264-660 7-11-2008 1/64

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Dr. Mike See, Ph.D.
Product Registration
Bayer Environmental Science
2T Alexander Drive
Research Triangle Park, NC 27709

JUL 11 2008

SUBJECT: Application for Pesticide Notification (PRN 98-10)
Request Directions for Use (Comply with NY Regulations)
EPA Reg. No. 264-660 (Liberty and Rely 200 Herbicide)
Application Dated June 10, 2008

Dear Registrant:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 dated 06/10/08 for the above product(s). The Registration Division (RD) has conducted a preliminary screen of this request for its applicability under PRN 98-10 and finds that the action(s) requested fall within the scope of PRN 98-10. The label submitted with the application has been stamped "Notification" and will be placed in our records.

If you have any questions, please call me directly at 703-305-6249 or Owen F. Beeder of my staff at 703-308-8899.

Sincerely,

Linda Arrington
Notifications & Minor Formulations Team Leader
Registration Division (7505P)
Office of Pesticide Programs

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Bayer CropScience

10 June 2008
Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
U. S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202-4501

Attn: Ms. Joanne Miller (PM 23)
Mr. James Stone (PM Team 23)

RE: Notification for Liberty® Herbicide (EPA Reg. No. 264-660), (also known as Rely® 200 for TNV Uses). Add county use restrictions per NY Department of Environmental Conservation.

Dear Ms. Miller & Mr. Stone:

With this Notification letter, Bayer CropScience proposes to add on page three (3) of the Liberty (and Rely 200) Herbicide labels under the "Directions for Use" heading the following statement per guidance from the NY Department of Environmental Conservation: **"In the State of New York Only: Not For Use in Nassau and Suffolk Counties."**

Bayer CropScience
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Phone: 919 549-2000

With this cover letter, please find the following:

1). A completed copy of EPA form 8570-1
2). A printed copy of each label with changes highlighted in yellow

"This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA."

Please contact me at your earliest convenience if you have any questions or require additional information.

Sincerely,

Mike See, Ph.D.
Registration Manager
Phone: (919) 549-2913
Fax: (919) 549-2545
e-mail: mike.see@bayercropscience.com

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Please read instructions on reverse before completing form. Form Approved. OMB No. 2070-0060. Approval expires 2-28-95

EPA

United States
Environmental Protection Agency
Washington, DC 20460

- [ ] Registration
- [ ] Amendment
- [x] Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number	2. EPA Product Manager	3. Proposed Classification
264-660	Joanne Miller	[x] None [ ] Restricted
4. Company/Product (Name)	**PM#**	
Liberty Herbicide	23	

5. Name and Address of Applicant *(Include ZIP Code)*

Bayer CropScience
2 TW Alexander Drive PO Box 12014
Research Triangle Park, NC 27709

[ ] *Check if this is a new address*

6. Expedited Reveiw. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to:

NOTIFICATION

EPA Reg. No. _____

JUL 11 2008

Product Name _____

Section - II

- [ ] Amendment - Explain below.
- [ ] Resubmission in response to Agency letter dated _____
- [x] Notification - Explain below.
- [ ] Final printed labels in repsonse to Agency letter dated _____
- [ ] "Me Too" Application.
- [ ] Other - Explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

With this Notification, Bayer CropScience proposes to add on page three (3) of the Liberty (and Rely 200) Herbicide labels under the "Directions for Use" heading the following statement per guidance from the NY Department of Environmental Conservation: "In the State of New York Only: Not For Use in Nassau and Suffolk Counties."

Section - III

1. Material This Product Will Be Packaged In:

Child-Resistant Packaging	Unit Packaging	Water Soluble Packaging	2. Type of Container
[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No	[ ] Metal [ ] Plastic [ ] Glass [ ] Paper [ ] Other (Specify) _____
***Certification must be submitted**	If "Yes" Unit Packaging wgt. / No. per container	If "Yes" Package wgt / No. per container	

3. Location of Net Contents Information	4. Size(s) Retail Container	5. Location of Label Directions
[ ] Label [ ] Container		[ ]

6. Manner in Which Label is Affixed to Product [ ] Lithograph [ ] Paper glued [ ] Stenciled [ ] Other _____

Section - IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)*

Name	Title	Telephone No. (Include Area Code)
Mike See	Registration Manager	(919) 549-2913

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowlingllly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

2. Signature	3. Title	6. Date Application Received
R. M. See	Registration Manager	(Stamped)
4. Typed Name	**5. Date**	
Mike See	10 June 2008	

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Liberty® HERBICIDE

A NON-SELECTIVE HERBICIDE FOR USE ONLY ON COTTON, CORN, RICE, SOYBEANS, SUGAR BEETS AND CANOLA TOLERANT TO THE ACTIVE INGREDIENT IN THIS PRODUCT. BAYER CROPSCIENCE RECOMMENDS USE ONLY ON SEED DESIGNATED AS LIBERTYLINK® OR WARRANTED BY BAYER CROPSCIENCE AS BEING TOLERANT TO LIBERTY® HERBICIDE. MAY ALSO BE USED AS A HERBICIDE FOR HOODED-SPRAYER APPLICATION ONLY IN COTTON NOT TOLERANT TO THE ACTIVE INGREDIENT IN THIS PRODUCT. FOR CONTROL OF EMERGED WEEDS IN APPLES, BERRIES, GRAPES, AND TREE NUTS; AND FOR POTATO VINE DESSICATION.

ACTIVE INGREDIENT: Glufosinate-ammonium*	18.19%**
OTHER INGREDIENTS:	81.81%
	TOTAL 100.00%

*CAS Number 77182-82-2, protected by U.S. Patent No 4,400,196
**Equivalent to 1.67 pounds of active ingredient per U.S. gallon.

EPA Reg No. 264-660

EPA Est. No. 264-MI-001
EPA Est. No. 407-IA-2

KEEP OUT OF REACH OF CHILDREN
WARNING - AVISO

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

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

For PRODUCT USE Information Call 1-866-99BAYER (1-866-992-2937)

FIRST AID

If swallowed	• Rinse mouth thoroughly with plenty of water. • Do not induce vomiting. • Get medical attention immediately.
If in Eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Get medical attention if irritation develops or persists.
If on skin or clothing	• Take off contaminated clothing. • Wash skin immediately with plenty of soap and water. • Get medical attention.
If inhaled	• Move person to fresh air. • Get medical attention if breathing difficulty develops.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or when going for treatment. Call 1-800-334-7577 for emergency medical treatment information.

NOTE TO PHYSICIAN

If this product is ingested, endotracheal intubation and gastric lavage should be performed as soon as possible, followed by charcoal and sodium sulfate administration. Additionally, call 1-800-334-7577 immediately for further information.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS
WARNING

May be fatal if absorbed through skin. Causes moderate eye irritation. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

NOTIFICATION

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Personal Protective Equipment (PPE)

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

Applicators and other handlers must wear:

Coveralls worn over short-sleeved shirt and short pants; chemical-resistant gloves such as barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils, neoprene rubber ≥14 mils, polyvinyl chloride (PVC) ≥14 mils, or Viton® ≥14 mils; chemical resistant footwear plus socks; protective eyewear. Wear a chemical resistant apron when mixing/loading and cleaning equipment.

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

Mixers/loaders supporting aerial applications must wear a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter.

Engineering control 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:

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

ENVIRONMENTAL HAZARDS

Do not apply directly to water or to areas where surface water is present, except as allowed by the Use Directions for rice on this label. Do not apply to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

This pesticide is toxic to vascular plants and should be used strictly in accordance with the drift and run-off precautions on this label in order to minimize off-site exposures.

Under some conditions, this product may have a potential to run-off to surface water or adjacent land. Where possible, use methods which reduce soil erosion, such as no till, limited till and contour plowing; these methods also reduce pesticide run-off. Use of vegetation filter strips along rivers, creeks, streams, wetlands, etc. or on the downhill side of fields where run-off could occur to minimize water run-off is recommended.

STORAGE AND DISPOSAL

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

Do not use or store near heat or open flame. Keep the container tightly closed and dry in a cool, well-ventilated place. Storage temperature should not exceed 125°F. If storage temperature for bulk Liberty® Herbicide is below 32°F, the material should not be pumped until its temperature exceeds 32°F. Protect against direct sunlight.

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

CONTAINER DISPOSAL: *[1 and 2½ Gallon Containers Only]*

Empty containers should be triple rinsed (or equivalent), then offer for recycling or reconditioning; or puncture and dispose of in a sanitary landfill, or by incineration; or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

[15 Gallons, 60 Gallons,120 Gallons & Bulk Containers Only]

This is a sealed returnable container to be used only for Liberty® Herbicide. When this container is empty, it must not be opened, cleaned, or discarded. Empty containers must be returned to the original purchase location.

SEED DISPOSAL: To dispose of out-of-date or otherwise unmarketable seed from plants which have been treated with Liberty® Herbicide, broadcast and lightly incorporate seed into field soils using disc or other suitable implement. Any resulting crop may be destroyed by chemical or mechanical means. Alternatively, seed may be destroyed by deep burial, incineration or landfill disposal.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not use this product until you have read the entire label. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

In the State of New York Only: Not For Use In Nassau and Suffolk Counties.

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted entry-interval (REI) of 12 hours.

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 worn over short-sleeved shirt and short pants; chemical-resistant gloves such as barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils, neoprene rubber ≥14 mils, polyvinyl chloride (PVC) ≥14 mils, or Viton® ≥14 mils; chemical resistant footwear plus socks; protective eyewear.

IMPORTANT CROP SAFETY INFORMATION
READ BEFORE USING THIS PRODUCT

Liberty® Herbicide is for use only on corn, soybeans, sugar beets, rice, cotton and canola tolerant to the active ingredient in this product. Bayer CropScience recommends use only on corn, soybeans, sugar beets, rice, cotton and canola designated as LibertyLink® or warranted by Bayer CropScience as being tolerant to Liberty® Herbicide.

The basis of selectivity of Liberty® Herbicide in corn, soybeans, sugar beets, rice, cotton and canola is the presence of a gene in LibertyLink® or other Bayer CropScience warranted corn, soybeans, sugar beet, rice, cotton and canola varieties which results in a plant that is tolerant to the active ingredient of Liberty® Herbicide. Corn, soybeans, sugar beets, rice, cotton and canola not containing this gene will not be tolerant to Liberty® Herbicide and severe injury may result.

Liberty® Herbicide is to be applied either to cotton tolerant to the active ingredient in Liberty® Herbicide as a post-emergent, over-the-top or directed foliar spray; or to conventional or other transgenic cotton not tolerant to the active ingredient in Liberty® Herbicide using a hooded sprayer.

Use of Liberty® Herbicide on corn, soybeans, sugar beets, rice, cotton or canola not designated as LibertyLink® or not warranted by Bayer CropScience may result in severe crop injury and/or yield loss.

Do not allow spray to contact foliage or green tissue of desirable vegetation other than corn, soybeans, sugar beets, rice, cotton and canola tolerant to the active ingredient in this product. This product may injure or kill all green vegetation contacted by the spray other than LibertyLink® corn, soybeans, sugar beet, rice, cotton and canola or other corn, soybeans, sugar beet, rice, cotton and canola varieties warranted by Bayer CropScience.

Bayer CropScience does not warrant the crop safety or weed control of this product if used on corn, soybean, sugar beet, rice, cotton or canola varieties other than those designated as LibertyLink® or warranted by Bayer CropScience to safely withstand the application of Liberty® Herbicide.

GENERAL INFORMATION

Liberty® Herbicide is a water-soluble herbicide for application as a foliar spray for the control of a broad spectrum of emerged annual and perennial grass and broadleaf weeds in corn, soybeans, sugar beets, rice, cotton, canola, apples, berries, grapes, tree nuts and potato vine dessication.

Liberty® Herbicide may also be used during corn, soybean and rice seed production to remove corn, soybean and rice plants that are not tolerant to glufosinate-ammonium.

SPRAY DRIFT

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

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Do not apply under circumstances where possible drift to unprotected persons or to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption can occur.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.
3. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.

Where states have more stringent regulations, they should be observed. The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

INFORMATION ON DROPLET SIZE:

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

Uniform, thorough spray coverage is important to achieve consistent weed control. Select nozzles and pressure that deliver **MEDIUM** spray droplets as indicated in nozzle manufacturer's catalogs and in accordance with ASAE Standard S-572. Nozzles that deliver **COARSE** spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of weeds.

CONTROLLING DROPLET SIZE:

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM LENGTH:

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

APPLICATION HEIGHT:

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

For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

SWATH ADJUSTMENT:

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

WIND:

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

For all non-aerial applications, wind speed must be measured adjacent to the application site, on the upwind side, immediately prior to application.

TEMPERATURE AND HUMIDITY:

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry. Avoid spraying during conditions of low humidity and/or high temperatures.

TEMPERATURE INVERSIONS:

Do not make aerial or ground applications into areas of temperature inversions. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated

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cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

CLEANING INSTRUCTIONS

Before using Liberty® Herbicide, thoroughly clean bulk storage tank, refillable tank, nurse tanks, spray tank, lines, and filter, particularly if a herbicide with the potential to injure crops was previously used. Equipment should be thoroughly rinsed using a strong detergent solution.

After using Liberty® Herbicide, triple rinse the spray equipment and clean with a commercial tank cleaner before using for crops not labeled LibertyLink® or warranted by Bayer CropScience. Make sure any rinsate or foam is thoroughly removed from spray tank and boom. Rinsate may be disposed following the pesticide disposal directions on this label.

APPLICATION DIRECTIONS FOR USE ON SUGAR BEETS

THOROUGH SPRAY COVERAGE IS VERY IMPORTANT. Liberty® Herbicide works best when weeds are actively growing. A cultivation may be made at least 5 days before a Liberty® application or 5 days after a Liberty® application.

APPLICATION TIMING

Applications of Liberty® Herbicide on sugar beets may be made from the cotyledon stage up to the 10-leaf stage of the sugar beet. Liberty® Herbicide is a foliar-active material with no soil-residual activity. For best results, apply to emerged, young actively growing weeds. Weeds that emerge after application will not be controlled. Liberty® Herbicide will have an effect on weeds that are larger than the recommended leaf stage, however speed of activity and control may be reduced. Weed control may be reduced if application is made when heavy dew, fog, and mist/rain are present; or when weeds are under stress due to drought, cool temperatures or extended periods of cloudiness. Liberty® Herbicide is rainfast 4 hours after application, therefore, rainfall within 4 hours may necessitate retreatment.

For best weed control and sugar beet yield, Liberty® Herbicide applications should begin when weeds are up to 1 inch in height or diameter. Repeat applications should be made when newly germinated weeds again reach 1 inch in height or diameter. Refer to the *Rate Recommendation Tables for Weed Control In Sugar Beets* for selection of the proper rate dependent upon the weed species present and size. A repeat application of Liberty® Herbicide or a tank mix application with a residual herbicide selected from the tank mix partners recommended on this label will be needed to control weeds that have not yet emerged at the time of application.

RESTRICTIONS TO THE DIRECTIONS FOR USE ON SUGAR BEETS

1. **DO NOT** apply more than 42 ounces per acre of Liberty® Herbicide in one application and **DO NOT** apply more than 84 ounces per acre of Liberty® Herbicide on the sugar beet crop per growing season.
2. **DO NOT** apply Liberty® Herbicide within 60 days of harvesting sugar beets.
3. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days after the last application of this product. Corn, soybeans, canola, and sugar beets tolerant to the active ingredient of Liberty® Herbicide may be planted at any time.
4. **DO NOT** graze the treated crop or cut for hay.
5. **DO NOT** add surfactants. Anti-foams or drift control agents may be added if needed.
6. **DO NOT** apply Liberty® Herbicide if sugar beets show injury from prior herbicide applications or environmental stress (drought, excessive rainfall, etc.).
7. **DO NOT** apply this product through any type of irrigation system.

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with properly calibrated and clean equipment. Liberty® Herbicide is specially formulated to mix readily in water. Prior to adding Liberty® Herbicide to the spray tank, ensure that the spray tank is thoroughly clean, particularly if a herbicide with the potential to injure crops was previously used (see *Cleaning Instructions*).

Mix Liberty Herbicide with water to make a finished spray solution as follows:

1. Fill tank to one-half full with clean water prior to adding Liberty® Herbicide.
2. Add the correct amount of Liberty® Herbicide.
3. Add the remaining amount of water, begin agitation, and spray out immediately.
4. The addition of an anti-foaming agent may reduce foaming, especially when using soft water.

Ensure that all spray system lines including pipes, booms, etc. have the correct concentration of Liberty® Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of the tank to minimize foaming. Screen size in nozzles or line strainers should be no finer than 50 mesh.

If the tank mix partners recommended on this label are added, maintain good agitation at all times until contents of the tank are spayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

APPLICATION METHODS

Do not use flood jet nozzles, controlled droplet application equipment or air-assisted spray equipment. Uniform, thorough spray coverage is important to achieve consistent weed control.

Ground application: Refer to the *Rate Recommendation Tables for Weed Control in Sugar Beets* for proper application rates. DO NOT apply when winds are gusty, or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure consistent weed control, apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern. Liberty® Herbicide should be applied broadcast in a minimum of 10 gallons of water per acre using a minimum spray pressure of 40 pounds per square inch and a maximum ground speed of 10 mph. The use of 80 degree or 110 degree flat fan nozzles is highly recommended for optimum spray coverage and canopy penetration. Application of the spray at a 45 degree angle forward will result in better spray coverage. **Under dense weed/crop canopies, a broadcast rate of 15-20 gallons of water per acre should be used so that thorough spray coverage will be obtained.** DO NOT use raindrop nozzles. For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Aerial application: Calibrate the spray equipment prior to use. Liberty® Herbicide should be applied in a minimum of 5 gallons of water per broadcast acre. To get uniform spray coverage, use nozzles to provide 200-350 micron size droplets. Aerial applications with this product should be made at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi.

Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. Do Not apply when wind causes drift to off-site vegetation.

RATE RECOMMENDATION TABLES FOR WEED CONTROL IN SUGAR BEETS

The rate of Liberty® Herbicide in fluid ounces (pints) of formulated product per acre to be used for the control of weeds at selected heights are shown in the following tables. In weed populations with mixed species, apply the rate needed for all species present.

Grass Weeds Controlled with Liberty® Herbicide

Weed Species	Growth Stage of Weed* (Maximum Height)		Comments on Weed Growth Stage/ Application Timing/ Number of Applications
	20 fl.oz./A (1.25 pt./A)	28 fl.oz./A (1.75 pt./A)	
Barley, volunteer	1 - 2 leaf (2")	3 leaf (3")	Multiple applications may be required
Barnyardgrass	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Corn, volunteer	1 - 2 leaf (3")	3 - 4 leaf (6")	---
Crabgrass, large	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Crabgrass, smooth	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Cupgrass, woolly	1 - 5 leaf (4")	(8")	---
Foxtail, giant	1 - 4 leaf (3")	5 - 6 leaf (4")	Maximum of 2 tillers
Foxtail, green	1 - 4 leaf (3")	5 - 6 leaf (4")	Maximum of 2 tillers
Foxtail, yellow	1 - 3 leaf (1")	4 leaf (2")	Apply prior to tillering
Millet, volunteer proso	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Millet, wild proso	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Oat, wild	1 - 2 leaf (2")	3 leaf (3")	Maximum of 1 tiller
Panicum, fall	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Panicum, Texas	1 - 3 leaf (2")	4 - 5 leaf (3")	Maximum of 1 tiller
Sandbur, field	---	1 - 4 leaf (2")	Apply prior to tillering
Wheat, volunteer	1 - 2 leaf (2")	3 leaf (3")	Maximum of 1 tiller

* Apply up to 42 fluid ounces/acre (2.63 pints/acre) if weeds exceed the growth stage shown in the table.

For improved control of heavy populations or larger than recommended volunteer wheat, volunteer barley, yellow foxtail, and wild oats, Liberty® Herbicide can be tank mixed with Assure® II Herbicide, Poast® Herbicide, Prism® Herbicide or Select® 2EC Herbicide.

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Perennial Weeds Controlled by Liberty® Herbicide

Weed Species	Growth Stage of Weed* (Maximum Height/Diameter)		Comments on Number of Applications
	20 fl.oz./A (1.25 pt./A)	28 fl.oz./A (1.75 pt./A)	
Quackgrass	---	1 - 3 leaf (3")	Multiple applications required
Sowthistle, perennial	---	1 - 4 leaf (3")	Multiple applications required
Thistle, Canada	---	1 - 4 leaf (3")	Multiple applications required

* Apply up to 42 fluid ounces/acre (2.63 pints/acre) if weeds exceed the growth stage shown in the table.

Broadleaf Weeds Controlled by Liberty® Herbicide

Weed Species	Growth Stage of Weed* (Maximum Diameter)	
	20 fl.oz./A (1.25 pt./A)	28 fl.oz./A (1.75 pt./A)
Buckwheat, wild	1 - 4 leaf (2")	5 - 6 leaf (3")
Buffalobur	1 - 4 leaf (2")	5 - 6 leaf (3")
Carpetweed	---	1 - 4 leaf (2")
Chickweed, common	1 - 4 leaf (2")	5 - 6 leaf (3")
Cocklebur, common	1 - 6 leaf (3")	7 - 8 leaf (5")
Kochia	(1")	(2")
Ladysthumb	1 - 2 leaf (1")	3 - 4 leaf (3")
Lambsquarter, common	1 - 2 leaf (1")	4 - 5 leaf (3")
Mallow, Venice	1 - 4 leaf (2")	5 - 6 leaf (3")
Marshelder	1 - 2 leaf (1")	3 - 4 leaf (2")
Mustard, wild	1 - 4 leaf (2")	5 - 6 leaf (3")
Nightshade, eastern black	1 - 4 leaf (2")	5 - 6 leaf (3")
Pigweed, prostrate	(1")	(3")
Pigweed, redroot	1 - 2 leaf (1")	3 - 4 leaf (3")
Pigweed, smooth	1 - 2 leaf (1")	3 - 4 leaf (3")
Pigweed, spiny	1 - 2 leaf (1")	3 - 4 leaf (3")
Purslane, common	(1")	(2")
Ragweed, common	1 - 6 leaf (3")	7 - 8 leaf (5")
Ragweed, giant	1 - 4 leaf (2")	5 - 6 leaf (3")
Sheperd's purse	1 - 4 leaf (2")	5 - 6 leaf (3")
Smartweed, Pennsylvania	1 - 2 leaf (1")	3 - 4 leaf (3")
Sowthistle, annual	1 - 4 leaf (2")	5 - 6 leaf (3")
Sunflower, common	1 - 6 leaf (3")	7 - 8 leaf (5")
Thistle, Russian	(1")	(2")
Velvetleaf	1 - 2 leaf (1")	3 - 4 leaf (3")

*Apply up to 42 fluid ounces/acre (2.63 pints/acre) if weeds exceed the growth stage shown in the table.

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APPLICATION DIRECTIONS FOR USE ON CANOLA

To assure the optimum benefit from the use of Liberty® Herbicide, apply when weeds are in an early stage of growth, before they stress the growth of canola. Apply as described in the "Application Methods" section to get maximum weed control.

APPLICATION TIMING

Applications of Liberty® Herbicide on canola may be made from the cotyledon stage up to the early bolting stage of the canola. Slight discoloration of the canola may be visible after application. This effect is temporary and will not influence crop growth, maturity or yield. Liberty® Herbicide is a foliar-active material with no soil-residual activity. For best results, apply to emerged, young actively growing weeds. Weeds that emerge after application will not be controlled. Liberty® Herbicide will have an effect on weeds that are larger than the recommended leaf stage, however speed of activity and control may be reduced. Weed control may be reduced if application is made when heavy dew, fog, and mist/rain are present; or when weeds are under stress due to drought, cool temperatures or extended periods of cloudiness. Liberty® Herbicide is rainfast 4 hours after application, therefore, rainfall within 4 hours may necessitate retreatment.

RESTRICTIONS TO THE DIRECTIONS FOR USE ON CANOLA

1. **DO NOT** use on canola in the states of Alabama, Delaware, Georgia, Kentucky, Maryland, New Jersey, North Carolina, South Carolina, Tennessee, Virginia and West Virginia
2. **DO NOT** apply more than 68 ounces per acre of Liberty® Herbicide for weed control on the canola crop per growing season.
3. **DO NOT** apply Liberty® Herbicide within 65 days of harvesting canola.
4. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days after the last application of this product. Corn, soybeans, canola, and sugar beets, cotton and rice tolerant to the active ingredient in Liberty® Herbicide may be planted at any time.
5. **DO NOT** graze the treated crop or cut for hay.
6. **DO NOT** add surfactants or crop oils. Anti-foams or drift control agents may be added if needed.
7. **DO NOT** apply Liberty® Herbicide if canola shows injury from prior herbicide applications or environmental stress (drought, excessive rainfall, etc.).
8. **DO NOT** apply this product through any type of irrigation system.
9. **DO NOT** tank mix Liberty® Herbicide with other pesticides including herbicides unless recommended on this label.

SPRAY ADDITIVES

Liberty® Herbicide must be applied with ammonium sulfate (AMS). Use only fine feed grade or spray grade AMS at 3 pounds per acre. Anti-foams or drift control agents may be added if needed.

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with properly calibrated and clean equipment. Liberty® Herbicide is specially formulated to mix readily in water. Prior to adding Liberty® Herbicide to the spray tank, ensure that the spray tank is thoroughly clean, particularly if a herbicide with the potential to injure crops was previously used (see *Cleaning Instructions*).

Mix Liberty Herbicide with water to make a finished spray solution as follows:

1. Fill tank to one-half full with clean water.
2. Add the appropriate amount of AMS to the spray tank.
3. If tank mixing with a grass herbicide specified on this label, add the correct amount of the grass herbicide.
4. Add the correct amount of Liberty® Herbicide.
5. Add the remaining amount of water, begin agitation, and spray out immediately.

The addition of an antifoaming agent may reduce foaming, especially when using soft water.

Ensure that all spray system lines including pipes, booms, etc. have the correct concentration of Liberty® Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers should be no finer than 50 mesh.

If the tank mix partners recommended on this label are added, maintain good agitation at all times until contents of the tank are spayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

APPLICATION METHODS

Do not use flood jet nozzles, controlled droplet application equipment or air-assisted spray equipment. Uniform, thorough spray coverage is important to achieve consistent weed control.

Ground application: Refer to the *Rate Recommendation Tables for Weed Control in Canola* for proper application rates. DO NOT apply when winds are gusty, or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure

consistent weed control, apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern. Liberty® Herbicide should be applied broadcast in a minimum of 10 gallons of water per acre using a minimum spray pressure of 40 pounds per square inch and a maximum ground speed of 10 mph. The use of 80 degree or 110 degree flat fan nozzles is highly recommended for optimum spray coverage and canopy penetration. Application of the spray at a 45 degree angle forward will result in better spray coverage. **Under dense weed/crop canopies, a broadcast rate of 15-20 gallons of water per acre should be used so that thorough spray coverage will be obtained.** For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Aerial application: Calibrate the spray equipment prior to use. Liberty® Herbicide should be applied in a minimum of 5 gallons of water per broadcast acre. To get uniform spray coverage, use nozzles to provide 200-350 micron size droplets. DO NOT use raindrop nozzles. Aerial applications with this product should be made at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi.

Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. Do Not apply when wind causes drift to off-site vegetation.

RATE RECOMMENDATION TABLES FOR WEED CONTROL IN CANOLA

The rate of Liberty® Herbicide in fluid ounces (pints) of formulated product per acre to be used for the control of weeds at selected heights are shown in the following tables. In weed populations with mixed species, select the rate needed for all species present.

Grass Weeds Controlled with Liberty® Herbicide at 34 fl. oz./A (2.1 pt./A) Plus Ammonium Sulfate

Weed Species	Growth Stage of Weed (Leaves/Max. Height)	Comments
Barley, volunteer*	1-3 leaves (3")	A second application may be required
Foxtail, yellow	1-4 leaves (2")	Apply prior to tillering
Sandbur, field		
Oat, wild	1-4 leaves (4")	Maximum of 1 tiller; a second application may be required
Wheat, volunteer		
Corn, volunteer	1-4 leaves (6")	---
Barnyardgrass	1-5 leaves (3")	Maximum of 1 tiller
Crabgrass, large		
Crabgrass, smooth		
Millet, volunteer proso		
Millet, wild proso		
Panicum, fall		
Panicum, Texas		
Foxtail, giant	1-6 leaves (4")	Maximum of 2 tillers
Foxtail, green		
Cupgrass, woolly	1-8"	---

* Suppression only

When used in tank-mix combination with Assure® II Herbicide at 4 to 5 fl. oz. per acre, Select® 2EC Herbicide at 2 to 3 fl. oz. per acre, or Poast® Herbicide at 6 to 8 fl. oz. per acre, Liberty® Herbicide may be applied at 28 fl. oz. per acre plus ammonium sulfate to control grass weed species at the growth stage of weeds indicated in the table above. For improved control of heavy populations or larger than recommended volunteer wheat, volunteer barley, yellow foxtail, and wild oats, Liberty® Herbicide at 34 fl. oz per acre can be tank mixed with Assure® II Herbicide, or Poast® Herbicide.

Perennial Weeds Controlled with Liberty® Herbicide at 34 fl. oz./A (2.1 pt./A) Plus Ammonium Sulfate

Weed Species	Growth Stage of Weed (Leaves/Max. Height)	Comments
Quackgrass	1-4 leaves (4")	Top growth control; a second application may be required.
Sowthistle, perennial	1-6 leaves (4")	
Thistle, Canada		

Broadleaf Weeds Controlled with Liberty® Herbicide at 32 fl. oz./A (2 pt./A) Plus Ammonium Sulfate

Weed Species	Growth Stage of Weed (Leaves/Max. Height)	Comments
Buckwheat, wild	1-3 leaves	Up to 1" in height
Pigweed, redroot		Up to 2" in height
Carpetweed	1-4 leaves	Up to 2" in height
Lambsquarter, common		
Marshelder		
Ladysthumb		Up to 3" in height
Pigweed, smooth		
Pigweed, spiny		
Smartweed, Pennsylvania		
Velvetleaf		
Mustard, wild	1-5 leaves	Up to 3" in height
Buffalobur	1-6 leaves	Up to 3" in height
Chickweed, common		
Mallow, Venice		
Nightshade, eastern black		
Ragweed, giant		
Shepherd's purse		
Sowthistle, annual		
Cocklebur, common	1-8 leaves	Up to 5" in height
Ragweed, common		
Sunflower, common		
Kochia	1-2"	---
Thistle, Russian		---
Pigweed, prostrate	1-3"	---
Purslane, common		---
Waterhemp, tall		---
Wormwood, biennial		---
Pennycress, field	1-4"	---
Dandelion	1-6"	Diameter of rosette

For optimum canola yield, early weed removal and application prior to canola bolting is important. For optimum control of both early and late germinating grass and broadleaf weed species, Liberty® Herbicide may be applied sequentially at 20 fl. oz./A to 1-3 leaf grass and 1-2" broadleaf weed species followed by a second application of 20 fl. oz./A 7-10 days later.

APPLICATION DIRECTIONS FOR USE ON FIELD CORN, SILAGE CORN AND SOYBEANS

THOROUGH SPRAY COVERAGE IS VERY IMPORTANT. Visual effects and control from Liberty® Herbicide applications occur within 2 to 4 days after application under good growing conditions. Liberty® Herbicide works best when weeds are actively growing. To maximize weed control, no cultivation should occur in the period from 5 days before an application to 5 days after an application of Liberty® Herbicide.

APPLICATION TIMING

Liberty® Herbicide is a foliar-active material with little or no soil-residual activity. Best results are obtained when applications are made to actively growing weeds. Weeds that emerge after application will not be controlled. Applications of Liberty® following the use of soil-applied insecticides will not injure corn.

Applications of Liberty® Herbicide on corn may be made with over-the-top broadcast or drop nozzles from emergence until corn is 24" tall or in the V-7 stage of growth, i.e., 7 developed collars, whichever comes first. For corn 24" to 36" tall, only apply Liberty® using ground application and drop nozzles and avoid spraying into the whorl or leaf axils of the corn stalks.

Applications of Liberty® Herbicide on soybeans may be made from emergence to the bloom growth stage.

Liberty® Herbicide is rainfast 4 hours after application to most weed species. Rainfall within 4 hours may necessitate retreatment or may result in reduced weed control. Applications should be made between dawn and two hours before sunset to avoid the possibility of reduced control of lambsquarters and velvetleaf. Do not apply when wind causes drift to off-site vegetation as injury may occur. Weed control may be reduced if application is made when heavy dew, fog, and mist/rain are present or when weeds are under stress due to drought, cool temperatures, or extended periods of cloudiness.

Apply Liberty® Herbicide at rates of 28 to 34 fluid ounces per acre. Refer to the *Rate Recommendation Tables for Weed Control* for selection of the proper rate dependent upon weed species and size. A repeat application of Liberty® or a tank mix application with a residual herbicide selected from the tank mix partners listed on this label will be needed to control weeds that have not yet emerged at the time of application.

RESTRICTIONS TO THE DIRECTIONS FOR USE ON FIELD CORN, SILAGE CORN AND SOYBEANS

1. **DO NOT** apply more than two applications of Liberty® Herbicide to the corn or the soybean crop. DO NOT apply more than 62 fluid ounces of Liberty® per acre on corn or soybeans per growing season.
2. **DO NOT** apply Liberty® Herbicide within 60 days of harvesting corn forage and within 70 days of harvesting corn grain and corn fodder.
3. **DO NOT** apply Liberty® Herbicide within 70 days of harvesting soybean seed.
4. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days after the last application of this product. Corn and soybeans may be planted at any time.
5. **DO NOT** harvest treated green soybean plants for forage and hay feed for livestock.
6. **DO NOT** use nitrogen solutions as spray carriers. A silicone-based antifoam agent may be added if needed.
7. **DO NOT** apply Liberty® Herbicide if soybeans or corn show injury from prior herbicide applications or environmental stress (drought, excessive rainfall, etc.).
8. **DO NOT** apply this product through any type of irrigation system.
9. Volunteer LibertyLink® crop plants from the previous season will not be controlled by an application of Liberty® Herbicide.

SPRAY ADDITIVES

For use on corn only, Liberty® Herbicide must be applied with ammonium sulfate (AMS). It is recommended to use only fine feed grade or spray grade AMS at 3 pounds per acre (17 lbs/100 gallons). When ambient air temperatures exceed 85° F, the rate of AMS can be reduced to 1.5 pounds per acre (8.5 lbs/100 gallons) to reduce potential leaf burn.

Liberty® Herbicide is formulated to provide optimum herbicidal performance. Use of additional surfactants or crop oils will not enhance weed control.

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with properly calibrated and clean equipment. Liberty® is specially formulated to mix readily in water. Prior to adding Liberty® to the spray tank, ensure that the spray tank is thoroughly clean, particularly if a herbicide with the potential to injure crops was previously used (see *Cleaning Instructions*).

Mix Liberty® Herbicide with water to make a finished spray solution as follows:

1. Fill the spray tank half full with water.
2. Start agitation.
3. Prepare a slurry of the proper amount of dry flowable/wettable powder tank mix partners in a small amount of water.
4. Add the slurry of dry materials to the spray tank.
5. Add the appropriate amount of ammonium sulfate (AMS) (for corn use only) to the spray tank.
6. Add the proper amount of liquid tank mix partners.
7. Complete filling the spray tank with water.
8. Add the proper amount of Liberty® Herbicide and continue agitation.
9. If foaming occurs, use a silicone-based antifoam agent.

Ensure that all spray system lines including pipes, booms, etc. have the correct concentration of Liberty® Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers should be no finer than 50 mesh.

If tank mix partners recommended on this label are added, maintain good agitation at all times until contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

APPLICATION METHODS

Refer to the *Rate Recommendation Tables for Weed Control* in the following section for the proper application rates. Uniform, thorough spray coverage is important to achieve consistent weed control.

Ground Application: Liberty® Herbicide should be applied broadcast in a minimum of 15 gallons of water per acre. Under dense weed/crop canopies, 20 to 40 gallons of water per acre should be used so that thorough spray coverage will be obtained.

Apply Liberty® Herbicide using 80-degree or 110-degree flat-fan nozzles. Select a spray pressure between 30 to 60 pounds per square inch (psi) measured at the nozzle which will achieve a droplet size of about 300 microns. If Turbo TeeJet® spray tips are used, a spray pressure of 60 or more pounds per square inch will be required to get thorough coverage of the weed foliage. Flood-jet nozzles, raindrop nozzles, controlled droplet application equipment, or air-assisted spray equipment do not provide adequate coverage characteristics; and therefore, are not recommended because weed control is likely to be reduced.

DO NOT apply when winds are gusty or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure consistent weed control, apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern. For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Aerial Application: Use 34 fluid ounces of Liberty® Herbicide per acre for aerial application. Do not apply more than 62 fl. oz. of Liberty® Herbicide per acre per growing season. Poor coverage will result in reduced weed control. Liberty® Herbicide should be applied in a minimum of 5 gallons per acre with spray nozzle tips and sufficient pressure to provide a uniform pattern and median droplet size of 350 to 450 microns. Aerial applications with this product should be made at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi.

Avoid application during conditions when uniform coverage cannot be obtained or where excessive spray drift may occur. Do not apply when wind causes drift to off-site vegetation.

RATE RECOMMENDATION TABLES FOR WEED CONTROL IN CORN AND SOYBEANS

Apply Liberty® Herbicide at rates of 28 to 34 fluid ounces per acre. Rates in ounces of formulated product per acre for the control of weeds at selected heights are shown in the following tables. In weed populations with mixed species, apply at a rate needed for the species that requires the highest rate.

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Grass Weeds Controlled with Liberty® Herbicide Plus Ammonium Sulfate

Weed Species	Maximum Weed Height or Diameter (Inches)		
	28 Fl. Oz./A	32[1] Fl. Oz./A	34 Fl. Oz./A
Barnyardgrass	**	3	4
Bluegrass, annual	**	3	4
Corn, volunteer	**	10[1,2]	12[1,2]
Crabgrass, large	**	3[3]	4[3]
Crabgrass, smooth	**	3[3]	4[3]
Cupgrass, woolly	4	6	8
Foxtail, bristly	3	6	8
Foxtail, giant	3	6	8
Foxtail, giant (ALS resistant)	3	6	8
Foxtail, green	3	6	8
Foxtail, robust purple	3	6	8
Foxtail, yellow	**	3[3]	4[3]
Johnsongrass, seedling	2	6	8
Millet, wild-proso	2	6	7
Millet, proso volunteer	2	6	7
Oat, wild	**	3[3]	4[3]
Panicum, fall	2	3	4
Panicum, Texas	2	4	5
Rice, red	2	4	5
Sandbur, field	**	**	3[3]
Shattercane	**	6	8
Shattercane (ALS resistant)	**	6	8
Signalgrass, broadleaf	2	4	5
Sprangletop	2	4	5
Sorghum, volunteer	**	6	7
Stinkgrass	2	4	5
Witchgrass	2	4	5

** Indicates suppression

[1] Volunteer corn arising from a previous corn crop containing a glufosinate tolerance gene will not be controlled.

[2] A timely cultivation 7 to 10 days after application and/or retreatment within 2 weeks is recommended for controlling dense clumps of volunteer corn arising from a previous corn crop that was not tolerant to glufosinate-ammonium.

[3] Yellow foxtail, field sandbur, crabgrass and wild oats must be treated prior to tiller initiation for best results.

Broadleaf Weeds Controlled with Liberty® Herbicide Plus Ammonium Sulfate

Weed Species	Maximum Weed Height or Diameter (Inches)		
	28 Fl. Oz./A	32 Fl. Oz./A	34 Fl. Oz./A
Amaranth, Palmer[1]	**	4	6
Beggarweed, Florida	**	4	6
Black medic	3	5	6
Buckwheat, wild	3	6	7
Buffalobur	3	6	7
Burcucumber	3	6	8
Carpetweed	**	4	6
Chickweed, common	3	6	7
Cocklebur, common	3	6	8
Cocklebur, common (ALS resistant)	3	6	8
Copperleaf, hophornbeam	2	4	6
Eclipta	2	4	6
Fleabane, annual	3	6	8
Galinsoga, hairy	3	6	8
Galinsoga, small flower	3	6	7
Groundcherry, cutleaf	2	4	6
Geranium, cutleaf	2	4	6
Java bean	2	4	6
Jimsonweed	3	6	8
Kochia[1]	2	4	6
Kochia (ALS resistant)1	2	4	6
Ladysthumb	3	6	8
Lambsquarters, common[1]	2	4	6
Lambsquarters, common (triazine resistant)	2	4	6
Mallow, common	**	4	6
Mallow, Venice	3	6	7
Marestail	3	6	8
Marshelder	**	4	6
Morningglory, entireleaf[1]	2	6	7
Morningglory, ivyleaf[1]	3	6	7
Morningglory, pitted[1]	2	6	7
Morningglory, smallflower[1]	2	4	6
Morningglory, tall[1]	3	6	7
Mustard, wild	3	6	7
Nightshade, eastern black	3	6	8
Nightshade, hairy	3	6	8
Pennycress	2	4	6
Pigweed, redroot[1]	2	4	6
Pigweed, redroot (ALS resistant) [1]	2	4	6
Pigweed, redroot (triazine resistant)	2	4	6

Weed Species	Maximum Weed Height or Diameter (Inches)		
	28 Fl. Oz./A	32 Fl. Oz./A	34 Fl. Oz./A
Pigweed, prostrate[1]	**	4	6
Pigweed, spiny[1]	**	4	6
Pigweed, smooth[1]	**	4	6
Pigweed, tumble[1]	**	4	6
Punctureviné	**	4	6
Ragweed, common	3	6	8
Ragweed, common (ALS resistant)	3	6	8
Ragweed, giant	3	6	8
Ragweed, giant (ALS resistant)	3	6	8
Sesbania, hemp	3	6	8
Shepherd's-Purse	3	6	8
Sicklepod	3	6	7
Sida, prickly	3	6	7
Smartweed, Pennsylvania	3	6	8
Smellmelon	2	4	6
Sowthistle, annual	3	6	7
Sunflower, common	3	6	8
Sunflower, common (ALS resistant)	3	6	8
Sunflower, volunteer	3	6	8
Thistle, Russian	**	4	6
Velvetleaf[1]	3	5	6
Waterhemp, common[1]	2	4	6
Waterhemp, common (ALS resistant)[1]	2	4	6
Waterhemp, tall[1]	2	4	6

** indicates suppression

1. Tank mixing with atrazine may enhance weed control of this species.

INSTRUCTIONS FOR BIENNIAL/PERENNIAL WEEDS

Liberty® Herbicide applied at 34 fluid ounces per acre will provide top-growth control or suppression of the biennial/perennial weed species shown in the following table. A second application of Liberty Herbicide at 28 fluid ounces per acre or a tank mix with other herbicides selected from those listed on this label is required for control.

Biennial/Perennial Weeds Suppressed or Controlled with Liberty® Herbicide Plus Ammonium Sulfate

Alfalfa	Clover, red	Muhly, wirestem
Artichoke, Jerusalem	Dandelion	Orchardgrass
Bindweed, field	Dock, smooth	Poinsettia, wild
Bindweed, hedge	Dogbane, hemp	Pokeweed
Bluegrass, Kentucky	Goldenrod, gray	Quackgrass
Bromegrass, smooth	Johnsongrass, rhizome	Thistle, bull
Burdock	Milkweed, common	Thistle, Canada
Chickweed, Mouse-ear	Milkweed, honeyvine	Timothy
Clover, Alsike		

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RATE RECOMMENDATION TABLE FOR WEED CONTROL IN CALIFORNIA

Apply Liberty® Herbicide at rates of 16 to 34 fluid ounces per acre. Rates in ounces of formulated product per acre for the control of weeds in California at selected heights are shown in the following table. In weed populations with mixed species, apply at a rate needed for the species that requires the highest rate.

Weeds Controlled in California with Liberty® Herbicide Plus Ammonium Sulfate

Weed Species	Maximum Weed Height (inches)		
	20 Fl. Oz./A	28 Fl. Oz./A	34 Fl. Oz./A
Barnyardgrass	**	3	4
Cocklebur, common	8	12	14
Cocklebur, common (ALS resistant)	8	12	14
Foxtail, bristly	4	6	8
Foxtail, giant	6	10	11
Foxtail, giant (ALS resistant)	6	10	11
Foxtail, green	6	10	11
Foxtail, robust purple	4	6	8
Foxtail, yellow	**	3[1]	4[1]
Henbit	**	2	4
Johnsongrass, seedling	2	6	8
Lambsquarters, common	2	4	5
Lambsquarters, common (triazine resistant)	2	4	5
Malva, common	**	2	4
Morningglory, entireleaf	2	6	7
Morningglory, ivyleaf	4	6	7
Morningglory, pitted	2	6	7
Morningglory, smallflower	2	4	5
Morningglory, tall	4	6	7
Nettle, burning	**	2	4
Nightshade, black	**	4	6
Panicum, fall	2	3	4
Pigweed, redroot	2	4	5
Pigweed, redroot (ALS resistant)	2	4	5
Pigweed, redroot (triazine resistant)	2	4	5
Pigweed, tumble	**	4	5
Purslane, common	**	2	4
Rice, Jungle	**	2	4
Sowthistle, annual	3	6	7
Sunflower, common	8	12	14
Sunflower, common (ALS resistant)	8	12	14
Sunflower, volunteer	6	8	9
Velvetleaf	3	5	6

** indicates suppression

1. Yellow foxtail must be treated prior to tiller initiation for best results.

TANK MIX RECOMMENDATIONS FOR LIBERTY® HERBICIDE

Liberty® Herbicide (alone and with a tank mix partner listed on this label) may be applied following any corn or soybean pre-plant incorporated or preemergence herbicide applications. When using Liberty® Herbicide in tank mix combinations, carefully follow the "Direction of Use" labeling of the selected partner. Do not use a tank mix partner that has already been applied as a pre-plant incorporated or preemergence herbicide unless the "Directions of Use" labeling of that partner allows sequential applications of it to the same crop.

Corn Tank Mix Herbicide Partners for Liberty® Herbicide

To enhance weed control and/or provide residual control in corn, Liberty® Herbicide may be mixed with the following herbicides.

2,4-D	Confidence® Herbicide	NorthStar™ Herbicide
Accent® Herbicide	Confidence® Xtra 5.6L Herbicide	Permit® Herbicide
Accent® Gold™ Herbicide	Distinct™ Herbicide	Prowl® 3.3 EC Herbicide
Atrazine	Dual II Magnum™ Herbicide	Pursuit® Herbicide
Banvel® Herbicide	Exceed® Herbicide	Python® WDG Herbicide
Basagran® Herbicide	Frontier® 6.0 Herbicide	Scorpion® III Herbicide
Basis Gold® Herbicide	FulTime™ Herbicide	Shotgun® Herbicide
Beacon® Herbicide	Guardsman® Herbicide	Spirit® Herbicide
Bicep Lite II Magnum® Herbicide	Harness ® Herbicide	Sterling™ Plus
Bicep II Magnum® Herbicide	Harness® Xtra Herbicide	Stinger® Herbicide
Buctril® Herbicide	Harness® Xtra 5.6L Herbicide	Surpass® EC Herbicide
Buctril® 4EC Herbicide	Hornet® Herbicide	Surpass® 100 Herbicide
Buctril® + atrazine Herbicide	Laddok® S-12 Herbicide	Topnotch™ Herbicide
Callisto™ Herbicide	LeadOff™ Herbicide	Tough® 5 EC Herbicide
Celebrity™ Herbicide	Lightning™ Herbicide	Volley™ Herbicide
Clarity® Herbicide	Marksman® Herbicide	

Apply tank mixes of Lightning™ and Pursuit® only to corn designated as Clearfield™ tolerant and LibertyLink® or warranted by Bayer CropScience as being tolerant to Liberty® Herbicide.

Applications of 2,4-D, Banvel® Herbicide, Celebrity™ Herbicide, Clarity® Herbicide, Distinct™ Herbicide, or Marksman® Herbicide, and NorthStar™ Herbicide to corn during periods of rapid growth may result in temporary leaning or green snap. If these symptoms occur, cultivation should be delayed until after corn is growing normally to avoid breakage. Tank mixing with Prowl® 3.3 EC Herbicide may result in reduced control of barnyardgrass, fall panicum, field sandbur, yellow foxtail, and volunteer corn.

Corn Tank Mix Insecticide Partners for Liberty® Herbicide

To provide weed and insect control in corn, Liberty® Herbicide may be mixed with the following insecticides:

Ambush® Insecticide	Furadan® 4F Insecticide	Pounce® 3.2EC Insecticide
Asana® XL Insecticide	Lorsban® 4E Insecticide	Warrior™ Insecticide
Baythroid® 2 Insecticide		

Soybean Tank Mix Herbicide Partners for Liberty® Herbicide

To enhance weed control and/or provide residual control in soybeans, Liberty® Herbicide may be mixed with the following herbicides:

Basagran® Herbicide	Manifest™ B Herbicide	Reflex® Herbicide
Blazer® Herbicide	Manifest™ G Herbicide	Resource® Herbicide
Firstrate® Herbicide	Pinnacle® Herbicide	Scepter® Herbicide
Flexstar® HL Herbicide	Poast® HC Herbicide	Select® 2EC Herbicide
Frontier® 6.0 Herbicide	Poast Plus® Herbicide	Storm® Herbicide
Fusilade® DX Herbicide	Prism® Herbicide	Tornado® Herbicide
Fusion® Herbicide	Pursuit® Herbicide	Typhoon® Herbicide
Galaxy® Herbicide	Raptor™ Herbicide	

APPLICATION DIRECTIONS FOR USE ON RICE

THOROUGH SPRAY COVERAGE IS VERY IMPORTANT. For best results apply to emerged, young, actively growing weeds. Liberty® Herbicide is a foliar-active material with little or no soil-residual activity. Weeds that emerge after application will not be controlled. Weed control may be reduced if application is made when heavy dew, fog, and mist/rain are present; or when weeds are under stress due to drought, cool temperatures, or extended periods of cloudiness. Liberty® Herbicide is rainfast 4 hours after application to most weed species. Rainfall within 4 hours after application may necessitate retreatment or reduced weed control may result.

RESTRICTIONS TO THE DIRECTIONS FOR USE ON RICE

1. **DO NOT** exceed 68 ounces of Liberty® Herbicide per growing season.
2. **DO NOT** apply Liberty® Herbicide within 70 days of harvesting rice.
3. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum and triticale which may be planted 70 days after the last application of this product. The crops listed on this label may be planted at any time.
4. **DO NOT** apply this product through any type of irrigation system.
5. **DO NOT** use paddy water from a rice field treated with Liberty® Herbicide for irrigation, or as a water source for livestock or for raising crayfish.
6. **DO NOT** add surfactants or crop oils. A silicon-based anti-foam agent may be added if needed.

Application Timing for the Southern United States (Arkansas, Louisiana, Mississippi, Missouri, Texas)

Applications of Liberty® Herbicide on rice may be made from the 1-leaf stage through the mid-tillering stage of development. Refer to the *Rate Recommendation Tables for Weed Control in Rice* to select the proper rate to use to control the weed species present. Liberty® Herbicide will have an effect on weeds that are larger than the recommended leaf stage, however speed of activity and control may be reduced.

Rice fields should be as level as possible and free of large clods to obtain uniform germination of rice and grassy weeds and to ensure uniform flood levels. If necessary, fields may be flushed prior to treatment so that the rice and grass/broadleaf weeds are actively growing at the time of treatment. If the rice field is flushed, allow sufficient time for germination of the weed species to occur prior to treatment.

Apply Liberty® Herbicide prior to the permanent flood when weeds are in the 1-5 leaf stage. A second application is recommended after a new flush of weeds emerge. A second application may be made from 10-14 days after the first application up to the mid-tillering growth stage of the rice. For optimum weed control, apply Liberty® Herbicide before canopy closure to ensure thorough spray coverage of the weed species.

When applying Liberty® Herbicide post-flood, lower the water level so that 75% of the weed foliage is exposed. The water level may be brought back to normal level 48 hours after the herbicide application.

APPLICATION TIMING FOR CALIFORNIA

1. Water-Seeded Rice

Liberty® Herbicide can be applied when the rice is in the 1-leaf stage to mid-tillering stage of development (but prior to panicle initiation). For optimum weed control apply Liberty® Herbicide when rice is in the 4- to 5-leaf stage. Lower the water in the field in order to expose small broadleaf weeds and sedges. The water level may be brought back to the normal level 24 hours after herbicide application. The water level must be controlled such that the rice is not completely covered. A second application is recommended at the 2 to 3 tiller stage of rice. For optimum weed control, apply Liberty® Herbicide before canopy closure to ensure thorough spray coverage of the weed species.

2. Drilled or Dry-Seeded Rice

Rice fields should be as level as possible and free of large clods to obtain uniform germination of rice and grassy weeds and to ensure uniform flood levels. If necessary, fields may be flushed prior to treatment so that the rice and grass/broadleaf weeds are actively growing at the time of treatment. If the rice field is flushed, allow sufficient time for germination of the weed species to occur prior to treatment.

Apply Liberty® Herbicide prior to the permanent flood when weeds are in the 1-5 leaf stage. A second application is recommended after a new flush of weeds emerge. A second application may be made from 10-14 days after the first application up to the mid-tillering growth stage of the rice. For optimum weed control, apply Liberty® Herbicide before canopy closure to ensure thorough spray coverage of the weed species.

Rate Recommendation Tables for Weed Control in Rice

Rates in ounces of formulated product per acre for the control of weeds are shown in the following tables. In weed populations with mixed species, apply the rates needed for all species present.

1. Southern United States (Arkansas, Louisiana, Mississippi, Missouri, Texas)

Grass Weeds Controlled with Liberty® Herbicide in Rice Grown in the Southern United States

Weed Species	Maximum Weed Growth Stage (leaf/tiller)	
	28 Fl. Oz./A	34 Fl. Oz./A
Barnyardgrass	4 leaf	2 tiller
Crabgrass, large	4 leaf	2 tiller
Fall Panicum	4 leaf	2 tiller
Johnsongrass	4 leaf	2 tiller
Rice, red*	2 leaf	2 tiller
Signalgrass, broadleaf	4 leaf	2 tiller
Sprangletop	4 leaf	2 tiller
Watergrass	6 leaf	2 tiller

*For optimum red rice control, make two applications of Liberty® Herbicide. The first application should be made when the red rice is in the 2 – 3 leaf stage. The second application should be made after the newly emerged red rice reaches the 2 – 3 leaf stage, but before the white rice reaches the mid-tillering stage of development.

Broadleaf Weeds Suppressed or Controlled with Liberty® Herbicide in Rice Grown in the Southern United States

Weed Species	Maximum Weed Height or Diameter (Inches)	
	28 Fl. Oz./A	34 Fl. Oz./A
Ammania	2"	4"
California Arrowhead	**	4"
Cocklebur, common	6"	10"
Curly Indigo	2"	8"
Dayflower	2"	4"
Eclipta	4"	6"
Morningglory, ivyleaf	4"	8"
Morningglory, pitted	4"	8"
Northern jointvetch	4"	8"
Pennsylvania smartweed	4"	8"
Sesbania, hemp	4"	10"

** *indicates suppression*

Liberty® Herbicide applied at 28 fluid ounces per acre may control or suppress the sedges shown in the following table. Control of sedges may be enhanced by using a second application or by a tank mix with other herbicides recommended on this label.

Sedges Suppressed with Liberty® Herbicide in Rice Grown in the Southern United States

Sedges	34 Fl. Oz./A
Bulrushes	**
Flatsedge	**
Nutsedge	**
Smallflower Umbrellaplant	**

** indicates suppression

2. California

Grass Weeds Controlled with Liberty® Herbicide
at *28* Fluid Ounces/Acre in Rice Grown in California

Weed Species	Maximum Weed Growth Stage
Barnyardgrass	4 leaf
Sprangletop	4 leaf
Watergrass	4 leaf

Broadleaf Weeds Suppressed or Controlled
with Liberty® Herbicide in Rice Grown in California

Weed Species	Maximum Weed Height (Inches)	
	28 Fl. Oz. /A	34 Fl. Oz. /A
Ammania	2	4
California Arrowhead	2	4
Ducksalad	2	4

Liberty® Herbicide applied at 28 to 34 fluid ounces per acre may control or suppress the sedges shown in the following table. Control of sedges may be enhanced by using a second application or tank mixes with other herbicides.

Sedges Suppressed or Controlled
With Liberty® Herbicide in Rice Grown in California.

Weed Species	Maximum Weed Height (Inches)	
	28 Fl. Oz./A	34 Fl. Oz./A
Ricefield bullrush	**	4
Smallflower Umbrellaplant	**	4

** indicates suppression

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with properly calibrated and clean equipment. Liberty® is specially formulated to mix readily in water. Prior to adding Liberty® to the spray tank, ensure that the spray tank is thoroughly clean, particularly if a herbicide with the potential to injure crops was previously used (see *Cleaning Instructions*).

Mix Liberty® Herbicide with water to make a finished spray solution as follows:

1. Fill the spray tank half full with water.
2. Start agitation.
3. If using a dry flowable/wettable powder tank mix partner recommended on this label, prepare a slurry of the proper amount of the product in a small amount of water.
4. Add the slurry of the tank mix partner to the spray tank.
5. If using a liquid tank mix partner recommended on this label, add the proper amount of the product.
6. Complete filling the spray tank with water.
7. Add the proper amount of Liberty® Herbicide and continue agitation.
8. If foaming occurs, use a silicon-based antifoam agent.

Ensure that all spray system lines including pipes, booms, and filters have the correct concentration of Liberty® Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming.

If the tank mix partners recommended on this label are added, maintain good agitation at all times until contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers should be no finer than 50 mesh.

APPLICATION METHODS

Uniform, thorough spray coverage is important to achieve consistent weed control. For best results, use flat-fan nozzles. Do not use flood-jet nozzles, controlled droplet application equipment, or air-assisted spray equipment.

Ground Application: Refer to the *Rate Recommendation Tables for Weed Control* in the following sections for the proper application rates. DO NOT apply when winds are gusty, or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure consistent weed control, apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern. DO NOT apply at ground speeds exceeding 12 mph. Liberty® Herbicide should be applied broadcast in a minimum of 10 gallons of water per acre. Under dense weed/crop canopies, 20 to 40 gallons of water per acre should be used so that thorough spray coverage will be obtained.

The use of 80-degree or 110-degree flat-fan nozzles is highly recommended for optimum spray coverage and canopy penetration. Use a spray pressure of 30 to 60 pounds per square inch (measured at the nozzle). If using Turbo TeeJet® spray tips, use a minimum pressure of 45 pounds per square inch so that thorough spray coverage will be obtained. For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Aerial Application: Refer to the *Rate Recommendation Tables for Weed Control* in the following sections for the proper application rates. Liberty® Herbicide should be applied in a minimum of 10 gallons per acre with spray nozzle tips and sufficient pressure to provide a uniform pattern and median droplet size of 350 to 450 microns. DO NOT use raindrop nozzles. Aerial applications with this product should be made at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi.

Avoid application during conditions when uniform coverage cannot be obtained or where excessive spray drift may occur. Do not apply when wind causes drift to off-site vegetation or damage to off-site vegetation or crops may occur.

TANK MIX RECOMMENDATIONS FOR USE IN RICE

When using Liberty® Herbicide in tank mix combinations, follow the precautions and directions of the most restrictive label for the appropriate timing, rate, and crop response information.

1. Southern United States (Arkansas, Louisiana, Mississippi, Missouri, Texas)

To enhance weed control and/or provide residual control in rice, Liberty® Herbicide may be mixed with the following herbicides.

Arrosolo® 3-3E Herbicide

Basagran® Herbicide

Bolero EC® Herbicide

Londax® Herbicide

Prowl® 3.3EC Herbicide

Propanil

Stam® Herbicide

Permit® Herbicide

2. California

To enhance weed control and/or provide residual control in rice, Liberty® Herbicide may be mixed with the following herbicides.

Londax® Herbicide

Stam® Herbicide

Super Wham® Herbicide

APPLICATION DIRECTIONS FOR USE ON COTTON

Liberty® Herbicide may be applied as a broadcast, over-the-top, post-emergence spray or as a directed spray only to LibertyLink® cotton or other cotton varieties or cultivars warranted by Bayer CropScience as tolerant to Liberty® Herbicide.

This product may be applied post-emergence to non-tolerant cotton varieties or cultivars by using equipment designed to minimize contact of the spray with the cotton foliage. See the *Application Methods on Non-Tolerant Cotton* section for selection of shielding equipment. **SEVERE INJURY OR DEATH MAY RESULT IF THE LIBERTY® HERBICIDE CONTACTS THE FOLIAGE OR STEMS OF COTTON NOT TOLERANT TO LIBERTY® HERBICIDE.**

Liberty® Herbicide is only foliar-active with little or no activity in soil. Weeds that emerge after application will not be controlled. Apply Liberty® Herbicide to actively growing weeds as described in the *Applications Methods* section to get maximum weed control. **THOROUGH SPRAY COVERAGE IS NECESSARY FOR BEST HERBICIDAL PERFORMANCE.** Necrosis of leaves and young shoots occur within 2 to 4 days after application under good growing conditions.

Liberty® Herbicide is rainfast four (4) hours after application to most weed species; therefore, rainfall within four (4) hours may necessitate retreatment or may result in reduced weed control. Do not apply when wind causes drift to off-site vegetation as injury may occur. Weed control may be reduced if application is made when heavy dew, fog and mist/rain are present; or when weeds are under stress due to environmental conditions such as drought, cool temperatures or extended periods of cloudiness. To maximize weed control, do not cultivate from 5 days before an application to 7 days after an application.

Refer to the *Rate Recommendation Tables for Weed Control in Cotton* section of this label for selection of the proper rate dependent upon weed species present and size. A repeat application of Liberty® Herbicide or tank mixes with a residual herbicide will be needed to control weeds that have not emerged at the time of application. See the *Tank Mix Recommendations for Use on Cotton* to select suitable tank mix partners.

RESTRICTIONS TO THE DIRECTIONS FOR USE ON COTTON

1. **DO NOT** apply Liberty® Herbicide to genetically modified cotton in Florida, South of Tampa (Florida Route 60), or in Hawaii, except for test plots or breeding nurseries.
2. **DO NOT** apply more than 40 fluid ounces per acre of Liberty® Herbicide in a single application.
3. **DO NOT** apply more than 80 fluid ounces per acre of Liberty® Herbicide to cotton.
4. **DO NOT** apply Liberty® Herbicide within 70 days prior to the cotton harvest.
5. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be not planted within 70 days after the last application of this product. The crops listed on this label may be planted at any time.
6. **DO NOT** apply this product through any type of irrigation system.

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with calibrated spray equipment. Liberty® is formulated to mix readily in water. Prior to adding Liberty® to the spray tank, ensure that the spray tank is thoroughly cleaned and free of other pesticides that may injure cotton (see *Cleaning Instructions*). See the *Tank Mix Recommendation for Use in Cotton* to select suitable tank mix partners and for directions for testing compatibility of tank mixtures.

Mix the finished spray solution as follows:

1. Fill the spray tank half-full with water.
2. Start agitation.
3. If mixing with a dry flowable/wettable powder tank mix partner, prepare a slurry of the proper amount of the product in a small amount of water. Add the slurry of dry materials to the spray tank.
4. If mixing with a liquid tank mix partner, add the liquid tank mix partner.
5. Complete filling the spray tank with water.
6. Add Liberty® Herbicide and continue agitation.
7. If foaming occurs, use a silicon-based anti-foam agent.

Ensure that all spray system lines including pipes, booms, and screens have the correct concentration of the spray solution by flushing out the system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming.

If a tank mix partner is added, maintain agitation until the contents of the tank is sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers must be 50 mesh or larger.

APPLICATION TO COTTON *TOLERANT* TO LIBERTY® HERBICIDE

APPLICATION TIMING TO *TOLERANT* COTTON

Liberty® Herbicide may be applied to cotton tolerant to Liberty® Herbicide from emergence up to the early bloom stage. Up to 40 fluid ounces of Liberty® Herbicide per acre may be applied per application. Up to 80 fluid ounces per acre may be applied per year.

APPLICATION METHODS TO *TOLERANT* COTTON

Refer to the *Rate Recommendation Tables for Weed Control in Cotton* to select the proper application rate based upon the weeds present and their size. Uniform and thorough spray coverage is required to achieve consistent weed control.

Ground Application: Apply Liberty® Herbicide to tolerant cotton as an over-the-top foliar spray or as a spray directed to the lower one-third of the cotton stand. Liberty® Herbicide should be applied broadcast in a minimum of 15 gallons of water per acre. Use a spray volume of 20 to 40 gallons per acre for dense weed/crop canopies so that thorough spray coverage will be obtained. Use only 80-degree or 110-degree flat-fan nozzles and a spray pressure between 30 to 60 pounds per square inch (measured at the nozzle) that will produce a droplet size of about 300 microns. If Turbo TeeJet® spray tips are used, a spray pressure of 60 or more pounds per square inch will be required to get thorough coverage of the weed foliage. Flood-jet nozzles, raindrop nozzles, controlled droplet application equipment or air-assisted (air injection) spray equipment do not provide adequate coverage characteristics; and therefore, are not recommended because weed control is likely to be reduced.

Do not apply when winds are gusty or when conditions will favor movement of spray particles off the desired spray target as injury to off-site vegetation may occur. Apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern to avoid drift and insure thorough coverage of the weeds. For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

Aerial Application: Apply Liberty® Herbicide with aerial equipment in a minimum of 10 gallons of water. Apply at a height of 10 feet or less above cotton and use low-drift nozzles. Adjust the nozzles to provide a uniform pattern and median droplet size of 350 to 450 microns while keeping the pressure at the nozzle at less than 40 psi. Do not apply when atmospheric conditions are favorable for spray drift and do not apply when wind could cause drift to surrounding vegetation as injury to off-site vegetation may occur (See *Spray Drift* section).

APPLICATION TO COTTON VARIETIES *NOT TOLERANT* TO LIBERTY® HERBICIDE

When applying to cotton *not tolerant* to Liberty® Herbicide, use a hooded applicator designed to minimize exposure of the cotton stand to the spray as described in the *Application Methods To Non-Tolerant Cotton* section of this label. A hooded sprayer directs the spray onto weeds, while shielding the cotton stand from contact. Do not allow spray to contact foliage or stem of desirable vegetation. This product may injure or kill any green vegetation exposed to the spray.

APPLICATION TIMING TO *NON-TOLERANT* COTTON

Apply Liberty® Herbicide to cotton from emergence up to the early bloom stage. Refer to the *Rate Recommendation Tables for Weed Control in Cotton* to select the proper application rate based on weeds present and their size. Uniform, thorough spray coverage is important to achieve consistent weed control.

APPLICATION METHODS TO *NON-TOLERANT* COTTON

Application of Liberty® Herbicide to cotton varieties ***not tolerant*** to Liberty® Herbicide requires the use of hooded spray equipment designed to minimize exposure of the spray to the cotton stand. Use nozzles that provide uniform coverage within the treated area. Keep hoods on these sprayers adjusted to protect desirable vegetation. EXTREME CARE MUST BE EXERCISED TO AVOID EXPOSURE OF THE DESIRABLE VEGETATION TO THE SPRAY.

With a hooded sprayer, the spray pattern is completely enclosed on the top and all 4 sides by a hood, thereby shielding the crop from the spray solution. This equipment must be set up and operated in a manner that avoids bouncing or raising the hoods off the ground in any way. The spray hoods must be operated on the ground or skimming across the ground. Tractor speed must be adjusted to avoid bouncing of the spray hoods. Avoid operation on rough or sloping ground where the spray hoods might be raised off the ground. If the hoods are raised, spray particles may escape and come into contact with the cotton, causing damage or destruction of the crop.

Herbicide rates and spray volume recommendations are presented as broadcast equivalents and must be reduced in proportion to the area actually treated. Use the following formulas to calculate the correct rate and volume per planted (field) acre:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast RATE per acre} = \text{Amount of banded product needed per acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast spray VOLUME per acre} = \text{Banded spray volume needed per acre}$$

RATE RECOMMENDATION TABLES FOR WEED CONTROL IN COTTON

Liberty® is formulated with a surfactant to provide optimum herbicide performance. Apply Liberty® Herbicide at rates from 32 to 40 fluid ounces per acre. The rate of Liberty® Herbicide in fluid ounces of formulated product per acre to be used for the control of weeds at specific heights is shown in the following tables. Increase the rate to 40 fluid ounces per acre for weeds exceeding the maximum weed height. Volunteer LibertyLink® crop plants (corn, rice, cotton, soybeans, sugarbeets) from the previous season will not be controlled by applications of Liberty® Herbicide.

Broadleaf Weeds Controlled by Liberty® Herbicide

Weed Species	Maximum Weed Height (inches)
	32 Fl. Oz./A
Amaranth, Palmer	3
Anoda, spurred	3
Beggarweed, Florida	3
Black medic	5
Blueweed, Texas	5
Burcucumber	8
Carpetweed	4
Chickweed, common	6
Cocklebur, common	12
Copperleaf, hophornbeam	4
Cotton, volunteer[1,2]	6
Croton, tropic	3
Croton, woolly	2
Eclipta	4
Devil's claw	2
Fleabane, annual	6
Groundcherry, cutleaf	4
Geranium, cutleaf	4
Horsenettle, Carolina[3]	2
Jimsonweed	8
Knotweed	3
Ladysthumb	12
Lambsquarters, common	4
Mallow, common	4
Mallow, Venice	6
Marestail	6
Marshelder, annual	4
Morningglory, entireleaf	6
Morningglory, ivyleaf	6
Morningglory, pitted	6
Morningglory, sharppod	2
Morningglory, smallflower	4
Morningglory, tall	6
Mustard, wild	4
Nightshade, black	4
Nightshade, eastern black	6
Nightshade, hairy	6
Pennycress	4

Weed Species	Maximum Weed Height (inches)
	32 Fl. Oz./A
Pigweed, redroot	3
Pigweed, prostrate	3
Pigweed, spiny	3
Pigweed, smooth	3
Pigweed, tumble	3
Puncturevine	4
Purslane, common	2
Pusley, Florida	**
Ragweed, common	8
Ragweed, giant	10
Senna coffee	4
Sesbania, hemp	6
Shepherd's-Purse	6
Sicklepod	4
Sida, prickly	4
Smartweed, Pennsylvania	12
Smellmelon	4
Sowthistle, annual	6
Soybeans, volunteer[1,2]	6
Spurge, prostrate	2
Spurge, spotted	2
Starbur, bristly	4
Sunflower, common	12
Sunflower, prairie	3
Sunflower, volunteer	8
Thistle, Russian	4
Velvetleaf	3
Waterhemp, common	4
Waterhemp, tall	4

** Indicates suppression

[1] Volunteer LibertyLink® cotton or soybeans from the previous season will not be controlled.

[2] Cultivation 7 to 10 days after application and/or retreatment 10-21 days after the first application is recommended for controlling dense clumps of volunteer soybeans and cotton.

[3] Two applications of Liberty® Herbicide may be required for control of Carolina horsenettle.

Grass Weeds Controlled by Liberty® Herbicide

Weed Species	Maximum Weed Height (inches)
	32 Fl. Oz./A
Barnyardgrass	3
Bluegrass, annual	3
Corn, volunteer[1,2]	10
Crabgrass, large	3
Crabgrass, smooth	3
Cupgrass, woolly	10
Foxtail, bristly	6
Foxtail, giant	10
Foxtail, green	10
Foxtail, robust purple	6
Foxtail, yellow[3]	3
Goosegrass[4]	2
Johnsongrass, seedling	3
Junglerice,	3
Panicum, fall	3
Panicum, Texas	4
Rice, red	4
Rice, volunteer[1,2]	4
Sandbur, field	**
Signalgrass, broadleaf	3
Sprangletop	4
Sorghum, volunteer	6
Stinkgrass	4
Witchgrass	4

** Indicates suppression

[1] Volunteer LibertyLink® corn or rice from the previous season will not be controlled.

[2] A timely cultivation 7 to 10 days after application and/or retreatment 10-21 days after the first application is recommended for controlling dense clumps of volunteer corn or rice.

[3] For best control of yellow foxtail, treat prior to tiller initiation.

[4] A sequential application may be necessary.

INSTRUCTIONS FOR BIENNIAL/PERENNIAL WEEDS

Liberty® Herbicide applied at 40 fluid ounces per acre may control or suppress the biennial and perennial weed species shown in the following table. Control of biennial and perennial weeds may be enhanced with a second application of Liberty® Herbicide or by a tank mix with the herbicides specified on this label.

Biennial and Perennial Weeds Controlled with Liberty® Herbicide

Weed Species	40 Fluid Ounce/Acre	32 Fluid Ounce/Acre followed by 32 Fluid Ounce/Acre
Alfalfa	**	✓
Artichoke, Jerusalem	**	✓
Bermudagrass	**	✓
Bindweed, field	**	✓
Bindweed, hedge	**	✓
Bluegrass, Kentucky	**	✓
Blueweed, Texas	**	✓
Bromegrass, smooth	**	✓
Bursage, woolyleaf	**	✓
Chickweed, Mouse-ear	**	✓
Clover, red	**	✓
Dandelion	**	✓
Dock, smooth	**	✓
Dogbane, hemp	**	**
Johnsongrass, rhizome	**	✓
Milkweed, common	**	**
Milkweed, honeyvine	**	**
Nightshade, silverleaf	**	✓
Nutsedge, purple	**	**
Nutsedge, yellow	**	**
Orchardgrass	**	✓
Poinsettia, wild	**	✓
Pokeweed	**	✓
Thistle, bull	**	✓
Thistle, Canada	**	✓

✓ Indicates control

** Indicates suppression

TANK MIX RECOMMENDATIONS FOR USE ON COTTON

Liberty® Herbicide may be applied in tank mix combinations with labeled rates of other products provided these other products are labeled for the timing and method of application for the cotton to be treated. The tank mix partner must be used in accordance with the label limitations and precautions. No label dosage rates may be exceeded. Liberty® Herbicide cannot be mixed with any product containing a label prohibition against such mixing. Refer to the specific crop section for rate recommendations and other restrictions.

TOLERANT COTTON

For cotton *tolerant* to Liberty® Herbicide, Dual® or STAPLE® Herbicide may be tank-mixed with Liberty® Herbicide and applied over-the-top post-emergence to enhance weed control and/or provide residual control.

ALL COTTON TYPES

The following herbicides may be mixed with Liberty® Herbicide for hooded-spray application to enhance weed control and/or provide residual control:

Caparol® 4L Herbicide	Direx® 4L Herbicide	Prowl® 3.3EC Herbicide
Cotoran® 4L Herbicide	Direx® 80DF Herbicide	Staple® Herbicide
Cotoran® DF herbicide	Karmex® DF Herbicide	AIM™ Herbicide
Glyphosate	Pendimex™ 3.3 Herbicide	

COMPATIBILITY TESTING

If Liberty® Herbicide is to be mixed with pesticide products labelled for cotton other than those listed above, test the compatibility of the intended tank mixture to mixing prior to mixing the products in the spray tank. The following procedure assumes a spray volume of 25 gallons per acre. For other spray volumes, adjust the amount of the water used accordingly. Check compatibility as follows:

1. Place 1.0 pint of water from the source that will be used to prepare the spray solution in a clear 1-quart jar.
2. For each pound of a dry tank mix partner to be applied per acre, add 1.5 teaspoons to the jar.
3. For each 16 fluid ounces of a liquid tank mix partner to be applied per acre, add 0.5 teaspoon to the jar.
4. For each 16 fluid ounces of Liberty® Herbicide to be applied per acre, add 0.5 teaspoon to the jar.
5. After adding all the ingredients, place a lid on the jar and tighten. Invert 10 times to mix.
6. Let the mixture stand for 15 minutes, and evaluate the solution for uniformity and stability. Look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. If the tank mix partners are not compatible, do not use the mixture in a spray tank.
7. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the *Storage and Disposal* section of this label.

APPLICATION DIRECTIONS FOR USE IN FIELD CORN SEED AND SOYBEAN SEED PROPAGATION

Liberty® Herbicide may be applied to select out susceptible "segregates", i.e., corn and soybean plants that are not tolerant to glufosinate-ammonium during seed propagation. Inbred lines, plants not possessing glufosinate-ammonium tolerance, will be severely injured or killed if treated with this herbicide. A hooded sprayer may be used to protect corn and soybean plants from coming into contact with the herbicide application.

Rate Recommendations for Seed Production

Corn: For the selection of tolerant corn "segregates", Liberty® Herbicide may be applied at up to 34 fluid ounces per acre plus ammonium sulfate (AMS) at 3 pounds per acre when corn is in the V-3 to V-4 stage of growth, i.e., 3 to 4 developed collars. A second treatment of 28 fluid ounces per acre plus AMS at 3 pounds per acre may be applied when the corn is in the V-6 to V-7 stage of growth or up to 24" tall.

Soybeans: For the selection of tolerant soybean "segregates", Liberty® Herbicide may be applied at up to 34 fluid ounces per acre when soybean is in the third trifoliate stage. A second treatment of 28 fluid ounces per acre may be applied up to the bloom growth stage of soybean.

APPLICATION DIRECTIONS FOR USE IN RICE SEED PROPAGATION

Liberty® Herbicide is to be applied as a foliar spray to selectively remove susceptible "segregates", i.e., undesirable rice plants which are not tolerant to glufosinate-ammonium and to control of a broad spectrum of emerged grass and broadleaf weeds in rice-seed production fields. Inbred lines or breeding material not possessing the glufosinate-ammonium tolerance gene will be severely injured or killed if treated with this herbicide. Apply Liberty® Herbicide exclusively to rice-seed propagation fields in which the desired plants are glufosinate-ammonium tolerant.

THOROUGH SPRAY COVERAGE IS VERY IMPORTANT. Liberty® Herbicide works best when weeds are small, and the crops and weeds are actively growing. Visual effects and control of rice susceptible "segregates" from Liberty® Herbicide applications occur within 2 to 4 days after application under good growing conditions. The ability of Liberty® Herbicide to eliminate rice plants not tolerant to Liberty® Herbicide may be reduced when heavy dew, fog, or mist/rain is present on the crop; or when the crop is under stress due to drought, cool temperatures, or extended periods of cloudiness.

Rice fields should be as level as possible and free of large clods to obtain uniform germination of rice and grassy weeds and to ensure uniform flood levels. If necessary, fields may be flushed prior to treatment. If fields are flushed prior to treatment, flush in sufficient time so that the rice and grass/broadleaf weeds are actively growing at time of treatment.

Do not allow spray to contact foliage or green tissue of desirable vegetation other than rice lines in which the desired plants are glufosinate-ammonium tolerant. This product will injure any other green vegetation contacted by the spray.

INSTRUCTIONS FOR SEED HANDLING, STORAGE AND USE

Seed from treated plants must be held in secured storage until used for breeding of glufosinate-ammonium tolerant rice seed, or destroyed. Seed from treated plants must be labeled as follows: "Do Not Use for Feed or Food Purposes. Store Away from Feed and Food Stuffs." In addition, label the seed with the "Seed Disposal" statements found in the "Storage and Disposal" section of this label.

RESTRICTIONS TO THE DIRECTIONS FOR USE

1. **DO NOT** use rice, any rice processed commodities or rice straw treated with Liberty® Herbicide for food or feed consumption.
2. **DO NOT** exceed 112 fluid ounces per acre of Liberty® Herbicide per growing season on rice being treated for segregate control in seed production fields.
3. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide for 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum and triticale which may be planted 70 days after the last application of this product.
4. **DO NOT** apply this product through any type of irrigation system.

MIXING INSTRUCTIONS

Liberty® Herbicide must be applied with properly calibrated and clean equipment. Liberty® is specially formulated to mix readily in water. Prior to adding Liberty® to the spray tank, ensure that the spray tank is thoroughly clean, particularly if a herbicide with the potential to injure crops was previously used (see *Cleaning Instructions*).

Mix Liberty® Herbicide with water to make a finished spray solution as follows:

1. Fill the spray tank half full with water.
2. Start Agitation
3. If using a dry flowable/wettable powder tank mix partner recommended on this label, prepare a slurry of the proper amount of the product in a small amount of water.
4. Add the slurry of dry materials to the spray tank.
5. If using a liquid tank mix partner recommended on this label, add the proper amount of the product.
6. Complete filling the spray tank with water.
7. Add the proper amount of Liberty® Herbicide and continue agitation.
8. If foaming occurs, use a silicon based antifoam agent.

Ensure that all spray system lines including pipes, booms and filters have the correct concentration of Liberty® Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers should be no finer than 50 mesh.

If the tank mix partners recommended on this label are added, maintain good agitation at all times until contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

APPLICATION METHODS

Uniform, thorough spray coverage is important to achieve consistent weed control. For best results, use flat-fan nozzles. Do not use flood-jet nozzles, controlled droplet application equipment, or air-assisted spray equipment.

Ground Application: Refer to the *Rate Recommendation for Seed Production* in the following section for the proper application rates. Avoid application when wind conditions can cause drift to off-site vegetation. To avoid drift and ensure consistent weed control, apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern. DO NOT apply at ground speeds exceeding 12 mph. Liberty® Herbicide should be applied broadcast in a minimum of 10 gallons of water per acre. Under dense weed/crop canopies, 20 to 40 gallons of water per acre should be used so that thorough spray coverage will be obtained. For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

The use of 80-degree or 110-degree flat-fan nozzles is highly recommended for optimum spray coverage and canopy penetration. Use a spray pressure of 30 to 60 pounds per square inch (measured at the nozzle). If using Turbo TeeJet® spray tips, use a minimum pressure of 45 pounds per square inch so that thorough spray coverage will be obtained. Do not use raindrop nozzles.

Aerial Application: Refer to the *Rate Recommendation for Seed Production* in the following section for the proper application rates. Liberty® Herbicide should be applied in a minimum of 10 gallons per acre with spray nozzle tips and sufficient pressure to provide a uniform pattern and median droplet size of 200 to 350 microns. Aerial applications with this product should be made at a maximum height of 10 feet above the crop with low drift nozzles at a maximum pressure of 40 psi.

Avoid application during conditions when uniform coverage cannot be obtained. Do not apply when wind conditions can cause drift to off-site vegetation or injury to vegetation contacted by the spray could occur.

Rate Recommendations and Timing for Seed Production

For the selection of susceptible rice "segregates", Liberty® Herbicide must be applied at 56 fluid ounces per acre when rice is in the 1 to 3 leaf stage of growth. A second treatment of 56 fluid ounces per acre must be applied 14 days later or up until the rice is in the mid-tillering state of growth.

WATER MANAGEMENT

A sufficient portion of the target grassy weed plant must be exposed to Liberty® Herbicide for satisfactory control to be achieved. Therefore, if necessary, lower or allow water to recede so that at least 75% of the weed foliage is exposed above the water level. Do not increase the water level for at least 48 hours following the application of Liberty® Herbicide. The water level may be brought back to normal level following this period.

TANK MIX RECOMMENDATIONS FOR LIBERTY® HERBICIDE USE IN RICE SEED PROPAGATION

When using Liberty® Herbicide in tank mix combinations, follow the precautions and directions of the most restrictive label for the appropriate timing, rate, and crop response information.

1. **Southern United States (Arkansas, Louisiana, Mississippi, Missouri, Texas)**

To enhance weed control and/or provide residual control in rice, Liberty® Herbicide may be mixed with the following herbicides.

Arrosolo® 3-3E Herbicide

Basagran® Herbicide

Bolero® 8EC Herbicide

Londax® Herbicide

Prowl® 3.3 EC Herbicide

Stam® Herbicide

Permit® Herbicide

2. **California**

To enhance weed control and/or provide residual control in rice, Liberty® Herbicide may be mixed with the following herbicides.

Bolero® 8EC Herbicide

Londax® Herbicide

Stam® Herbicide

Super Wham® Herbicide

APPLICATION DIRECTIONS FOR USE IN COTTON SEED PROPAGATION

Liberty Herbicide may be used as a foliar spray to selectively eliminate cotton plants that do not carry a gene that imparts tolerance to glufosinate-ammonium and as such, can be applied to remove susceptible segregates during cotton seed propagation. Breeding material not possessing the glufosinate-ammonium tolerance gene will be severely injured or killed if treated with this herbicide.

RESTRICTIONS TO THE DIRECTIONS FOR USE

1. **DO NOT** apply more than 40 fluid ounces per acre of Liberty® Herbicide to cotton in a single application.
2. **DO NOT** apply more than 80 fluid ounces per acre of Liberty® Herbicide to cotton per season.
3. **DO NOT** plant rotation crops in a field treated with Liberty® Herbicide within 120 days or more after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days or more after the last application of this product. Corn, soybeans, canola, or sugarbeets tolerant to glufosinate-ammonium may be planted at any time.
4. **DO NOT** apply this product through any type of irrigation system.
5. **DO NOT** apply Liberty® Herbicide within 70 days prior to the cotton harvest.

APPLICATION METHODS

Uniform, thorough spray coverage is important to achieve consistent weed control. For best results, use flat-fan nozzles.

Ground Application: Liberty® Herbicide should be applied broadcast in a minimum of 15 gallons of water per acre. Use a spray volume of 20 to 40 gallons of water per acre under dense weed and crop populations so that thorough spray coverage will be obtained. Apply Liberty® Herbicide using 80-degree or 110-degree flat-fan nozzles. Select a spray pressure between 30 to 60 pounds per square inch (measured at the nozzle) that will achieve a droplet size of about 300 microns. If Turbo TeeJet® spray tips are used, a spray pressure of 60 or more pounds per square inch will be required to get thorough coverage of the weed and crop foliage. Flood-jet nozzles, raindrop nozzles, controlled droplet application equipment or air-assisted spray equipment do not provide adequate coverage and are not recommended.

Do not apply when winds are gusty or when conditions will favor movement of spray particles off the desired spray target as injury to off-site vegetation may occur. Apply Liberty® Herbicide with the spray boom as low as possible while maintaining a uniform spray pattern.

Rate Recommendations and Timing for Cotton Seed Propagation

For the selection of susceptible cotton plant "segregates", apply Liberty® Herbicide as an over-the-top foliar spray or as a post-directed spray from emergence up to the early bloom stage. Up to 40 fluid ounces of Liberty® Herbicide per acre may be used per application. Do not apply more than 80 fluid ounces per acre of Liberty® Herbicide per season.

TANK MIX RECOMMENDATIONS FOR USE IN COTTON SEED PROPAGATION

Liberty® Herbicide may be applied in tank mix combinations with labeled rates of other products provided these other products are labeled for the timing and method of application for the cotton to be treated. The tank mix partner must be used in accordance with the label limitations and precautions. No label dosage rates may be exceeded. Liberty® Herbicide cannot be mixed with any product containing a label prohibition against such mixing. Refer to the specific crop section for rate recommendations and other restrictions.

TOLERANT COTTON

For cotton *tolerant* to Liberty® Herbicide, Dual® or STAPLE® Herbicide may be tank-mixed with Liberty® Herbicide and applied over-the-top post-emergence to enhance weed control and/or provide residual control.

ALL COTTON TYPES

The following herbicides may be mixed with Liberty® Herbicide for hooded-spray application to enhance weed control and/or provide residual control:

Caparol® 4L Herbicide	Direx® 4L Herbicide	Prowl® 3.3EC Herbicide
Cotoran® 4L Herbicide	Direx® 80DF Herbicide	Staple® Herbicide
Cotoran® DF herbicide	Karmex® DF Herbicide	AIM™ Herbicide
Glyphosate	Pendimex™ 3.3 Herbicide	

COMPATIBILITY TESTING

If Liberty® Herbicide is to be mixed with pesticide products labelled for cotton other than those listed above, test the compatibility of the intended tank mixture to mixing prior to mixing the products in the spray tank. The following procedure assumes a spray volume of 25 gallons per acre. For other spray volumes, adjust the amount of the water used accordingly. Check compatibility as follows:

1. Place 1.0 pint of water from the source that will be used to prepare the spray solution in a clear 1-quart jar.
2. For each pound of a dry tank mix partner to be applied per acre, add 1.5 teaspoons to the jar.
3. For each 16 fluid ounces of a liquid tank mix partner to be applied per acre, add 0.5 teaspoon to the jar.
4. For each 16 fluid ounces of Liberty® Herbicide to be applied per acre, add 0.5 teaspoon to the jar.
5. After adding all the ingredients, place a lid on the jar and tighten. Invert 10 times to mix.
6. Let the mixture stand for 15 minutes, and evaluate the solution for uniformity and stability. Look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. If the tank mix partners are not compatible, do not use the mixture in a spray tank.
7. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the *Storage and Disposal* section of this label.

APPLICATION DIRECTIONS FOR USE ON LISTED TREE AND VINE CROPS

GENERAL INFORMATION

LIBERTY® HERBICIDE is a nonselective herbicide for application as a foliar spray for the control of a broad spectrum of emerged annual and perennial grass and broadleaf weeds. LIBERTY® HERBICIDE will also control certain woody species. Plants that have not yet emerged at the time of application will not be controlled. THOROUGH SPRAY COVERAGE IS IMPORTANT. Visual effects and control from an application of LIBERTY® HERBICIDE occur within 2 to 4 days after application under good growing conditions.

Avoid all contact with foliage or green tissue of desirable vegetation. Do not spray during windy conditions. This product may injure or kill growing plants that receive spray drift or if they receive applications of a spray mixture containing LIBERTY® HERBICIDE by error or accident. If desirable vegetation is contacted, rinse the sprayed portion with water immediately to reduce potential injury.

LIBERTY® HERBICIDE works best when weeds are actively growing. Warm temperatures, high humidity, and bright sunlight improve the performance of LIBERTY. Weed control may be reduced when applications are made to weeds under stress due to drought or cool temperatures. Weeds under stress or in dense populations will require application at the highest specified label use rate. Stressed conditions also include prior treatments of other contact or systemic herbicides. Do not retreat these weeds with LIBERTY until sufficient new or regrowth has occurred. Refer to the *How to Apply* section of this label.

Apply LIBERTY® HERBICIDE as a directed spray to control undesirable vegetation in apple orchards, grape vineyards, and in tree nut groves for tree nuts listed below. When applied as recommended in this label, LIBERTY® HERBICIDE controls annual and perennial weeds. Refer to the *How to Apply* section of this labeling for recommended rates and a list of weeds controlled. Apply as a broadcast, banded, or spot treatment application depending on the situation. Avoid direct spray or drift to desirable vegetation. Regrowth may occur due to the weed stage of growth at application, low use rate, or environmental conditions. Repeat applications of LIBERTY® HERBICIDE may be necessary to control plants generating from underground parts or seed.

Tree Nuts	Vineyards	Tree Fruits
almonds	all grape varieties	apples
pecans	(table, wine,	
walnuts	and raisins)	
filberts		
hickory nuts		
macadamia nuts (bush nuts)		
pistachios		

Do not apply on, or allow spray to drift onto, desirable foliage of trees and vines, as damage will occur. Avoid contact with green, uncaliused bark on young trees and vines as injury may occur. Do not apply LIBERTY® HERBICIDE to trees or vines established less than one year, unless protected from spray contact by non-pourous wraps, grow tubes, or waxed containers.

Refer to the *When to Apply*, *Mixing Procedures*, and *How to Apply* sections of this label for information on how and when to properly mix and apply this product. Do not apply more than 345 fluid ounces of LIBERTY® HERBICIDE per acre to tree and vine crops in a 12-month period.

WHEN TO APPLY

LIBERTY® HERBICIDE is a foliar-active material with little or no perceptive soil-residual activity. Best results are obtained when applications are made to actively growing weeds. LIBERTY® HERBICIDE is rainfast for most weeds within 4 hours after application. Rainfall, overhead irrigation, or flood irrigation within 4 hours may necessitate retreatment.

Apply LIBERTY® HERBICIDE at the rate recommended in the *How to Apply* section of this label. Repeat applications of LIBERTY® HERBICIDE or tank mixes of LIBERTY® HERBICIDE with appropriate residual herbicides will be needed to control weeds emerging from underground parts or seeds.

When using LIBERTY® HERBICIDE in a weed control program with other herbicides, follow the precautions and "Directions For Use" for those herbicides.

HOW TO APPLY

Apply LIBERTY® HERBICIDE by ground equipment only. Do not apply LIBERTY® HERBICIDE aerially to Tree and Vine Crops. Do not apply this product through any type of irrigation system. Good spray coverage of target weeds is necessary for optimum control.

Broadcast Application

Use the recommended rate of LIBERTY® HERBICIDE as shown in the following sections. LIBERTY® HERBICIDE should be applied in a minimum of 15 gallons of water per acre. Under dense weed canopies, 20 to 40 gallons of water per acre should be used so that thorough spray coverage will be obtained. Select a spray pressure which will achieve a droplet size of about 300 microns. Properly calibrate your spraying equipment to assure applications at the correct rates and volumes.

Banded Application

Banded applications may be used using the following formula to calculate the amount of herbicide needed for orchard or vineyard strip sprays:

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Rate per acre broadcast} = \text{Amount of herbicide needed for treatment}$$

For best results with ground broadcast or banded application equipment, use flat fan nozzles. Check for even distribution of spray droplets. Do not apply when weather conditions favor drift, such as when winds are gusty. Applications under conditions which cause drift of this product will result in damage to any vegetation contacted.

Spot or Directed-Spray Application

For spot or spray application, use LIBERTY® HERBICIDE at 2.4 fluid ounces of product per gallon of water. Spray undesirable vegetation foliage on a spray-to-wet basis prior to runoff. Ensure uniform and complete coverage. Use a coarse spray. Do not spray during windy conditions. Thoroughly clean the sprayer following use.

DO NOT make spot spray applications to apple suckers, as tree injury may occur.

Weeds Controlled by LIBERTY® HERBICIDE

For spot application: Apply 2.4 fluid ounces of product per gallon of water and on a spray-to-wet basis prior to runoff.

For broadcast application: Apply to vigorously growing broadleaf weeds between cotyledon and early seedling stage of growth and pre-tillered grassy weeds. Apply 57.5 fluid ounces of product per acre to weeds less than 6 inches in height or diameter. Apply 96 fluid ounces of product per acre to weeds greater than 6 inches in height or diameter.

Broadleaf Weeds			Grasses	
alkali sida[1]	groundcherry	Smartweed, Pennsylvania	barnyardgrass	windgrass
bull thistle	groundsel, common[1]	spurge, prostrate	bluegrass, annual	witchgrass
California arrowhead[1]	henbit[1]	starthistle, yellow[1]	brome, ripgut[1]	yellow foxtail
California burclover[1]	jimsonweed	sunflower	Bulrush**	
carpetweed	knotweed	swine cress[1]	canarygrass[1]	
chickweed	kochia	turkey mullein[1]	cupgrass	
Chinese thornapple[1]	London rocket	wild radish[1]	fall panicum	
clover	malva (little mallow)	willowherb, panicle[1]	giant foxtail	
common cocklebur	marestail		goosegrass	
common mallow	mayweed[1]		green foxtail	
common mullein[1]	miners lettuce[1]		Johnsongrass	
common yarrow[1]	morningglory, annual		jungle rice	
cudweed[1]	Mustard, wild		lovegrass	
cutleaf eveningprimrose[1]	pineapple weed[1]		soft chess[1]	
dodder[1]	puncture vine		shattercane	
eclipta	purple ammannia[1]		sprangletop	
fiddleneck[1]	purslane		stinkgrass	
filaree	redmaids[1]		Texas Panicum	
goosefoot[1]	shepherdspurse		toad rush**	

[1] Use for control of annotated weeds not permitted in California unless otherwise directed by supplemental labeling.

** **Indicates** Suppression

For spot application:

Apply 2.4 fluid ounces of product per gallon of water.

For broadcast application:

Apply 77 fluid ounces of product per acre when the weeds are less than 8 inches tall or in the rosette stage and to tillered grasses. Apply 115 fluid ounces of product per acre to broadleaf weeds greater than 8 inches tall in the reproductive stage, or growing under stressed conditions and to fully tillered grasses.

Broadleaf Weeds			Grasses and Sedges	
annual sowthistle	mugwort	vetch	smooth bromegrass	ryegrass
bindweed	musk thistle	Virginia copperleaf	torpedograss	sandbur
buffalobur	nettle	white clover	vaseygrass	
burdock	nightshade	white heath aster	wheat	Woody Species
Canada thistle	pennycress	wild buckwheat	wild oat	*Rubus* spp.
curly dock	pigweed, red root	wild mustard	crabgrass	poison ivy/oak
dandelion	plantain	wild onion	dallisgrass	
dogbank (hemp)	prickly lettuce	wild rose	downy bromegrass	
field gromwell	ragweed	wild turnip	fescue	
fleabane	redstem filaree[1]	woodsorrel	guineagrass	
goldenrod	Russian thistle	yellow rocket	Kentucky bluegrass	
horsetail	tansy mustard		nutsedge	
lambsquarters	velvetleaf		paragrass	
leafy spurge	vervain		quackgrass	

[1] Use for control of redstem filaree not permitted in California unless otherwise directed by supplemental labeling.

Sucker Control with LIBERTY® HERBICIDE

LIBERTY® HERBICIDE will reduce or eliminate sucker growth when applied to suckers that are young, green, and uncallused. For sucker control, apply a split application approximately 4 weeks apart at 77 fluid ounces of product per acre. Coverage of all sucker foliage is necessary for optimum control. Suckers should *not* exceed 12 inches in length.

Tank Mixtures

Always predetermine the compatibility of labeled tank mixtures of this herbicide with water carrier by mixing small proportional quantities in advance. Always add individual formulations to the spray tank according to the following sequence (first to last): wettable powder, flowable, emulsifiable concentrate, drift control additive, water-soluble liquid followed by surfactant.

Mixing Procedures:

1. Fill the spray tank one-half full with water.
2. Add the tank mix product to the spray tank.
3. Fill the spray tank with water to the desired level.
4. Add the recommended amount of LIBERTY® HERBICIDE; always add the LIBERTY® HERBICIDE last to help reduce foaming.
5. Nonionic antifoaming agents may be used.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh. Carefully select proper nozzle to avoid spraying a fine mist. For best results with conventional ground application equipment, the use of flat fan nozzles is suggested.

Tank Mix Recommendations for Tree and Vine Crops

LIBERTY® HERBICIDE does not provide residual weed control. LIBERTY® HERBICIDE will not control underground, unexposed plants, or plant parts. Delay application until plants have emerged. Tank mix applications of LIBERTY® HERBICIDE plus the following residual herbicides are recommended for broad spectrum control and residual activity. Refer to label of companion tank mix products for directions, limitations, warnings, and list of weeds controlled.

Chateau

Simazine 4L

Simazine 80W

Simazine 90

Karmex® DF

Sinbar® 80W

Solicam® DF

Surflan® A.S.

Devrinol® 50WP

Goal® 1.6E

Princep® 4L

RESTRICTIONS AND PRECAUTIONS FOR TREE AND VINE CROPS

1. *DO NOT* apply more than 345 fluid ounces of this product per acre to any site in any calendar year.
2. *DO NOT* graze, harvest, and/or feed treated orchard cover crops to livestock.
3. *DO NOT* apply this product through any type of irrigation system.
4. *DO NOT* apply this product aerially to tree and vine crops.
5. *DO NOT* apply this product within 14 days of nut, apple, or grape harvest.
6. Compatibility of LIBERTY® HERBICIDE and clay-based, dry-flowable herbicides should be determined before tank mixing.

APPLICATION DIRECTIONS FOR USE ON LISTED BERRIES*

Apply LIBERTY® HERBICIDE as a directed spray to control undesirable vegetation in bushberry and other berry crops listed below. When applied as recommended in this label, LIBERTY® HERBICIDE controls annual and perennial weeds. Refer to the *Weeds Controlled by Liberty® Herbicide* section of this label for recommended rates and a list of weeds controlled. Apply as a broadcast, banded, or spot treatment application depending on the situation. Avoid direct spray or drift to desirable vegetation. Regrowth may occur due to the weed stage of growth at application, low use rate or environmental conditions. Repeat applications of LIBERTY® HERBICIDE may be necessary to control plants generating from underground parts or seed.

Bushberry Crops	Other Berry Crops
blueberry	lingonberry
currant	juneberry
elderberry	salal
gooseberry	
huckleberry	

Do not apply on or allow spray to drift onto desirable foliage of the berry bushes as damage will occur. Avoid contact with green or uncallused bark on young bushes as injury may occur.

Refer to the *When to Apply*, *Mixing Procedures*, and *How to Apply* sections of this label for information on how to properly mix, and how and when to apply this product.

USE PRECAUTIONS

1. *DO NOT* apply more than 230 fluid ounces of LIBERTY® HERBICIDE per acre (3 lbs. ai per acre) to berry bushes in a 12-month period.
2. *DO NOT* apply this product within 14 days of berry harvest.
3. *DO NOT* graze, harvest and/or feed treated cover crops to livestock.
4. *DO NOT* apply this product through any type of irrigation system.
5. *DO NOT* apply this product aerially to berries.

***Use on Berries not permitted in California unless otherwise directed by supplemental labeling.**

APPLICATION DIRECTIONS FOR POTATO VINE DESICCATION*

Apply LIBERTY® HERBICIDE at the beginning of natural senescence of potato vines. Apply 29 fluid ounces of product per acre. Do not split this application or apply more than one application per harvest. Potato varieties with heavy or dense vines may require an application of another desiccation product to complete vine desiccation.

Thorough coverage of the potato vines to be desiccated is essential. Use a sufficient volume of water to obtain a thorough coverage of the potato vines.

USE PRECAUTIONS

1. Do not harvest potatoes until 9 days or more after application of LIBERTY® HERBICIDE.
2. Do not apply to potatoes grown for seed.
3. Do not plant treated areas to wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale until 30 or more days after an application of LIBERTY® HERBICIDE as a potato vine desiccant.
4. Do not plant treated areas to crops other than those listed above and below in this use precautions section until 120 or more days after an application of LIBERTY® HERBICIDE as a potato vine desiccant.
5. Field corn and soybeans may be planted at any time after the application of LIBERTY® HERBICIDE as a potato vine desiccant.

GROUND APPLICATION: Apply LIBERTY® HERBICIDE in 20 to 100 gallons of water per acre, using 80-degree or 110-degree flat-fan nozzles. Select a spray pressure between 30 to 60 pounds per square inch (psi) measured at the nozzle that will achieve a droplet size of about 300 microns. Vary the gallons of water per acre and the spray pressure as indicated by the density of the potato vines to assure thorough spray coverage. Increase the spray volume to at least 30 gallons of water per acre when the potato vine canopy is dense or under cool and dry conditions. If Turbo TeeJet® spray tips are used, a spray pressure of 60 or more pounds per square inch will be required to get thorough coverage. Do not apply when winds are gusty or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure consistent weed control, apply LIBERTY® HERBICIDE with the spray boom as low as possible while assuring thorough coverage of the potato vines.

AERIAL APPLICATION: Apply LIBERTY® HERBICIDE with aerial equipment in 5 to 10 gallons of water, using the higher volume of water when potato vines are dense. Apply at a height of 10 feet or less above the potato vines and use low-drift nozzles. Adjust the nozzles to provide a uniform pattern and median droplet size of 350 to 450 microns while keeping the pressure at the nozzle at less than 40 psi. Do not apply aerially when atmospheric conditions give rise to spray drift and do not apply when wind could cause drift to surrounding vegetation.

Mixing Procedures:

1. Fill the spray tank to the desired level with water.
2. Add the recommended amount of LIBERTY® HERBICIDE.
3. The addition of a nonionic antifoaming agent may reduce foaming, especially when using soft water. Additional surfactant is not needed.

Ensure that all spray system lines including pipes, booms, and screens have the correct concentration of LIBERTY® HERBICIDE /water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers must be greater than 50 mesh.

*Use for Potato Vine Desiccation not permitted in California unless otherwise directed by supplemental labeling.

FALLOW FIELDS OR POST HARVEST

Liberty® Herbicide may be used as a substitute for tillage to control or suppress weeds in the grass, broadleaf and biennial/perennial weed tables in this label. Applications may be made in fallow fields, post harvest, prior to planting or emergence of any crop listed on this label.

Refer to the *Application Methods* section of this labeling for appropriate application rates to control specific weeds. Liberty® Herbicide must be applied with ammonium sulfate. Tank mixes with 2,4-D, glyphosate or atrazine are recommended with Liberty® Herbicide to enhance total weed control. When using Liberty® Herbicide in tank mix combinations, follow the precautions and directions of use of the most restrictive label.

Do not plant crops in a field treated with Liberty® Herbicide for 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days after the last application of this product. Corn, soybeans, sugar beets and canola may be planted at any time.

APPLICATION DIRECTIONS FOR NON-CROP FARMSTEAD WEED CONTROL

When applied as recommended, this product controls undesirable plant vegetation in noncrop areas around farmstead building foundations, shelter belts, along fences, and general nonselective farmstead weed control. Refer to the *Application Methods* section of this labeling for appropriate application rates to control specific weeds.

IMPORTANT: READ BEFORE USE

Read the entire Directions for Use, Conditions, Disclaimer of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties and Limitations of Liability.

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Bayer CropScience. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BAYER CROPSCIENCE MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, THAT EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL. No agent of Bayer CropScience is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BAYER CROPSCIENCE DISCLAIMS ANY LIABILITY WHATSOEVER FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

LIMITATIONS OF LIABILITY: TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER FOR ANY AND ALL LOSSES, INJURIES OR DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE PAID, OR AT BAYER CROPSCIENCE'S ELECTION, THE REPLACEMENT OF PRODUCT.

Net Contents: 1 Gallon, 2.5 Gallons, 15 Gallons, 60 Gallons, 120 Gallons & Bulk

Produced for

Bayer CropScience

Bayer CropScience LP
P.O. Box 12014, 2 T.W. Alexander Drive
Research Triangle Park, North Carolina 27709
1-866-99BAYER (1-866-992-2937)
http://www.bayercropscienceus.com

Liberty Herbicide (MASTER) 10/24/07, Notification 01/08/08, Notification 05/16/08

Bayer CropScience

Ketoenols

Resistance Management Recommendations for **Lipid Biosynthesis Inhibitors** (LBIs)

(IRAC MOA Group 23 Products)

Alfred Elbert, Ralf Nauen, Emmanuel Salmon

May 29, 2008

Lipid Biosynthesis Inhibitors (LBIs)

- **LBIs** are a BCS exclusive Mode of Action Class. No cross resistance of **LBIs** to other acaricidal / insecticidal classes has been detected so far.
- An effective resistance management is a core element for the sustainable use of the whole chemical class.
- **LBIs** consist of the tetronic acids **ENVIDOR** and **OBERON** and the tetramic acid **MOVENTO**
- **ENVIDOR** is a broad acting contact acaricide mainly for the use in perennial crops
- **OBERON** has contact and translaminar activity for the control of mites, whiteflies and psyllids in vegetables, corn and ornamentals
- **MOVENTO** is a fully (two way) systemic insecticide (phloem and xylem mobility) for the control of aphids, mealy bugs, scales, whiteflies with acaricidal side effects in a wide range of perennial, field crops and vegetables

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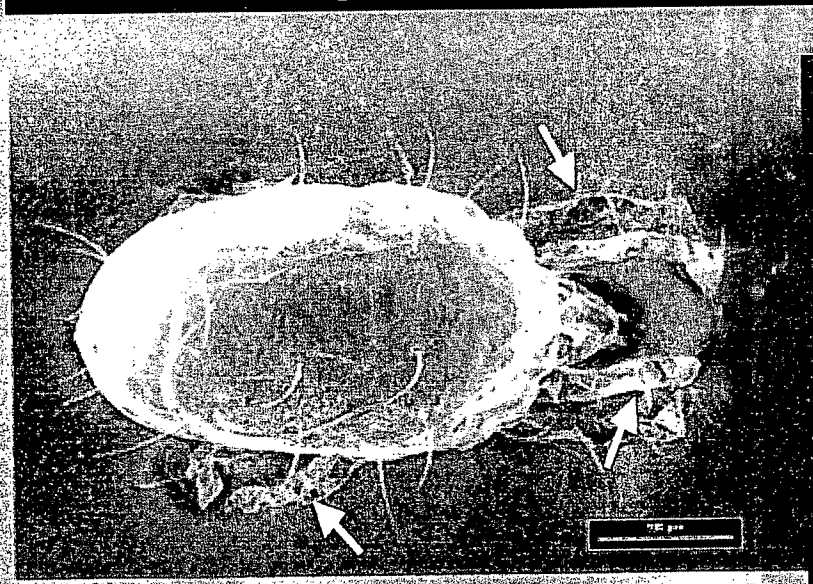
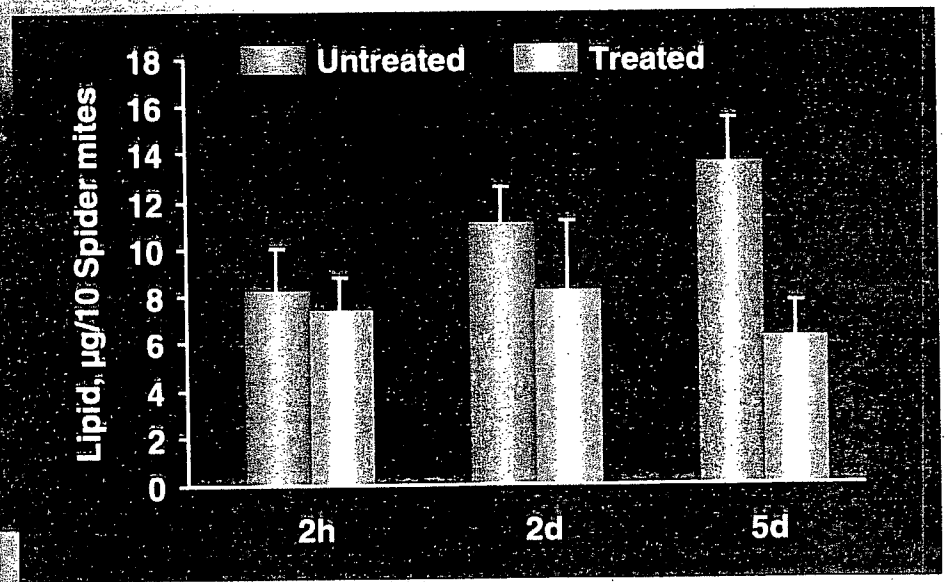
LBIs - Mode of Action

Biochemical studies revealed acetyl-CoA-carboxylase as the molecular target site



Decrease in total lipids in *Tetranychus urticae* female adults after spray application of 200 ppm active ingredient to infested French bean leaves.



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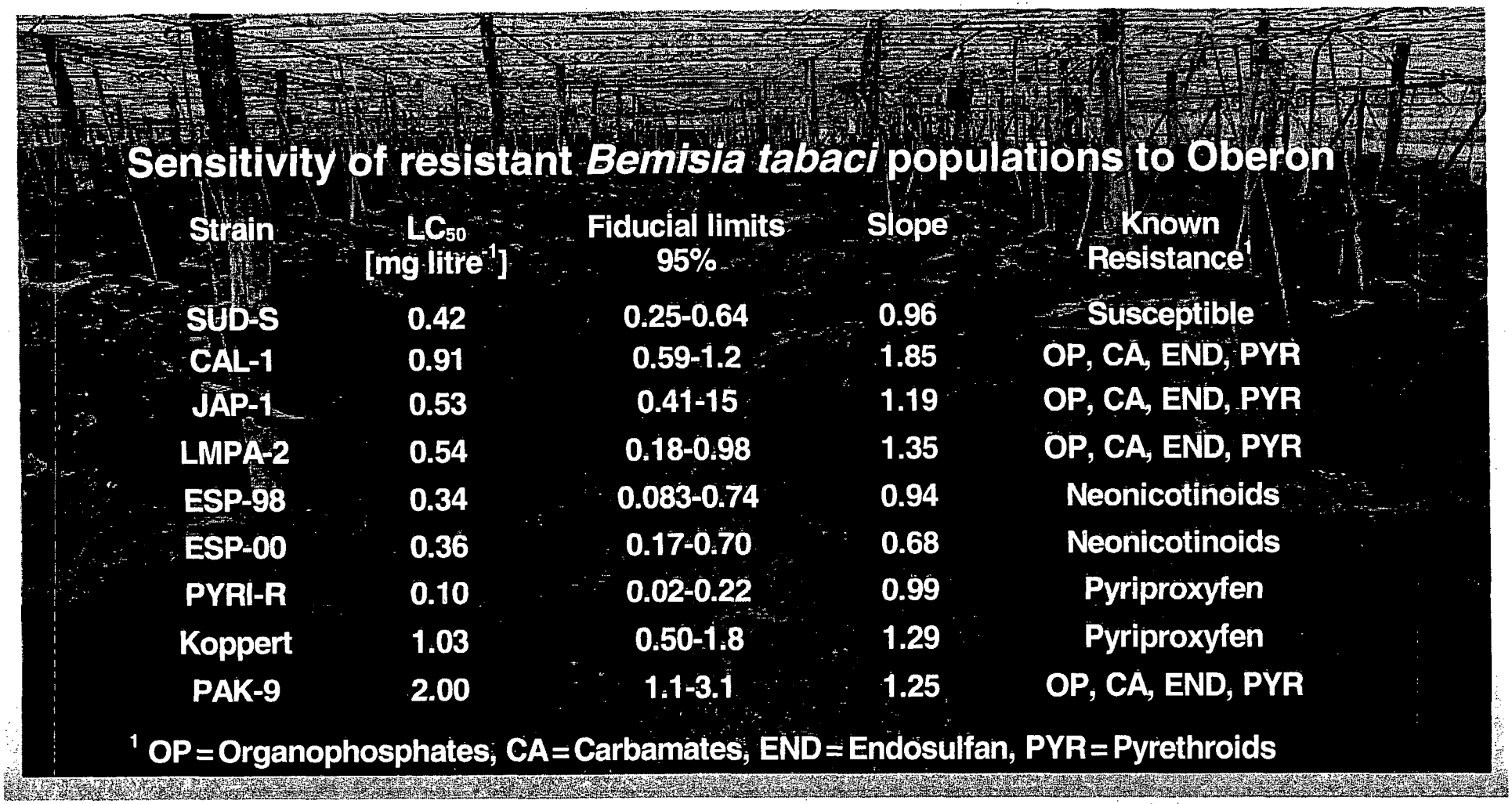
LBIs control multi-resistant pest populations



Sensitivity of resistant *Bemisia tabaci* populations to Oberon

Strain	LC_{50} [mg litre^{-1}]	Fiducial limits 95%	Slope	Known Resistance[1]
SUD-S	0.42	0.25-0.64	0.96	Susceptible
CAL-1	0.91	0.59-1.2	1.85	OP, CA, END, PYR
JAP-1	0.53	0.41-15	1.19	OP, CA, END, PYR
LMPA-2	0.54	0.18-0.98	1.35	OP, CA, END, PYR
ESP-98	0.34	0.083-0.74	0.94	Neonicotinoids
ESP-00	0.36	0.17-0.70	0.68	Neonicotinoids
PYRI-R	0.10	0.02-0.22	0.99	Pyriproxyfen
Koppert	1.03	0.50-1.8	1.29	Pyriproxyfen
PAK-9	2.00	1.1-3.1	1.25	OP, CA, END, PYR

[1] OP = Organophosphates, CA = Carbamates, END = Endosulfan, PYR = Pyrethroids

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General Statement for LBI Resistance Management I

- Use LBIs at manufacturer's recommended rates and timings
- Ensure complete and uniform spray coverage
- LBIs should be used in such a way that detrimental effects on beneficial insects / mites are minimised
- A combination/rotation with products from different mode of action groups is recommended
- Effective labelled doses of each component should be used when applying tank mixtures
- In the case of repetitive LBI applications the block approach is preferred
- Monitoring of insects/mites for LBI susceptibility is an ongoing process, led by headquarter scientists.

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General Statement for LBI Resistance Management II

- If signs of reduced efficacy become evident, follow-up treatments should not be carried out with a LBI active ingredient
- Refugia crops without LBIs uses, whenever feasible, should be maintained in order to keep susceptible pest populations
- The recommendations for resistance management do not cover necessarily the local label recommendations for LBIs.
  - They are setting a frame from the resistance management point of view.
  - All local recommendations should be set within this frame
- Being in their initial status, the guidelines are currently not to be presented externally

Resistance Management for *envidor*

Envidor is primarily used as acaricide and for the control of specific insect species e.g. psyllids in perennial crops

- In any perennial crop: one application per season against mites
- A maximum of 2 applications against e.g. Psyllids
- In annual crops for mite control: maximum of 2 applications

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Resistance Management for o·b·e·r·o·n®

SMART PERFORMANCE!

Oberon is recommended for insect / mite control preferably in annual crops

- Oberon may be applied up to 3 times in total per cropping cycle in annual crops
- For mite control, a maximum of 2 applications, for whitefly, a maximum of 3 applications
- In crops with long cropping cycle, continuous pest attack and multiple insecticide uses with different modes of action 4 Oberon applications against whiteflies are allowed
- For control of *Paratrioza cockerelli* 2 – 3 applications maximum are recommended either in block or rotational regimens with other modes of action
- In perennial crops (i.e. Japan, Korea) Oberon may be applied only once against mites

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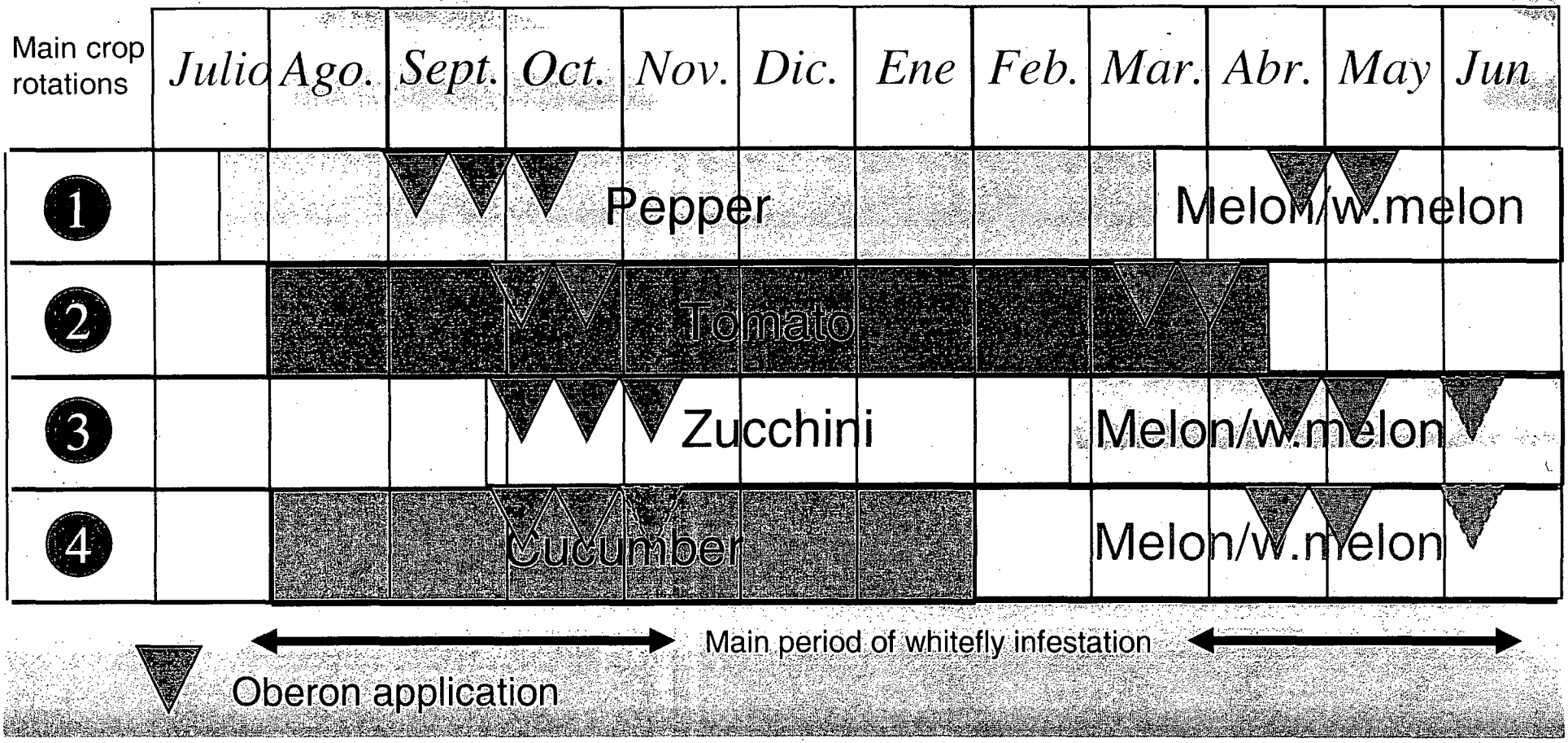
Example
for an Application Scheme for o·b·e·r·o·n® SMART PERFORMANCE!
in Greenhouse Vegetables in Almeria Spain



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Resistance Management for MOVENTO

Movento, a 2-way systemic insecticide controls a broad range of sucking insect pests. It has suppressive effects against mites

The use patterns for Movento have been developed in line with good resistance management practices. They allow a maximum number of applications per cropping cycle, which varies according to the local label recommendations:

- **Straight product**

- Pome & stone fruits, grape, nuts	aphids, scales, mealy bugs, psyllids	1-3
- Tropical fruits	mealybugs, scales	1-3
- Citrus	scales mealybugs, psyllids, thrips	1-3
- Grapes	*Phylloxera*	1-2
- Vegetables, field crops	aphids, whiteflies, psyllids	1-3*
- Hops	aphids, mites	1-2

* 4 with long cropping cycle only

- **CNI or PYR mixtures**

– Field crops	aphids, whiteflies, bugs	2-3

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Multiple LBI Use – Guidelines for Perennial Crops

- Only one ENVIDOR/OBERON application in perennial crops per targeted mite species and per season is allowed
- Applying MOVENTO against insects after an ENVIDOR treatment is expected to have low impact on selection for mite resistance, as long as ENVIDOR´s residual effect is present
- A MOVENTO application against insects before ENVIDOR use can increase selection pressure on mites, if present at relevant levels due to the product's suppressive effect. The Movento application is seen as uncritical, if mite populations are below the economic threshold
- Separation of LBIs in space as an option: use Movento in orchards with known insect and Envidor in orchards with known mite attack
- 1 to 3 Movento applications in perennial crops against insects depending on species and infestation level

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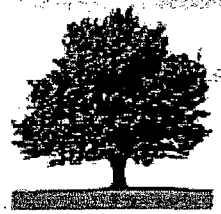
Multiple LBI Use – Guidelines for Annual Crops

- For mite control in vegetables and field crops 2 LBI applications are feasible
- For insect control in annual crops with MOVENTO or OBERON, 3 applications are recommended (max 4 in long cropping cycle)

Resistance management

simplified global strategy !



PERENNIAL

envidor = (o·b·e·r·o·n) = max. 1x / cropping cycle / mite species

MOVENTO MOVENTO* *envidor** MOVENTO

< aphids + scales + mealybugs + white flies + thrips ... >

BBCH

ANNUAL

o·b·e·r·o·n = (*envidor*) = max. 2x / crop

MOVENTO = o·b·e·r·o·n = max. 3-(4)x / crop

in presence of mites!

MOVENTO = max. 3x / crop

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* for details see guidelines

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Resistance Management Recommendations for **Lipid Biosynthesis Inhibitors** (LBIs) (IRAC MOA Group 23 Products)

Comments, Questions & Answers

General Statement for LBI Resistance Management

The general guidelines for LBI resistance management are based on recommendations given by IRAC, the Insecticide Resistance Action Committee. For mode of action classification and further details see: http://www.irac- . Block approach means: To apply LBIs twice or more in one block, i.e. against only one generation of a pest, will create less selection pressure than to spread the applications one by one through the season…

Microsoft Word Document

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The LBI Resistance Management Team

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- Shane Hand
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- Jürgen Kühnhold
- Ralf Nauen
- Hans-Werner Rauen
- David Rogers
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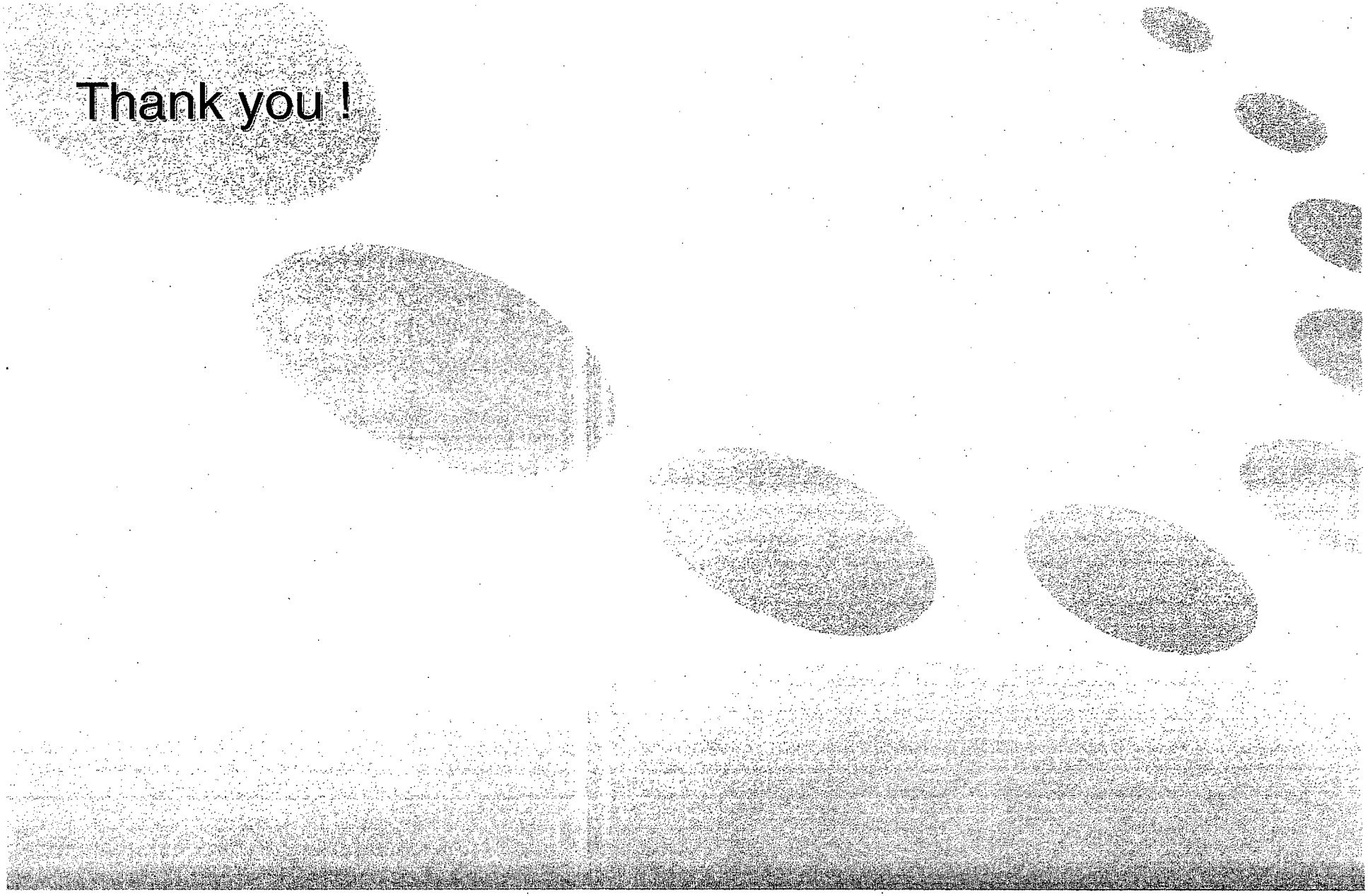
Thank you !



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DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not use this product until you have read the entire label. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

In the State of New York Only: Not For Use In Nassau and Suffolk Counties.

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted entry-interval (REI) of 12 hours.

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 worn over short-sleeved shirt and short pants; chemical-resistant gloves such as barrier laminate, butyl rubber ≥14 mils, nitrile rubber ≥14 mils, neoprene rubber ≥14 mils, polyvinyl chloride (PVC) ≥14 mils, or Viton® ≥14 mils; chemical resistant footwear plus socks; protective eyewear.

IMPORTANT CROP SAFETY INFORMATION
READ BEFORE USING THIS PRODUCT

Do not allow spray to contact foliage or green tissue of desirable vegetation other than corn, soybeans, sugar beets, rice, cotton and canola tolerant to the active ingredient in this product. This product may injure or kill all green vegetation contacted by the spray other than LibertyLink® corn, soybeans, sugar beet, rice, cotton and canola or other corn, soybeans, sugar beet, rice, cotton and canola varieties warranted by Bayer CropScience.

GENERAL INFORMATION

Rely® 200 Herbicide is a water-soluble herbicide for application as a foliar spray for the control of a broad spectrum of emerged annual and perennial grass and broadleaf weeds in apples, berries, grapes, tree nuts and potato vine dessication.

SPRAY DRIFT

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

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Do not apply under circumstances where possible drift to unprotected persons or to food, forage, or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption can occur.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.
3. All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.

Where states have more stringent regulations, they should be observed. The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

INFORMATION ON DROPLET SIZE:

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

Uniform, thorough spray coverage is important to achieve consistent weed control. Select nozzles and pressure that deliver **MEDIUM** spray droplets as indicated in nozzle manufacturer's catalogs and in accordance with ASAE Standard S-572. Nozzles that deliver **COARSE** spray droplets may be used to reduce spray drift provided spray volume per acre (GPA) is increased to maintain coverage of weeds.

CONTROLLING DROPLET SIZE:

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM LENGTH:

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

APPLICATION HEIGHT:

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

For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

SWATH ADJUSTMENT:

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

WIND:

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

For all non-aerial applications, wind speed must be measured adjacent to the application site, on the upwind side, immediately prior to application.

TEMPERATURE AND HUMIDITY:

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry. Avoid spraying during conditions of low humidity and/or high temperatures.

TEMPERATURE INVERSIONS:

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

CLEANING INSTRUCTIONS

Before using Rely® 200 Herbicide, thoroughly clean bulk storage tank, refillable tank, nurse tanks, spray tank, lines, and filter, particularly if a herbicide with the potential to injure crops was previously used. Equipment should be thoroughly rinsed using a strong detergent solution.

After using Rely® 200 Herbicide, triple rinse the spray equipment and clean with a commercial tank cleaner before using for crops not labeled LibertyLink® or warranted by Bayer CropScience. Make sure any rinsate or foam is thoroughly removed from spray tank and boom. Rinsate may be disposed following the pesticide disposal directions on this label.

APPLICATION DIRECTIONS FOR USE ON LISTED TREE AND VINE CROPS

GENERAL INFORMATION

Rely® 200 Herbicide is a nonselective herbicide for application as a foliar spray for the control of a broad spectrum of emerged annual and perennial grass and broadleaf weeds. Rely® 200 Herbicide will also control certain woody species. Plants that have not yet emerged at the time of application will not be controlled. THOROUGH SPRAY COVERAGE IS IMPORTANT. Visual effects and control from an application of Rely® 200 Herbicide occur within 2 to 4 days after application under good growing conditions.

Avoid all contact with foliage or green tissue of desirable vegetation. Do not spray during windy conditions. This product may injure or kill growing plants that receive spray drift or if they receive applications of a spray mixture containing Rely® 200 Herbicide by error or accident. If desirable vegetation is contacted, rinse the sprayed portion with water immediately to reduce potential injury.

Rely® 200 Herbicide works best when weeds are actively growing. Warm temperatures, high humidity, and bright sunlight improve the performance of Rely® 200 Herbicide. Weed control may be reduced when applications are made to weeds under stress due to drought or cool temperatures. Weeds under stress or in dense populations will require application at the highest specified label use rate. Stressed conditions also include prior treatments of other contact or systemic herbicides. Do not retreat these weeds with Rely® 200 Herbicide until sufficient new or regrowth has occurred. Refer to the *How to Apply* section of this label.

Apply Rely® 200 Herbicide as a directed spray to control undesirable vegetation in apple orchards, grape vineyards, and in tree nut groves for tree nuts listed below. When applied as recommended in this label, Rely® 200 Herbicide controls annual and perennial weeds. Refer to the *How to Apply* section of this labeling for recommended rates and a list of weeds controlled. Apply as a broadcast, banded, or spot treatment application depending on the situation. Avoid direct spray or drift to desirable vegetation. Regrowth may occur due to the weed stage of growth at application, low use rate, or environmental conditions. Repeat applications of Rely® 200 Herbicide may be necessary to control plants generating from underground parts or seed.

Tree Nuts	Vineyards	Tree Fruits
almonds	all grape varieties	apples
pecans	(table, wine,	
walnuts	and raisins)	
filberts		
hickory nuts		
macadamia nuts (bush nuts)		
pistachios		

Do not apply on, or allow spray to drift onto, desirable foliage of trees and vines, as damage will occur. Avoid contact with green, uncallused bark on young trees and vines as injury may occur. Do not apply Rely® 200 Herbicide to trees or vines established less than one year, unless protected from spray contact by non-pourous wraps, grow tubes, or waxed containers.

Refer to the *When to Apply*, *Mixing Procedures*, and *How to Apply* sections of this label for information on how and when to properly mix and apply this product. Do not apply more than 345 fluid ounces of Rely® 200 Herbicide per acre to tree and vine crops in a 12-month period.

WHEN TO APPLY

Rely® 200 Herbicide is a foliar-active material with little or no perceptive soil-residual activity. Best results are obtained when applications are made to actively growing weeds. Rely® 200 Herbicide is rainfast for most weeds within 4 hours after application. Rainfall, overhead irrigation, or flood irrigation within 4 hours may necessitate retreatment.

Apply Rely® 200 Herbicide at the rate recommended in the *How to Apply* section of this label. Repeat applications of Rely® 200 Herbicide or tank mixes of Rely® 200 Herbicide with appropriate residual herbicides will be needed to control weeds emerging from underground parts or seeds.

When using Rely® 200 Herbicide in a weed control program with other herbicides, follow the precautions and "Directions For Use" for those herbicides.

HOW TO APPLY

Apply Rely® 200 Herbicide by ground equipment only. Do not apply Rely® 200 Herbicide aerially to Tree and Vine Crops. Do not apply this product through any type of irrigation system. Good spray coverage of target weeds is necessary for optimum control.

Broadcast Application

Use the recommended rate of Rely® 200 Herbicide as shown in the following sections. Rely® 200 Herbicide should be applied in a minimum of 15 gallons of water per acre. Under dense weed canopies, 20 to 40 gallons of water per acre should be used so that thorough spray coverage will be obtained. Select a spray pressure which will achieve a droplet size of about 300 microns. Properly calibrate your spraying equipment to assure applications at the correct rates and volumes.

Banded Application

Banded applications may be used using the following formula to calculate the amount of herbicide needed for orchard or vineyard strip sprays:

Band width in inches		Rate per acre		Amount of herbicide
Row width in inches	X	broadcast	=	needed for treatment

For best results with ground broadcast or banded application equipment, use flat fan nozzles. Check for even distribution of spray droplets. Do not apply when weather conditions favor drift, such as when winds are gusty. Applications under conditions which cause drift of this product will result in damage to any vegetation contacted.

Spot or Directed-Spray Application

For spot or spray application, use Rely® 200 Herbicide at 2.4 fluid ounces of product per gallon of water. Spray undesirable vegetation foliage on a spray-to-wet basis prior to runoff. Ensure uniform and complete coverage. Use a coarse spray. Do not spray during windy conditions. Thoroughly clean the sprayer following use.

DO NOT make spot spray applications to apple suckers, as tree injury may occur.

Weeds Controlled by Rely® 200 Herbicide

For spot application: Apply 2.4 fluid ounces of product per gallon of water and on a spray-to-wet basis prior to runoff.

For broadcast application: Apply to vigorously growing broadleaf weeds between cotyledon and early seedling stage of growth and pre-tillered grassy weeds. Apply 57.5 fluid ounces of product per acre to weeds less than 6 inches in height or diameter. Apply 96 fluid ounces of product per acre to weeds greater than 6 inches in height or diameter.

Broadleaf Weeds			**Grasses**	
alkali sida[1]	groundcherry	Smartweed, Pennsylvania	barnyardgrass	windgrass
bull thistle	groundsel, common[1]	spurge, prostrate	bluegrass, annual	witchgrass
California arrowhead[1]	henbit[1]	starthistle, yellow[1]	brome, ripgut[1]	yellow foxtail
California burclover[1]	jimsonweed	sunflower	Bulrush**	
carpetweed	knotweed	swine cress[1]	canarygrass[1]	
chickweed	kochia	turkey mullein[1]	cupgrass	
Chinese thornapple[1]	London rocket	wild radish[1]	fall panicum	
clover	malva (little mallow)	willowherb, panicle[1]	giant foxtail	
common cocklebur	marestail		goosegrass	
common mallow	mayweed[1]		green foxtail	
common mullein[1]	miners lettuce[1]		Johnsongrass	
common yarrow[1]	morningglory, annual		jungle rice	
cudweed[1]	Mustard, wild		lovegrass	
cutleaf eveningprimrose[1]	pineapple weed[1]		soft chess[1]	
dodder[1]	puncture vine		shattercane	
eclipta	purple ammannia[1]		sprangletop	
fiddleneck[1]	purslane		stinkgrass	
filaree	redmaids[1]		Texas Panicum	
goosefoot[1]	shepherdspurse		toad rush**	

[1] Use for control of annotated weeds not permitted in California unless otherwise directed by supplemental labeling.

** **Indicates** Suppression

For spot application:

Apply 2.4 fluid ounces of product per gallon of water.

For broadcast application:

Apply 77 fluid ounces of product per acre when the weeds are less than 8 inches tall or in the rosette stage and to tillered grasses. Apply 115 fluid ounces of product per acre to broadleaf weeds greater than 8 inches tall in the reproductive stage, or growing under stressed conditions and to fully tillered grasses.

Broadleaf Weeds			Grasses and Sedges	
annual sowthistle	mugwort	vetch	smooth bromegrass	ryegrass
bindweed	musk thistle	Virginia copperleaf	torpedograss	sandbur
buffalobur	nettle	white clover	vaseygrass	
burdock	nightshade	white heath aster	wheat	Woody Species
Canada thistle	pennycress	wild buckwheat	wild oat	*Rubus* spp.
curly dock	pigweed, red root	wild mustard	crabgrass	poison ivy/oak
dandelion	plantain	wild onion	dallisgrass	
dogbank (hemp)	prickly lettuce	wild rose	downy bromegrass	
field gromwell	ragweed	wild turnip	fescue	
fleabane	redstem filaree[1]	woodsorrel	guineagrass	
goldenrod	Russian thistle	yellow rocket	Kentucky bluegrass	
horsetail	tansy mustard		nutsedge	
lambsquarters	velvetleaf		paragrass	
leafy spurge	vervain		quackgrass	

[1] Use for control of redstem filaree not permitted in California unless otherwise directed by supplemental labeling.

Sucker Control with Rely® 200 Herbicide

Rely® 200 Herbicide will reduce or eliminate sucker growth when applied to suckers that are young, green, and uncallused. For sucker control, apply a split application approximately 4 weeks apart at 77 fluid ounces of product per acre. Coverage of all sucker foliage is necessary for optimum control. Suckers should *not* exceed 12 inches in length.

Tank Mixtures

Always predetermine the compatibility of labeled tank mixtures of this herbicide with water carrier by mixing small proportional quantities in advance. Always add individual formulations to the spray tank according to the following sequence (first to last): wettable powder, flowable, emulsifiable concentrate, drift control additive, water-soluble liquid followed by surfactant.

Mixing Procedures:

1. Fill the spray tank one-half full with water.
2. Add the tank mix product to the spray tank.
3. Fill the spray tank with water to the desired level.
4. Add the recommended amount of Rely® 200 Herbicide; always add the Rely® 200 Herbicide last to help reduce foaming.
5. Nonionic antifoaming agents may be used.

Maintain good agitation at all times until the contents of the tank are sprayed. If the spray mixture is allowed to settle, thorough agitation is required to resuspend the mixture before spraying is resumed.

Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh. Carefully select proper nozzle to avoid spraying a fine mist. For best results with conventional ground application equipment, the use of flat fan nozzles is suggested.

Tank Mix Recommendations for Tree and Vine Crops

Rely® 200 Herbicide does not provide residual weed control. Rely® 200 Herbicide will not control underground, unexposed plants, or plant parts. Delay application until plants have emerged. Tank mix applications of Rely® 200 Herbicide plus the following residual herbicides are recommended for broad spectrum control and residual activity. Refer to label of companion tank mix products for directions, limitations, warnings, and list of weeds controlled.

Chateau

Simazine 4L

Simazine 80W

Simazine 90
Karmex® DF
Sinbar® 80W
Solicam® DF
Surflan® A.S.
Devrinol® 50WP
Goal® 1.6E
Princep® 4L

RESTRICTIONS AND PRECAUTIONS FOR TREE AND VINE CROPS

1. *DO NOT* apply more than 345 fluid ounces of this product per acre to any site in any calendar year.
2. *DO NOT* graze, harvest, and/or feed treated orchard cover crops to livestock.
3. *DO NOT* apply this product through any type of irrigation system.
4. *DO NOT* apply this product aerially to tree and vine crops.
5. *DO NOT* apply this product within 14 days of nut, apple, or grape harvest.
6. Compatibility of Rely® 200 Herbicide and clay-based, dry-flowable herbicides should be determined before tank mixing.

APPLICATION DIRECTIONS FOR USE ON LISTED BERRIES*

Apply Rely® 200 Herbicide as a directed spray to control undesirable vegetation in bushberry and other berry crops listed below. When applied as recommended in this label, Rely® 200 Herbicide controls annual and perennial weeds. Refer to the *Weeds Controlled by Rely® 200 Herbicide* section of this label for recommended rates and a list of weeds controlled. Apply as a broadcast, banded, or spot treatment application depending on the situation. Avoid direct spray or drift to desirable vegetation. Regrowth may occur due to the weed stage of growth at application, low use rate or environmental conditions. Repeat applications of Rely® 200 Herbicide may be necessary to control plants generating from underground parts or seed.

Bushberry Crops	Other Berry Crops
blueberry	lingonberry
currant	juneberry
elderberry	salal
gooseberry	
huckleberry	

Do not apply on or allow spray to drift onto desirable foliage of the berry bushes as damage will occur. Avoid contact with green or uncallused bark on young bushes as injury may occur.

Refer to the *When to Apply*, *Mixing Procedures*, and *How to Apply* sections of this label for information on how to properly mix, and how and when to apply this product.

USE PRECAUTIONS

1. *DO NOT* apply more than 230 fluid ounces of Rely® 200 Herbicide per acre (3 lbs. ai per acre) to berry bushes in a 12-month period.
2. *DO NOT* apply this product within 14 days of berry harvest.
3. *DO NOT* graze, harvest and/or feed treated cover crops to livestock.
4. *DO NOT* apply this product through any type of irrigation system.
5. *DO NOT* apply this product aerially to berries.

***Use on Berries not permitted in California unless otherwise directed by supplemental labeling.**

APPLICATION DIRECTIONS FOR POTATO VINE DESICCATION*

Apply Rely® 200 Herbicide at the beginning of natural senescence of potato vines. Apply 29 fluid ounces of product per acre. Do not split this application or apply more than one application per harvest. Potato varieties with heavy or dense vines may require an application of another desiccation product to complete vine desiccation.

Thorough coverage of the potato vines to be desiccated is essential. Use a sufficient volume of water to obtain a thorough coverage of the potato vines.

USE PRECAUTIONS

1. Do not harvest potatoes until 9 days or more after application of Rely® 200 Herbicide.
2. Do not apply to potatoes grown for seed.
3. Do not plant treated areas to wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale until 30 or more days after an application of Rely® 200 Herbicide as a potato vine desiccant.
4. Do not plant treated areas to crops other than those listed above and below in this use precautions section until 120 or more days after an application of Rely® 200 Herbicide as a potato vine desiccant.
5. Field corn and soybeans may be planted at any time after the application of Rely® 200 Herbicide as a potato vine desiccant.

GROUND APPLICATION: Apply Rely® 200 Herbicide in 20 to 100 gallons of water per acre, using 80-degree or 110-degree flat-fan nozzles. Select a spray pressure between 30 to 60 pounds per square inch (psi) measured at the nozzle that will achieve a droplet size of about 300 microns. Vary the gallons of water per acre and the spray pressure as indicated by the density of the potato vines to assure thorough spray coverage. Increase the spray volume to at least 30 gallons of water per acre when the potato vine canopy is dense or under cool and dry conditions. If Turbo TeeJet® spray tips are used, a spray pressure of 60 or more pounds per square inch will be required to get thorough coverage. Do not apply when winds are gusty or when conditions will favor movement of spray particles off the desired spray target. To avoid drift and insure consistent weed control, apply Rely® 200 Herbicide with the spray boom as low as possible while assuring thorough coverage of the potato vines.

AERIAL APPLICATION: Apply Rely® 200 Herbicide with aerial equipment in 5 to 10 gallons of water, using the higher volume of water when potato vines are dense. Apply at a height of 10 feet or less above the potato vines and use low-drift nozzles. Adjust the nozzles to provide a uniform pattern and median droplet size of 350 to 450 microns while keeping the pressure at the nozzle at less than 40 psi. Do not apply aerially when atmospheric conditions give rise to spray drift and do not apply when wind could cause drift to surrounding vegetation.

Mixing Procedures:

1. Fill the spray tank to the desired level with water.
2. Add the recommended amount of Rely® 200 Herbicide.
3. The addition of a nonionic antifoaming agent may reduce foaming, especially when using soft water. Additional surfactant is not needed.

Ensure that all spray system lines including pipes, booms, and screens have the correct concentration of Rely® 200 Herbicide/water mixture before the application is started. Flush out any remaining air or water from the spray system lines before starting the crop application. Keep bypass line on or near bottom of tank to minimize foaming. Screen size in nozzles or line strainers must be greater than 50 mesh.

***Use for Potato Vine Dessication not permitted in California unless otherwise directed by supplemental labeling.**

FALLOW FIELDS OR POST HARVEST

Liberty® Herbicide may be used as a substitute for tillage to control or suppress weeds in the grass, broadleaf and biennial/perennial weed tables in this label. Applications may be made in fallow fields, post harvest, prior to planting or emergence of any crop listed on this label.

Refer to the *Application Methods* section of this labeling for appropriate application rates to control specific weeds. Liberty® Herbicide must be applied with ammonium sulfate. Tank mixes with 2,4-D, glyphosate or atrazine are recommended with Liberty® Herbicide to enhance total weed control. When using Liberty® Herbicide in tank mix combinations, follow the precautions and directions of use of the most restrictive label.

Do not plant crops in a field treated with Liberty® Herbicide for 120 days after the last application of this product with the exception of wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale which may be planted 70 days after the last application of this product. Corn, soybeans, sugar beets and canola may be planted at any time.

APPLICATION DIRECTIONS FOR NON-CROP FARMSTEAD WEED CONTROL

When applied as recommended, this product controls undesirable plant vegetation in noncrop areas around farmstead building foundations, shelter belts, along fences, and general nonselective farmstead weed control. Refer to the *Application Methods* section of this labeling for appropriate application rates to control specific weeds.