



U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs
Registration Division (7505T)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg. Number:

89168-151

Date of Issuance:

9/17/26

NOTICE OF PESTICIDE:

☒ Registration
☐ Reregistration
(under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

LIBERTY ETHEPHON 55

Name and Address of Registrant (include ZIP Code):

Liberty Crop Protection LLC
1880 Fall River Drive Suite 100
Loveland, Colorado 80538

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.
2. The data requirements for storage stability and corrosion characteristics (Guidelines 830.6317 and 830.6320) are not satisfied. You have 18 months from the date of registration to provide these data.

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Signature of Approving Official:

Kristy Crews, Ph.D., Product Manager 22
Fungicide Branch, Registration Division (7505T)

Date:

9/17/26

3. Make the following label changes before you release the product for shipment:
 - Revise the EPA Registration Number to read, "EPA Reg. No. 89168-151."
4. Submit one copy of the final printed label for the record before you release the product for shipment.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) lists examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records.

The record for this product currently contains the following CSF(s):

- Basic CSF dated 10/28/2021

If you have any questions, please contact Yasmin Bowers at 202-566-2507 or Bowers.Yasmin@epa.gov.

Enclosure- Stamped Label

09/17/2026

Under the Federal Insecticide, Fungicide
and Rodenticide Act as amended, for the
pesticide registered under
EPA Reg. No. 89168-151

LIBERTY ETHEPHON 55

Plant Growth Regulator

Intended for Commercial or Agricultural Use Only, Not for Residential Use

For use on Apples, Blackberries, Blueberries, Cantaloupes, Cherries, Cotton, Grapes, Peppers, Pineapple, Sugarcane (Hawaii only), Tobacco, Field and Greenhouse Tomatoes, Walnuts, and for Minimizing Lodging in Barley and Wheat

For the Removal of Dwarf Mistletoe in Ornamental Conifers and Leafy Mistletoe in Ornamental Deciduous Trees, for Controlling Plant Height and Increasing Branching/Shoot Number in Certain Ornamental Plant Species, for the Elimination of Undesirable Fruit on Ornamental Trees and Shrubs, for Inducing Flowering of Ornamental Bromeliads, for Increased Lateral Branching in Ornamentals, for Reducing Plant Height of Potted Daffodils and Stem Topple of Potted Hyacinths, in the Production of Cucumber, Squash and Pumpkin Hybrid Seed, and for Use on Golf Course Turf

ACTIVE INGREDIENT:

By wt.

Ethephon: (2-Chloroethyl) phosphonic acid* 55.4%

OTHER INGREDIENTS: 44.6%

TOTAL 100.0%

* 1 gallon contains 6 lb ethephon.

KEEP OUT OF REACH OF CHILDREN

DANGER / PELIGRO

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

See inside booklet for PRECAUTIONARY STATEMENTS

FIRST AID	
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything to an unconscious person.
HOT LINE NUMBER Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.	
NOTE TO PHYSICIAN Treat symptomatically. Consideration should be given to the possibility that overexposure to materials other than LIBERTY ETHEPHON 55 may have occurred. No specific antidote is available. Probable mucosal damage may contraindicate the use of gastric lavage.	

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300
For Medical Emergencies Only, Call (877) 325-1840

Product of China or USA.

Formulated in the United States with U.S. and imported ingredients.

EPA REG. NO. 89168-RLR

EPA EST. NO. _____

NET CONTENTS _____ GAL

MANUFACTURED FOR
LIBERTY CROP CARE, LLC
1880 Fall River Drive, Suite 100
Loveland, CO 80538

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER / PELIGRO

CORROSIVE. Causes skin burns. Causes irreversible eye damage. Harmful if swallowed. Harmful if absorbed through skin. Do not get in eyes, on skin, or clothing. Wear protective eyewear such as goggles, face shield, or safety glasses. Wear coveralls worn over long-sleeved shirt and long pants, socks, chemical-resistant footwear, and waterproof gloves. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Applicators and other handlers must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material including nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or barrier laminate
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles, face shield or safety glasses)
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing or loading

User Safety Requirements

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with LIBERTY ETHEPHON 55's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls Statement

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

USER SAFETY RECOMMENDATIONS

Users Should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

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

NON-TARGET ORGANISM ADVISORY STATEMENT: LIBERTY ETHEPHON 55 is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize drift.

USE PRECAUTIONS:

- Do not apply LIBERTY ETHEPHON 55 through any type of irrigation system.
- Do not allow spray to drift to nearby crops as LIBERTY ETHEPHON 55 will affect plant growth resulting in injury or reduced yields.
- Do not prepare more spray solution than can be used in one day. Clean out the spray tank after use and do not allow the spray solution to remain in the sprayer overnight.

DIRECTIONS FOR USE

It is a violation of Federal law to use LIBERTY ETHEPHON 55 in a manner inconsistent with its labeling. Do not apply LIBERTY ETHEPHON 55 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 regulation. Read the entire label before using LIBERTY ETHEPHON 55.

AGRICULTURAL USE REQUIREMENTS

Use LIBERTY ETHEPHON 55 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) and notification to workers and restricted-entry intervals. The requirements in this box only apply to uses of LIBERTY ETHEPHON 55 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.

Exemptions: If the product is applied by drenching or soil-injected, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area at any time if there will be no contact with anything that has been treated.

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 over long-sleeved shirt and long pants
- Chemical-resistant gloves made of any waterproof material including nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, or barrier laminate
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles, face shield or safety glasses)
- Chemical-resistant headgear for overhead exposure

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

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of LIBERTY ETHEPHON 55 that are not within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when LIBERTY ETHEPHON 55 is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried

PRODUCT INFORMATION

LIBERTY ETHEPHON 55 is a plant growth regulator which penetrates plant tissues and degrades to ethylene which affects the growth process of the plant. LIBERTY ETHEPHON 55 can be used to produce the following effects in treated crops:

Apples, Grapes, Peppers, Tomatoes	Earlier maturation and coloring of leaves
Apples, Cherries [except CA], Walnuts	Loosens fruit/nut for earlier and more efficient harvest
Blackberries [WA & OR only]	Earlier ripening, loosens fruit
Blueberry	Concentrates maturation for earlier harvest, reduces undesirable barrenberry fruit
Cantaloupes	Helps abscission of fruit
Pineapples	Stimulates uniform initiation of flowering and uniform fruit coloration
Sugarcane	Prevents or reduces flowering; can also increase biomass accumulation and recoverable sugar yield
Sweet Cherries	Increases hardness of dormant fruit buds, delays spring bloom in the Pacific Northwest
Flue-Cured Tobacco	Uniform coloring of mature leaves, earlier harvest
Ornamental Plant Species	Controlling Plant Height and Increasing Branching/Shoot Number
Ornamental Trees and Shrubs: Apple, Crabapple, Carob, Cottonwood, Elm, Flowering Pear, Horsechestnut (Buckeye), Maple, Oak, Olive, Pine, Sour Orange, Sweetgum, and Sycamore	Reduces or eliminates undesirable fruit development
Ornamental Conifers	Eliminates dwarf mistletoe
Ornamental Deciduous Trees	Eliminates leafy mistletoe
Ornamental Bromeliads such as Ananas, Aechmea, Neoregelia, Vriesia, and Billbergia	Initiates flowering
Roses, Tallhedge, and Apple Nursery Stock	Initiates earlier leaf drop, allowing digging of stock plants prior to the onset of unfavorable weather
Greenhouse, Shadehouse, and Field Grown Ornamental Plants such as Azalea, Begonia, chrysanthemum, Geranium, Impatiens, Lantana, Verbena, Vinca vine	Increases lateral branching
Potted Daffodils and Hyacinths	Aids in reducing total plant height of potted daffodils and stem topple of potted hyacinths at time of full flower
Cucumber, pumpkin, and squash	Modifies sex expression and flowering pattern to facilitate hybrid seed production. DO NOT TREAT CROPS FOR HUMAN OR ANIMAL CONSUMPTION

Golf Course Turf	Slows growth of turfgrass; suppresses seedhead formation of Poa annua and white clover
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Additional information on how to use LIBERTY ETHEPHON 55 (including use rates, spray volumes (gallons of water per acre), and spray equipment) or if an application needs to be made based on weather conditions (such as variable temperatures or anticipated rainfall) can be obtained from your local Extension or Horticultural Specialist, Liberty Crop Protection Representative, or Farm Advisors.

SPRAY DRIFT

AERIAL APPLICATIONS

- **DO NOT** release spray at a height greater than 10 feet above the vegetative canopy, unless a greater application height is necessary for pilot safety.
- For all applications, applicators are required to use a fine to medium or coarser droplet sized (ASABE S572.1).
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions.

GROUND BOOM APPLICATIONS

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet above the ground or crop canopy.
- For all applications, applicators are required to use a fine to medium or coarser droplet size (ASABE S572.1)
- **DO NOT** apply when wind speeds exceed 10 miles per hour at the application site.
- **DO NOT** apply during temperature inversions

AIRBLAST APPLICATIONS

- Direct spray into the canopy
- Turn off outward pointing nozzles at row ends and when spraying outer rows.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS

BOOM-LESS GROUND APPLICATIONS

Setting nozzles at the lowest effective height will help reduce the potential for spray drift

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size

Ground Boom

- **Volume** – Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- **Pressure** – Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- **Spray Nozzle** – Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Aircraft

- **Adjust Nozzles**- Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

BOOM HEIGHT-Ground Boom

For ground equipment, the boom should remain level with the crop and have minimal bounce.

RELEASE HEIGHT- Aircraft

Higher release heights increase the potential for spray drift.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

Temperature and Humidity

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

Temperature Inversions

Drift potential is high during temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or 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. Avoid applications during temperature inversions.

Wind

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

RESTRICTIONS

- Do not apply LIBERTY ETHEPHON 55 through any type of irrigation system. (Exception for Ornamental Use Only).
- Do not plant another crop in treated fields until 30 days after the last application.

USE INFORMATION

- Avoid spray drift to nearby crops. LIBERTY ETHEPHON 55 affects plant growth and may cause injury or reduced yields in non-target crops.
- For best results, use only the additives specified on this label with LIBERTY ETHEPHON 55.

MIXING DIRECTIONS

Caution: **DO NOT** prepare more spray solution than required for one day's use. **DO NOT** allow the spray solution to stand overnight. Avoid spilling the concentrated product on any spray equipment or on airplane parts (a nurse tank is recommended to help prevent spills). THIS PRODUCT IS CORROSIVE. CLEAN UP SPILLS IMMEDIATELY BY FLUSHING WITH PLENTY OF WATER.

DO NOT MIX LIBERTY ETHEPHON 55 WITH AMMONIUM THIOSULFATE. SUCH TANK MIXTURES RESULT IN FORMATION OF TOXIC FUMES.

TANK MIXTURES WITH DEFOLIANTS AND INSECTICIDES

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

APPLICATION VOLUMES AND SPRAY COVERAGE

Thorough spray coverage is essential for LIBERTY ETHEPHON 55 to produce maximum effects. 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, choose equipment 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 minimum spray volume of 5 gallons per acre for aerial applications.

EQUIPMENT CLEANING: LIBERTY ETHEPHON 55 is very acidic and can damage acrylic plastics, certain paints, and metals after prolonged exposure. Therefore, ensure that any exposed acrylic plastic-type materials (e.g., aircraft windshields) are washed thoroughly with soap and water within 1 hour of exposure to the spray droplets. When the application is completed, wash all metal parts of the aircraft and other spray equipment which were exposed to the spray solution thoroughly with soap and water.

CHEMIGATION

For Ornamental Use Only

- Apply this product only through pressurized drench (flood), sprinkler, or drip (trickle) irrigation systems. **DO NOT** apply this product through any other type of irrigation systems.
- **DO NOT** connect chemigation system to a public water system.
- Crop injury, lack of effectiveness, or illegal residues in the crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact your State Extension Service specialists, equipment manufacturers, or other experts.
- **DO NOT** connect any irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- Should the need arise, a person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments.

Pressurized Drench (Flood) System

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump, (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from back flow if water flow stops.

Sprinkler and Drip (Trickle) Chemigation

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump, (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- **DO NOT** apply when wind speed favors drift beyond the area intended for treatment

Special Instructions for Injectors

Special Instructions for Proportional Injectors (e.g. Dosatron, Dosmatic, Anderson, and similar equipment)

Determine the treatment rate for crop and pathogen from the foliar application table below. Determine the injection ratio for the individual system to be used for application. For systems using a 1:100 ratio, measure and add the exact specified amount of product per 100 gallons to each gallon of water in a stock bucket or tank. For systems using a 1:200 ratio, multiply the specified amount per 100 gallons by 2. For systems using a 1:50 ratio, divide the specified amount per 100 gallons added by 2. For systems using a 1:16 ratio, divide the specified amount per 100 gallons by 6. Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of a more dilute suspension per unit time. An injection ratio of 1:100 is preferred for most greenhouse and nursery systems.

APPLES

LIBERTY ETHEPHON 55 promotes fruit maturity and loosens apples. Hand and mechanical harvest will be easier and more efficient. It can be applied with a preharvest drop control chemical registered for use on apples. This mixture stimulates early development of red color and ripening without loosening fruit.

The effects of LIBERTY ETHEPHON 55 on apples will depend on the rate and time of application. Some of the benefits of LIBERTY ETHEPHON 55 include: fruit loosening, uniform ripening and coloring without loosening, thinning and return bloom, and increased flower bud development in young trees. Follow the specific instructions in the table below for the type of effect desired from applications of LIBERTY ETHEPHON 55.

USE INFORMATION

- A number of environmental factors can affect thinning and return bloom. Test small plots of trees each year under the program desired to gain experience under local conditions.
- Overthinning and reduced fruit size may result from applications of LIBERTY ETHEPHON 55. Use caution when applying it to young trees just starting to bear as excessive fruit thinning and fruit size reduction can occur.
- When LIBERTY ETHEPHON 55 is applied to achieve early maturity, the fruit size is reduced, especially if fruits are small at application.
- Reduced fruit quality and size is noticed in harvested apples when LIBERTY ETHEPHON 55 is applied earlier than 3 weeks before normal anticipated harvest.
- Apply LIBERTY ETHEPHON 55 only to vigorous trees. Weakened trees which are treated will show an excessive reduction in growth.
- Avoid overlap of spray applications in orchards.

WHEN TO HARVEST APPLES

Monitor fruit daily. The proper harvest period is shorter with LIBERTY ETHEPHON 55 treated fruit than untreated fruit. Harvest fruit before they become overripe on the trees. Check fruit intended for fresh markets for quality and maturity. In addition to fruit color, the internal maturity of apples must be checked using a pressure gauge or other suitable methods. Fruit which are harvested when over-ripe and then stored soften sooner than untreated fruit.

Crop	Product Application Rate Pint/Acre (lb ai)	Apples – Application Instructions
FOR FRUIT LOOSENING		
APPLES	$\frac{5}{6}$ (0.625)	Make foliar applications of LIBERTY ETHEPHON 55 at 7 to 14 days before normal anticipated harvest. Apply in a sufficient amount of water for thorough, uniform spray coverage of foliage and fruit. Use a wetting agent to improve spray coverage. The application equipment and size of trees will affect the volume required.
EARLY OR MIDSEASON MATURING VARIETIES (varieties maturing with McIntosh or earlier)		Make applications of LIBERTY ETHEPHON 55 when temperatures are between 60 °F and 90 °F, although applications can be made if temperatures are at 50 °F but will rise during the day.
LATE MATURING VARIETIES IN THE EASTERN UNITED STATES (varieties maturing later than McIntosh)	$1\frac{2}{3}$ (1.25)	High temperatures: fruit treated with LIBERTY ETHEPHON 55 experiences reduced color response, however ripening and loosening effects will be accelerated Cool temperatures: longer periods of time between application and harvest is required.
USE RESTRICTIONS • Maximum Single Application Rate: $1\frac{2}{3}$ pints (1.25 lb ai)/A. • DO NOT apply more than $1\frac{2}{3}$ pint (1.25 lb ai)/A/year. • DO NOT make more than 2 applications/year. • Minimum Retreatment Interval (RTI) = 7 days • DO NOT graze or feed cover crops grown in treated apple orchards to livestock. • DO NOT apply within 7 days of harvest. (PHI = 7 days)		

Crop	Product Application Rate Pint/Acre (lb ai)	Apples – Application Instructions
FOR PROMOTION OF UNIFORM RIPENING AND COLORING OF RED VARIETIES WITHOUT LOOSENING		
APPLES	$\frac{1}{3}$ – $1\frac{1}{3}$ (0.25 – 1.0)	Make foliar applications of LIBERTY ETHEPHON 55 with a preharvest drop control chemical registered for use on apples. Follow the directions for use on the preharvest drop control label since instructions vary depending on location and apple variety. Time applications to begin 2 to 3 weeks before normal harvest and about 1 to 2 weeks before desired harvest date.
EARLY OR MIDSEASON MATURING VARIETIES (varieties maturing with McIntosh or earlier)		
LATE MATURING VARIETIES (varieties maturing later than McIntosh)	$\frac{2}{3}$ – $1\frac{1}{3}$ (0.5 - 1.0)	Apply in a sufficient amount of water for thorough, uniform spray coverage of foliage and fruit. The application equipment and size of trees will affect the volume required. Use a wetting agent to improve spray coverage. For apples which will be stored after harvest, use the lower application rate. As long as harvested fruit are in good condition, they can be stored in cold air storage facilities.
USE RESTRICTIONS • Maximum Single Application Rate: $1\frac{1}{3}$ pints (1.0 lb ai)/A • DO NOT apply more than $1\frac{2}{3}$ pint (1.25 lb ai)/A/yr. • DO NOT make more than 1 application at $1\frac{1}{3}$ pint/A (1.0 lb ai)/A/year or 5 applications at $\frac{1}{3}$ pint/A (0.25 lb ai)/A/year. • DO NOT apply LIBERTY ETHEPHON 55 to more acreage than can be harvested in 1 to 2 days. • DO NOT graze or feed cover crops grown in treated apple orchards to livestock. • Minimum retreatment interval = 7 days • DO NOT apply within 7 days of harvest. (PHI = 7 days)		
FOR THINNING AND RETURN BLOOM		
APPLES	$\frac{1}{2}$ – $1\frac{1}{3}$ (0.375 – 1.0)	Make applications of LIBERTY ETHEPHON 55 at 10 to 20 days after full bloom.
Most Varieties		Tank mixes with 1-Naphthaleneacetamide or carbaryl insecticide will provide greater thinning. Read all labels for specific use directions on apples and follow the most restrictive of the label limitations and precautions. Do not exceed label use rates. Do not mix LIBERTY ETHEPHON 55 with any product with a label which prohibits such mixing. Consult local Extension Specialists for more information about which products can be mixed with LIBERTY ETHEPHON 55. Add a non-ionic surfactant to improve effects. In locations where water is alkaline, add buffers to the spray solution to a pH of 3 to 5 for improved performance. Apply in a sufficient amount of water for thorough, uniform spray coverage of foliage and fruit. The application equipment and size of trees will affect the volume required.
DIFFICULT TO THIN VARIETIES, SUCH AS GOLDEN DELICIOUS	1 - 2 (0.75 – 1.5)	Ensuring a good crop from one season to another can be a problem when a high percentage of spurs and lateral buds bloom in a single season. The trees in the following year will show a severe drop in bearing. This problem can be avoided with the application of LIBERTY ETHEPHON 55 or a combination of LIBERTY ETHEPHON 55 plus 1-Naphthaleneacetamide or LIBERTY ETHEPHON 55 plus carbaryl insecticide. Make applications 7 to 21 days after full bloom. Selection of the best program to use will depend on the amount of thinning required and the biennial bearing history of the orchard. A reduction of "type" and fruit size of Red Delicious apples is expected particularly from applications to trees under stress. Higher Rates: reduced fruit size result.
USE RESTRICTIONS • Maximum Single Application Rate: 2 pint (1.5 lb ai)/A • DO NOT apply more than $2\frac{2}{3}$ pint/A (2.0 lb ai)/A/year. • DO NOT make more than 1 application at 2 pint (1.5 lb ai)/A/year or 5 applications at $\frac{1}{2}$ pint (0.375 lb ai)/A/year. • DO NOT graze or feed cover crops grown in treated apple orchards to livestock. • Minimum retreatment interval: ○ Most Varieties = 10 days ○ Difficult to thin Varieties = 7 days • Minimum Retreatment Interval (RTI) = 7 days • DO NOT apply within 7 days of harvest. (PHI = 7 days)		

FOR INCREASED FLOWER BUD DEVELOPMENT		
APPLES	$\frac{2}{3} - 2\frac{2}{3}$ (0.5 – 2.0)	Make applications of LIBERTY ETHEPHON 55 2 to 4 weeks after full bloom. To minimize fruit thinning, time applications to occur 6 weeks after full bloom and after June drop.
NON-BEARING TREES		
BEARING TREES	$\frac{1}{6} - 1$ (0.125 – 0.75)	Apply in a sufficient amount of water to the point of runoff. The application equipment and size of trees will affect the volume required. Use a wetting agent to improve spray coverage. Higher Rate: for use on more vigorous trees. Non-bearing trees: Make applications of LIBERTY ETHEPHON 55 2 to 4 weeks after full bloom for increased flower bud development. LIBERTY ETHEPHON 55 causes excessive fruit thinning and reduced fruit size and yield reduction the year of use. However, vegetative growth should be reduced and flowering increased the following spring.
USE RESTRICTIONS • Maximum Single Application Rate: $2\frac{2}{3}$ pints (2.0 lb ai)/A • DO NOT apply more than $2\frac{2}{3}$ pints/A (2.0 lb ai)/A/year. • DO NOT make more than 1 application at $2\frac{2}{3}$ pint (2.0 lb ai) or 15 applications at $\frac{1}{6}$ pint (0.125 lb ai)/A/year. • DO NOT graze or feed cover crops grown in treated apple orchards to livestock. • DO NOT treat trees to initiate flower buds unless they are large enough to support a crop of apples. • Minimum Retreatment Interval (RTI) = 7 days • DO NOT apply within 7 days of harvest. (PHI = 7 days)		

BLACKBERRIES – OREGON AND WASHINGTON ONLY

LIBERTY ETHEPHON 55 applied to blackberries will concentrate maturity and loosen fruit. Harvest efficiency will improve and cane injury from mechanical harvest will be reduced.

USE INFORMATION

- Spray only the blackberries that can be harvested three days after treatment as considerable fruit will drop.
- To prevent a reduction in berry size, apply LIBERTY ETHEPHON 55 only at the specified times and rates to healthy, vigorous plants and not to damaged or diseased plants.

Crop	Product Application Rate Pint/Acre (lb ai)	Blackberries – Application Instructions
Blackberries – Oregon and Washington Only (Cultivars Chehalem Thornless and Evergreen)	$1\frac{2}{3} - 2\frac{2}{3}$ (1.25 – 2.0)	Make foliar applications of LIBERTY ETHEPHON 55 at least three days before harvest. Wait to make applications when air temperatures are between 60 °F and 90 °F and when rain is not predicted within 24 hours. To obtain thorough, uniform coverage of the foliage and fruit, use sufficient spray volumes. Applications of LIBERTY ETHEPHON 55 can be made early in the harvest season to reduce the number of pickings, or late in the harvest season for a once over final picking.
USE RESTRICTIONS • Maximum Single Application Rate: $2\frac{2}{3}$ pint (2.0 lb ai)/A. • DO NOT apply more than $2\frac{2}{3}$ pint (2.0 lb ai)/A/year. • DO NOT make more than 1 application/year. • DO NOT apply within 3 days of harvest. (PHI = 3 days)		

BLUEBERRIES

Applications of LIBERTY ETHEPHON 55 to blueberries will concentrate maturity of berries for easier and more efficient harvest. LIBERTY ETHEPHON 55 will abort black barrenberry (*Aronia melanocarpa*) flowers and/or fruit growing in Maine lowbush blueberry fields; this effect reduces the number of undesirable barrenberry fruit harvested with blueberries.

USE INFORMATION

- **DO NOT** apply to cultivars other than those listed in the table below, or excessive steminess and/or premature crops will result.
- Note: Application of LIBERTY ETHEPHON 55 increases the number of berries with stems, and berries with slightly decreased fruit size or soluble solids and acidity. LIBERTY ETHEPHON 55 affects berry color more quickly than it will internal ripening.
- Application to blueberry plants under drought stress or when excessively high temperatures exist results in defoliation and reduced yield.

WHEN TO HARVEST BLUEBERRIES

Harvest when berries have reached maturity, i.e., when colored, which typically occurs one to two weeks after application of LIBERTY ETHEPHON 55. Monitor berries often. The proper harvest timing for optimum internal and external berry quality is shorter with LIBERTY ETHEPHON 55 treated fruit than with untreated fruit. Berries will ripen faster at high temperatures (90 °F).

Crop	Product Application Rate Pint/Acre (lb ai)	Blueberries – Application Instructions
FOR CONCENTRATION OF MATURITY AND EARLIER FRUIT COLORING		
Blueberries Cultivars Bluecrop, Weymouth, Jersey, Rancocas, Rubel, Bluetta, Erliblue, Wolcott, Croatan, Murphy, Angola, Morrow, Garden Blue, Trifblue and NC901	$1 \frac{1}{3} - 2 \frac{2}{3}$ (1.0 - 2.0)	Make foliar applications of LIBERTY ETHEPHON 55 in 150 to 200 gallons per acre when air temperatures are 60 °F to 90 °F. Thorough uniform spray coverage of foliage and fruit is essential. A wetting agent such as VOYAGER 90/10 at 1 to 2.0 pints per 100 gallons will help the uniform wetting of plants. High Rate: when using the high rate, use the higher spray volume on large dense foliage bushes or when temperatures are cool. When applying at first harvest: make applications when 15 to 20% of the berries are blue. When applying at final harvest: make applications of LIBERTY ETHEPHON 55 after the first or second picking.
FOR BLACK BARRENBERRY CONTROL		
Lowbush Blueberries in Maine	$1 \frac{1}{3} - 2 \frac{2}{3}$ (1.0 - 2.0)	Make applications of LIBERTY ETHEPHON 55 in 100 to 200 gallons per acre for ground sprayers and 10 gallons per acre for aerial application. Thorough uniform spray coverage of foliage and fruit is essential. A wetting agent such as VOYAGER 90/10 at 0.1% of spray volume will help the uniform wetting of plants. Lower Rate: use when black barrenberries are at 90 to 100% petal fall. Higher Rate: use when black barrenberry fruit is $\frac{1}{8}$ to $\frac{3}{16}$ inch in diameter which occurs generally 7 to 10 days after blueberries are in the same stages of development. Blueberry harvest can generally occur when fruit are ripe, 6 to 8 weeks after application.
USE RESTRICTIONS • Maximum Single Application Rate: $2 \frac{2}{3}$ pint (2.0 lb ai)/A. • DO NOT apply more than $2 \frac{2}{3}$ pint (2.0 lb ai)/A/year. • DO NOT make more than 1 application/year.		

CANTALoupES – ARIZONA, CALIFORNIA AND TEXAS ONLY

Application of LIBERTY ETHEPHON 55 to cantaloupe results in abscission (slipping) of fruit, which results in a more efficient and economical harvesting.

USE INFORMATION

- **DO NOT** apply LIBERTY ETHEPHON 55 if night temperatures are below 60 °F.
- Make applications of LIBERTY ETHEPHON 55 to 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%.
- Applications of LIBERTY ETHEPHON 55 can cause some yellowing or rapid aging of vines, and some plants with poor vigor will not respond properly.

WHEN TO HARVEST CANTALOUPE

Monitor treated fields closely. Harvest fruit when the quality is acceptable for marketing. Do not allow fruit to remain in the field too long or quality will decline. Typically fruit can be harvested 2 to 5 days after treatment; however temperature will also affect the time to harvest after applications.

Crop	Product Application Rate Pint/Acre (lb ai)	Cantaloupes – Application Instructions
Cantaloupes – Arizona, California and Texas Only	1 (0.75)	Make applications of LIBERTY ETHEPHON 55 in a minimum of 40 gallons per acre for ground sprayers. Texas Only: apply in a minimum of 10 gallons per acre for aerial application. Thorough uniform spray coverage of foliage and fruit is essential for uniform abscission. The effects of LIBERTY ETHEPHON 55 occur faster at higher temperatures. Time applications to occur once fruit quality (i.e., soluble solids and flesh color) have reached marketable levels since applications of LIBERTY ETHEPHON 55 do not increase these qualities. Applications made too early will yield fruit with poor color and unacceptable soluble solids.
USE RESTRICTIONS • Maximum Single Application Rate: 1 pint (0.75 lb ai)/A. • DO NOT apply more than 1 pint (0.75 lb ai)/A/year. • DO NOT make more than 1 application/year. • Rotation Crop Restriction: DO NOT plant another crop in treated fields within 30 days after treatment. • DO NOT apply within 2 days of harvest. (PHI = 2 days)		

CHERRIES – NOT REGISTERED FOR USE BY CALIFORNIA

Applications of LIBERTY ETHEPHON 55 to cherry trees will loosen fruit and allow an early, uniform ripening. These effects reduce the shaker force needed for mechanical harvest of fruit, and thereby increases efficiency and recoverable yields, while maintaining fruit quality and reducing tree injury. In the Pacific Northwest, applications to sweet cherries increases dormant bud hardiness and delays bloom the following spring.

USE INFORMATION

- Fruit drop with stems attached occurs if applications are made too early.
- Applications cause early leaf yellowing and drop and gummosis.
- Severe gummosis occurs if temperatures during and after application remain higher than 85 °F. **DO NOT** treat trees that have experienced severe gummosis the previous year to prevent tree damage.
- Excessive gummosis will occur if applications are made to trees that are of low vigor or have experienced severe stress (such as winter injury, drought, or disease), and particularly if high temperatures and/or drought conditions follow treatment. Make applications when air temperatures are between 60 °F and 85 °F. **DO NOT** treat when air temperatures exceed 85 °F.
- Irrigation of orchards after application prevents drought stress which can lead to gummosis.
- Applications to sweet cherry trees under the fall bud hardiness treatment causes slight gummosis and reduced individual fruit sizes.
- **DO NOT** apply until all fruit, including those inside the tree canopy, are in stage 3 (defined as when fruit undergo rapid size increase and change from bright green to yellow background color).
- Thorough, uniform coverage of fruit and foliage is important. Use caution when applying with concentrated sprays and avoid erratic application as these can lead to gummosis and tip dieback.

Crop	Product Application Rate Pint/Acre (lb ai)	Cherries– Application Instructions
Tart Cherries	Dilute Spray: $\frac{1}{3}$ (0.25) Concentrate Spray: $\frac{1}{5} - \frac{1}{3}$ (0.15 – 0.25)	Make applications of LIBERTY ETHEPHON 55 as either a dilute or a concentrate spray. Concentrate sprays are typically less than 100 gallons per acre. Use sufficient water for thorough, uniform coverage. Several factors (such as trees size, density of trees, and type of application equipment) will determine the optimum spray volumes to select.
Sweet Cherries (including varieties such as Windsor, Napoleon-Royal Anne, Emperor Francis)	Dilute Spray: 1 - $1\frac{1}{3}$ (0.75 - 1.0) Concentrate Spray: $\frac{2}{3} - 1$ (0.5 – 0.75)	Expect a longer treatment to harvest interval with lower rates.

Sweet Cherries – Pacific Northwest Only	1 (0.75)	To increase dormant fruit bud hardiness and to delay spring bloom An application of LIBERTY ETHEPHON 55 in the first two weeks of September increases fruit bud hardiness by decreasing the chance for winter injury and delays bloom by 3 to 5 days, which helps avoid frost injury. Bloom delay from treatment of early flowering varieties helps to coincide pollination from other varieties
USE RESTRICTIONS • Maximum Single Application Rate: 1 1/3 pint (1.0 lb ai)/A. • DO NOT apply more than 1 1/3 pint (1.0 lb ai)/A/year. • DO NOT make more than 1 application/year • DO NOT apply within 7 days of harvest. (PHI = 7 days)		

COTTON

Follow the application instructions in the tables below for use of LIBERTY ETHEPHON 55 on cotton alone or in combination with other products.

MIXING DIRECTIONS

- Fill the spray tank 1/2 to 3/4 full of water. Agitate the water and continue agitation throughout mixing and spraying operations.
- Add LIBERTY ETHEPHON 55 to the tank followed by the remaining amount of water.
- Add any other tank mix partner products. Do not allow the spray solution to sit without agitation longer than 5 to 10 minutes.

WHEN TO HARVEST COTTON

Monitor the treated crop to determine when the optimum number of bolls are open before the cotton is harvested. Lint quality and yield may be reduced if the crop is harvested too late.

Mature bolls are determined by squeezing the boll between thumb and finger: If the boll cannot be dented then it is mature. Other signs of boll maturity include when the boll is too hard to be sliced with a sharp knife, and when the seed coat has changed color to light brown.

Application of LIBERTY ETHEPHON 55 Alone (Boll Opening Application)

Conditions	Product Application Rate Pint/Acre (lb ai)	No. Acres Treated by 1 gallon of LIBERTY ETHEPHON 55	Additional Instructions
Hot and dry 80 °F or higher	1 1/3 (1.0)	6	Select the type of equipment (ground or air) and spray volumes which will ensure thorough coverage of bolls and foliage. Apply LIBERTY ETHEPHON 55 when a sufficient number of unopened bolls have matured to give the desired yield. Bolls will open 7 to 14 days earlier than without treatment.
Dry and 75 °F to 80 °F	2.0 (1.5)	4	By ground: Apply in a minimum spray volume of 10 gal/A. By air: Apply in a minimum spray volume of 2 gal/A (5 gal/A in AZ and CA). Cotton bolls and plants which are overly rank or not standing will not be thoroughly covered by a LIBERTY ETHEPHON 55 application. It is recommended that an application of a defoliant be made BEFORE a LIBERTY ETHEPHON 55 application to facilitate boll and foliage coverage by LIBERTY ETHEPHON 55.
Cool but above 65 °F or Rank cotton	2 2/3 (2.0)	3	

USE RESTRICTIONS

- **Maximum Single Application Rate:** 2 2/3 pint (2.0 lb ai)/A.
- **DO NOT** apply more than 2 2/3 pint (2.0 lb ai)/A/year.
- **DO NOT** make more than 1 application at 2 2/3 pint (2.0 lb ai) or 2 applications at 1 1/3 pint (1.0 lb ai)/A/year.
- **DO NOT** apply if rain is expected within 6 hours as product performance may be reduced.
- Rotation Crop Restrictions:
 - **DO NOT** plant back another crop within 30 days after application. If small grains are planted earlier than 1 month after a **LIBERTY ETHEPHON 55** application or are planted between the cotton plant rows which were treated with **LIBERTY ETHEPHON 55**, these crops can only be used as cover crops.
 - **DO NOT** harvest the grain crops for food or feed. Small grain plants grown under these conditions may turn yellow and their growth may be stunted.
- **DO NOT** apply within 7 days of harvest. (PHI = 7 days)

TANK MIX APPLICATIONS OF LIBERTY ETHEPHON 55

USING LIBERTY ETHEPHON 55 WITH DEFOLIANTS AND INSECTICIDES: LIBERTY ETHEPHON 55 may be applied as a tank mixture or in sequence with currently registered cotton defoliants and insecticides. Refer to the label of the tank mix partner for use precautions and use rates.

PRECAUTIONS:

- Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures
- Use caution when LIBERTY ETHEPHON 55 is applied as a tank mix with defoliants as a slight reduction in boll opening could occur.
- Only apply LIBERTY ETHEPHON 55 as a tank mix with desiccants if plant desiccation is required.
- **DO NOT** use a defoliant unless sufficient mature unopened bolls are present to produce the desired yield.
- **DO NOT** TANK MIX LIBERTY ETHEPHON 55 WITH DESICCANTS IF COTTON IS TO BE SPINDLE HARVESTED.
- UNDER CERTAIN CONDITIONS, TANK MIXTURES OF LIBERTY ETHEPHON 55 WITH DESICCANTS CONTAINING SODIUM CHLORATE COULD RESULT IN THE FORMATION OF HYPOCHLOROUS ACIDS WHICH ON HEATING WILL EMIT TOXIC CHLORIDE FUMES.
- **DO NOT** MIX LIBERTY ETHEPHON 55 WITH AMMONIUM THIOSULFATE AS THESE MIXTURES MAY RESULT IN FORMATION OF TOXIC FUMES.

Conditions	LIBERTY ETHEPHON 55 Plus TRIBUPHOS		Pre-Conditioner Prior to Defoliant Tank Mix Application	
	LIBERTY ETHEPHON 55 Pint/A (lb ai/A)	No. Acres Treated by 1 gal. tank mix	LIBERTY ETHEPHON 55 Pint/A (lb ai/A)	No. Acres Treated by 1 gal tank mix
Hot and dry 80°F or higher	1/3 (0.25)	24	2/3 (0.5)	12
Cool but above 65°F or Rank cotton			1 1/3 (1.0)	6
High soil moisture or High fertility level or Rank cotton			NR	NR
Additional Instructions	Make application 4 to 7 days before the LIBERTY ETHEPHON 55 boll-opening application. Defoliant tank mix applications are to be used as a sequential treatment with, not in place of, the LIBERTY ETHEPHON 55 boll-opening treatment. By ground: Apply in a minimum spray volume of 10 gals./A.E. For LIBERTY ETHEPHON 55 Plus TRIBUPHOS: Apply by air in a minimum spray volume of 5 gals./A.		Make application 4 to 7 days before a defoliant tank mix is applied. This application helps defoliate the top of the crop and preserves the bottom of the crop (may lead to earlier harvest). By ground: Apply in a minimum spray volume of 10 gals./A. By air: Apply in a minimum spray volume of 2 gals./A (5 gals./A in AZ and CA).	
	In all tank mix options, select the type of application equipment (air or ground) and spray volumes which will ensure thorough coverage of bolls and foliage. Do not exceed a maximum of 2.0 lb AI/A (2 2/3 pints/A) of LIBERTY ETHEPHON 55 per year through combined or repeated uses of any ethephon products.			

USE RESTRICTIONS

- **Maximum Single Application Rate:** 2 2/3 pint (2.0 lb ai)/A.
- **DO NOT** apply more than 2 2/3 pint (2.0 lb ai)/A/year.
- **DO NOT** make more than 1 application at 2 2/3 pint (2.0 lb ai) or 2 applications at 1 1/3 pint (1.0 lb ai)/A/year.
- **DO NOT** apply if rain is expected within 6 hours as product performance may be reduced.
- Rotation Crop Restrictions:
 - **DO NOT** plant back another crop within 30 days after application. If small grains are planted earlier than 1 month after a **LIBERTY ETHEPHON 55** application or are planted between the cotton plant rows which were treated with **LIBERTY ETHEPHON 55**, these crops can only be used as cover crops.
 - **DO NOT** harvest the grain crops for food or feed. Small grain plants grown under these conditions may turn yellow and their growth may be stunted.
- **DO NOT** apply within 7 days of harvest. (PHI = 7 days)

NR = Not recommended

GRAPES – CALIFORNIA AND ARIZONA ONLY

TABLE GRAPES: Applications of LIBERTY ETHEPHON 55 cause early uniform color development in the table grape varieties listed below which allows a more efficient harvest of quality fruit.

GRAPES GROWN FOR RAISINS: A foliar spray of LIBERTY ETHEPHON 55 will speed the maturation of Thompson seedless grapes and result in higher quality raisins containing less acids and increased sugars.

USE INFORMATION

Table Grapes

- **DO NOT** use rates higher than $\frac{1}{3}$ pint/A to avoid an increase in cracked fruit. Only use the higher rates when grapes had difficulty in coloring in previous seasons.
- Applications of LIBERTY ETHEPHON 55 to certain grape varieties cause berry softening which limits or influences storage of grapes.
- **DO NOT** store Tokay grapes.

Raisin Production (Thompson Seedless)

- **DO NOT** treat grapes which are under stress from insect damage or moisture. Monitor treated vineyards closely and harvest when grapes are mature as indicated by sugar acid levels.

WHEN TO HARVEST GRAPES

Monitor treated vineyards closely and harvest when grapes are mature—usually two weeks or longer after application—as indicated by color and sugar acid levels. Harvest grapes before the berries become too dark. Contact your Farm Advisor or Extension Viticulturist for more information regarding local experiences with LIBERTY ETHEPHON 55 on grapes.

Crop	Product Application Rate Pint/Acre (lb ai)	Grapes – Application Instructions
TABLE GRAPES (such as Cardinal, Emperor, Flame Seedless, Red Malaga, and Queen) California and Arizona Only	$\frac{1}{6} - \frac{2}{3}$ (0.125 – 0.50)	High temperature conditions (above 85 °F): apply LIBERTY ETHEPHON 55 at $\frac{1}{6}$ to $\frac{1}{3}$ pint per A. Low temperature conditions (but above 65 °F): apply LIBERTY ETHEPHON 55 at the higher use rates. Thorough, uniform coverage of the fruit and vines are needed for optimum effect. Use sufficient water using conventional ground sprayers. Make applications when 5 – 30% of the berries show color.
TOKAY GRAPES California and Arizona Only	$\frac{1}{3} - \frac{2}{3}$ (0.25 – 0.50)	Make applications when 5 – 15% of berries show color.
RAISIN PRODUCTION (Thompson Seedless) California and Arizona Only	$\frac{1}{3} - \frac{2}{3}$ (0.25 – 0.50)	Make foliar applications at 5% berry softening and when 5 – 30% of berries show color. LIBERTY ETHEPHON 55 speeds the maturation of Thompson Seedless grapes and produces grapes with reduced acids, increased sugars and increased raisin quality. Contact your Farm Advisor or Extension Viticulturist for more information regarding local experiences with LIBERTY ETHEPHON 55 on grapes.

USE RESTRICTIONS

- **Maximum Single Application Rate:** $\frac{2}{3}$ pint (0.5 lb ai)/A.
- **DO NOT** apply more than $\frac{2}{3}$ pint (0.5 lb ai)/A/year.
- **DO NOT** make more than 1 application/year.
- **DO NOT** apply within 14 days of harvest. (PHI = 14 days)

PEPPERS

LIBERTY ETHEPHON 55 can be applied as a foliar spray to peppers and leads to early, uniform ripening and coloring for more efficient harvesting, packaging and handling of fruit.

USE INFORMATION

- **DO NOT** make applications when temperatures exceed 100 °F, or if prolonged temperatures of 95 °F or more are expected after treatment. Applications under these conditions will cause excessive fruit ripening, yellowing of foliage, defoliation, and immature fruit abscission.
- **DO NOT** treat when average temperatures are below 60 °F as these temperatures reduce or negate the effects of LIBERTY ETHEPHON 55. It will not ripen immature, green fruit.
- Applications cause yellowing and general aging of treated leaves.
- Under certain conditions, tank mixtures of LIBERTY ETHEPHON 55 with desiccants containing sodium chlorate could result in the formation of hypochlorous acids which on heating will emit toxic chloride fumes.

WHEN TO HARVEST PEPPERS

Typically, fruit can be harvested 14 or more days after treatment when fruit reach desired color and maturity. Monitor the crop in several locations for crop stage and degrees of maturity. **DO NOT** apply LIBERTY ETHEPHON 55 too early or if there is a lack of uniform, mature, green fruit (due to split fruit set or other soil cultural practices) or total yields will be reduced.

Crop	Product Application Rate Pint/Acre (lb ai)	Peppers– Application Instructions
Peppers	$\frac{2}{5}$ - $1\frac{1}{3}$ (0.3 – 1.0)	For optimum results, ensure thorough, uniform coverage of spray solution to fruit and foliage by selecting the appropriate application equipment (ground or air) and spray volumes. Make applications of LIBERTY ETHEPHON 55 to bell peppers when 10% of fruit turn red and chocolate in color and to chili and pimento pepper varieties when 10 to 30% of fruit turn red and chocolate in color. Be sure that there are sufficient mature green fruit to produce desired tonnage since LIBERTY ETHEPHON 55 will not ripen immature, green fruit. Higher Rate: for situations when cool temperatures are anticipated (less than 65 °F), or when dense foliage is present; also use when higher spray volumes (1 - $1\frac{1}{3}$ pints/40 gal/A) are required. Lower Rate: for use with lower spray volumes ($\frac{2}{5}$ to $\frac{2}{3}$ pint rate in 20 gal/A). Note: Using the 1 – $1\frac{1}{3}$ pint rate in less than 40 gallons per acre causes foliage burn under hot dry conditions.
USE RESTRICTIONS • Maximum Single Application Rate: $1\frac{1}{3}$ pint (1.0 lb ai)/A • DO NOT apply more than $1\frac{1}{3}$ pint (1.0 lb ai)/A/year • DO NOT make more than 1 application/year. • DO NOT apply within 5 days of harvest. (PHI = 5 days)		

PINEAPPLE

PINEAPPLE FLOWER INDUCTION: Application of LIBERTY ETHEPHON 55 will induce uniform flower initiation of pineapple plants.
PINEAPPLE MATURITY CONCENTRATION: Application of LIBERTY ETHEPHON 55 will stimulate uniform shell color of pineapple fruit.

Crop	Product Application Rate Pint/Acre (lb ai)	Pineapple– Application Instructions
PINEAPPLE Flower Induction LIBERTY ETHEPHON 55 applied to pineapple plants will stimulate uniform initiation of flowering.	$1 \frac{1}{3} - 2 \frac{2}{3}$ (1.0 – 2.0)	Apply LIBERTY ETHEPHON 55 at "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.
PINEAPPLE Maturity Concentration LIBERTY ETHEPHON 55 application will stimulate uniform shell color development.	$\frac{2}{3} - 2 \frac{2}{3}$ (0.5 - 2.0)	Apply LIBERTY ETHEPHON 55 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.
USE RESTRICTIONS • Maximum Single Application Rate: $2 \frac{2}{3}$ pint (2.0 lb ai)/A • DO NOT apply more than 4 pint (3.0 lb ai)/A/year. • DO NOT make more than 1 application at $2 \frac{2}{3}$ pint (2.0 lb ai) or 6 applications at $\frac{2}{3}$ (0.5 lb ai) • DO NOT graze pineapple forage treated with LIBERTY ETHEPHON 55. • Minimum Retreatment Interval (RTI) = 2 days • DO NOT apply within 2 days of harvest. (PHI = 2 days)		

SUGARCANE (Hawaii only)

SUGARCANE FLOWER PREVENTION: A foliar spray of LIBERTY ETHEPHON 55 will reduce or prevent flowering of sugarcane.

SUGARCANE BIOMASS INCREASE: LIBERTY ETHEPHON 55 application to prevent flowering can result in increased biomass accumulation and increased recoverable sugars.

Crop	Product Application Rate Pint/Acre (lb ai)	Sugarcane– Application Instructions
SUGARCANE Flower Prevention LIBERTY ETHEPHON 55 application will prevent or reduce flowering and pithy tissue formation. Biomass Increase LIBERTY ETHEPHON 55 used to prevent flowering can also result in increased biomass accumulation and recoverable sugar yield.	$\frac{2}{3}$ (0.5)	Apply LIBERTY ETHEPHON 55 just prior to flower initiation. Apply by fixed wing aircraft or helicopter using equipment designed to give uniform coverage. Actual biomass increase will be affected by the time between treatment and harvest. Consider anticipated recoverable sugars as well as biomass to determine optimum harvest date. Apply no less than 7 gallons of spray mixture

USE RESTRICTIONS

- **Maximum Single Application Rate:** $\frac{2}{3}$ pint (0.5 lb ai)/A.
- **DO NOT** apply more than $\frac{2}{3}$ pint (0.5 lb ai)/A/year.
- **DO NOT** make more than 1 application/year.
- **DO NOT** graze sugarcane forage treated with LIBERTY ETHEPHON 55.
- **DO NOT** apply within 2 days of harvest. (PHI = 2 days)

TOBACCO – FLUE-CURED ONLY

LIBERTY ETHEPHON 55, when applied as a foliar spray to flue-cured tobacco, causes the mature leaves to uniformly turn yellow. This feature provides flexibility in scheduling harvest and also reduces curing time. The applications can be made by directing the spray to the bottom or middle part of the plant or by spraying over the top of the plants.

APPLICATION TIMING

For best results, apply LIBERTY ETHEPHON 55 to mature leaves. Treatment of immature leaves can lead to leaves that are not acceptable in color, quality or dryness. The correct timing for application can be tested by spraying a few plants in several different locations of the field. If the leaves begin to yellow within 24-72 hours, the leaves are mature. If some treated leaves do not change color within 72 hours, do not apply LIBERTY ETHEPHON 55 until another test is carried out a few days later to determine if the leaves are mature. To prepare a test spray solution, add 1 $\frac{1}{3}$ tsp of LIBERTY ETHEPHON 55 to 1 qt water. Apply about 1 oz of the test spray solution as a fine mist and thoroughly cover the leaves. Immature leaves won't change color.

When the test shows that the desired number of leaves per plant change color, calculate the number of acres to treat in order to fill the barn.

Remove yellowed leaves before making an application as this will help yields and prevent leaf drop. Typical growing conditions will require the lower rates specified in the table below. If the higher rates are used, only apply if temperatures are below 65 °F on the day of application.

WHEN TO HARVEST TOBACCO

Within 24 to 72 hours after the application of LIBERTY ETHEPHON 55, mature, sprayed leaves will begin to turn yellow, but the exact timing is dependent on the weather so that under cooler temperatures, yellowing will be delayed while under warm, sunny conditions, yellowing occurs faster. Monitor weather conditions and intensity of tobacco leaves color to determine timing of harvest. Usually the leaves have reached the desired color intensity and can be harvested within 48 hours after the application of LIBERTY ETHEPHON 55.

To avoid reduced yields and quality, harvest the tobacco before it over-ripens in the field after an application.

CURING TREATED TOBACCO

A number of factors must be considered when curing treated tobacco. These factors include, but are not limited to tobacco condition, timing between application of LIBERTY ETHEPHON 55 and harvest, weather conditions, and type of curing. Best quality tobacco is obtained when the curing process is closely monitored during late leaf coloring and early leaf drying stages.

Application of LIBERTY ETHEPHON 55 to tobacco begins the coloring process before harvest, so the amount of time required in the coloring phase and drying phase will be reduced. Harvested green leaves will need to be colored for a few hours. Harvested yellow leaves will require adjustment of temperature and ventilation so the tobacco dries as quickly as possible without scalding. At the point of 75% dried state, the leaves can be treated using normal procedures for curing. However, leaves treated with LIBERTY ETHEPHON 55 cure faster, so cure treated and untreated leaves in separate barns.

Type of Application	Product Application Rate Pints/Acre (lb ai)	Tobacco – Application Instructions
Directed Spray	1 $\frac{1}{3}$ (1.0)	Apply LIBERTY ETHEPHON 55 with drop nozzles and TG or OC spray tips designed to apply 50-60 gal/A at 35-40 psi and at tractor speed of 2-3 mph. Best results are obtained when thorough sprays are directed to the leaves to be ripened. Adjust the sprayer so that there are 2 nozzles per row placed low enough to direct the spray to the leaves. For this type of application, harvest when 20% or more of the leaves have yellowed.

Over-the-top Spray	1 ¹ / ₃ - 2 ² / ₃ (1.0 - 2.0)	Apply LIBERTY ETHEPHON 55 in a minimum spray volume of 40 gal/A. Make applications only to the mature leaves left on the stalk. Use the test procedure described in the Application Timing section above to determine if remaining leaves are mature and will respond to applications of LIBERTY ETHEPHON 55. Apply the lower rate of LIBERTY ETHEPHON 55 for mature crop or if experience indicates that a minimum ripening inducement is required. The higher rate is used for heavy, more rank crops or when temperatures are lower than normal.
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USE RESTRICTIONS

- **Maximum Single Application Rate:** 2 ²/₃ pint (2.0 lb ai)/A
- **DO NOT** apply more than 2 ²/₃ pint (2.0 lb ai)/A/year.
- **DO NOT** make more than 1 application/year.
- **DO NOT** apply LIBERTY ETHEPHON 55 to immature leaves as this can result in unsatisfactory coloring, weight loss and reduced leaf quality.
- **DO NOT** allow the crop to overripen in the field after using LIBERTY ETHEPHON 55 since this causes some reduction in yield and quality.
- **DO NOT** treat before an anticipated major storm which could prevent harvest and result in crop loss.
- **DO NOT** apply LIBERTY ETHEPHON 55 if rain is expected with 6 hours.
- **DO NOT** apply within 2 days of harvest. (PHI = 2 days)

TOMATOES

TOMATOES FOR PROCESSING: Foliar application of LIBERTY ETHEPHON 55 speeds the ripening of tomatoes and leads to a uniform maturation of fruit. The uniform maturation generates a high yield of ripe tomatoes which are obtained from a once-over harvest. This early maturation extends the harvest season and allows growers to select when to harvest for more efficient handling of the processed commodity.

TOMATOES FOR FRESH MARKETS IN CALIFORNIA: Foliar application of LIBERTY ETHEPHON 55 speeds ripening of tomatoes and increases early yields of marketable tomatoes.

USE INFORMATION

- Apply LIBERTY ETHEPHON 55 only when there is sufficient mature green fruit to produce the desired tonnage since it does not ripen immature green fruit. Foliage becomes yellow or age after an application of LIBERTY ETHEPHON 55.
- Plants with poor root systems or if growing under stress (from poor soil conditions, drought, disease, or insect damage) should not be treated with LIBERTY ETHEPHON 55 because these weakened plants will lose their foliage cover, and risk sunburn and sun scalding, especially under high temperature conditions.
- To prevent foliar damage, LIBERTY ETHEPHON 55 should not be applied if temperatures are expected to remain above 105 °F. For sensitive varieties, LIBERTY ETHEPHON 55 should not be applied if temperatures are above 100 °F to prevent foliar damage. Particularly sensitive varieties include VF 10, VF 315, VF 145, 21-4, and 13L. Use the lower rates on these varieties when temperatures are high.

WHEN TO HARVEST TOMATOES

Observe treated fields closely and harvest fruit at proper maturity after application of LIBERTY ETHEPHON 55.

Crop	Product Application Rate Pints/Acre (lb ai)	Tomato – Application Instructions
Tomatoes for Processing	$\frac{2}{5} - 1 \frac{1}{12}$ (0.3 - 0.81)	Early and Midseason Crops OR High Temperatures Make the application of LIBERTY ETHEPHON 55 when enough mature green fruit will give the tonnage required and when 5-15% of the fruit are red and pink (includes breakers). To determine the proper application date, check the fruit weight and calculate the percent fruit which is red and pink, including breakers. Do not rely on fruit size alone and check for specific directions to determine treatment stage for your situation. Foliage and fruit must receive a thorough coverage of LIBERTY ETHEPHON 55. Use settings on spray equipment (ground or air) and volumes that provide uniform spray coverage. When temperatures exceed 85 °F, the lower rate is effective. Do not overlap spray swaths to prevent severe foliage injury. If banded spray applications are made, reduce the amount of LIBERTY ETHEPHON 55 in proportion to the area actually treated. Continue normal cultural practices after application and prior to harvest. Before making the application of LIBERTY ETHEPHON 55, contact the processor to check delivery schedules and quotas. If you have questions on how to use LIBERTY ETHEPHON 55, contact Liberty Crop Protection, Extension Horticultural Specialist or Farm Advisor. They can advise you especially if fields have variable plant vigor due to differences in soil conditions or cultural practices and can provide rates of fruit ripening as affected by temperature, within the rate and timing limitations shown on the label.
	$1 \frac{1}{12} - 2 \frac{1}{6}$ (0.81 – 1.63)	Late Season or Coastal Crops or Cool Temperatures Make the application of LIBERTY ETHEPHON 55 when enough mature green fruit will give the tonnage required and when 5-30% (for optimum response, 5-15%) of the fruit are red and pink (includes breakers). Foliage and fruit must receive a thorough coverage of LIBERTY ETHEPHON 55. Use settings on spray equipment (ground or air) and volumes that provide uniform spray coverage. If night temperatures are expected to be cool (below 65 °F) or if foliage is dense, use the higher rate of LIBERTY ETHEPHON 55. When temperatures exceed 90 °F, fruit ripens sooner. When temperatures fall below 65 °F, the development of the fruit's natural color will be delayed and result in a longer period of time needed between application and harvest.
Tomatoes for the Fresh Market – California	$\frac{2}{5} - 1 \frac{2}{3}$ (0.3 - 1.25)	Make an application of LIBERTY ETHEPHON 55 about 3-6 days prior to the desired harvest date but be sure that the desired tonnage of fruit has reached marketable size and maturity. No more than one harvest is expected from areas treated with LIBERTY ETHEPHON 55. Foliage and fruit must receive a thorough coverage of LIBERTY ETHEPHON 55. Spray equipment (ground or air) and spray volumes should be selected that will provide this uniform spray coverage. For late season crops, if temperatures are generally below 85 °F and if foliage is dense, use the higher application rate and longer preharvest interval (3 days). When temperatures exceed 85 °F, the lower rate is effective and does not damage foliage especially in sensitive varieties. To time harvest of different blocks of fruit on different days, apply LIBERTY ETHEPHON 55 to a different block each day. Then harvest the blocks daily in the same sequence.
USE RESTRICTIONS • Maximum Single Application Rate: $2 \frac{1}{6}$ pint (1.63 lb ai)/A. • DO NOT apply more than $2 \frac{1}{6}$ pint (1.63 lb ai)/A/year. • DO NOT make more than 1 application/year. • DO NOT apply LIBERTY ETHEPHON 55 as a tank mix with sun protection products, sun protection whiteners, spray adjuvants or other additives. • DO NOT apply LIBERTY ETHEPHON 55 to more acres than can be harvested in 2 to 3 days. • DO NOT use on varieties which soften rapidly or shatter when ripe. • DO NOT apply within 3 days of harvest. (PHI = 3 days)		

GREENHOUSE TOMATOES – [NOT REGISTERED FOR USE BY CALIFORNIA]

Use LIBERTY ETHEPHON 55 to accelerate fruit maturation or to facilitate uniform fruit ripening of greenhouse tomatoes.

Crop Situation	Product Application Rate Pints/Acre (lb ai)	Greenhouse Tomatoes – Application Instructions
Late-season	$\frac{2}{5}$ to $1\frac{2}{3}$ pints/acre (0.30 – 1.25) (0.17 to 0.6 fl oz/1000 ft ²)	Foliar Application Spray the solution on the plant foliage and fruit. Apply when fruit has reached a marketable size.
Late-season	$\frac{2}{3}$ to $1\frac{2}{3}$ pints/acre (0.50 – 1.25) (0.25 to 0.6 fl oz/1000 ft ²)	Stem Application Mix with water in a 1:6 ratio Apply with a brush or sponge directly to the stem in stripes 3 – 6 inches long just below the fruit. Apply when fruit has reached a marketable size. RESTRICTION: Avoid application to fruit.
Directional application used to aid in uniform maturation of cluster tomatoes or individual fruit with irregular maturing	0.5 – 1.17 ml/L of spray solution OR $\frac{1}{3}$ – $\frac{5}{8}$ teaspoons per gallon of spray solution Buffer to pH 6.0	Apply directly to fruit to aid in uniform maturation. Use a handheld sprayer or spray applicator directed specifically to individual fruit RESTRICTION: To avoid damage to the plant, DO NOT spray entire plant or foliage.
USE RESTRICTIONS • Maximum Single Application Rate: $1\frac{2}{3}$ pint (1.25 lb ai)/A • DO NOT apply more than $1\frac{2}{3}$ pint (1.25 lb ai)/A (0.6 fl oz/1000 ft²)/year. • DO NOT make more than 1 application/year • DO NOT apply within 48 hours of harvest. (PHI = 48 hours)		

WALNUTS-CALIFORNIA ONLY

Applications of LIBERTY ETHEPHON 55 to walnut trees will loosen the nuts for a more efficient mechanical harvest. As a result of this application, nuts can be harvested earlier, their hull more effectively removed, and yields increased from a once-over harvest.

USE INFORMATION

- Reduced nut quality occurs if application is made before the packing tissue brown (mature) stage.
- Applications cause some leaf drop, which is enhanced if trees under stress (vigor, drought) are treated.
- Use caution when measuring the dosage. Injury to trees (excessive defoliation, reduced catkin formation and twig dieback) occur if higher than specified rates are used.

WHEN TO HARVEST WALNUTS

Sample nuts from different parts of the tree to determine the percent nut maturity. When the packing tissue between the kernel halves has turned completely brown, the nuts are mature.

Advancing Harvest – Make an application of LIBERTY ETHEPHON 55 when 95-100% of the nuts have reached maturity. Harvest as soon as adequate hullability occurs. Depending on walnut varieties and weather conditions, this typically occurs 10-16 days after the application. Schedule a second shake 10-12 days after the first shake.

Once-Over Harvest – Before deciding on a once-over harvest, contact an Extension Specialist or Farm Advisor to determine if your situation warrants this type of harvest. A number of factors will play a role in the walnut maturity timing for this type of harvest (i.e., variety, growing conditions and weather). Make an application of LIBERTY ETHEPHON 55 to mature walnuts 10 days before the expected harvest date. The timing of harvest actually ranges from 7-12 days after treatment.

Crop	Product Application Rate Pints/Acre (lb ai)	Walnuts – Application Instructions
Walnuts (California Only)	1 – 1 ² / ₃ (0.75 – 1.25)	For optimum results: Use spray concentrations between 300 and 900 ppm. These concentrations can be determined by checking the chart below. Make applications when the air temperature is between 60 °F and 90 °F. The walnuts hull must be thoroughly covered by the spray solution to ensure maximum hull split and nut loosening. Use application equipment designed to provide penetration of the entire tree such as large air carrier sprayers or volute sprayer attachments. High rate: use under conditions of low humidity or low temperatures. Note that the time from application to harvest will be shorter with higher rates than with lower rates. At higher air temperatures (>90 °F) and low humidity, LIBERTY ETHEPHON 55 evaporates and be less effective.
USE RESTRICTIONS - Maximum Single Application Rate: 1 ²/₃ pint (1.25 lb ai)/A. DO NOT apply more than 1 ²/₃ pint (1.25 lb ai)/A/year. DO NOT make more than 1 application/year. DO NOT apply within 5 days of harvest. (PHI = 5 days)		

PREPARATION OF SPRAY SOLUTIONS FOR USE IN WALNUTS

Product Rate Pints/A (lb /A)	Spray Volume (gallons/A)				
	100	200	300	400	500
	Concentration (ppm)				
1 (0.75)	900	450	300	-	-
1 ¹ / ₃ (1.00)	-	600	400	300	-
1 ² / ₃ (1.25)	-	750	500	375	300

WHEAT AND BARLEY (NOT REGISTERED FOR USE BY CALIFORNIA)

Use LIBERTY ETHEPHON 55 to reduce lodging of wheat and barley.

LIBERTY ETHEPHON 55 can be applied as a preventative measure in a tank-mix with certain cereal insecticides and fungicides approved for such use. **DO NOT** apply such a tank mix to plants stressed by cold, disease, heat, insect or moisture as a decrease in yield or injury to crops may occur. When tank mixed with propiconazole LIBERTY ETHEPHON 55 causes a decrease in yield or flag leaf burn.

Treatment timing of LIBERTY ETHEPHON 55 may or may not coincide with insecticide and fungicide treatments. Make an economic and plant condition assessment prior to deciding on a tank mix partner.

USE INFORMATION

- Lodging reduction effects may not occur for up to seven days following treatment. Once crops are lodged, LIBERTY ETHEPHON 55 is not effective.
- LIBERTY ETHEPHON 55 affects certain disease infestations, such as mildew, rust and Septoria. Use LIBERTY ETHEPHON 55 in conjunction with a fungicide control program where needed.
- Yield loss occurs if, during or after application, plants are subject to disease, moisture or temperature stress. Yield loss occurs if LIBERTY ETHEPHON 55 is applied under non-lodging conditions.
- Always follow label temperature restrictions.
- Harvest maturity will be delayed 1-4 days and heading by 1-2 days following use of LIBERTY ETHEPHON 55. Additional harvest maturity delay occurs if crops are subject to extreme temperatures within five days following treatment. Extreme temperatures are under 35 °F or above 85 °F for non-irrigated crops, or over 90 °F in irrigated crops.
- Secondary tillers increase following application of LIBERTY ETHEPHON 55 to certain spring barleys. This particularly occurs if crop is subject to temperature or moisture stress.

TREATMENT DECISION GUIDE

Shortly before application, check the fields to be treated to determine the chance lodging will occur. Apply LIBERTY ETHEPHON 55 only under these circumstances:

- Lodging is anticipated with a considerable decrease in grain quality, harvest efficiency, and recoverable yield likely to occur.
- There is no disease stress or insect pressure on the crop.
- There is little to no chance of crop stress following application because of adequate irrigation or soil moisture. Extreme temperature fluctuations (as described above) are not anticipated to occur within five days following application.
- Crop is at the proper growth stage (Feekes 8 to 10).

APPLICATION TIMING

Apply LIBERTY ETHEPHON 55 at the point the flag leaf is slightly visible to the boot stage. Apply prior to awn emergence or sheath split. These visual cues correspond to Feekes-Large Scale 8-10 and Zadok's Code 37-45. Crop damage and decreased yields occur if application contacts exposed heads.

APPLICATION

Best results can be obtained when post-treatment temperatures are no less than 60 °F. Avoid overlapping sprays as yield and rate loss will be exaggerated.

Ground application: Make conventional ground equipment applications in at least 7 gals/A of water. Use of flat fan nozzles is suggested. Make air foil-type equipment or controlled droplet application (CDA) treatments in at least 5 gals/A of water. Adjust spray boom to drive at moderate speed and at the height of the plant canopy to avoid an uneven application.

Make aerial applications in at least 3 gals/A of water.

USE RATES

The specified application rate will be determined by environmental conditions and lodging pressure listed on the table. Contact your state extension specialist for information on local varying conditions. Use the $\frac{1}{3}$ pint/A rate on more responsive varieties.

BARLEY AND WHEAT APPLICATION RATES

Crop	ANTICIPATED LODGING PRESSURE			APPLICATION INSTRUCTIONS
	MODERATE	HEAVY	SEVERE	
	APPLICATION RATE pt/A (lb ai)			
Barley (Spring and Winter Seasons)	$\frac{1}{3}$ (0.25)	$\frac{1}{3}$ to $\frac{1}{2}$ (0.25 – 0.375)	$\frac{1}{2}$ to $\frac{2}{3}$ * (0.375- 0.5)	The $\frac{2}{3}$ pt/A rate are necessary for use on certain vigorously growing tall varieties.
Winter Wheat	$\frac{1}{3}$ (0.25)	$\frac{1}{3}$ to $\frac{1}{2}$ (0.25 – 0.375)	$\frac{1}{2}$ to $\frac{2}{3}$ * (0.375)– 0.5)	For certain tall straw varieties (e.g. "Roughrider" and "Agassiz"), the listed rates will be unable to control lodging under severe lodging conditions.
Most Spring Wheats	$\frac{1}{3}$ (0.25)	$\frac{1}{3}$ (0.25)	$\frac{1}{2}$ (0.375)	For certain tall durum wheats (e.g., "Vic"), the listed rates will be unable to control lodging under severe lodging conditions.
Sensitive Variety or High Temperature **	$\frac{1}{3}$ (0.25)	$\frac{1}{3}$ (0.25)	$\frac{1}{3}$ (0.25)	

USE RESTRICTIONS

- **DO NOT** supplement LIBERTY ETHEPHON 55 with adjuvants, surfactants or wetting agents or tank mixed with nitrogen solutions or herbicides.
- **DO NOT** apply through any type of irrigation system. Failure to observe label instructions results in decreased product quality or yield.
- **DO NOT** use on late-seeded crops in short-season growing areas due to the potential for maturity and harvest delays.
- **DO NOT** use LIBERTY ETHEPHON 55 on Azure barley or Tyler wheat.
- **DO NOT** apply LIBERTY ETHEPHON 55 when rain will likely occur within six hours.
- Grazing or foraging by livestock or cutting for hay or silage are prohibited. Mature straw at normal harvest can be consumed by animals.
- A 30-day plant-back interval is required.
- **Maximum Single Application Rate:** $\frac{2}{3}$ pint (0.5 lb ai)/A.
- **DO NOT** apply more than $\frac{2}{3}$ pint (0.5 lb ai)/A/year.
- **DO NOT** make more than 1 application/year.
- **DO NOT** apply within 40 days of harvest. (PHI = 40 days)

* Restrict application with the $\frac{2}{3}$ pint rate to the following anticipated yield-decreasing conditions:

- 1) very tall varieties that are lodging-prone,
- 2) cereal types like durum notorious for severe lodging, or 3) irrigated crops that are subject to abnormally severe lodging.

** **DO NOT** apply LIBERTY ETHEPHON 55 if it is anticipated that anytime during the five days following treatment, temperatures are to go above 85 °F for non-irrigated crops or 90 °F for irrigated crops.

NON-IRRIGATED WHEAT AND BARLEY

Application of LIBERTY ETHEPHON 55 to non-irrigated wheat and barley in states West of the Mississippi River is prohibited except West of the Cascade Range in the states of Oregon and Washington.

IRRIGATED WHEAT AND BARLEY

To prevent stress on the crop, irrigate prior to and after twenty-four (24) hours following application. Continue irrigation through the period of grain head filling if weather remains hot and dry. Please note that considerable decreases in yield and plant quality occurs if crop is subject to heat stress and moisture during grain fill and antithesis. As a result, it is imperative to avoid plant stress during these periods when treating with LIBERTY ETHEPHON 55.

GROWTH STAGE CHART

Growth Class	2 nd Node Detectable	Flag leaf Barely Visible	Flag Leaf Ligule Visible	Swollen Boot	First Spikelet Visible	Inflorescence 3/4 complete
Feekes Large Scale	7	8	9	10	10.1	10.4
Zadok's Code	32	37	39	45	50	57
Treatment time advice	Too early				Too late	

DRENCH APPLICATION – ORNAMENTAL USE ONLY[*]

Drench applications of LIBERTY ETHEPHON 55 are effective in controlling plant height uniformly and increasing branching/shoot number in certain plant species. Only make drench applications to plants with well developed root systems.

Rates & Application Notations

In general, the rate range to apply LIBERTY ETHEPHON 55 as a drench application is 20 to 250 ppm. This can be applied by overhead boom, hand held equipment and/or sub-irrigation. Table 1 below provides a list of plant species with suggested rates and notations for applying LIBERTY ETHEPHON 55 as a drench to those species. As it is not possible to test all species and cultivars or to test those plants in all growing conditions, conduct trials to determine desired rates and timings for optimum results under local growing conditions. To determine optimum use rates, conduct trials on a small number of plants under actual use conditions starting with the lowest indicated rate. Test before applying a drench application of LIBERTY ETHEPHON 55 to plants being produced at each growing facility. Table below is to be used as a general guide for applications.

Suggested LIBERTY ETHEPHON 55 rates for drench applications

Plant/Species	Drench Rate (ppm)	Notations
Angelonia	20 to 40	Apply after the root system is well established.
Argyranthemum	50 to 75	
Bacopa	50 to 75	
Calibrachoa	50 to 75	
Celosia	20 to 40	
Coleus	50 to 100	
Dianthus	50 to 75	
Geranium, Cutting	50 to 100	
Geranium, Seed	20 to 40	
Marigold	50 to 75	
Nemesia	50 to 75	
Osteospermum	50 to 75	
Pansy	50 to 75	
Petunia	2 to 100	
Plumbago	100 to 200	Apply 2 weeks after pinching the plants and new shoots 2-4 inches long.
Snapdragon	50 to 75	Apply after the root system is well established.
Verbena (annual)	20 to 40	
Verbena (perennial)	50 to 100	Apply early in production, moderate height control.
Veronica	100	Apply early in production, little height control but increased branching with minimal to no delay in flowering.
Vinca	20 to 40	Apply after the root system is well established.

When applying **LIBERTY ETHEPHON 55** by drench, it is important that:

- Mix only the amount of solution you expect to use each day.
- **DO NOT** allow mixed solutions to stand overnight.
- Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.
- Applications are made to moist potting substrate (media).
- Uniform distribution of the drench solution is achieved with the application.
- No more than 10% run through of solution occurs.
- Attention is to be paid to the growing substrate. Substrates containing bark or of high organic content may require the use of higher application rates.
- When applied as a drench through sub-irrigation in saucers or benches etc., it may be required to reduce rates by 25-50%. Test to determine optimal rates prior to large scale applications.
- **LIBERTY ETHEPHON 55** breaks down and becomes inactive with water pH conditions greater than 6.1. While all of the registered ethephon products contain acidifiers, in areas with high levels of alkalinity, the alkalinity will need to be neutralized before mixing the solution. The ideal endpoint pH for a **LIBERTY ETHEPHON 55** solution is ~4.5 to 5.0.
- For all drench applications, **DO NOT** apply more than 1.67 fl oz/1,000 sq ft (3.4 lb of ethephon ai/A)/application.
- **DO NOT** apply more frequently than every 28 days.
- **DO NOT** apply more than 2 applications/year.
- For all drench applications, **DO NOT** apply more than 3.4 lb of ethephon ai/A/year.
- **DO NOT MIX LIBERTY ETHEPHON 55 WITH AMMONIUM THIOSULFATE** (a spray solution acidifier). **SUCH TANK MIXES MAY RESULT IN FORMATION OF TOXIC FUMES.**

Table below provides a dilution guide for determining the appropriate amount of **LIBERTY ETHEPHON 55** to add per gallon or per 10 gallons to achieve the appropriate concentration (PPM).

LIBERTY ETHEPHON 55 (55.4%) dilution guide

PPM ETHEPHON	mL/1 Gallon	Fl oz/10 Gallons
20	0.1	0.04
40	0.2	0.07
50	0.3	0.09
75	0.4	0.13
100	0.5	0.18
150	0.8	0.27
200	1.0	0.36
250	1.3	0.44

A guide to determine the drench volume needed for the specified pot sizes based on the capacity of a 6 inch 'Azalea' type pot is provided below. Individual pots vary in style and depth and thus capacity. Growers must determine the appropriate concentration and volume of drench to apply according to the pot volume, media and species/variety of plant considered.

Drench volume guidelines

Pot Diameter (inches)	Drench Volume (fl oz/pot)
4	2
5	3
6	4
8	10
10	25
10" hanging basket	15
12	40

DRENCH APPLICATIONS ON BULB CROPS

Drench applications of **LIBERTY ETHEPHON 55** can be applied at rates of 100 ppm to 500 ppm for reducing plant height in certain bulb crops (daffodil and hyacinth). Drench applications of **LIBERTY ETHEPHON 55** can be made indoors or outdoors.

Generally, 4 fl oz of drench solution is optimal per 6 inch pot. Larger or smaller pots will require an appropriate volume adjustment. The correct drench volume is determined by applying enough solution to achieve run through of no more than 10% of the initial volume. This assumes that the soil media is properly moist prior to application (Example: If 4.0 fl oz of drench is applied to a pot, no more than 0.4 fl oz should run through the bottom of the pot). Growers needs to determine proper drench solution volume by conducting small trials on a few pots using untreated water in place of the drench solution.

When applying **LIBERTY ETHEPHON 55** by drench, it is important that:

- Applications are made to moist potting media
- Uniform distribution of drench is achieved
- No more than 10% run through of solution occurs
- Maximum specified application rates must never be exceeded

Drench rate conversion table

PPM ETHEPHON	mL/1 Gallon	Fl oz/10 Gallons
100	0.5	0.18
200	1.0	0.36
300	1.6	0.53
400	2.1	0.71
500	2.6	0.89

For most bulb types drench apply LIBERTY ETHEPHON 55 when plants reach a height of 1 - 3 inches with well-established roots. For hyacinth and daffodil which require a cold period, drench apply 1 to 6 days after bringing plants into the greenhouse. **DO NOT USE LIBERTY ETHEPHON 55 ON TULIPS AS EARLY APPLICATIONS OF ETHEPHON CAN RESULT IN FLOWER ABORTION.**

Optimum rates for drench applications on all bulb crops have not been determined. Optimum LIBERTY ETHEPHON 55 rates will vary between growers and will depend on the desired final plant height, growing conditions, applications techniques, species, and variety or cultivar. **Use of LIBERTY ETHEPHON 55 as a drench application may cause a delay in flowering. For first time users of LIBERTY ETHEPHON 55, always conduct trials on a small number of plants to determine optimum use rates for selected species and local growing conditions.**

Recommended starting concentrations for grower trials is 100 to 200 ppm. Always start trials at the lowest recommended rate and work up as required. Do not exceed the maximum rate.

[*Not Registered for Use by California]

FRUIT ELIMINATION – ORNAMENTAL USE ONLY

TO ELIMINATE UNDESIRABLE FRUIT: A foliar application of LIBERTY ETHEPHON 55 reduces or eliminates undesirable fruit development on ornamental trees and shrubs: apple, crabapple, carob, cottonwood, elm, flowering pear, horse chestnut (Buckeye), maple, oak, olive, pine, sour orange, sweetgum, and sycamore.

Crop	Product Application Rate fl oz/Acre (lb ai)	Ornamental Fruit Trees – Application Instructions
Apple, Crabapple, Cottonwood, Elm, Flowering Pear, Horse chestnut (Buckeye), Maple, Oak, Pine, Sour Orange, Sweetgum, and Sycamore	2.8 to 4 fl oz (0.13 – 0.19) per 20 gallons of water (equivalent to 750 to 1,000 ppm)	Apply as a foliar spray to thoroughly wet buds and blooms, but not to runoff. Time application to occur at the mid to full bloom stage, but before fruit set. The amount of spray needed depends on the tree size. Use the higher rates when temperatures are cool. DO NOT use on small red fruited varieties of crabapple as fruit elimination will not be satisfactory.
Carob (Ceratonia siliqua)	2 fl oz (0.09) per 20 gallons of water (equivalent to 500 ppm)	Apply as a foliar spray to thoroughly wet buds and blooms, but not to runoff. Time application to occur at the mid to full bloom stage, but before fruit set. The amount of spray needed depends on the tree size.
Olive (Olea europaea)	4 fl oz (0.19) per 20 gallons of water (equivalent to 1000 ppm)	

USE INFORMATION

- For optimum results, make applications before fruit set. Sprays applied too early or too late will be less effective and result in incomplete fruit elimination.
- Failure to wet blooms thoroughly will cause incomplete fruit elimination. Spraying too much (until runoff) may cause some defoliation or other plant injury.
- Some temporary leaf yellowing and drop of older leaves may occur after treatment.
- The activity of LIBERTY ETHEPHON 55 is linked to plant growth activity and is therefore slower acting when temperatures are low (60 °F) or very high (95 °F).
- When LIBERTY ETHEPHON 55 is applied to plants, the active ingredient readily enters the plant and breaks down to ethylene, a naturally occurring plant hormone. Ethylene production within the plant is stimulated by stress. For this reason, it is important that plants being treated are not under stress from drought, high temperature, disease, or other environmental stresses. Treating stressed plants may cause severe injury such as defoliation or leaf scorching. While injury that may result from the use of LIBERTY ETHEPHON 55 usually does not kill the plant, it may render the plant unattractive.
- LIBERTY ETHEPHON 55 has not been tested on all varieties of trees or shrubs which may have undesirable fruit. When treating plant species not listed in this table for the first time, treat only a small portion of the plant using the lower rate of application and evaluate plant response.

USE RESTRICTIONS

- **DO NOT** use LIBERTY ETHEPHON 55 as a thinning agent for commercial fruit production.
- **Maximum Single Application Rate:** 4 fl oz (0.187 lb ai)/A.
- **DO NOT** apply more than 4 fl oz (0.187 lb ai)/A/year.
- **DO NOT** make more than 1 application/year.

ORNAMENTALS – MISTLETOE REMOVAL

DWARF AND LEAFY MISTLETOE REMOVAL: LIBERTY ETHEPHON 55 applied to ornamental conifers or ornamental deciduous trees, will remove the mistletoe species noted in the table below.

Crop	Product Application Rate (lb ai)	Mistletoe Removal– Application Instructions
FOR DWARF MISTLETOE REMOVAL		
Ornamental Conifers	$\frac{2}{3}$ pints per 20 gallons water (0.5)	Apply as a foliar spray directed to dwarf mistletoe shoots before mistletoe seed dispersal. For effective removal, all mistletoe shoots must be sprayed to wet. Use of a nonionic surfactant at the specified use rate may help increase the coverage of spray on shoots. Applications of LIBERTY ETHEPHON 55 in conjunction with silvicultural mistletoe management will prevent the spread of the mistletoe parasite to other parts of the tree and other trees.
Douglas Fir Ornamentals	$\frac{1}{3}$ pint per 20 gallons water (0.25)	LIBERTY ETHEPHON 55 speeds the normal mature needle drop that occurs in the fall. DO NOT apply higher rates to Douglas fir as excessive needle drop may result.
FOR LEAFY MISTLETOE REMOVAL		
Ornamental Deciduous Trees	$1 \frac{1}{3}$ pints per 20 gallons water (1.0)	Apply as a foliar spray directed to mistletoe shoots 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 the specified use rate may help increase the coverage of spray on shoots. Treat mistletoe regrowth during the indicated application period. Severe mistletoe infestations and mistletoe found in mesquite may be difficult to control with a single application and may require additional treatments.
USE RESTRICTIONS		
• Maximum Single Application Rate: $1 \frac{1}{3}$ pint (1.0 lb ai)/A. • DO NOT apply more than $1 \frac{1}{3}$ pint (1.0 lb ai)/A/year. • DO NOT make more than 1 application/year		

FLOWER INDUCTION OF BROMELIADS

A foliar application of LIBERTY ETHEPHON 55 initiates flowering of ornamental bromeliads such as Ananas, Aechmea, Neoregelia, Vriesia, and Billbergia.

SPRAY CONCENTRATION

For most bromeliad varieties, mix 1¹/₃ fluid ounces of LIBERTY ETHEPHON 55 per 3 gallons of water (0.4 fl oz/gallon of water). This prepares a spray concentration of approximately 2,500 ppm.

For treating groups of plants, use approximately 1/6 pint of spray solution per 10 sq ft of greenhouse bench or outdoor bed area.

APPLICATION INSTRUCTIONS

Spray all surfaces of the plant to "wet". Avoid overspraying to "runoff" which may cause damage to leaves or the growing points. Prepare only the amount of spray solution needed for immediate use and apply within 4 hours. Do not save unused spray solutions as they will not be as effective as fresh solutions.

The degree of flower induction with a given rate of product is influenced by plant age, variety, growth rate, climate, and cultural conditions. Lower rates may effectively force flowering or produce desirable foliage coloring on certain varieties. Trial applications at lower rates are suggested before making extensive treatments.

GUIDELINES FOR CONSISTENT FLOWER FORCING

- 1) Grow plants on photoperiods regulated to maintain plants vegetatively active prior to treatment: long days for Ananas, Billbergia, Neoregelia, and short days for Aechmea, and Vriesia.
- 2) Treat mature plants that have well established root systems. Treatments too early in the development of the plants will cause erratic flower initiation and the few flowers formed will be small.
- 3) Remove water at base of leaves. Allow foliage to dry prior to treatment. Water may be replaced 24 hours after treatment.
- 4) Maintain a minimum night temperature of 65 - 70 °F or higher throughout the forcing period.
- 5) **DO NOT** apply fertilizer for two weeks prior to or following treatment.

NOTE: Inconsistent results may be obtained if the leaf surface is covered with algae.

USE RESTRICTIONS

- **DO NOT** apply more than 1¹/₃ fl oz/1,000 sf (or 3.62 pints/A, equivalent to 2.73 lb ai/A) of LIBERTY ETHEPHON 55/year.
- **DO NOT** make more than 1 application/year.

DEFOLIATION

A foliar application of LIBERTY ETHEPHON 55 after buds have matured initiates earlier leaf drop of roses, tallhedge and apple nursery stock.

Site	Product Application Rate (lb ai)	Application Instructions
ROSES	3.5 fl oz per 20 gallons water (0.165)	Apply to thoroughly wet foliage. The amount of spray solution needed depends on the size of the rose bush. The amount of defoliation obtained depends on the variety and temperature. The addition of 1 pint of nonionic surfactant such as VOYAGER 90/10 per 100 gallons of spray solution will improve defoliation. DO NOT treat sensitive varieties such as Red American Beauty as bud injury may result.
TALLHEDGE BUCKTHORN	17.7 to 35.3 fl oz (1.1 to 2.2 pints) per 20 gallons water (0.83 – 1.65)	Apply to thoroughly wet foliage. The amount of spray solution needed depends on the size of tallhedge. Use the higher rate when temperatures are cool or earlier defoliation is desired.

APPLE NURSERY STOCK (Washington)	0.9 to 1.8 fl oz (0.04 – 0.08) PLUS 3 quarts of surfactant 80% or above per 50 gallons water	Apply no more spray solution than is necessary to moisten foliage without runoff. A second treatment 3 to 7 days later may be applied. Apply no more than 3.5 fl oz of product per year. The amount of defoliation obtained depends on the variety of apple and on temperatures. DO NOT use on Rome apples as defoliation will not be satisfactory.
USE RESTRICTIONS • DO NOT apply more than 2.2 pint (1.65 lb ai)/A/year. • DO NOT make more than 1 application/year.		

INCREASED LATERAL BRANCHING

A foliar application of LIBERTY ETHEPHON 55 increases lateral branching in the following ornamental species: Azalea, Garden Chrysanthemum (perennial species), Fuchsia, Zonal Geranium, Ivy Geranium, Lantana, Verbena, Vinca vines (Vinca major). To minimize the risk of unacceptable plant injury, do not use LIBERTY ETHEPHON 55 on ornamental varieties or species not specifically listed on the label.

When LIBERTY ETHEPHON 55 is applied to plants, the active ingredient readily enters the plant and breaks down to ethylene, a naturally occurring plant hormone. Ethylene production within the plant is stimulated by stress. For this reason it is important that plants being treated are not under stress from drought, high temperature, disease, or other environmental stresses. Treating stressed plants may cause severe injury such as defoliation or leaf scorching.

While injury that may result from the use of LIBERTY ETHEPHON 55 usually does not kill the plant, it may render the plant unattractive and unfit for sale. The activity of LIBERTY ETHEPHON 55 is linked to plant growth activity and is therefore slower acting when temperatures are below 60 °F or above 95 °F.

Site	Product Application Rate (lb ai)	Application Instructions
STOCK PLANT (EXCEPT AZALEA)	1.8 fl oz per 20 gallons of water (equivalent to 500 ppm) (0.08)	Spray to thoroughly wet foliage but not to runoff. Make applications at normal pinching times instead of hand pinching. To optimize the vigor of cuttings, DO NOT make applications for 2 weeks prior to harvesting cuttings from stock plants.
YOUNG PLANTS (EXCEPT AZALEA)	1.8 fl oz per 20 gallons of water (equivalent to 500 ppm) (0.08)	Spray to thoroughly wet foliage but not to runoff. Make applications at normal pinching times instead of hand pinching. To ensure flowering and full foliage on finished plants, DO NOT make applications for 6 to 8 weeks prior to bloom or planned sale.
FOR AZALEA (BOTH STOCK AND YOUNG PLANTS)	9.0 to 17.8 fl oz (0.56 to 1.1 pints) per 20 gallons of water (equivalent to 2,500 to 5,000 ppm) (0.42– 0.83)	Apply the spray solution to thoroughly wet foliage. The amount of spray solution needed depends upon the size of the plant being treated. Make applications at normal pinching times. Hand pinching or chemical pinching agents may be used in conjunction with applications of LIBERTY ETHEPHON 55. Use the higher rate on vigorous tolerant varieties as determined by experience. To prevent unacceptable plant injury, DO NOT treat sensitive varieties such as Sweetheart and other varieties as determined by experience. To optimize vigor of cuttings, DO NOT make applications for 2 weeks prior to harvesting cuttings from stock plants. To ensure full foliage and flowering on finished plants, DO NOT make applications for 6 to 8 weeks prior to bloom or planned sale.
USE RESTRICTIONS • DO NOT apply more than 1.1 pint (0.83 lb ai)/A/year. • DO NOT make more than 1 application/year.		

REDUCTION OF HYACINTH STEM TOPPLE AND DAFFODIL PLANT HEIGHT

Potted Hyacinth

To reduce potted hyacinth stem topple at time of full flower, apply a foliar spray of LIBERTY ETHEPHON 55 before florets have opened. Most cultivars will respond to applications of 1,000 to 2,000 ppm spray solution ((equivalent to 0.9 to 1.8 fl oz (0.04 – 0.08 lb ai) of LIBERTY ETHEPHON 55 in 5 gallons of water)). Bismarck, Jan Bos, Blue Giant, Delft Blue, and Madame Kruger may benefit from a second spray 2 days after the first treatment.

Potted Daffodils

To reduce total plant height of potted daffodils, apply a foliar spray of LIBERTY ETHEPHON 55 when the shoots are 3 to 4 inches tall. Most cultivars will respond to applications of 2,000 ppm spray solution ((equivalent to 1.8 fl oz (0.08 lb ai) of LIBERTY ETHEPHON 55 in 5 gallons of water)). For earlier forcing, Dutch Master, Joseph MacLeod, Flower Record, and Barrett Browning will benefit from a second spray 2 or 3 days after the first treatment. Bridal Crown and Geranium require only 1,000 ppm spray solution ((equivalent to 0.9 fl oz of (0.04 lb ai) LIBERTY ETHEPHON 55 in 5 gallons of water)). Gold Medal, Van Sion, February Gold, and Tête-à-Tête do not require treatments with LIBERTY ETHEPHON 55.

RESTRICTIONS

- **DO NOT** apply more than 1.76 fl oz/1,000 sq ft (or 4.8 pints/A, equivalent to 3.6 lb ai/A) of LIBERTY ETHEPHON 55/year.
- **DO NOT** make more than 1 application per year.

HYBRID SEED PRODUCTION

LIBERTY ETHEPHON 55 modifies sex expression and flowering pattern of cucumber, squash and pumpkins to facilitate hybrid seed production. It increases the number of pistillate (female) and decreases the number of staminate (male) flowers. The use of LIBERTY ETHEPHON 55 brings about earlier formation of female flowers at lower nodes where normally only male flowers are formed in standard (nomoecious) cucumber, squash and pumpkin varieties.

Sexual modification towards femaleness in treated plants is temporary (5 to 15 nodes). Variety, location, climate and cultural practices may influence the best rate for treatment. Due to the wide range in sensitivity of cucumber and squash cultivars, excessive injury may result from application of LIBERTY ETHEPHON 55 even when all label directions are observed. Treatment of cultivars classified as strongly male (Straight Neck, Crookneck) may result in an unacceptable level of male flowers remaining. New breeding lines require trial applications before full scale treatments are made.

HYBRID SEED PRODUCTION IN CUCUMBER AND SQUASH

Application Rate

Apply 1.7 fl oz (0.08 lb ai) of LIBERTY ETHEPHON 55 per acre in 40 to 100 gallons of water (100 to 250 ppm). The actual amount needed to achieve a satisfactory level of performance without excessive injury is dependent on the specific cultivar and environmental conditions at time of treatment. Spray plants at the two leaf stage.

When germination is variable, a second application 7-10 days after the first treatment may be necessary.

USE RESTRICTIONS

- **Maximum Single Application Rate:** 1.7 fl oz (0.08 lb ai)/A.
- **DO NOT** apply more than 3.4 fl oz (0.16 lb ai)/A/year.
- **DO NOT** make more than 2 applications/year.
- **Minimum Retreatment Interval (RTI)** = 7 days

DO NOT HARVEST ANY TREATED CUCUMBERS OR SQUASH FOR HUMAN OR ANIMAL CONSUMPTION. TREATMENTS ARE TO BE MADE FOR SEED PRODUCTION ONLY.

HYBRID SEED PRODUCTION IN PUMPKINS (ILLINOIS ONLY)

Application Rate

Apply $\frac{1}{3}$ pint (0.25 lb ai) of LIBERTY ETHEPHON 55 per acre in 40 to 100 gallons of water (300 to 750 ppm). Make the first application at the 2-4 leaf stage.

USE RESTRICTIONS

- **Maximum Single Application Rate:** $\frac{1}{3}$ pint (0.25 lb ai)/A.
- **DO NOT** apply more than 2 pint (1.50 lb ai)/A/year.
- **DO NOT** make more than 6 applications/year.
- **Minimum Retreatment Interval (RTI)** = 7 days
- **DO NOT** apply within 42 days of harvest. (PHI = 42 days)

DO NOT HARVEST ANY TREATED PUMPKINS FOR HUMAN OR ANIMAL CONSUMPTION. TREATMENTS ARE TO BE MADE FOR SEED PRODUCTION ONLY.

HYBRID SEED PRODUCTION IN CUCUMBER, PUMPKINS, AND SQUASH (CALIFORNIA ONLY)

Application Rate

Apply up to $\frac{1}{3}$ pint (0.25 lb ai) of LIBERTY ETHEPHON 55 per acre in 40 to 100 gallons of water (300 to 750 ppm) by ground equipment. Make the first application at the first true leaf stage.

The actual amount and number of applications needed to achieve a satisfactory level of performance without excessive injury is dependent on the specific cultivar and environmental conditions at time of treatment.

USE RESTRICTIONS

- **Maximum Single Application Rate:** $\frac{1}{3}$ pint (0.25 lb ai)/A.
- **DO NOT** apply more than 2 pint (1.50 lb ai)/A/year.
- **DO NOT** make more than 6 applications/year.
- **Minimum Retreatment Interval (RTI)** = 3 days
- **DO NOT** apply within 60 days of harvest. (PHI = 60 days)

DO NOT HARVEST ANY TREATED CUCUMBERS, PUMPKINS, OR SQUASH FOR HUMAN OR ANIMAL CONSUMPTION. TREATMENTS ARE TO BE MADE FOR SEED PRODUCTION ONLY.

TURF

Applications of LIBERTY ETHEPHON 55 to turf can be used to suppress seedheads of *Poa annua* and white clover and to suppress growth of turfgrass on golf course tees, greens and fairways.

RESTRICTIONS

- Use is permitted on golf course turf only. **DO NOT** use on residential turf or lawns, institutional turf, parks, recreational fields, or sod farms.
- Use on golf courses is limited to tees, greens, and fairways only.
- **DO NOT** apply more than 3.4 lb of ethephon ai./A per application.
- **DO NOT** apply more frequently than every 14 days.
- East of the Mississippi River: **DO NOT** apply more than 13.6 lb of ethephon ai/A per year, 4 applications/year.
- West of the Mississippi River: **DO NOT** apply more than 20.4 lb of ethephon ai/A per year, 6 applications/year.
- **DO NOT** allow entry to treated areas until sprays have dried.

USE INFORMATION

- Make applications to turfgrass with good root systems growing under favorable conditions. **DO NOT** apply if turfgrass or the roots are stressed from poor soil conditions, drought, disease or insect damage.
- Make applications in sufficient amounts of water so that uniform coverage of the grass is achieved.
- Only apply LIBERTY ETHEPHON 55 to actively growing turf and which has not become dormant. **DO NOT** apply LIBERTY ETHEPHON 55 if excessive thatch is present in the turf.
- Use of more than 2 applications of LIBERTY ETHEPHON 55 to suppress *Poa* seedhead formation causes scalping on creeping bentgrass cultivars.
- Although LIBERTY ETHEPHON 55 has been used successfully on many bentgrass cultivars, test new cultivars for tolerance to it on small areas before applying it on large areas.
- Spreaders or stickers are not required when applying LIBERTY ETHEPHON 55. If tank mix partners are used with LIBERTY ETHEPHON 55, test the tank mix on a small plot before using on large areas.
- LIBERTY ETHEPHON 55 is acidic. Long term exposure to spray deposits will damage acrylic plastics, certain paints and metals. Wash any plastic materials and painted surfaces which came in contact with the spray mixture of LIBERTY ETHEPHON 55 thoroughly with detergent and water within one hour after exposure.

Sites	Product Application Rate (lb ai)	Turf– Application Instructions
For Poa annua and White Clover Seedhead suppression		
Golf courses including Greens*, Tees*, and Fairways. (Turfgrass varieties including Bentgrass, Kentucky Bluegrass, Perennial Ryegrass, Tall and Fine Fescue, and Bermudagrass*)	1.7 fl oz/1000 sq ft (0.8)	Make a foliar application of LIBERTY ETHEPHON 55 before new seed heads emerge. Apply LIBERTY ETHEPHON 55 in 1 to 2 gallons of water per 1000 sq. ft. A period of 2 to 3 weeks after application is required for maximum performance. Make a repeat application if needed but no sooner than 2 weeks after the previous application. *Not registered for use on greens and tees, or Bermudagrass by California
For Growth Suppression of Turfgrass		
Golf course turf including Greens*, Tees*, and Fairways. (Turfgrass varieties including Bentgrass, Kentucky Bluegrass, Perennial Ryegrass)	1.7 fl oz/1000 sq ft (0.8)	Applications of to turf will slow the growth of turfgrasses. Apply in 1 to 2 gallons of water per 1000 sq. ft. Fewer mowings will be required and less clippings will be generated. Best results are obtained if LIBERTY ETHEPHON 55 is applied during the day when temperatures are 65 °F and rising. Wait to make an application of LIBERTY ETHEPHON 55 until the turfgrass mowing heights have been established for the season. DO NOT make multiple applications of LIBERTY ETHEPHON 55 in areas where excessive thatch has accumulated since it must reach the turfgrass to be effective. Make multiple applications of LIBERTY ETHEPHON 55 at the following retreatment intervals: Bentgrass – 4 weeks Kentucky Bluegrass – 7 weeks Perennial Ryegrass – 7 weeks Tall/Fine Fescue – 4 weeks *Not registered for use on tees and greens by California
For Poa annua and White Clover Seedhead suppression - Tank Mixtures of LIBERTY ETHEPHON 55 with products containing Trinexapac-Ethyl		
Golf courses including Greens*, Tees*, and Fairways. (Turfgrass varieties including Bentgrass, Kentucky Bluegrass, Perennial Ryegrass, Tall and Fine Fescue, and Bermudagrass*)	1.7 fl oz/1000 sq ft (0.8) PLUS products containing trinexapac-ethyl at labeled rates	LIBERTY ETHEPHON 55 can be tank mixed with products containing trinexapac-ethyl, at the given rates to suppress seedhead formation and to promote turfgrass quality. Make multiple applications of the tank mix if needed but DO NOT exceed the maximum number of applications or total use rate or timings for either product and observe the most restrictive application interval for turfgrass. Temporary discoloration of turfgrass may occur if the tank mix is applied when frost is present. *Not registered for use on greens and tees, or Bermudagrass by California

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or disposal.

PESTICIDE STORAGE: Store in original container and keep tightly closed. Store in a cool, dry place.

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

CONTAINER HANDLING:

[Note to Reviewer: The following statement will be included on all Final Printed Labels bearing multiple Container Handling statements] "NOTE: LIBERTY ETHEPHON 55 is available in multiple containers. Refer to the Net Contents section of LIBERTY ETHEPHON 55's labeling for the applicable "Nonrefillable" or "Refillable" designation. Follow the container handling instructions below that apply to your container type/size."

[Nonrefillable containers 5 gallons or less]

Nonrefillable container. **DO NOT** reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

[Nonrefillable containers larger than 5 gallons]

Nonrefillable container. **DO NOT** reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure-rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

[Refillable containers larger than 5 gallons]

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

[FOR BULK AND MINI-BULK CONTAINERS]

CONTAINER HANDLING: Refillable container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.]

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather, presence of other materials or other influencing factors in the use of the product, which are beyond the control of LIBERTY CROP PROTECTION LLC or Seller. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW all such risks shall be assumed by Buyer and User and Buyer and User agree to hold LIBERTY CROP PROTECTION LLC and Seller harmless for any claims relating to such factors.

LIBERTY CROP PROTECTION LLC warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or LIBERTY CROP PROTECTION LLC, and TO THE EXTENT CONSISTENT WITH APPLICABLE LAW Buyer and User assume the risk of any such use. To the extent consistent with applicable law LIBERTY CROP PROTECTION LLC MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

To the extent consistent with applicable law, neither LIBERTY CROP PROTECTION LLC nor Seller shall be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF LIBERTY CROP PROTECTION LLC AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF LIBERTY CROP PROTECTION, LLC OR SELLER, THE REPLACEMENT OF THE PRODUCT.

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