniform coverage. Actual volume will depend on the type of delivery of sprayer used and size of trees. generally 200 to 400 gallons per acre depending on size of trees. Use the lower rate on apples intended for storage.
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THINNING AND RETURN BLOOM ON GOLDEN DELICIOUS		300-400	Treat 10 to 20 days after full bloom. For greater thinning, this product can be mixed with 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 for use on apples in accordance with the most restrictive of the AMID-THIN® W, SEVIN®, AND Ethephon 2# label limitations and precautions. No label dosage rates should be exceeded. Ethephon 2# cannot be mixed with any product containing a label prohibition against such mixing. Consult local extension recommendations. apply AMID-THIN® W at 3 to 4 oz plus Ethephon 2# at 1/2 to 1 pint per 100 gallons of spray solution. Treat 10 to 20 days after full bloom.	Golden Delicious is a difficult variety to adequately thin. Regulating cropping from one season to another is also a serious problem. Whenever a high percent of the spurs and lateral buds bloom in a single season, severe alternate bearing can develop the following year.
1. Most Varieties SPUR GOLDEN DELICIOUS	1 1/2 to 4 1/2-1 per 100 gal	300-400	The addition of a non-ionic surfactant can enhance treatment effectiveness.	To overcome this problem, use Ethephon 2# or a combination of Ethephon 2# plus AMID-THIN® W or Ethephon 2# plus one of the SEVIN® products listed under Specific Directions applied 7 to 21 days after full bloom. The program to use will depend on the amount of thinning required and the biennial bearing history of your orchard.
2. Difficult to Thin Varieties Such as Golden Delicious	3 - 6 1-1 1/2 per 100 gal		Buffering spray solution to a pH of 3 to 5 can improve performance where water is alkaline. Use a spray volume sufficient to cover trees thoroughly and uniformly.	Expect Red Delicious to show a reduction of "type" and fruit size particularly on trees under stress. Use of higher label rates may reduce fruit size.

INCREASED FLOWER BUD DEVELOPMENT ON YOUNG TREES		200-400	Spray trees thoroughly and uniformly to the point of runoff. Use the higher rate on more vigorous trees.	To increase flower bud development on young non-bearing trees, apply a foliar spray of Ethephon 2#, 2 3 to 4 weeks after bloom.
1. NON-BEARING TREES	2 - 8 1-2 per 100 gal		Treat 2 to 4 weeks after full bloom period.	Treatment can result in excessive fruit thinning and reduced fruit size and yield reduction the year of usage. Ethephon 2# should reduce vegetative growth and increase flowering the following spring.
2. BEARING TREES YOUNG TREES JUST STARTING TO BEAR	1/2 - 3 1/2-1 per 100 gal	100-300	To help minimize fruit thinning, delay application until 6 weeks after full bloom and after June drop. Apply Ethephon 2#, 5 to 6 weeks after full bloom and after June drop.	Trees should be large enough to support a crop of apples before treatment to initiate flower buds.

Use Limitations

- The use of Ethephon 2# can result in over thinning and reduced fruit size.
- Avoid double coverage and use on low vigor trees.
- Environmental factors can affect thinning and return bloom; it is advisable to obtain experience under your conditions by initially testing only a small percent of your trees each year with any one program.
- User must consider risk of excessive fruit thinning and fruit size reduction when using Ethephon 2# on young trees just starting to bear.
- Treat only vigorous trees since excessive growth reduction will result on weak trees.
- For best results a thorough uniform spray is needed. A wetting agent may improve spray coverage.
- Do not graze or feed cover crops grown in treated apple orchards.
- Do not harvest apples treated with Ethephon 2# sooner than 7 days after last application.
- Fruit size reduction may occur when used to obtain early maturity, especially if fruit is small at time of treatment.
- Ethephon 2# applied earlier than 3 weeks before normal

anticipated harvest may result in reduced fruit quality and size.
 * Follow use rates listed above for labeled uses. Do not exceed 8.0 pints of this product (2.0 lb. ethephon) per acre per year.

WALNUTS

WALNUTS IN CALIFORNIA: A foliar spray of Ethephon 2# will loosen walnuts for increased efficiency of mechanical harvest, promote earlier harvest, improve hull removal, and increase recoverable yields from a once-over harvest.

CROP SITUATION	Ethephon 2# Pts/Acre	SPRAY VOLUME Gal/Acre	SPECIFIC DIRECTIONS	REMARKS
CALIFORNIA	3-5	100-500	<p>Expect best results with spray concentrations of 300 to 900 ppm. Refer to Ethephon 2# spray preparation chart below. Under low temperatures and/or low humidity conditions use the higher label rates. Expect less time between application and harvest with higher label rates. For best results treat when air temperatures are between 60° F and 95° F. Expect reduced effectiveness if above 90° F with low humidity due to spray evaporation. Thorough uniform coverage of walnut hulls is essential for maximum hull split and nut loosening response. Choose equipment that provides maximum spray penetration of the entire tree canopy. Use large air carrier sprayers where tree size jeopardizes coverage. Or volute sprayer attachments may help. Spray volumes will depend on spray equipment and size of trees. Treat when air temperatures are between 60°F and 90°F and after the packing tissue of all nuts inspected are completely brown. Use 5 pints per acre when minimum time interval between treatment and harvest is desired and with cool temperature harvest conditions. Uniform spray coverage of walnut hulls is essential for maximum hull split and loosening response. Be sure equipment provides good penetration of spray to all parts of the tree. Check nozzle systems frequently to assure uniform distribution of spray droplets. Do not operate equipment in excess of 3 mph. Use directional spray volume equipment when treating tall dense foliage trees.</p>	<p>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> - Apply when 95-100% of the nuts have reached maturity. Inspect frequently and harvest as soon as adequate hullability occurs generally 10-16 days after treatment depending on variety and weather conditions. Plan second shake 10-12 days after first shake. <u>Once Over Harvest</u> - Variety, growing conditions and weather affect maturity and the opportunity for once over harvest. Contact a local fieldman or Farm Advisor to determine if once over harvest can be expected in your situation. Apply to mature walnuts 10 days prior to expected harvest date. Expect actual harvest to range from 7-12 days after treatment. Maximum benefit is obtained with application immediately after walnut packing tissue has turned brown. For a programmed harvest, spray a different orchard block each day and harvest blocks daily in same sequence starting 5 to 10 days after treatment. Inspect treated orchards frequently and harvest as soon as adequate hull split occurs, generally 5 to 10 days after treatment. Cool temperatures increase the time required for optimum harvest response. As with early harvest, longer drying time may be required.</p>

Use Limitations

- Treatment prior to packing tissue brown (mature) stage brown — coloration of packing tissue may reduce nut quality.

- Some leaf drop is associated with treatment.
- * Do not treat diseased, low vigor or moisture stressed trees as excessive leaf drop may occur.
- ~~Rates above that recommended are illegal and may result in tree injury (such as excessive defoliation, reduced catkin formation, twig dieback).~~
- * Assure that dosage rates are measured accurately since rates higher than recommended may result in tree injury (such as excessive defoliation, reduced catkin formation and twig dieback).
- Do not harvest walnuts treated with Ethephon 2# sooner than 5 days after last application.
- * Do not exceed 5 pints of this product (1.25 lb. ethephon) per acre per year.

Ethephon 2#		Spray Preparation Chart				
		Spray volume (gallons/acre)				
Ethephon 2#	Rate	100	200	300	400	500
Pints/A	Lbs/A	Concentration (ppm)				
3	0.75	900	450	300	....	....
4	1.00	....	600	400	300	....
5	1.25	....	750	500	375	300

PEPPERS

PEPPERS: A foliar spray of Ethephon 2# promotes early, uniform ripening and coloring for more efficient packing and handling of fruit.

CROP SITUATION	Ethephon 2# Pts/Acre	SPRAY VOLUME Gal/Acre	SPECIFIC DIRECTIONS	REMARKS
PEPPERS	1 1/4 3-4	40-100	Thorough coverage is essential. For ground or air application choose equipment and spray volumes that will insure uniform coverage of foliage and fruit. Apply with ground equipment. Use the higher rate when cool temperatures are anticipated (less than 65°F), when plants are growing vigorously or when foliage is dense to assure thorough wetting of all leaves and fruit. Use the lower rates with lower spray volumes (1 1/4 to 2 pint rate in 20 gal/A) and higher rates with higher volumes (3 - 4 pints/40 gal). The 3 - 4 pint rate in less than 40 gpa may cause foliage burn under hot dry conditions. Apply Ethephon 2# to bell peppers when 10% of fruit are red and chocolate and to chili and pimento pepper varieties, when 10 to 30% of fruit are red and chocolate and there is sufficient mature green fruit to produce desired tonnage. Ethephon 2# will not ripen immature, green fruit.	Check several field locations to determine crop stage and degree of maturity. Ethephon 2# treatments may reduce total yields if applied too early or there is a lack of uniform, mature, green fruit resulting from split fruit set or variable soil cultural practices. Harvest fruit after desired color and maturity, generally 14 or more days after treatment.

Use Limitations

- Do not apply when prolonged average high temperatures of 95°F after treatment are expected.
- Do not treat when temperatures exceed 100°F. Applications made

under high temperatures will accentuate fruit ripening, yellowing of foliage, defoliation and immature fruit abscission.

- Do not treat when average temperatures are below 60°F. Low temperatures after treatment may reduce or negate the effects of Ethephon 2#.
- Some yellowing and general aging of leaves will be noted after treatment.
- Do not harvest peppers treated with Ethephon 2# sooner than 5 days after last application.
- * Do not exceed 4 pints of this product (1.0 lb. ai ethephon) per acre per year.

NOTE: Under certain conditions, tank mixtures of Ethephon 2# with desiccants containing sodium chlorate could result in the formation of hypochlorous acids which on heating will emit toxic chloride fumes.

BLACKBERRIES

BLACKBERRIES IN OREGON AND WASHINGTON: A foliar spray of Ethephon 2# will concentrate maturity and loosen fruit, improving harvesting efficiency while reducing cane injury from mechanical harvest.

CROP SITUATION	Ethephon 2# Pts/Acre	SPRAY VOLUME Gal/Acre	SPECIFIC DIRECTIONS	REMARKS
IN OREGON AND WASHINGTON (Cultivars Chehalem Thornless and Evergreen)	5 - 8 5-per 100-gal	100-175	To loosen fruit and concentrate maturity, apply a foliar spray of Ethephon 2# at least 3 days prior to expected harvest when air temperatures are between 60°F and 90°F and rain is not predicted within 24 hours. Use sufficient volume to insure thorough and uniform wetting of foliage and fruit.	Use Ethephon 2#: 1) early in the harvest season to reduce the number of pickings or 2) treat later in the harvest season for a once-over final picking.

Use Limitations

- Do not spray more than can be harvested on the third day following treatment as considerable fruit may drop.
- Use only at recommended times and rates on healthy, vigorous plants, as a reduction in berry size may occur. Do not use on damaged or diseased plants.
- Do not harvest blackberries treated with Ethephon 2# sooner than 3 days after application.

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

CANTALOUPE

CANTALOUPE IN CALIFORNIA, ARIZONA AND TEXAS: A foliar spray of Ethephon 2# promotes abscission (slipping) of fruit allowing more efficient and economical harvesting.

CROP SITUATION	Ethephon 2# Pts/Acre	SPRAY VOLUME Gal/Acre	SPECIFIC DIRECTIONS	REMARKS
CALIFORNIA, AND ARIZONA, TEXAS	3	40-80		
TEXAS	3	ground 40-80 air 10-12	Good spray coverage is important for producing uniform abscission. Use 40 or more gallons for ground and 10 or more gallons/acre for aerial application. (Aerial applications are only permitted in Texas.) Be prepared to harvest abscised fruit 2 to 5 days after treatment. The exact pre-harvest interval will vary with temperature. Be sure to coordinate your harvesting schedule with your packer/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. The effect will be faster at higher temperatures. Proper timing of Ethephon 2# treatment is critical, but may vary from season to season. Fruit quality, in terms of soluble solids and flesh color, does not improve following treatment. Therefore, Ethephon 2# should not be used until after fruit has developed marketable levels of soluble solids and flesh color. Ethephon 2# promotes abscission of immature fruit as well as marketable fruit. Thus, using Ethephon 2# too soon will result in poorly colored fruit with

				substandard soluble solids. Observe treated fields frequently and pick fruit when market quality is reached. Fruit allowed to remain in the field too long will lose quality. Some yellowing or rapid aging of vines will be seen following treatment. Plants with low vigor will not respond properly. Do not plant another crop within 30 days after treatment.
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Use Limitations

- Ethephon 2# should not be applied when night temperatures are below 60°F.
- Treat only those fields plants that have a fairly uniform fruit set, have vines in good condition, and have fruit with marketable soluble solids and internal flesh color. Do not treat fields where soluble solids are running less than 10%.
- Do not harvest cantaloupes treated with Ethephon 2# sooner than 2 days after last application.
- * Do not exceed 3 pints of this product (0.75 lb. ethephon) per acre per year.

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 SITUATION	Ethephon 2# PTS/ACRE	SPRAY VOLUME gal/acre	APPLICATION TIMING	SPECIFIC DIRECTIONS	RESTRICTIONS
PINEAPPLE Flower Induction Ethephon 2# applied to pineapple plants will stimulate uniform initiation of flowering.	3-1/2 to 7-1/3	100 to 500	"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.	1-3/4 to 3-1/2	100 to 300	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)	1-3/4	7 minimu #	Just prior to flower initiation.	Apply by fixed wing 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#.
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.					

Use Limitations

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

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 Situation	Ethephon 2# Amount	Specific Directions	Remarks
DWARF MISTLETOE ON ORNAMENTAL CONIFERS	2 pints per 20 gallons	Apply as a foliar spray to dwarf mistletoe shoots before mistletoe seed dispersal. For effective removal, all mistletoe shoots must be sprayed to wet.	Applications made in conjunction with silvicultural mistletoe management will prevent spread of the mistletoe parasite to other parts of the tree and other trees.

DOUGLAS FIR, ORNAMENTALS	1 pint per 20 gallons	Use of a nonionic surfactant at recommended rates may increase effectiveness. Treat any mistletoe regrowth before seed dispersal.	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	2 quarts per 20 gallons	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 Situation	Ethephon 2# Amount	Specific Directions	Remarks
APPLES, CRABAPPLES	8 to 12 ounces per 20 gallons	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.
CAROB (Ceratonla siliqua)	6 ounces per 20 gallons	Apply as a foliar spray. Wet all foliage thoroughly.	Some leaf drop or temporary leaf yellowing may occur after treatment.

OLIVE (Olea auropaea)	12 ounces per 20 gallons	Amount of spray will depend on tree size.	Do not use on small red fruited varieties of crabapple as fruit elimination will not be satisfactory.
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