

PM22

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

1916

JUL 23 1993

Warren A. Davis
Rhone-Poulenc Ag Company
P.O. Box 12014
2 T.W. Alexander Drive
Research Triangle Park, North Carolina 27709

Subject: Label Reformatted to Include Tables
Ethrel Plant Regulator
EPA Reg No 264-267
Resubmission dated March 30, 1993

Dear Mr. Davis:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable subject to the comments listed below.

Under Environmental Hazards, at the beginning of the third sentence, add "For terrestrial uses,".

This acceptance of your label does not relieve you of any obligation to comply with the Worker Protection Standard (WPS). Under the WPS labeling regulations at 40 CFR part 156, subpart K, Sec 156.200(c)(3), you are prohibited from distributing or selling any product within the scope of the WPS requirements after April 21, 1994, without amended labeling accepted by the Agency.

A stamped copy is enclosed for your records. A copy of the finished labeling must be submitted prior to releasing the product for shipment.

Sincerely,

(S)

Cynthia L. Giles-Parker
Product Manager (22)
Fungicide-Herbicide Branch
Registration Division (H7505C)

CONCURRENCES							
SYMBOL	Enclosure						
SURNAME	D.W. Lusk						
DATE	7-26-93						

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ETHREL Plant Regulator

For Commercial Or Agricultural Use Only. Not For Residential Use

For use on Tobacco, Tomatoes, Cherries, Grapes, Apples, Walnuts, Peppers, Blackberries and Cantaloupes, for the removal of dwarf mistletoe in Ornamental Conifers 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%

*Contains 2 pounds ethephon per gallon.

EPA Reg. No. 264-267

EPA Est. No. 264-PA-01

KEEP OUT OF REACH OF CHILDREN WARNING AVISO

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este producto hasta que le etiqueta haya sido explicada ampliamente.

For **MEDICAL** And **TRANSPORTATION** Emergencies **ONLY** Call 24 Hours A Day 1-800-334-7577

For **PRODUCT USE** Information Call 1-800-334-9745

The use of this product for a variety of plant growth regulation uses is covered by United States and foreign patents including U.S. Patents 3,879,188 and 4,240,819. No license is granted to use this product in countries other than the United States or for any use not contemplated by this label. Liability for patent infringement may result from use or sale of this product outside the United States.

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. Remove contaminated clothing and shoes. Wash clothing separately before reuse.

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.

PRECAUTIONARY STATEMENTS

WARNING

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

HARMFUL IF SWALLOWED. May cause eye damage. Do not get in eyes. Wear safety goggles or face shield when handling. 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.

ENVIRONMENTAL HAZARDS

Do not contaminate water used for irrigation or domestic purposes. Keep out of lakes, streams and ponds. Do not apply directly to water, 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.

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.

IMPORTANT: Do not apply ETHREL® Plant Regulator 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 ETHREL® Plant Regulator 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.

GENERAL WORKER PROTECTION STATEMENTS

Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

Mixers, loaders and applicators must wear a full face shield, long trousers, long sleeved shirt, gloves, and boots to avoid as much skin and eye contact as possible.

Do not enter treated fields within 24 hours after application unless protective clothing is worn.

Because certain states may require more restrictive reentry intervals for various crops treated with this product, consult your State Department of Agriculture for further information. Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. Advise workers to stay out of fields during application and until sprays have dried. See PRECAUTIONARY STATEMENTS, STATEMENT OF PRACTICAL TREATMENT, and NOTE TO PHYSICIAN for information on accidental exposure. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: appropriate signal word (WARNING), area treated ETHREL® Plant Regulator, date of application, appropriate protective clothing, and reentry interval.

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.

ETHREL® HELPS NATURE HELP YOU

ETHREL® Plant Regulator

Promotes earlier, uniform coloring of mature FLUE-CURED TOBACCO. 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. Eliminates undesirable fruit on APPLE, CRABAPPLE, CAROB, and OLIVE trees.

GENERAL INFORMATION

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, Rhône-Poulenc Ag Company Representative or Farm Advisor for his experience with this product in your area.

TOBACCO (FLUE-CURED): A foliar spray of ETHREL® Plant Regulator promotes early, uniform "yellowing" of mature tobacco. ETHREL® reduces curing time, allowing more efficient use of curing barn space, and increased control over harvest schedules.

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

TOMATOES (PROCESSED): A foliar spray of ETHREL® Plant Regulator accelerates and concentrates tomato ripening increasing recoverable fruit yield from a once-over harvest. Plant Regulator 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 ETHREL® Plant Regulator accelerates tomato ripening increasing the early yields of marketable ripe fruit.

CHERRIES: A foliar spray of ETHREL® Plant Regulator 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 ETHREL® to sweet cherries in the Pacific Northwest area increases dormant bud hardiness and delays bloom the following spring.

GRAPES (TABLE GRAPES IN CALIFORNIA AND ARIZONA): An application of ETHREL® Plant Regulator 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 ETHREL® Plant Regulator will hasten maturity of Thompson Seedless grapes resulting in reduced acids, increased sugars and increased raisin quality.

APPLES: A foliar spray of ETHREL® Plant Regulator promotes fruit maturity and loosens apples, making harvest by hand or machine easier and more efficient. ETHREL® 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, ETHREL® will suppress vegetative growth and promote flower bud formation.

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

PEPPERS: A foliar spray of ETHREL® Plant Regulator promotes early, uniform ripening and coloring for more efficient packing and handling of fruit.

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

CANTALOUPE IN CALIFORNIA, ARIZONA, AND TEXAS: A foliar spray of ETHREL® Plant Regulator promotes abscission (slipping) of fruit allowing more efficient and economical harvesting.

DWARF MISTLETOE REMOVAL: A foliar spray of ETHREL® Plant Regulator will remove dwarf mistletoe shoots in ornamental conifers.

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

USE PRECAUTIONS

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 ETHREL® Plant Regulator 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 ETHREL® PLANT REGULATOR 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.

ACCEPTED
with COMMENTS
In EPA Letter Dated:

JUL 23 1993

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

264-267

TOBACCO (Flue-Cured Only)

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
Directed Spray Application	4	50-60	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.	<p>PROPER TIME FOR TREATMENT Successful results with ETHREL® 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 ETHREL® treatment. Wait a few days to permit further natural maturing, then make another test spray or "maturity" check.</p> <p>When you have confirmed the number of leaves per plant that will color, you can determine the number of acres to treat in order to fill the barn.</p> <p>Prepare your test spray by mixing four teaspoons of ETHREL® in 1 quart of water. Spray each test plant with about 1 oz. of this mixture, covering all leaves with a fine mist. ETHREL® will not color immature sprayed leaves.</p> <p>HARVESTING All mature, sprayed leaves will begin to color within 24 to 72 hours after ETHREL® 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.</p>

TOBACCO (continued)

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
Over-The-Top Application	4-8	40-60	<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 "Proper Time of Treatment."</p> <p>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 ETHREL®.</p> <p>Apply over-the-top ETHREL® spray as a fine mist using three nozzles (one nozzle tips over the center of the plant, and one on each side) so 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>	<p>With an over-the-top application, harvesting can commence 24 hours after ETHREL® application depending on weather conditions or to avoid over ripe tobacco. Tobacco harvested 24 hours after treatment will require more time in the coloring phase of the curing process.</p> <p>Do not allow tobacco to become over ripe before starting harvest. Leaf drop can occur when tobacco is over ripe and left on the stalk. If a number of the bottom leaves have yellowed at the time of treatment, they should be harvested prior to spraying with ETHREL®.</p> <p>CURING</p> <p>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.</p> <p>ETHREL® 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 ETHREL® treated leaves cure faster, treated and untreated leaves should not be cured together in the same barn.</p>

USE LIMITATIONS

- Do not apply ETHREL® 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 ETHREL®, 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 ETHREL® Plant Regulator if rain is expected within 4 hours.

TOMATOES

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
EARLY AND MIDSEASON CROPS OR WARM CONDITIONS	1 1/4 - 3 1/4	ground 20 - 100 air 10 - 12	<p>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.</p> <p>Under high temperatures (above 85 F), rates as low as 1 1/4 pints/acre can be effective.</p> <p>Uniform ripening requires uniform spray coverage of foliage and fruit. Overdosing from overlapping swaths or spray nozzle patterns can cause severe foliage injury. If bands are sprayed over the row, reduce the amount of ETHREL® used in proportion to the area actually treated.</p> <p>Observe treated fields closely and harvest fruit at proper maturity.</p>	<p>Apply ETHREL® 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. 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 ETHREL®.</p> <p>Consult your local Rhône-Poulenc Ag Company Representative, Extension Horticultural Specialist or Farm Advisor for suggestions on the proper use of ETHREL® 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.</p>
LATE SEASON OR COASTAL CROPS OR COOL CONDITIONS	3 1/4 - 6 1/2	ground 20 - 100 air 10 - 12	<p>Apply when 5% to 30% of 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 ETHREL® when nighttime temperatures are cool (below 65°F) or vegetative growth is dense.</p>	<p>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.</p>

Use Limitations

- Do not apply before there is sufficient mature green fruit to produce the desired tonnage. ETHREL® 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, 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 ETHREL® to more acreage than can be harvested in 2 to 3 days.
- Do not apply ETHREL® to varieties known to soften rapidly or shatter when ripe.
- Do not use on greenhouse tomatoes.
- Do not harvest tomatoes treated with ETHREL® Plant Regulator sooner than 3 days after last application.

TOMATOES (continued)

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
FRESH MARKET TOMATOES California	1 1/4-5	ground 40-100 air 10-12	Apply ETHREL® when desired tonnage of fruit has reached marketable size and maturity, generally 3 to 6 days before desired harvest date. Expect only one harvest from treated areas. 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.

Use Limitations

- Do not harvest fresh market tomatoes treated with ETHREL® Plant Regulator sooner than 3 days after last application.

CHERRIES

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
TART CHERRIES	Dilute Spray 1/3 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.	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.	
SWEET CHERRIES (varieties such as Windsor, Napoleon-Royal Anne, Emperor Francis)	Dilute Spray 1 to 1 1/3 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. Use low rates on the light or yellow-colored varieties.	
	Concen- trate Spray 2-3	50-100	Uniform coverage is essential for optimum response.	

CHERRIES (continued)

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
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 ETHREL® Plant Regulator 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 ETHREL® Plant Regulator 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.

GRAPES

Only in California and Arizona

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
TABLE GRAPES (such as Cardinal, Flame Seedless, Red Malaga, and Queen)	1-2	ground 50-300	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 ETHREL® Plant Regulator 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 ETHREL® treatment of some varieties which may limit or influence storage considerations.
- Do not store Tokays.
- Do not harvest grapes treated with ETHREL® Plant Regulator sooner than 14 days after last application.

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 acids levels.

APPLES

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
FRUIT LOOSENING EARLY AND MIDSEASON MATURING VARIETIES (such as Tydeman, 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 ETHREL® treated fruit than untreated fruit.	ETHREL® Plant Regulator provides several beneficial responses on apples. Depending on rate and time of application ETHREL® 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 ETHREL® treatment will be reduced, but ripening and loosening effects will be accelerated. Cool weather may extend the interval between treatment and harvest.
LATE MATURING VARIETIES (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.
PROMOTION OF UNIFORM RIPENING AND COLORING OF RED VARIETIES WITHOUT LOOSENING EARLY OR MIDSEASON MATURING VARIETIES (varieties maturing with McIntosh or earlier).	1/2 - 1 per 100 gal	200 - 400	Apply foliar spray of ETHREL® Plant Regulator and a preharvest drop control chemical such as FRUITONE® brand N. Begin spraying 2 to 3 weeks before normal harvest period and about 1 to 2 weeks before desired harvest date. Apply as a normal dilute spray using sufficient water for thorough uniform coverage, generally 200 to 400 gallons per acre depending on size of trees. Use the lower rate on apples intended for storage.	Do not apply ETHREL® to more acreage than can be harvested in 1 to 2 days. Treated fruit can be satisfactorily stored in a controlled atmosphere or regular cold air storage provided fruit is in good condition when put in storage.
LATE MATURING VARIETIES (varieties maturing later than McIntosh)	1 per 100 gal	200 - 400	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	

Use Limitations

- 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 ETHREL® Plant Regulator 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.
- ETHREL® applied earlier than 3 weeks before normal anticipated harvest may result in reduced fruit quality and size.

APPLES (continued)

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
THINNING AND RETURN BLOOM ON GOLDEN DELICIOUS	1/2 - 1 per 100 gal	300 - 400	Treat 10 to 20 days after full bloom. For greater thinning apply AMID-THIN® W at 3 to 4 oz. plus ETHREL® 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.
SPUR GOLDEN DELICIOUS	1 - 1 1/2 per 100 gal	300 - 400	The addition of a non-ionic surfactant can enhance treatment effectiveness.	To overcome this problem use ETHREL® or a combination of ETHREL® plus AMID-THIN® W 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.
INCREASED FLOWER BUD DEVELOPMENT ON YOUNG TREES			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 ETHREL® Plant Regulator 3 to 4 weeks after bloom.
NON-BEARING TREES	1 - 2 per 100 gal	200 - 400	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. ETHREL® should reduce vegetative growth and increase flowering the following spring.
YOUNG TREES JUST STARTING TO BEAR	1/2 - 1 per 100 gal	100 - 300	Apply ETHREL® 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 ETHREL® 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 ETHREL® on young trees just starting to bear.
- Treat only vigorous trees since excessive growth reduction will result on weak trees.

WALNUTS

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
CALIFORNIA	3-5	100-500	<p>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.</p> <p>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>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.</p> <p>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 requirement for optimum harvest response. As with early harvest, longer drying time may be required.</p>

Use Limitations

- Treatment prior to 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).
- Do not harvest walnuts treated with ETHREL® Plant Regulator sooner than 5 days after last application.

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PEPPERS

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
PEPPERS	3-4	40-100	<p>Apply with ground spray 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.</p> <p>Apply ETHREL® to bell peppers when 10% of fruit are red and chocolate and to pepper varieties, chili and pimento when 10 to 30% of fruit are red and chocolate and there is sufficient mature green fruit to produce desired tonnage. ETHREL® will not ripen immature, green fruit.</p>	Check several field locations to determine crop stage and degree of maturity. ETHREL® 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 ETHREL®.
- Some yellowing and general aging of leaves will be noted after treatment.
- Do not harvest peppers treated with ETHREL® Plant Regulator sooner than 5 days after last application.

NOTE: Under certain conditions tank mixtures of ETHREL® Plant Regulator with desiccants containing sodium chlorate could result in the formation of hypochlorous acids which on heating will emit toxic chloride fumes.

BLACKBERRIES

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
IN OREGON AND WASHINGTON (Cultivars Chehalis Thornless and Evergreen)	5 per 100 gal	100-175	To loosen fruit and concentrate maturity, apply a foliar spray of ETHREL® 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 ETHREL® Plant Regulator: 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 ETHREL® Plant Regulator sooner than 3 days after last application.

CANTALOUPE

Crop Situation	ETHREL® Pints/Acre	Spray Volume Gallons/ Acre	Specific Directions	Remarks
CALIFORNIA AND ARIZONA	3	40 - 80	Good spray coverage is important for producing uniform abscission. Be prepared to harvest abscised fruit two to five 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 ETHREL® in your area.
TEXAS	3	ground 40 - 80 air 10 - 12		The effect will be faster at higher temperatures. Proper timing of ETHREL® 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, ETHREL® should not be used until after fruit has developed marketable levels of soluble solids and flesh color. ETHREL® promotes abscission of immature fruit as well as marketable fruit. Thus, using ETHREL® 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.

Use Limitations

- ETHREL® should not be applied when night temperatures are below 60°F.
- Treat only those fruit 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 ETHREL® Plant Regulator sooner than 2 days after last application.

MISTLETOE REMOVAL

Crop Situation	ETHREL® 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. Use of a non-ionic surfactant at recommended rates may increase effectiveness. Treat any mistletoe regrowth before seed dispersal.	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	1 pint per 20 gallons		Mature needle drop, that normally occurs in the fall, may be hastened by the use of ETHREL® Plant Regulator. 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 non-ionic 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 mesquites may be difficult to control with a single application and retreatment may be necessary.

FRUIT ELIMINATION

Crop Situation	ETHREL® 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 ETHREL® Plant Regulator 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.
CAROB (<i>Ceratonia siliqua</i>)	6 ounces per 20 gallons	Apply as a foliar spray. Wet all foliage thoroughly. 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.
OLIVE* (<i>Olea europaea</i>)	12 ounces per 20 gallons		

*This recommendation is not intended to be used on commercial fruit production as a thinning agent.

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The manufacturer warrants (a) that this product conforms to the chemical description on the label; (b) that this product is reasonably fit for the purposes set forth in the directions for use when it is used in accordance with such directions; and (c) that the directions, warnings and other statements on this label are based upon responsible experts' evaluation of reasonable tests of effectiveness, of toxicity to laboratory animals and to plants and of residues and upon reports of field experience. Tests have not been made on all varieties or in all states or under all conditions. THE MANUFACTURER NEITHER MAKES NOR INTENDS, NOR DOES IT AUTHORIZE ANY AGENT OR REPRESENTATIVE TO MAKE ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, AND IT EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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