STATE OF HAWAII
Department of Agriculture
ACCEPTED
LICENSE NO. 9226.492

GROUP 9 HERBICIDE

PULL HERE TO OPEN

Refuge™ Herbicide

syngenta®

Herbicide

A Broad-Spectrum Systemic Nonselective Herbicide for Weed Control and Vegetation Management

Active Ingredient:
*Glyphosate: N-(phosphonomethyl) glycine, in the form of the monopotassium salt 52.3%

Other Ingredients:	47.7%
Total:	100.0%

*Contains 745 grams per liter (6.22 pounds per U.S. gallon) of the active ingredient glyphosate, in the form of its mono-potassium salt. Equivalent to 599 grams per liter (5 pounds per U.S. gallon) of the acid, glyphosate.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-1362

EPA Est. 100-LA-001

SCP 1362A-L1A 1011
358800

2.5 gallons
Net Contents

™

FIRST AID	
If in eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER For 24 Hour Medical Emergency Assistance (Human or Animal) Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident), Call **1-800-888-8372**	

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Socks and shoes

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering 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.

continued...

PRECAUTIONARY STATEMENTS *(continued)*

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

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters or rinsate.

Physical and Chemical Hazards

Do not store, mix or apply this product or spray solutions of this product in unlined steel (except stainless steel), galvanized steel containers, or sprayer tanks. This product or spray solutions of this product will react with these containers and tanks and produce hydrogen gas which may form a highly combustible mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by spark, open flame, lighted cigarette, welder torch, or other ignition source.

Spray solutions of this product should be mixed, stored and applied using only stainless steel, fiberglass, plastic, or plastic-lined steel containers.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

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

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, LLC or Seller. To the extent permitted by applicable law, all such risks shall be assumed by Buyer and User, and Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law,: (1) this warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. To the extent permitted by applicable law, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and of Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

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

Refuge [Herbicide] must be used only in accordance with requirements on this label or in separately published supplemental labeling requirements for this product.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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 interval. 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
- Chemical resistant gloves Category A, such as butyl rubber, or natural rubber, or neoprene rubber
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS

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

Keep people and pets off treated areas until spray solution has dried.

USE SITES

Refuge Herbicide may be used in the following use site:

AQUATIC AND WETLAND SITES

These sites include all bodies of fresh or brackish water which are flowing, nonflowing, or transient. Aquatic and wetland sites include bayous; canals; estuaries; irrigation and drainage ditches; lakes; marshes; ponds; reservoirs; rice levees; rivers; seeps; streams; wastewater treatment facilities; wildlife habitat restoration and management areas, and similar sites.

Aquatic and wetland sites
Ditchbanks; ditches and canals

FARMSTEADS (NON-CROP)

Applications can be made in non-crop areas on the farm including:

Barrier strips
Ditchbanks
Dry ditches and dry canals
Equipment areas
Farm buildings
Farm roads
Farmyards
Fence rows
Fuel storage areas
Rights-of-way
Shelterbelts
Soil bank land

FORESTRY AND UTILITY RIGHTS-OF-WAY

Refuge Herbicide may be used for the control or partial control of woody brush, trees, annual, and perennial weeds in forestry and utility sites. Refuge Herbicide may also be used in preparing or establishing wildlife openings within these sites, for maintaining logging roads, and for side trimming along utility rights-of-way (including electrical power; pipeline and telephone rights-of-way; and utility sites such as substations).

HABITAT MANAGEMENT AND RESTORATION

Refuge Herbicide may be used to control exotic and other undesirable vegetation in habitat management and natural areas, including rangeland and wildlife refuges, including riparian and estuarine areas. Wildlife Food Plots: Refuge Herbicide may be used for site preparation for control of annual and perennial weeds prior to planting wildlife food plots.

PASTURE

Pasture and rangeland ***(including stock tanks, watering holes, and ponds)***

TURFGRASS USES *(including roadsides)*

highways
golf courses
roadsides

OTHER USE SITES

Refuge Herbicide may be used in industrial sites, parks, railroads, recreational areas and other sites listed below. It may be applied with any application equipment described in this label. Refuge Herbicide may be used to trim-and-edge around objects in the use sites listed below for spot treatment of unwanted vegetation, and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. Refuge Herbicide may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects.

Non-Residential Sites

airports
industrial sites
lumber yards
manufacturing sites
office complexes
parking areas
petroleum tank farms and pumping installations
railroads and railroad rights-of-way
storage areas
warehouse areas

Residential Sites

Lawns (turf) and landscape areas associated with:
- athletic fields (including elementary, middle and high schools; collegiate; professional and recreational parks)
- campgrounds
- church grounds
- daycare center grounds
- parks
- playgrounds and play fields
- recreational areas
- residences (homes, apartment complexes, etc.)
- school grounds
- theme parks

USE INFORMATION

Unless otherwise specified, applications may be made in listed **USE SITES** to control any weeds listed in the annual, perennial, and woody brush tables (Tables 1, 2, 3, 4 and 5). Refer to the **APPLICATION PROCEDURES** section for additional rate information.

Refuge Herbicide is a nonselective foliar systemic herbicide for control of a broad spectrum of emerged annual and perennial grass and broadleaf weeds and unwanted woody brush and trees.

Refuge Herbicide is formulated as a liquid concentrate which contains 745 grams per liter (6.22 pounds per U.S. gallon) of the active ingredient glyphosate, in the form of its mono-potassium salt. Equivalent to 599 grams per liter (5 pounds per U.S. gallon) of glyphosate acid.

USE PRECAUTIONS AND RESTRICTIONS

- Do not apply this product through any type of irrigation system.
- DO NOT spray if conditions of thermal inversion exist, or if wind direction and speed may cause spray to drift onto adjacent nontarget areas. Drift minimization is the responsibility of the applicator. Consult with local and State agricultural authorities for information regarding avoiding or minimizing spray drift.
- The **MAXIMUM USE RATES** indicated for Refuge Herbicide have been determined based upon the concentration of glyphosate acid (expressed as acid equivalents) contained in this product. The actual maximum application rates stated apply to the total amount of glyphosate acid equivalents applied to a given site in any year either from the application of this product alone or in combination with other glyphosate containing products, applied either as mixtures with other products or separately. Application rates must be calculated to ensure that the use of this and other glyphosate containing products do not exceed the maximum use rate as specified below unless otherwise specified in the specific use directions.
- Do not exceed a total of 6.3 qt Refuge Herbicide/A equivalent to 8 lb glyphosate acid equivalents per acre per year.
- Do not exceed 0.6 qt/A by air unless otherwise specified on this label.
- For broadcast, do not feed treated vegetation for 8 weeks following application, unless otherwise specified.
- Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the plants, or other areas on which treatment was not intended. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) which are likely to drift. Avoid applying at excessive speed or pressure.
- Refuge Herbicide requires actively growing green plant tissue to function. Application to drought-stressed weeds or weeds with little green foliage (i.e. mowed, cut, or hailed on weeds); weeds covered with dust; weeds damaged by insects or diseases may result in reduced weed control.
- Refuge Herbicide does not provide soil residual control of weeds. Weeds emerging after application will require retreatment.
- Heavy rainfall or irrigation shortly after application may require retreatment.
- Tillage or mowing within 3 days following application may reduce weed control.
- Refuge Herbicide is not volatile and cannot move as a vapor after application onto nontarget vegetation.
- It is recommended that the spray system be thoroughly cleaned with water and a commercial tank cleaner after each use.
- Spray solutions of Refuge Herbicide should be mixed, stored, and applied using only plastic, plastic-lined steel, stainless steel, aluminum, or fiberglass containers. Concentrate should not be stored in galvanized steel, carbon steel, or unlined steel containers.
- There are no rotational restrictions following application of this product.

Severe damage or destruction may be caused by contact of Refuge Herbicide to any vegetation (including leaves, green stems, or exposed non–woody roots) of trees, and other desirable plants to which treatment is not intended.

GLYPHOSATE-RESISTANT WEED MANAGEMENT

Some naturally occurring weed biotypes resistant to glyphosate may exist through normal genetic variability in any weed population. The repeated use of herbicides with the same mode of action is known to lead under certain conditions to a selection of resistant weeds. Certain agronomic practices reduce the likelihood that resistant weed populations will develop and integrated strategies are known to manage such problem weeds.

Glyphosate is the active ingredient in the herbicide Refuge Herbicide. The primary mode of action of glyphosate involves inactivation of the target enzyme 5-enolpyruvylshikimate-3-phosphate synthase (EPSPS). This enzyme is involved in the synthesis of several essential amino acids that are the building blocks for proteins needed for plant growth and development. In susceptible weeds glyphosate binds tightly to EPSPS rendering the enzyme inactive. With the inactivation of EPSPS, the plant is unable to produce certain essential amino acids resulting in plant death. Initial studies on the mechanistic basis of resistance to glyphosate in various weed species have to date; revealed EPSPS target site resistance, and involvement of differences in translocation as important. Other mechanisms by which plants can become resistant to herbicides include differences in uptake, metabolism and sequestration. Within the USA specific biotypes of a number of species including, horseweed/marestail (*Conyza canadensis*), hairy fleabane (*Conyza bonariensis*), rigid ryegrass, (*Lolium rigidum*), Palmer amaranth (*Amaranthus palmeri*), common waterhemp (*Amaranthus rudis*), common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*) and johnsongrass (*Sorghum halepense*) have become resistant to glyphosate. The first incident reported to the Herbicide Resistance Action Committee (HRAC) of glyphosate resistance was in 1998 on rigid ryegrass.

Following is a list of Best Weed Management practices to be considered in glyphosate-based programs.

Diversify glyphosate-dependent weed control programs with alternative herbicides or cultural practices.

a. Use full label rates of glyphosate and tank mix partners. Minimize weed escapes.
b. Monitor treated weed populations for any loss of field efficacy.
c. Contact your local extension specialist, certified crop advisor, and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific resistant weed biotypes.

Since the occurrence of resistant weeds is difficult to detect prior to use, Syngenta Crop Protection accepts no liability for any losses that may result from the failure of Refuge Herbicide PP to control resistant weeds.

Cultural Considerations: Application to annual or perennial weeds that have been mowed, grazed, or cut, and have not been allowed to regrow to the recommended stage for treatment may result in reduced control. Weeds covered with dust; weeds damaged by insects or disease may result in reduced weed control.

Rainfastness: Heavy rainfall or irrigation shortly after application may require retreatment.

No Soil Activity: Refuge Herbicide does not provide soil residual control of weeds. Only emerged weeds at the time of application will be controlled. Weeds germinating from seed after application will not be controlled. Unemerged plants arising from unattached underground rhizomes or root stocks of perennials will not be affected.

RATES

Follow specified rates for Refuge Herbicide listed in the **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** sections. Use the higher label rates when weeds are dense or large. Also, use higher application volumes and pressures when weed vegetation is dense.

APPLICATION PROCEDURES

APPLICATION EQUIPMENT AND TECHNIQUES

- Avoid drift. Applications must not be made in low level inversion conditions, when winds are gusty or under any other conditions which favor drift. Inversions are characterized by stable air and increasing temperatures with height above the ground. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer. Drift may cause damage to any vegetation contacted to which treatment is not intended.
- Compatibility with drift control additives may vary. It is recommended that the combination be tested on a small scale such as a jar test. Read and follow manufacturer's directions for use. A reduction in weed control may occur when drift control agents are used.
- All equipment must be properly maintained and washed to remove product residues after use.

BROADCAST APPLICATIONS

Ground

Applications should be made in 3 to 40 gallons of water per acre.

When foliage is dense, spray volume should be increased to ensure coverage of the target weeds. Flat-fan nozzles will result in the most effective application of Refuge Herbicide. Spray boom and nozzle heights must be adjusted to provide coverage of target weed. Flood nozzles may result in reduced weed control due to inadequate coverage.

Air

Applications should be made in 3 to 15 gallons of water per acre.

Spray should be released at the lowest height consistent with effective weed control and flight safety. Applications more than 10 ft above the canopy should be avoided.

Use the largest droplet size consistent with good weed control. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding inappropriate spray boom pressure. Solid stream or low shear nozzles may be utilized to reduce small droplet formation. These nozzles direct the fluid parallel to the existing airflow to reduce shear effects. Other techniques may include reducing the fan angle of flat fan nozzles if used, or reducing the deflector plate angle if deflector type nozzles are used. Ensure the spray is released at an appropriate distance below the airfoil.

For best results, each specific aerial application vehicle used should be quantifiably pattern tested for aerial application of Refuge Herbicide initially and every year thereafter. To minimize drift, it is suggested aerial application equipment produce the following minimum spray deposition characteristics:

Volume Median Diameter (VMD)	› 400 microns
Volume Diameter (VD) {0.9}	› 200 microns

Prolonged exposure of Refuge Herbicide to uncoated steel surfaces may result in corrosion and possible failure of the part. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of Refuge Herbicide accumulated during spraying or from spills. Landing gear are most susceptible.

For aerial application in California, refer to the Federal Supplemental Label for aerial application for specific instructions, restrictions, and requirements. For aerial application, consult with State or local authorities regarding any additional requirements for aerial treatments. Banvel tank mixtures may not be applied by air in California.

SHIELDED/HOODED APPLICATION

Use shielded/hooded sprayers to control weeds between rows while protecting the crop from the herbicide. Keep shields/hoods as close to the ground as possible and avoid ground speed in excess of 5 mph. Use appropriate nozzles, spacing, and pressure to achieve coverage without allowing spray to touch or drift onto the crop. Maintain equipment in good operating condition to prevent leakage or dripping onto the crop. Refer to state extension service recommendations and equipment manufacturers' guidelines for more information on proper operation of shielded/hooded sprayers.

SPOT TREATMENTS

For annual weeds less than 6 inches, use a 0.3 to 0.6% v/v solution. For annual weeds over 6 inches, use a 0.6 to 0.9% v/v solution. Use a 0.6 to 1.25% v/v solution for most perennials (see Table 3 for specific rates and timing). When using motorized spot spray equipment (rider bar), use a 1.8% v/v solution. See **Spot Spray Dilution Table** below for rates of Refuge Herbicide /volume of finished spray solution. Spray the solution on actively growing weeds until uniformly wet but not to the point of runoff. Retreat 14 to 21 days later if regrowth occurs.

Refuge Herbicide Spot Spray Dilution Table

Solution Strength	To Make This Volume			
	1 gallon	10 gallons	25 gallons	100 gallons
0.4%	0.5 fl oz	5 fl oz	12 fl oz	3 pt
0.7%	0.9 fl oz	9 fl oz	1.4 pt	5.6 pt
0.9%	1.2 fl oz	12 fl oz	1.9 pt	3.8 qt
1.1%	1.4 fl oz	14 fl oz	2.2 pt	4.4 qt
1.5%	1.9 fl oz	1.2 pt	3 pt	1.5 gal
2.2%	2.8 fl oz	1.8 pt	4.4 pt	2.2 gal
5%	6.4 fl oz	4.0 pt	10 pt	5 gal
10%	12.8 fl oz	1 gal	2.5 gal	10 gal

For use in backpack sprayers, it is suggested that the specified amount of **Refuge Herbicide** be mixed with water in a large container. Fill sprayer with the mixed solution.

WIPER APPLICATION

Refuge Herbicide may be applied using a wiper or "wick" applicator (e.g. rope, sponge, or porous plastic applicators) for selective control or suppression of annual and perennial weeds which become taller than the crop or desirable vegetation. Mix 2.5 qt of Refuge Herbicide in 2 gallons of water unless directed otherwise in this label (See **General Use Precautions for Berries, Fruits, Nuts, and Vines**). Precautions must be taken to avoid contact with crops or desirable vegetation. Equipment should be operated at speeds of 5 mph or less. Use slower speeds where weeds are dense. For improved control, make two applications in opposite directions.

Hand-Held and High-Volume Equipment

For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in Table 1 (**Annual Weeds Controlled**), apply a 0.4% solution of Refuge Herbicide to weeds less than 6 inches in height or runner length. For annual weeds over 6 inches tall, or unless otherwise specified, use a 1% solution. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds.

For harder-to-control perennials, such as bermudagrass, Canada thistle, dock, field bindweed, hemp dogbane, and milkweed, use a 1.7% solution.

For low volume directed spray applications, use a 4-8% solution of Refuge Herbicide for control or partial control of annual weeds, perennial weeds, or woody brush and trees. Spray coverage should be uniform with at least 50 percent of the foliage contacted. When spraying large woody brush and trees with dense and thick foliage or multiple sprouts, spray both sides to ensure adequate coverage.

Injection Systems

Refuge Herbicide may be used in aerial or ground injection spray systems. It may be used as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix Refuge Herbicide with the undiluted concentrate of other products when using injection systems unless specifically recommended.

CONTROL DROPLET APPLICATION (CDA) EQUIPMENT

For control of annual weeds with hand held equipment, apply a 17% solution of Refuge Herbicide at a flow rate of 2 fl oz per minute and a walking speed of 1.5 mph (0.8 qt/A). For perennial weeds, use a 17 to 25% solution of Refuge Herbicide at a flow rate of 2 fl oz per minute and a walking speed of 0.75 mph (1.67 to 2.5 qt/A). For vehicle mounted equipment, apply in 3 to 15 gallons of water per acre. Refer to the **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** sections, for application rates and timing.

Precautions must be taken to avoid contact with crops or desirable vegetation.

LOW VOLUME EQUIPMENT

For low volume directed spray applications, use a 4-8% solution of Refuge Herbicide for control or partial control of annual weeds, perennial weeds, or woody brush and trees. Spray coverage should be uniform with at least 50 percent of the foliage contacted. When spraying large woody brush and trees with dense and thick foliage or multiple sprouts, spray both sides to ensure adequate coverage.

SELECTIVE EQUIPMENT

AVOID CONTACT OF HERBICIDE WITH DESIRABLE VEGETATION.

Refuge Herbicide may be applied through recirculating spray systems, shielded applicators, hooded sprayers, wiper applicators, or sponge bars to listed weeds growing in any noncrop site specified on this label. A recirculating spray system directs the spray solution onto weeds growing above desirable vegetation. Spray solution not intercepted by weeds is collected and returned to the spray tank for reuse. Shielded or hooded sprayers direct the herbicide solution onto weeds, while shielding desirable vegetation from the herbicide.

Adjust selective applicators so that the lowest spray stream or wiper contact point is at least 2 inches above the desirable vegetation. Droplets, mist, foam, or splatter of the herbicide solution settling on desirable vegetation is likely to result in discoloration, stunting, or destruction.

Better results may be obtained when more of the weed is exposed to the herbicide solution. Weeds not contacted by the herbicide solution will not be affected. In dense clumps, severe infestations, or when the height of the weeds varies so that not all weeds are contacted, repeat treatment may be necessary.

Shielded and Hooded Applicators

For shielded and hooded applicators, use nozzles that provide uniform coverage within the treated area. Keep shields on these sprayers adjusted to protect desirable vegetation.

Wiper Applicators and Sponge Bars

Equipment must be designed, maintained, and operated to prevent the herbicide solution from contacting desirable vegetation. Apply at ground speeds of 5 mph or less. Use slower speeds where weeds are dense. For improved control, make 2 applications in opposite directions.

Do not use wiper equipment when weeds are wet.

Use the spray solution within 24 hours of mixing.

For Rope or Sponge Wick Applicators: Mix 0.8 to 1.7 gallons of Refuge Herbicide in 2 gallons of water to prepare a 33 to 75% solution. Apply this solution to weeds listed in this section.

For Porous Plastic Applicators and Pressure Feed Systems: Mix 0.8 gallon of Refuge Herbicide in 2 gallons of water to prepare a 33% solution up to using the product undiluted as a 100% solution. Apply this solution to weeds listed in this section.

When applied as specified, Refuge Herbicide controls the following weeds:

Corn, volunteer	Sicklepod
Panicum, Texas	Spanishneedles
Rye, common	Starbur, bristly
Shattercane	

When applied as specified, Refuge Herbicide suppresses the following weeds:

Beggarweed, Florida	Milkweed	Sunflower
Bermudagrass	Nightshade, silverleaf	Thistle, Canada
Dogbane, hemp	Pigweed, redroot	Thistle, musk
Dogfennel	Ragweed, common	Vaseygrass
Guineagrass	Ragweed, giant	Velvetleaf
Johnsongrass	Smutgrass	

TANK MIXES

Tank mixes of Refuge Herbicide with other pesticides, fertilizers, or any other additives except as specified on this label or other approved Syngenta supplemental labeling may result in tank mix incompatibility or unsatisfactory performance. It is recommended that the compatibility of any tank mix combination be tested on a small scale such as a jar test before actual tank mixing.

Always refer to labels of other pesticide products for mixing directions and precautions which may differ from those outlined here. Use in accordance with the most restrictive of label limitations and precautions. Label dosage rates must not be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing.

Tank Mixing Directions:

1. Fill spray tank 1/2 full with clean water.
2. Begin tank agitation and continue throughout mixing and spraying.
3. Add AMS (if used).
4. Add dry formulations (WP, DF, etc.) to tank.
5. Add liquid formulations (SC, EC, L, etc.) to tank.
6. Add Refuge Herbicide.
7. Add nonionic surfactant or wetting agent.
8. Fill remainder of spray tank.

SPRAY ADDITIVES

Surfactants/Wetting Agents

This product does not contain a surfactant. A nonionic surfactant (NIS) or wetting agent (approved for intended use) must be added at 0.25-0.5% v/v (1-2 quarts NIS or wetting agent/100 gallons) of finished spray volume. The nonionic surfactant or wetting agent used should contain at least 75% active ingredient.

- **Any surfactant that is used must be approved for the intended use site.**

Ammonium Sulfate (AMS)

Control of annual and perennial weeds with Refuge Herbicide may be improved by adding dry ammonium sulfate at 0.5% by weight or 4.25 to 17 lb/100 gallons of water. Liquid formulations of AMS may be used at an equivalent rate. Do not reduce use rates of Refuge Herbicide when using AMS.

Drift Control Agents

Drift control agents may be used with Refuge Herbicide.

Dyes/Colorants

Dyes or colorants approved for agricultural use can be used in spray solutions of Refuge Herbicide. Use according to manufacturer's direction. Addition of these dyes/colorants may reduce performance, especially at low dilution rates.

When an adjuvant is to be used with the product, the use of an adjuvant that meets the standards of the Chemical Producers and Distributors Association (CPDA) adjuvant certification program is recommended.

SPECIFIC USE DIRECTIONS

AQUATIC AND WETLAND SITES

Use Refuge Herbicide to control emerged, floating, and marginal weeds in aquatic and wetland sites (Table 5). These sites include all bodies of fresh or brackish water which are flowing, nonflowing, or transient. Aquatic and wetland sites include bayous; canals; estuaries; irrigation and drainage ditches; lakes; marshes; ponds; reservoirs; rice levees; rivers; seeps; streams; wastewater treatment facilities; wildlife habitat restoration and management areas, and similar sites.

Use Precautions and Restrictions for Aquatic and Wetland Sites

Refuge Herbicide will only control plants which are emerged from the water during the application.

There are no restrictions on the use of treated water for irrigation, recreation, or domestic purposes.

Consult local state fish and game agency; and local public water control authorities before applying this product in and around public water. Permits may be required to treat such water.

Do not apply this product directly to water within 0.5 mile up-stream of an active potable water intake in flowing water (i.e. river, stream, etc.) or within 0.5 mile of an active potable water intake in a standing body of water such as lake, pond, or reservoir.

To make aquatic applications around and within 0.5 mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. The water intake may be turned on prior to 48 hours if the glyphosate level in the intake water is below 0.7 part per million as determined by laboratory analysis. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does NOT apply to intermittent inadvertent overspray of water in terrestrial use sites.

For treatments after drawdown of water or in dry ditches, allow 7 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after drawdown to ensure application to actively growing weeds.

Retreatment of floating mats of vegetation may be necessary for complete control due to splashing of the sprayed foliage. Avoid wash-off of the treated foliage for at least 2 hours following application. Wait at least 24 hours before retreating foliage.

In flowing waters, applications should be made while traveling upstream to prevent concentration of herbicide in the treated area. When treating weeds on the banks, avoid overlap more than one foot into open water.

Do not apply or allow drift to areas where no woody brush, trees, or weeds are present. The maximum application rate of 3 quarts (6 pints) per acre must not be exceeded in any single broadcast application that is being made over water except as follows:

- Stream crossings in utility rights-of-way.
- Where applications will result in less than 20% of the total water area being treated.

Treatment of dense emerged weeds may result in oxygen loss in the water from decomposition of the dead weeds. Oxygen depletion may result in fish kill. Therefore, treat only 1/3 to 1/2 of the total water body at one time, especially if dense weeds exist and wait 14-21 days between treatments.

CHRISTMAS TREE FARMS

Method of Application: Postdirected spray; site preparation; and spot spray.

Refuge Herbicide may be used prior to planting Christmas trees; or as a postdirected spray and spot treatment around established Christmas trees.

Follow the directions listed in the **APPLICATION DIRECTIONS, SPRAY ADDITIVES,** and **APPLICATION EQUIPMENT AND TECHNIQUES** sections. Refer to the **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** sections, for application rates and timing.

Use Precautions and Restrictions for Christmas Tree Farms

- A nonionic surfactant (NIS) or wetting agent (approved for intended use) must be added at 0.25% v/v (1 quart NIS or wetting agent/100 gallons) of finished spray volume. Control of weeds may also be improved by adding dry ammonium sulfate at 1-2% by weight or 8.5-17 lbs./100 gals. of water.
- Avoid contact of spray, drift, or mist with foliage or green bark of established Christmas trees.
- This product is not to be used for broadcast applications over the top of Christmas trees.

FARMSTEADS (NON-CROP)

Method of Application: General nonselective weed control, trim-and-edge, chemical mowing, cut stumps, and habitat management.

Applications can be made in noncrop areas on the farm including:

Barrier strips	Farmyards
Ditchbanks	Fence rows
Dry ditches and dry canals	Fuel storage areas
Equipment areas	Rights-of-way
Farm buildings	Shelterbelts
Farm roads	Soil bank land

Follow directions listed in the **APPLICATION DIRECTIONS, SPRAY ADDITIVES,** and **APPLICATION EQUIPMENT AND TECHNIQUES** sections. Refer to the **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** sections for rates and timing.

Use Precautions and Restrictions for Farmsteads

- Avoid contact with the foliage of ornamentals or other desirable plants.
- Repeat applications may be necessary.
- Avoid making cut stump applications as injury to adjacent trees may occur from root grafting.

A nonionic surfactant (NIS) or wetting agent (approved for intended use) must be added at 0.25% v/v (1 quart NIS or wetting agent/100 gallons) of finished spray volume. Control of weeds may also be improved by adding dry ammonium sulfate at 1-2% by weight or 8.5-17 lbs./100 gals. of water.

Tank Mixtures for Farmsteads

Refer to the **ANNUAL WEEDS CONTROLLED** section, Table 1, for application rates and timing. For annual weeds, use 0.6 to 2.4 qt/A of this product when weeds are less than 6 inches tall and 0.9 to 2.4 qt/A when weeds are greater than 6 inches tall.

Refer to the **PERENNIAL WEEDS CONTROLLED** section, Table 3, for application rates and timing. For perennial weeds, apply 1.25 to 3.0 qt/A in these tank mixes. For tank mixtures with these products through backpack sprayers, handguns, or other high-volume spray-to-wet applications, see the **APPLICATION EQUIPMENT AND TECHNIQUES** section of this label for specified rates.

Refuge Herbicide can be tank mixed with the following products:

Banvel®	Simazine
Direx	Surflan
Diuron	2,4-D
Princep Caliber 90	

Refer to individual product labels for precautionary statements, restrictions, rates, and a list of weeds controlled.

Chemical Mowing

Refuge Herbicide at 4 fl oz in 10 to 40 gallons of water per acre, will suppress Kentucky bluegrass and serve as a substitute for mowing.

Refuge Herbicide at 5 fl oz in 10 to 40 gallons of water per acre, will suppress fine fescue, orchardgrass, quackgrass, or tall fescue and serve as a substitute for mowing.

Refuge Herbicide at 2 to 3 fl oz in 10 to 40 gallons of water per acre, will suppress some annual grasses such as ryegrass, wild barley, and wild oats. Make applications while the annual grasses are actively growing and before the seedheads reach the boot stage of development. Treatment may cause injury to the desired grasses.

Chemical mowing applications may be made along farm ditches and other parts of farmsteads.

Cut Stumps

Refuge Herbicide will control regrowth of cut stumps and resprouts of many types of woody brush and tree species, some of which are listed. Apply Refuge Herbicide using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 40 to 100% solution of Refuge Herbicide completely covering the freshly-cut surface immediately after cutting. Application delay may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder	Salt-cedar
Eucalyptus	Sweetgum
Madrone	Tan oak
Oak	Willow
Reed, giant	

FORESTRY AND UTILITY RIGHTS-OF-WAY USES

Refuge Herbicide may be used for the control or partial control of woody brush, trees, annual, and perennial weeds in forestry and utility sites. Refuge Herbicide may also be used in preparing or establishing wildlife openings within these sites, for maintaining logging roads, and for side trimming along utility rights-of-way (including electrical power; pipeline and telephone rights-of-way; and utility sites such as substations).

Broadcast applications can be made at 1-6 qt/A in 5-30 gals./A by air; and 10 to 60 gallons/A by ground.

Spray to wet applications can be made with a handgun, backpack, or mistblower applicator with a 0.6 to 1.7% spray solution. For low volume directed spray applications, use a 4 to 8% solution of Refuge Herbicide. Handguns, backpack, or mistblower applicators can be used. For low volume directed spray applications, coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results.

Use of 0.5 to 1% NIS is recommended. Mix 2-4 qt of NIS per 100 gallons of spray solution.

Refer to the **WEEDS, WOODY BRUSH AND TREES CONTROLLED** sections for use rates. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop. Increase rates within the specified range for control of perennial weeds any time after emergence and before seedheads, flowers, or berries appear.

Use the lower rates of Refuge Herbicide within the specified range for control of annual weeds and actively growing perennial weeds after seedheads, flowers, or berries appear.

Tank Mixtures for Use in Forestry Site Preparation and Utility Rights-of-Way

Tank mixtures of Refuge Herbicide may be used to increase the spectrum of vegetation controlled. Any specified rate of Refuge Herbicide may be used in a tank mix.

Arsenal®	Garlon™ 4
Chopper®	Oust XP
Escort®	Vanquish®
Garlon™ 3A	

- Only use Garlon 4 tank mixes or use Refuge Herbicide alone at specified rates in utility side trimming.
- Ensure that Garlon 3A is thoroughly mixed with water according to label directions before adding to tank mixture. Ensure adequate agitation at the time Garlon 3A is added to avoid spray compatibility problems.
- For forestry site preparation, make sure the tank mix product is approved for use prior to planting desired species.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Forestry Conifer and Hardwood Release – Directed Spray and Selective Equipment

Refuge Herbicide may be applied with selective equipment or as a directed spray for forestry conifer and hardwood release, including Christmas tree plantations and silvicultural nurseries. See the **APPLICATION PROCEDURES** section for recommended equipment.

Spray to wet applications can be made with a 1.7% spray solution for control of undesirable woody brush and trees. Use a 0.8 to 1.7% spray solution for most annual and perennial weeds. For low volume directed spray applications, use a 4-8% solution of Refuge Herbicide. Handguns, backpack, or mistblower applicators can be used. Coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results.

Equipment calibrated for broadcast applications can be used. Use 1.2 to 6.0 qt of Refuge Herbicide in 10 to 60 gallons of clean water per acre. Use shielded application equipment to avoid contact with foliage **or** green bark of desirable plants.

Use of 0.5 to 1.5% NIS is recommended. Mix 2-6 qt NIS per 100 gallons of spray solution.

Wiper application equipment may be used. Refer to the **Wiper Applicators and Sponge Bars** section for rate and use directions.

Refer to the **WEEDS, WOODY BRUSH AND TREES CONTROLLED** sections for use rates. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop. Increase rates within the specified range for control of perennial weeds any time after emergence and before seedheads, flowers, or berries appear.

Use the lower rates of Refuge Herbicide within the specified range for control of annual weeds and actively growing perennial weeds after seedheads, flowers, or berries appear.

Tank Mixtures for Use in Directed Spray and Selective Equipment

Tank mixtures of Refuge Herbicide may be used to increase the spectrum of vegetation controlled. Any specified rate of Refuge Herbicide may be used in a tank mix.

Arsenal
Garlon 4
Oust XP

- Only use Oust XP tank mixes or use Refuge Herbicide alone at specified rates in hardwood plantations.
- Only use Garlon 4 or Arsenal tank mixes or use Refuge Herbicide alone at specified rates in pine plantations.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of trees, woody brush, and weeds controlled.

Forestry Conifer Release – Broadcast Spray

Use of 0.25 to 1% NIS is recommended. Mix 1-4 qt NIS per 100 gallons of spray solution.

To avoid injury to desirable species, make sure final resting buds have formed and are well hardened off before fall application or prior to initial bud swelling in the spring.

Outside Southeastern U.S.

Refuge Herbicide can be used as a broadcast spray for conifer forest release. Apply Refuge Herbicide at 0.6 to 1.8 qt/A for species listed in the following table in areas outside the southeastern U.S., unless specified otherwise in the table.

Use for Release of the Following Conifer Species Outside the Southeastern U.S.

Species	Scientific Name	Remarks
Douglas Fir	*Pseudotsuga menziesii*	Apply 0.6 to 0.9 qt/A at end of first growing season (except CA).
Fir	*Abies* spp.	---
Hemlock	*Tsuga* spp.	Do not add surfactant. Injury may result.
Pines	*Pinus* spp.	Not for use on loblolly, long leaf, short leaf, or slash pine. Apply 0.6 to 0.9 qt/A at end of first growing season (except CA).
Redwood, California	*Sequoia* spp.	Do not add surfactant. Injury may result.
Spruce	*Picea* spp.	In Michigan, Minnesota, and Wisconsin, up to 1.8 qt/A may be used for difficult to control woody brush and trees. In other areas, apply 0.6 to 0.9 qt/A at end of first growing season.

Tank Mixtures for Broadcast Sprays Outside the Southeastern U.S.

Tank mixtures of Refuge Herbicide may be used to increase the spectrum of vegetation control.

Arsenal Applicators Concentrate
Oust XP

- In Maine and New Hampshire, use 1 fl oz/A of Arsenal Applicators Concentrate in a tank mix to control difficult species.
- For Douglas Fir release, use 2 to 6 fl oz/A of Arsenal Applicators Concentrate in a tank mix with 0.6 to 0.9 qt/A of Refuge Herbicide.
- For Balsam Fir and Red Spruce release, use 1 to 2.5 fl oz/A of Arsenal Applicators Concentrate with 1.2 qt/A of Refuge Herbicide.
- For Jack Pine and White Spruce release, use 1 to 3 oz/A of Oust XP in a tank mix with 0.6 to 1.2 qt/A of Refuge Herbicide. For White Pine release, use 1 to 1.5 oz/A of Oust XP in a tank mix with 0.6 to 1.2 qt/A of Refuge Herbicide. Over-the-top applications to established stands can be made. Make sure late summer or final fall resting buds have formed before application.

Southeastern U.S.

Refuge Herbicide can be used as a broadcast spray for conifer forest release. Apply Refuge Herbicide at 0.6 to 1.2 qt/A for species listed in the following table in areas in the southeastern U.S., unless specified otherwise in the table.

Use for Release of the Following Conifer Species In the Southeastern U.S.

Species	Scientific Name	Remarks
Eastern White Pine	*Pinus strobus*	• Apply 0.6 to 0.9 qt/A during late summer or early fall on established stands. • Apply 0.6 qt/A at end of first growing season. • Make sure final fall resting buds have formed before application.
Loblolly Pine	*Pinus taeda*	
Long-leaf Pine	*Pinus palustris*	
Short-leaf Pine	*Pinus echinata*	
Slash Pine	*Pinus elliottii*	
Virginia Pine	*Pinus virginiana*	

Tank Mixtures for Broadcast Sprays in the Southeastern U.S.

A tank mix of Refuge Herbicide may be used to increase the spectrum of vegetation control. Apply 0.6 to 1.2 qt/A of Refuge Herbicide in a tank mix with Arsenal Applicators Concentrate at 2 to 16 fl oz. Use the higher specified rates for dense, tough-to-control, woody brush and trees.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of trees, woody brush, and weeds controlled.

Forestry Conifer Release – Broadcast – Annual and Perennial Weed Control

Refuge Herbicide may be used for the control of annual weeds and control or suppression of perennial weeds listed in the **WEED CONTROL** sections (Table 1 and 2). Make applications to actively growing weeds as a broadcast spray over the top of labeled conifers. For best results, apply in a maximum of 25 gallons of clean water per acre.

Tank Mixtures for Residual Annual and Perennial Weed Control in Conifer Forests

Refuge Herbicide in a tank mix with the following residual herbicides can provide residual control of annual and perennial weeds.

Atrazine
Oust XP

- For Loblolly Pine release, apply 9.6 to 14.4 fl oz/A of Refuge Herbicide in a tank mix with 2 to 4 oz/A of Oust XP.
- For Slash Pine release, apply 7.2 to 9.6 fl oz/A of Refuge Herbicide in a tank mix with 2 to 4 oz/A of Oust XP.
- These applications can be made to newly planted pines. For best results, apply after emergence of annual and perennial weeds in the spring or early summer. May and June applications are often the best.
- For Douglas Fir release, apply 0.6 qt/A of Refuge Herbicide in a tank mix with 4 lb a.i./A atrazine. Do not add surfactant. Applications can only be made to Douglas firs established at least one full growing season. Apply in early spring (mid-March to early April) before bud swell. Injury will occur if applications are made after bud swell.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of trees, woody brush, and weeds controlled.

Note: For all of the following use sites on this label, refer to Tables 1-4 for specific rates unless otherwise noted below.

HABITAT MANAGEMENT AND HABITAT RESTORATION

Refuge Herbicide may be used to control exotic and other undesirable vegetation in habitat management and natural areas, including rangeland and wildlife refuges, including riparian and estuarine areas. Applications can be made to allow recovery of native plant species, prior to planting desirable native species, and for similar broad spectrum vegetation control requirements in habitat management areas. Spot treatments can be made to selectively remove unwanted plants for habitat maintenance and enhancement. Refuge Herbicide can be tank mixed with the following products:

Banvel	Simazine
Direx®	Surflan
Diuron	Vanquish
Princep® Caliber 90®	2,4-D

Refer to individual product labels for precautionary statements, restrictions, rates, and a list of weeds controlled.

Wildlife Food Plots

Refuge Herbicide may be used for site preparation for control of annual and perennial weeds prior to planting wildlife food plots. Any wildlife food species may be planted or native species may be allowed to repopulate the area after applying Refuge Herbicide. If tillage is needed to prepare a seedbed, wait 7 days after application before tillage.

PASTURE

Refuge Herbicide can be used on pastures of the following type:

Alfalfa	Fescue
Bahiagrass	Orchardgrass
Bermudagrass	Ryegrass
Bluegrass	Timothy
Bromegrass	Wheatgrass
Clover	

Method of Application: Before, during, or after planting but before emergence; renovation; spot spray; and wiper/wick.

Follow directions listed in the **SPRAY ADDITIVES** and **APPLICATION PROCEDURES** sections. Refer to the **WEEDS, WOODY BRUSH AND TREES CONTROLLED** sections, for rates and timing.

To aid in renovation of pastures, Refuge Herbicide may be applied at 5.6 to 38 fl oz/A to dormant pastures. Applications of Refuge Herbicide to green, nondormant plant tissue of desirable species will cause stunting, plant injury, or plant death.

Use Precautions and Restrictions for Pastures

- For best results, remove domesticated livestock 14 days before treatment. Allow 2 to 6 inches of new growth prior to treatment.
- Remove domestic livestock and wait 8 weeks before grazing or harvesting for forage and hay following preplant, preemergence, or pasture renovation applications.
- If using spot or wiper/wick application, remove domestic livestock before application and wait 14 days before grazing or harvesting for forage or hay.

Tank Mixtures for Pastures

Refuge Herbicide can be tank mixed with the herbicides 2,4-D and/or Dicamba for control or suppression of annual and perennial weeds provided that the tank mix product label allows use of the product. Refer to the **WEEDS CONTROLLED** section for application rates and timing. Apply Refuge Herbicide at 0.6 to 4.8 pt/A in these tank mixes for control or suppression of annual and perennial weeds. For control or suppression of dense populations of weeds greater than 12 inches in height or weeds under stress, consider use rates at the higher end of the rate range.

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds, woody brush, and trees controlled.

TURFGRASS USES (INCLUDING ROADSIDES)

Refuge Herbicide may be used on turf.

Use Precautions and Restrictions for Turfgrass Uses

- **Do not** feed or graze turfgrass grown for seed or sod production for 8 weeks following application.
- A nonionic surfactant (NIS) or wetting agent (approved for intended use) must be added at 0.25% v/v (1 qt NIS or wetting agent/100 gallons) of finished spray volume.
- Do not disturb soil or underground plant parts before treatment. Tillage or renovation techniques such as vertical mowing, coring, or slicing should be delayed for 7 days after application to allow translocation into underground plant parts.
- Desirable turfgrasses may be planted following the above procedures. Hand-held equipment may be used for spot treatment of unwanted vegetation growing in existing turfgrass. Broadcast or hand-held equipment may be used to control sod remnants or other unwanted vegetation after sod is harvested.
- Application of rates greater than 10 fl oz/A of Refuge Herbicide may result in injury or delayed green-up in highly maintained areas, such as golf courses and lawns.
- Oust XP tank mixes must not be used in highly maintained turfgrass.
- Use only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Chemical Mowing

Refuge Herbicide at 4 fl oz in 10 to 40 gallons of water per acre, will suppress Kentucky bluegrass and serve as a substitute for mowing.

Refuge Herbicide at 5 fl oz in 10 to 40 gallons of water per acre, will suppress fine fescue, orchardgrass, quackgrass, or tall fescue and serve as a substitute for mowing.

Refuge Herbicide at 2 to 3 fl oz in 10 to 40 gallons of water per acre, will suppress some annual grasses such as ryegrass, wild barley, and wild oats growing in coarse turf on roadsides or other industrial areas. Make applications while the annual grasses are actively growing and before the seedheads reach the boot stage of development. Treatment may cause injury to the desired grasses.

Dormant Bermudagrass

Refuge Herbicide may be used to control or partially control many winter annual weeds and tall fescue for effective release in dormant bermudagrass. Treat only when turf is dormant and prior to spring greenup. Apply 5 to 38 fl oz of Refuge Herbicide in 10 to 40 gallons of water per acre to control winter annuals less than 6 inches in height and tall fescue at or beyond the 4 to 6 leaf stage.

Dormant Bahiagrass

Refuge Herbicide may be used to control or partially control many winter annual weeds and tall fescue for effective release of dormant bahiagrass. Treat only when turf is dormant and prior to spring greenup. Apply 5 to 38 fl oz of Refuge Herbicide in 10 to 40 gallons of water per acre to control winter annuals less than 6 inches in height and tall fescue at or beyond the 4 to 6 leaf stage.

Rates to Achieve Control (C) or Suppression (S) in Dormant Bermudagrass and Bahiagrass

	Refuge Herbicide fluid oz/acre				
Weed Species	**4.8**	**7.2**	**9.6**	**14.4**	**19**
Barley, little	S	C			
Bedstraw, catchweed	S	C			
Bluegrass, annual	S	C			
Chervil	S	C			
Chickweed, common	S	C			
Clover, crimson	*	S	S	C	
Clover, largehop	*	S	S	C	
Fescue, tall	*	*	*	*	S
Geranium, Carolina	*	*	S	S	C
Henbit	*	S	C		
Ryegrass, Italian	*	*	S	C	
Speedwell, corn	S	C			
Vetch, common	*	*	S	C	

*These rates apply only to sites where an established competitive turf is present.

Tank Mix with Oust XP - Dormant Bermudagrass

Refuge Herbicide can be tank mixed with Oust XP for residual control. Apply 5 to 40 fl oz of Refuge Herbicide with 0.25 to 1 oz of Oust XP per acre. Use where some temporary injury or discoloration to a desirable bermudagrass stand can be tolerated. Use a maximum of 1 oz of Oust XP to minimize injury and avoid delays in greenup.

Actively Growing Bermudagrass

Refuge Herbicide may be used to control or partially control many annual and perennial weeds for effective release in actively growing, well established bermudagrass. Apply 10 to 30 fl oz of Refuge Herbicide in 10 to 40 gallons of spray solution per acre. Use the lower rate when treating annual weeds below 6 inches in height or runner length. Use the higher rate as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Johnsongrass*
Bluestem, silver	Trumpetcreeper**
Fescue, tall	Vaseygrass

*Johnsongrass is controlled at the higher rate.
**Suppression at the higher rate only.

Use only on well established bermudagrass. Bermudagrass injury may occur but regrowth will occur under moist conditions. Repeat applications are not recommended in the same season.

Tank Mix with Oust XP - Actively Growing Bermudagrass

Refuge Herbicide can be tank mixed with Oust XP for residual control. Apply 10 to 19 fl oz of Refuge Herbicide with 1 to 2 oz of Oust XP per acre. Use lower rates of both products when treating annual weeds below 6 inches in height or runner length. Use the higher rates of both products as weeds increase in size or as they approach flower or seedhead formation. These rates will also provide partial control of the following perennial species:

Bahiagrass	Dallisgrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Dock, curly	Johnsongrass	Vaseygrass
Broomsedge	Dogfennel	Poor Joe	Vervain, blue

Use only on well-established bermudagrass. Bermudagrass injury may occur but regrowth will occur under moist conditions. Repeat applications are not recommended in the same season.

Tank Mix with Oust XP - Dormant Bahiagrass

Refuge Herbicide can be tank mixed with Oust XP for residual control. Apply 5 to 38 fl oz of Refuge Herbicide with 0.25 to 0.5 oz of Oust XP per acre. Use where some temporary injury or discoloration to a desirable bahiagrass stand can be tolerated.

Actively Growing Bahiagrass

Refuge Herbicide at 3 fl oz in 10 to 40 gallons of spray solution per acre, may be used to suppress vegetative growth and inhibit seedhead formation of actively growing bahiagrass for approximately 45 days. Make applications 1 to 2 weeks after green-up or after mowing to a height of 3 to 4 inches. Applications must be made before seedhead emergence. Suppression can be extended to 120 days with an application of Refuge Herbicide at 2.5 fl oz, followed in 45 days with an application at 1.25 to 2.5 fl oz. Do not make more than 2 applications per year.

Tank Mix with Oust XP - Actively Growing Bahiagrass

Refuge Herbicide can be tank mixed with Oust XP for residual control. One to 2 weeks following an initial spring mowing, apply 3.6 fl oz. of Refuge Herbicide with 0.25 oz of Oust XP. Do not make more than one application per year.

Bahiagrass Seedhead and Vegetative Suppression – Refuge Herbicide at 3.6 fl oz in 10 to 25 gallons of spray solution per acre, may be used to suppress vegetative growth and inhibit seedhead formation of actively growing bahiagrass for approximately 45 days. Make applications 1 to 2 weeks after green-up or after mowing to a height of 3-4 inches. Applications must be made before seedhead emergence. Suppression can be extended to 120 days with an application of Refuge Herbicide at 2.4 fl oz, followed in 45 days with an application at 1.2 to 2.3 fl oz. Do not make more than 2 applications per year.

Annual Grass Suppression in Rough Turf - Refuge Herbicide at 2.4 to 3 fl oz in 10 to 40 gallons of spray solution per acre, may be used to suppress growth of some annual grasses (such as annual ryegrass, wild barley, and wild oats) growing in coarse turf on roadsides or other industrial areas. Make applications when annual grasses are actively growing and before seedheads are in the boot stage. Treatments after seedhead emergence may cause injury to desired grasses.

Renovation; Seed or Sod Production

Refuge Herbicide may be used to renovate turf.

Refuge Herbicide controls most existing vegetation prior to renovating turfgrass areas or establishing turfgrass grown for seed or sod. For maximum control of existing vegetation, delay planting or sodding to determine if any regrowth from escaped underground plant parts occurs. Where repeat treatments are necessary, sufficient regrowth must be attained prior to application. For warm season grasses such as bermudagrass, summer or fall applications provide the best control where existing vegetation is growing under mowed turfgrass management. Apply Refuge Herbicide after omitting at least one regular mowing to allow sufficient growth for good interception of the spray.

Roadsides

For specific use rates, refer to **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** section.

Refuge Herbicide may be used on road shoulders, medians, and landscape areas. It may be applied with boom sprayers, shielded boom sprayers, high-volume off-center nozzles, hand-held equipment, and similar equipment.

Refuge Herbicide may be used to control weeds growing under guardrails and around signposts and other objects along the roadside.

Refuge Herbicide may be used as a spot treatment to control unwanted vegetation growing along roadsides.

Refuge Herbicide may be tank mixed with the following products for shoulder, guardrail, spot, and bare ground treatments:

Banvel	Escort	Pendulum	Sahara	Telar
Diuron	Krovar	Princep	Simazine	Vanquish
Endurance	Oust XP	Ronstar	Surflan	2,4-D

OTHER USE SITES

Refuge Herbicide may be used in industrial sites, parks, railroads, and recreational areas and other sites listed below. It may be applied with any application equipment described in this label. Refuge Herbicide may be used to trim-and-edge around objects in the use sites listed below, for spot treatment of unwanted vegetation, and to eliminate unwanted weeds growing in established shrub beds or ornamental plantings. Refuge Herbicide may be used prior to planting an area to ornamentals, flowers, turfgrass (sod or seed), or prior to laying asphalt or beginning construction projects. Repeated applications of Refuge Herbicide may be used, as weeds emerge, to maintain bare ground.

Non-Residential Sites

airports
industrial sites
lumber yards
manufacturing sites
office complexes
parking areas
petroleum tank farms and pumping installations
railroads and railroad rights-of-way (*see specific directions below*)
storage areas
warehouse areas

Residential Use Sites

Lawns (turf) and landscape areas associated with:
- athletic fields (including elementary, middle and high schools; collegiate; professional and recreational parks)
- campgrounds
- church grounds
- daycare center grounds
- parks
- playgrounds and play fields
- recreational areas
- residences (homes, apartment complexes, etc.)
- school grounds
- theme parks

Woody Brush and Tree Management:

For specific use rates, refer to **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** section.

Refuge Herbicide may be used to control woody brush and tree weeds.

Apply Refuge Herbicide as a broadcast spray, using boom-type or boomless nozzles.

Apply a 0.6 to 1.7% solution of Refuge Herbicide when using high-volume spray-to-wet applications. Use a 4-8% solution of Refuge Herbicide when using low volume directed sprays for spot treatment.

For weeds that have been mowed, grazed, or cut; allow regrowth to occur prior to treatment. Reduced results may occur when treating weeds heavily covered with dust.

Cut Stumps

Refuge Herbicide will control regrowth of cut stumps and resprouts of many types of woody brush and tree species, some of which are listed. Apply Refuge Herbicide using suitable equipment to ensure coverage of the entire cambium. Cut trees or resprouts close to the soil surface. Apply a 40 to 100% solution of Refuge Herbicide completely covering the freshly-cut surface immediately after cutting. Application delay may result in reduced performance. For best results, applications should be made during periods of active growth and full leaf expansion.

Alder	Madrone	Salt-cedar
Coyote Brush	Maple	Sweetgum
Dogwood	Oak	Tan oak
Eucalyptus	Poplar	Willow
Hickory	Reed, giant	

Note: Avoid making cut stump applications when roots of desirable adjacent trees may have grafted onto the roots of the cut stump.

Tree Injections and Frill Applications

Refuge Herbicide may be used to control woody brush and trees by using injection and frill applications.

Apply the equivalent of 1 ml of this product per each 2 to 3 inches of trunk diameter at breast height (DBH). For best results, apply a 25 to 100% solution of Refuge Herbicide to a continuous frill or to evenly spaced cuts around the tree below all branches. In larger diameter trees, better results are achieved by applying diluted material to a continuous frill or more closely spaced cuttings.

Avoid runoff in species that exude sap freely by making frills or cuts at an oblique angle, producing a cupping effect. Use Refuge Herbicide in an undiluted form. For best results, avoid applications during peak sap flow in the spring. Make applications during periods of active growth and after full leaf expansion.

Following is a partial list of species that can be controlled using this technique.

Black gum[1]	Oak
Dogwood[1]	Poplar
Hickory[1]	Sweetgum
Maple, red[1]	Sycamore

[1]Partial Control

Note: Avoid making injection or frill applications when roots of desirable adjacent trees may have grafted onto the roots of the cut stump.

Tank Mixtures

Refuge Herbicide can be tank mixed with the following herbicides for control of emerged annual weeds and control or partial control of perennial weeds, woody brush, and trees:

Arsenal	Karmex	Sahara®
Banvel	Krovar®	Simazine
Barricade®	Pendulum®	Surflan®
Diuron	Plateau®	Telar®
Endurance®	Princep®	Vanquish
Escort	Ronstar®	2,4-D

Tank Mix with Oust XP - Perennial Weed Control

Refuge Herbicide, applied at 1.2 to 2.4 pt/A in a tank mix with Oust XP at 2 to 4 oz/A, will provide control or suppression of the following perennial weeds:

Bahiagrass	Fescue, tall
Bermudagrass	Johnsongrass
Broomsedge	Poor Joe
Dallisgrass	Quackgrass
Dock, curly	Vaseygrass
Dogfennel	Vervain, blue

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

Railroads and Railroad Rights-of-Way

For specific use rates, refer to **WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED** section.

Refuge Herbicide may be used to maintain bare ground on railroad ballast and shoulders. Repeat applications of Refuge Herbicide may be used, as weeds emerge, to maintain bare ground. Refuge Herbicide may be used to control tall-growing weeds to improve line-of-sight at railroad crossings and reduce the need for mowing along rights-of-way. For crossing applications, up to 80 gallons of spray solution per acre may be used.

Refuge Herbicide may be tank mixed with the following products for ballast, shoulder, spot, bare ground, and crossing treatments.

Arsenal	Escort	Krovar	Spike®	2,4-D
Banvel	Garlon™	Oust XP	Telar	
Diuron	Hyvar®	Sahara	Vanquish	

Refuge Herbicide can be tank mixed with the following products for enhanced control of woody brush and trees.

Arsenal	Garlon
Escort	Tordon®

Refer to individual product labels for precautionary statements, restrictions, rates, approved uses, and a list of weeds controlled.

WEEDS CONTROLLED, WOODY BRUSH AND TREES CONTROLLED

Water volumes of 3-40 gallons per acre by ground equipment and 3-15 gallons by air are recommended. Use the minimum spray volume that provides adequate coverage.

When tank mixing with residual herbicides, refer to the individual crop section for recommendations.

Apply to actively growing weeds.

Table 1. Annual Weed Control – Refuge Herbicide Rates

Use the higher end of the rate range when stressful growing conditions or dense plant populations exist.

Weed Species	Scientific Name	Refuge Herbicide Fluid Ounces Per Acre				
		Maximum Weed (Height/Length)				
		3″	6″	12″	18″	24″
Anoda, spurred	*Anoda cristata*	14–20	20–24			
Barley	*Hordeum vulgare*				10–14	14–20
Barnyardgrass	*Echinochloa crus-galli*	20	14–20	20–30		

Weed Species	Scientific Name	Refuge Herbicide Fluid Ounces Per Acre				
		Maximum Weed (Height/Length)				
		3″	6″	12″	18″	24″
Bassia, fivehook	*Bassia hyssopifolia*		20			
Bittercress	*Cardamine* spp.			5–10	10–14	
Bluegrass, annual	*Poa annua*			5–10		
Bluegrass, bulbous	*Poa bulbosa*			5–10		
Bristly starbur	*Ancanthospornum hispidum*		10–14	14–20		
Brome, downy	*Bromus tectorum*		8–10	10–14		
Brome, Japanese	*Bromus japonicus*		5–10	10–14		14–20
Browntop panicum	*Panicum fasciculatum*		5–10	14–20		22–30
Buckwheat, wild[1]	*Polygonum convolvulus*	20				
Buffalobur	*Solanum rostratum*	14–20	20–30	22–30		
Burcucumber	*Sicyos angulatus*		10–14	14–20		
Burgherkin	*Cucumis anguria*	14–20	20–30			
Buttercup[2]	*Ranunculus* spp.			5–10	10–14	
Camphorweed	*Heterotheca subaxillaris*		20–30			
Canarygrass	*Phalaris canariensis*		14–20			
Carolina geranium	*Geranium carolinianum*	14–20	20–30			
Carpetweed	*Mullugo verticillata*		10–14	14–20		
Cheat	*Bromus secalinus*		5–10		10–14	
Cheatgrass	*Bromus tectorum*		5-10		10-14	
Cheeseweed	*Malva parviflora*	14	20			
Chervil	*Anthriscus cerefolium*				5–10	
Chickweed, common	*Stellaria media*			5–14	14–20	
Chickweed, mouseear	*Cerastium vulgatum*		5–10	5–14	14–20	
Citronmelon	*Citrullus lanatus*	14–20	20–30			
Cocklebur, common	*Xanthium strumarium*			5–10	10–14	14–20
Coffee senna	*Cassia occidentalis*	14–20	20–30			
Coreopsis, plains/tickseed	*Coreopsis tinctoria*		10-14	14-20	20-30	
Corn[3]	*Zea mays*		5–10	10–14		14–20
Corn speedwell	*Veronica arvensis*			5–10		
Cowpea	*Vigna unguiculata*	14–20	20–30			
Crabgrass[4]	*Digitaria* spp.	10	10–14	14–20		

continued...

Table 1. Annual Weed Control – Refuge Herbicide Rates *(continued)*

Weed Species	Scientific Name	Refuge Herbicide Fluid Ounces Per Acre				
		Maximum Weed (Height/Length)				
		3″	6″	12″	18″	24″
Crotalaria, showy	*Crotalaria spectabilis*	10–14	14–20	20–30		
Croton, tropic	*Croton glandulosus*	14–20	20–30			
Crowfootgrass	*Dactyloctenium aegyptium*	5–10	10–20	24–48		
Cutleaf eveningprimrose	*Oenothera laciniata*	14–20	24–36			
Deadnettle, purple	*Lamium purpureum*		14-20	24-36		
Devil's–claw (unicorn plant)	*Proboscidea louisianica*	14	20			
Dwarfdandelion	*Krigia cespitosa*				5–10	
Eastern mannagrass			5–10	10–14		
Eclipta	*Eclipta prostrata*	10–14	14–20	20–30		
Fall panicum	*Panicum dichotomiflorum*	5–10	14–20	20–30		22-30
Falsedandelion	*Pyrrhopappus carolinianus*				10–14	
Falseflax, smallseed	*Camelina microcarpa*			5–10		
Fiddleneck	*Amsinckia* spp.		14	20–30		
Filaree	*Erodium* spp.		14–20	20–30		
Fleabane, annual	*Erigeron annus*		5–10		10–14	
Fleabane, hairy	*Conyza bonariensis*		14–20	20–30		
Fleabane, rough	*Erigeron strigosus*	5–10	10–14	14–20		
Florida beggarweed	*Desmodium tortuosum*		10–14	14–20		
Florida pusley	*Richardia scabra*	14–20	20–30			
Foxtails	*Setaria* spp.		5–10	10–14	14–20	
Goatgrass, jointed	*Aegilops cylindrica*		5–10	10–14		
Goosefoot, neetleleaf	*Chenopodium murale*		20–30			
Goosegrass	*Eleusine indica*	10–14	14–20	20–30		
Grain sorghum (milo)	*Sorghum bicolor*		5–10	10–14	14–20	
Groundcherry	*Physalis* spp.		20–30			
Groundsel, common	*Senecio vulgaris*		10–14			
Hemp sesbania	*Sesbania exaltata*	10–14	24–30	24–30		
Henbit	*Lamium amplexicaule*		14–20	24–36		
Hophornbeam copperleaf	*Acalypha ostryifolia*	14–20	24–36			
Horseweed/Marestail	*Conyza canadensis*		10–14	14–20	20–30	
Itchgrass	*Rottboellia cochinchinensis*		5–10	14–20	20–30	
Jimsonweed	*Datura stramonium*			14–20	20–30	

Weed Species	Scientific Name	Refuge Herbicide Fluid Ounces Per Acre				
		Maximum Weed (Height/Length)				
		3″	6″	12″	18″	24″
Johnsongrass, seedling	*Sorghum halepense*		5–10	10–14	14–20	20–30
Junglerice	*Echinochloa colona*	10–14	14–20	20–30		
Knotweed	*Polygonum aviculare*		14–20	20–30		
Kochia[2]	*Kochia scoparia*		10–14	14–20		
Lambsquarters, common	*Chenopodium album*		14-20	20-30	30-35	
Lettuce, prickly	*Lactuca serriola*		10–14	14–20		
Little barley	*Hordeum pussillum*		5–10	10–14		
London rocket	*Sisymbrium irio*		5–10			14–20
Mayweed	*Anthemis cotula*	10–14	14–20		20–30	
Medusahead	*Taeniatherum caput-medusae*	14	14-20			
Morningglory[5]	*Ipomoea* spp.	14–20	20–30			
Mustard, blue	*Chorispora tenella*		5–10	10–14	14–20	
Mustard, tansy	*Descurainia pinnata*		5–10	10–14	14–20	
Mustard, tumble	*Sisymbrium altissimum*		5–10	10–14	14–20	
Mustard, wild	*Brassica kaber*		5–10	10–14	14–20	
Nightshade, black	*Solanum nigrum*	14	14–20	20–30		
Nightshade, hairy	*Solanum sarrachoides Sendtner*	14	14–20	20–30		
Oats	*Avena sativa*	10	10–14		14–20	
Oats, wild	*Avena fatua*	10	10–14		14–20	
Panicum, Texas	*Panicum texanum*		5–10	14–20		20–30
Pennycress, field	*Thlaspi arvense*		5–10	10–14		
Pigweed	*Amaranthus* spp.			10–14	14–20	24–30
Poinsettia, wild	*Euphorbia heterophylla*	10–14	20–30			
Prickly sida (Teaweed)[5]	*Sida spinosa*	14–20	20–30			
Puncturevine	*Tribulus terrestris*	14–20	20–30			
Purslane, common	*Portulaca oleracea*	14–20	20–30			
Rabbitfootgrass	*Polypogon monspeliensis*		14–20			
Ragweed, common	*Ambrosia artemisiifolia*		10–14	14–20	20–30	
Ragweed, giant	*Ambrosia trifida*		10–14	14–20	20–30	
Red rice	*Oryza sativa*	14–20				
Redweed	*Melochia corchorifolia*	14–20	20–30			
Rockpurslane Redmaids	*Calandrinia* spp.		14–20			

continued...

Table 1. Annual Weed Control – Refuge Herbicide Rates *(continued)*

Weed Species	Scientific Name	Refuge Herbicide Fluid Ounces Per Acre				
		Maximum Weed (Height/Length)				
		3″	6″	12″	18″	24″
Rye	*Secale cereale*		5–10		14–20	20–30
Ryegrass, Italian	*Lolium multiflorum*		14–20	20–30		
Sandbur, field	*Cenchrus incertus*		10	10–14		
Sandbur, southern	*Cenchrus echinatus*	5–10	10–14	14–20		
Shattercane	*Sorghum bicolor*		5–10	10–14	14–20	
Shepherdspurse	*Capsella bursa-pastoris*		5–10	10–14		
Sicklepod	*Cassia obtusifolia*	14–20	20–30			
Signalgrass, broadleaf	*Brachiaria platyphylla*	10–14	14–20	20–30		
Smartweed (ladysthumb)	*Polygonum persicaria*		14–20	20–30		
Smartweed, Pennsylvania	*Polygonum pensylvanicum*		14–20	20–30		
Sowthistle, annual	*Sonchus oleraceus*		14–20	20–30		
Spanishneedles	*Bidens bipinnata*		14–20	20–30		
Speedwell, purslane	*Veronica peregrina*			5–10		
Sprangletop	*Leptochloa* spp.		5–10	10–14	14–20	
Spurge, annual	*Euphorbia spathulata*		10-14	14-20		
Spurge, prostrate	*Euphorbia humistrata*		10–14	14–20		
Spurge, spotted	*Euphorbia maculata*		10–14	14–20		
Spurry, umbrella	*Holosteum umbellatum*		10–14			
Stinkgrass	*Eragrostis cilianensis*			10–14		
Sunflower, common	*Helianthus annuus*			5–10	10–14	
Thistle, Russian	*Salsola iberica*		14–20	20–30		
Velvetleaf[5]	*Abutilon theophrasti*		14–20	20–30		
Virginia copperleaf	*Acalypha virginica*	14–20	20–30			
Virginia pepperweed	*Lepidium virginicum*				10–14	
Waterhemp	*Amaranthus* spp.		14–20	20–30		
Wheat	*Triticum aestivum*		5–10	10–14	14–20	
Wild-proso millet	*Panicum miliaceum*		14	20	30	
Witchgrass	*Panicum capillare*			10–14		
Woolly cupgrass	*Eriochloa villosa*		10–14	14–20		
Yellow rocket	*Barbarea vulgaris*			10–14	14–20	

[1] Maximum runner length. For control of wild buckwheat >3″ in runner length, use sequential applications of 20 oz./A.
[2] Control will be reduced at the button stage.
[3] Will not control glyphosate-tolerant volunteer corn.
[4] Plant diameter.
[5] Multiple applications may be required.

Refuge Herbicide will not control glyphosate–resistant weed biotypes.

Table 2. Annual Weed Control – Refuge Herbicide Rates in a Tank Mix with 0.25 lb. a.i./A of Dicamba or 0.5 lb. a.i./A of 2,4-D

Weed Species	Scientific Name	Maximum Height/Length	Refuge Herbicide Fluid Ounces Per Acre
Kochia (dicamba only) Lettuce, prickly Morningglory Ragweed, common Ragweed, giant Smartweed, Pennsylvania Velvetleaf	*Kochia scoparia* *Lactuca serriola* *Ipomoea* spp. *Ambrosia artemisiifolia* *Ambrosia trifida* *Polygonum pensylvanicum* *Abutilon theophrasti*	6″	10–14
Cocklebur, common Fleabane, rough Horseweed/Marestail Kochia Lambsquarters, common Pigweed Sunflower, common Thistle, Russian	*Xanthium strumarium* *Erigeron strigosus* *Conyza canadensis* *Kochia scoparia* *Chenopodium album* *Amaranthus* spp. *Helianthus annuus* *Salsola iberica*	12″	

Read and follow dicamba and 2,4-D labels.

Table 3. Perennial Weed Control and Weed Management – Refuge Herbicide Rates Used Alone or in Tank Mix with 0.25 lb. a.i./A of Dicamba or 0.5 lb. a.i./A of 2,4-D

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Alfalfa	*Medicago sativa*	1.25	0.83–1.25		At 6-8 inch stage or more after final cutting in fall. Deep till 7 days after treatment.
Artichoke, Jerusalem	*Helianthus tuberosus*	1.25	1.8–3		At or after flowering.
Balsam-apple[1]	*Momordica charantia*	1.25	--		Apply at or beyond bloom.
Bahiagrass	*Paspalum notatum*	1.25	1.8–3		Early seedhead stage.
Barley, foxtail	*Hordeum jubatum*	1.25	0.6–1.33		4-6 inch stage.
Bentgrass	*Agrostis* spp.	1.25	1		Should have at least 3 inches of growth. Ensure entire crown area has resumed growth prior to fall application. Till 7-10 days after application.
Bermudagrass	*Cynodon dactylon*	1.25	1.8–3		Seedheads present; may require retreatment.

continued...

Table 3. Perennial Weed Control and Weed Management – Refuge Herbicide Rates Used Alone or in Tank Mix with 0.25 lb. a.i./A of Dicamba or 0.5 lb. a.i./A of 2,4-D *(continued)*

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Bindweed, field	*Convolvulus arvensis*	1.25	2.25–3		At or after flowering, west of Mississippi River, in late summer for best results.
			1.8–2.25		At or after flowering, east of Mississippi River, in late summer for best results
			1.2	Yes	At or after flowering for control, multiple applications may be required. Do not apply by air.
Bluegrass, Kentucky	*Poa pratensis*	1.25	0.6–1.2		Apply at boot to early seedhead stage.
			0.6–1		For partial control in pasture renovation, apply when plants are 4-12 inches.
Blueweed, Texas	*Helianthus ciliaris*	1.25	2.25–3		Apply at or beyond bloom west of the Mississippi River. For best results, apply in late summer or fall, but before a killing frost.
			1.8–2.25		Apply at or beyond bloom east of the Mississippi River. For best results, apply in late summer or fall, but before a killing frost.
Brackenfern	*Pteridium aquilinum*	0.6–1	1.8–2.75		Fronds fully expanded and at least 18 inches long.
Bromegrass, smooth	*Bromus inermis*	1.25	0.6–1.33		Apply when most plants are at the boot to early seedhead stage.
			0.6–1		For partial control in pasture renovation, apply to actively growing plants 4-12 inches in height.
Bursage, woollyleaf	*Ambrosia grayi*	1.25	1.2	Yes	Apply to actively growing plants at or beyond flowering.
			0.6	Yes[1]	Apply to actively growing plants at or beyond flowering.
Canarygrass, reed	*Phalaris arundinacea*	1.25	1.33–1.8		Boot to head.
Cattail	*Typha* spp.	1.25	1.8–3		Early head to early bud.
Clover, red Clover, white	*Trifolium pratense* *Trifolium repens*	1.25	1.8–3		Early head to early bud. May require retreatment.
Cogongrass	*Imperata cylindrica*	1.25	1.8–3		Late summer/fall, greater than 18 inches in height. May require retreatment.

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Dallisgrass	*Paspalum dilatatum*	1.25	1.8–3		Early head to early bud.
Dandelion	*Taraxacum officinale*	1.25	1.8–3		Early bud.
			0.33	Yes	Early bud.
Dayflower[1]	*Commelina* spp.	1.25	1–1.33		Less than 4 inches in height.
Dock, curly	*Rumex crispus*	1.25	1.8–3		Early bud.
			0.33	Yes	Early bud.
Dogbane, hemp	*Apocynum cannabinum*	1.25	2.75		Late bud to flower. May require retreatment.
			0.33	Yes	Actively growing at 6-12 inch stage for suppression.
Dogfennel	*Eupatorium capillifolium*	1.25	1.8–3		Actively growing, less than 12 inches in height.
Fescue	*Festuca* spp.	1.25	1.8–3		Apply when most plants have reached the early head stage.
Fescue, tall	*Festuca arundinacea*	1.25	0.6–1.8		Apply 1.8 qts./A when most plants have reached boot to early seedhead stage. Fall applications only: Apply 0.6 qt./A when plants are 6-12 inches in height. A spring applied sequential treatment of 0.6 pt./A will improve long term control.
Goatweed	*Scoparia dulcis*	1.25	1.2–1.8		Less than 8 inch stage.
Guineagrass	*Panicum maximum*	0.6	1.33–1.8		7-10 leaf stage.
Horsenettle	*Solanum carolinense*	1.25	1.8–3		Early bud stage.
Horseradish	*Armoracia rusticana*	1.25	2.75		Apply when most plants have reached the late bud to early flower stage in late summer or fall.
Iceplant	*Mesembryanthemum crystallinum*	1–1.25	–		At or beyond the early bud stage.
Ivy, German	*Senecio milkanioides*	1.25	1.2-3.0		At or beyond the early bud stage.
Johnsongrass	*Sorghum halepense*	0.6	0.33–1.8		Apply at boot to head stage and in the fall prior to frost.
			0.33		For burndown, apply when plants are 12 inches in height.
Kikuyugrass	*Pennisetum clandestinum*	1.25	1.33–1.8		Spray when most kikuyugrass is at least 8 inches in height.
Knapweed	*Centaurea* spp.	1.25	2.75		Apply in fall at late bud to flower stage.

continued...

Table 3. Perennial Weed Control and Weed Management – Refuge Herbicide Rates Used Alone or in Tank Mix with 0.25 lb. a.i./A of Dicamba or 0.5 lb. a.i./A of 2,4-D *(continued)*

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Lantana, largeleaf[1]	*Lantana camara*	0.83	–		Apply at or beyond bloom stage.
Lespedeza	*Lespedeza* spp.	1.25	1.8–3		Apply when most plants have reached the early bud stage.
Loosestrife, purple	*Lythrum salicaria*	1.25	1.2-3	Yes	Apply at or beyond bloom stage.
Milkweed, common	*Asclepias syriaca*	1.25	1.8	Yes	Apply when most plants have reached the early bud stage.
Milkweed, honeyvine	*Ampelamus albidus*	1.25	1.33–2.75	Yes	Late bud to early flower. May require retreatment.
Muhly, wirestem	*Muhlenbergia frondosa*	1.25	0.6–1.33		Use 0.6 to 1.33 qts./A in pasture, sod, or noncrop areas. Spray plants 8 inches or more in height.
Mullein, common	*Verbascum thapsus*	1.25	1.8–3		Early bud.
Napiergrass	*Pennistum purpureum*	1.25	1.8–3		Early head stage.
Nightshade, silverleaf	*Solanum eleagnifolium*	1.25	1.33		Apply when 60% of plants have berries. Apply fall treatments before a killing frost.
Nutsedge, purple Nutsedge, yellow	*Cyperus rotundus* *Cyperus esculentus*	0.6–1.25	0.33–1.8		Apply 1.8 qts./A for control of nutsedge plants and immature nutlets attached to treated plants. Treat when plants are in flower or when new nutlets can be found at rhizome tips. Nutlets which have not germinated will not be controlled and may germinate following treatment. Sequential applications: 0.6–1.2 qts./A applied to plants in the 3-5 leaf stage or less than 6 inches tall. Repeat treatments at this stage for long term control. For partial control: apply 0.33–1.2 qts. per acre. Treat when plants have 3-5 leaves or less than 6 inches tall. Repeat treatments at this stage for long term control.
Orchardgrass	*Dactylis glomerata*	1.25	0.6–1.33		Apply 1.2 qts./A on plants at early boot to seedhead stage. For partial control in pasture renovation, apply 0.6–1 qt./A. Apply to actively growing plants 4-12 inches in height. In orchardgrass sods rotated to no-till corn: Apply 0.6–1 qt. Apply to orchardgrass that is a minimum of 12 inches tall for spring applications and 6 inches tall for fall applications. Allow at least 3 days following application before planting.

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Pampasgrass[1]	*Erianthus ravennae*	0.83–1.25	--		Apply at or beyond boot stage.
Paragrass	*Brachiaria mutica*	1.25	1.8–3		Early seedhead stage.
Phaseybean[1]	*Phaseolus lathyroides*	1.25	1.33–2.75		Less than 8 inches tall.
Phragmites[1]	*Phragmites* spp.	0.83–1.25	1.8–3		For best results, treat during late summer or fall months or when plants are actively growing and in full bloom. Repeat treatments may be necessary. Visual control symptoms will be slow to develop.
Poison hemlock	*Conium maculatum*	0.83–1.25	--		Apply as a spray to wet treatment. Optimum results are obtained when plants are treated at the bud to full-bloom stage of growth.
Pokeweed, common	*Phytolacca americana*	1.25	1		Apply to actively growing plants up to 24 inches in height.
Quackgrass	*Agropyron repens*	1.25	0.6–1.8		Do not tank mix with a residual herbicide at the 0.6 qt. rate. Spray when quackgrass is 6-8 inches in height. Do not till between harvest and fall applications or in the fall or spring prior to spring application. Allow 3 or more days after application before tillage.
			1.33–1.8		Apply in pastures, sod, or noncrop areas where deep tillage will not follow the application. Spray when quackgrass is at least 8 inches in height.
Redvine[1]	*Brunnichia ovata*	1.25	0.4–1.33		For suppression, apply 0.4 qt./A at each of two applications 7-14 days apart or a single application of 1.33 qts./A. Apply to plants greater than 18 inches tall in September/October to plants which have been growing 45-60 days since the last tillage. Make application at least 1 week prior to killing frost.
Ryegrass, perennial	*Lolium perenne*	0.83	0.6–1.8		Apply 0.6–1.8 qts./A when most plants are in the boot to head stage or prior to frost. In noncrop or areas where no tillage is practiced, use 1.33–1.8 qts./A. Do not tank mix with residual herbicides when using the 0.6 qt./A per acre rate.
Smallflowered Alexandergrass	*Brachiaria subquadripara*	1.25	1.33–2.75		Less than 4 inches in height, actively growing.
Smartweed, swamp	*Polygonum coccineum*	1.25	1.8–3		Early bud, 12 inch stage.
			0.33	Yes	Early bud, 12 inch stage.

continued...

Table 3. Perennial Weed Control and Weed Management – Refuge Herbicide Rates Used Alone or in Tank Mix with 0.25 lb. a.i./A of Dicamba or 0.5 lb. a.i./A of 2,4-D *(continued)*

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Sowthistle, perennial	*Sonchus arvensis*	1.25	1.33–1.8		Apply when most plants are at or beyond the bud stage of growth. After mowing, or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to application. Fall treatments must be applied before a killing frost. Allow 3 or more days before tillage.
Spurge, leafy	*Euphorbia esula*	1.25	0.33	Yes	For suppression: greater than 12 inches tall in late summer.
Starthistle, yellow	*Centaurea solstitialis*	1.25	1.8-3		Apply to actively growing plants at late bud to flowering stage.
Sweet potato, wild[1]	*Ipomea pandurata*	1.25	--		Apply at or beyond flowering stage.
Switchgrass	*Panicum virgatum*	1.25	1–1.8		Boot to head stage.
Thistle, artichoke[1]	*Cynara cardunculus*	1.25	--		Apply when plants are beyond the bloom stage.
Thistle, Canada	*Cirsium arvense*	1.25	1.33–1.8		Apply when most plants are at or beyond the bud stage of growth. After mowing, or tillage in the late summer or fall, allow at least 4 weeks for initiation of active growth and rosette development prior to application. Fall treatments must be applied before a killing frost. Allow 3 or more days before tillage. For fall applications or following mowing, allow a minimum of 6-8 inches rosette development.
			0.33–0.6	Yes	For suppression: Apply in late summer or fall after, mowing, or tillage. Allow rosette regrowth to be a minimum of 6 inches in diameter before treating. Allow 3 or more days before tillage.
Timothy	*Phleum pratense*	1.25	1.33–1.8		Boot to head; wait 3 days before tillage.
Torpedograss[1]	*Panicum repens*	1.25	2.25–3		At or beyond seedhead. Repeat applications will be required to maintain control. Fall treatments must be made prior to a killing frost.
Trumpetcreeper[1]	*Campsis radicans*	1.25	1.33		Late September/October applications on actively growing plants at least 18 inches in height; retreatment may be required. Make applications at least one week before killing frost.

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Tank Mix With 2,4-D or Dicamba	Application Timing and Remarks
Vaseygrass	*Paspalum urvillei*	1.25	1.8–3		Apply at early head stage.
Vetch	*Vicia* spp.	1.25	1.2–2.42		Boot to head.
Virginia creeper	*Parthenocissus quinquefolia*	1.25	2.75		Full leaf expansion.
Velvetgrass	*Holcus* spp.	1.25	1.8–3		Early head stage.
Wheatgrass, western	*Agropyron smithii*	1.25	1.33–1.8		Boot to head.

[1] Partial control

Woody Brush and Trees Controlled

Apply Refuge Herbicide after full leaf expansion, unless otherwise directed. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. In most areas, best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when applications are made in the spring to early summer when brush species are at high moisture content and are flowering.

Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing, or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Reduced performance may result if fall treatments are made following a frost.

When plants are growing under stressed conditions, or where infestations are dense, Refuge Herbicide may be used at 3-6.3 qts./A or a 0.6-1.25% solution for spot spray clean-up.

Table 4. Woody Brush and Trees Controlled

Weed	Rate (qt/A)[1]
Alder	1.8-2.75
Ash[2]	1.33-3
Aspen, quaking	1.8-2.75
Bearmat (Bearclover)[2]	1.33-3
Beech[2]	1.33-3
Birch	1.33-1.8
Blackberry	1.8-2.75
Blackgum	1.33-3
Bracken	1.33-3
Broom, French and Scotch	3
Buckwheat, California[2]	3
Cascara[2]	1.33-3
Catsclaw[2]	3
Ceanothus[2]	1.33-3
Chamise[2]	1.33-3
Cherry, bitter, black and pin	1.33-8

continued...

Table 4. Woody Brush and Trees Controlled *(continued)*

Weed	Rate (qt/A)[1]
Cottonwood, eastern	1.33-3
Coyote brush	3
Cypress, swamp and bald	1.33-3
Deerwood	1.33-3
Dewberry	1.8-2.4
Dogwood[2]	1.33-3
Elderberry	1.33-1.8
Elm[2]	1.33-3
Eucalyptus, bluegum	1.33-3
Florida holly (Brazilian peppertree)[2]	1.33-3
Gallberry	1.33-3
Gorse[2]	1.33-3
Hackberry, western	1.33-3
Hasardia[2]	3
Hawthorn	1.33-1.8
Hazel	1.33-1.8
Hickory[2]	1.33-3
Honeysuckle	1.8-2.75
Hornbeam, American[2]	1.33-3
Huckleberry	1.33-3
Kudzu	2.25-3
Locust, black[2]	1.33-3
Madrone, resprouts[2]	3
Magnolia, sweetbay	1.33-3
Manzanita	1.33-3
Maple, red	1.33-3
Maple, sugar	3
Monkey flower[2]	3
Oak, black and white[2]	1.33-3
Oak, northern and pin	1.33-3
Oak, post	1.8-2.75
Oak, red	1.33-3
Oak, scrub[2]	1.33-3
Oak, southern red	1.33-1.8
Orange, osage	1.33-3
Persimmon[2]	1.33-3

Weed	Rate (qt/A)[1]
Pine	1.33-3
Poison ivy	2.25-3
Poison oak	2.25-3
Poplar, yellow[2]	1.33-3
Prunus	1.33-3
Raspberry	1.8-2.5
Redbud, eastern	1.33-3
Redcedar, eastern	1.33-3
Rose, multiflora	1.33-1.8
Russian olive[2]	1.33-3
Sage brush, California	3
Sage, black	3
Sage, white[2]	1.33-3
Sago, black	1.33-3
Salmonberry	1.33-1.8
Saltbrush, Seamyrtle	1.33-3
Saltcedar[2]	1.33-3
Sassafras[2]	1.33-3
Sourwood[2]	1.33-3
Sumac (laurel[2], poison, smooth, sugar bush, and winged[2])	1.33-3
Sweetgum	1.33-1.8
Swordfern[2]	1.33-3
Tallowtree, Chinese	3
Tan oak resprouts[2]	3
Thimbleberry	1.33-1.8
Tobacco tree[2]	3
Toyon	1.33-3
Trumpetcreeper	1.33-1.8
Vine maple[2]	1.33-3
Virginia creeper	1.33-3
Waxmyrtle, southern[2]	1.33-3
Willow	1.8-2.75
Yerbesenta, California	1.33-3

[1]Or use a 4-8% solution for spot spray clean-up

[2]Partial control

Table 5. Aquatic and Wetland Sites - Perennial Weed Control and Weed Management – Refuge Herbicide Rates Used Alone.

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Application Timing and Remarks
Alligatorweed	*Alternanthera philoxeroides*	1.25	2.4	Apply when most of the target plants are in bloom. Repeat applications will be required to maintain control.
Cordgrass	*Spartina backeri*	1.25	1.8-3	Schedule applications in order to allow 6 hours before treated plants are covered by tidewater. The presence of debris and silt on the cordgrass plants will reduce performance. It may be necessary to wash targeted plants prior to application to improve uptake of this product into the plant.
Cutgrass, Giant	*Zizaniopsis millacea*	1.25	2.54	Repeat applications will be necessary to maintain control. Allow for substantial regrowth to the 7-10 leaf stage prior to retreatment.
Loosestrife, Purple	*Lythrum salicaria*	0.6-1.25	1.6	Treat when plants are actively growing at or beyond the bloom stage of growth. Fall treatments must be applied before a killing frost.
Lotus, American	*Nelumbo lutea*	0.6	2.4	Treat when plants are actively growing or beyond the bloom stage of growth. Fall treatments must be applied before a killing frost. Repeat treatment may be necessary to control regrowth from underground parts or seed.
Maidencane	*Panicum hematomon*	0.6	2.4	Repeat treatments will be required, especially to vegetation partially submerged in water. Under these conditions, allow for regrowth to the 7-10 leaf stage prior to retreatment.
Pepperweed, Perennial	*Lepidium latifolium*	1.25	1.8-3	Apply at or beyond flowering.
Reed, Giant	*Arundo donax*	1.25		Apply when plants are actively growing. Best results are obtained when applications are made in late summer to fall.
Salvinia spp. Including Giant salvinia	*Salvinia* spp.; *S. molesta*	1.5-1.8	3	Spray when plants are approaching maturity. This product does not control plants which are completely submerged or a majority of their foliage is under water.
Spatterdock	*Nuphar luteum*	0.6	2.4	Apply when most plants are in full bloom. For best results, apply during the summer or fall months.
Starthistle, Yellow	*Centaurea solstitialis*	1.25	1.8-3	Apply when actively growing and when most plants have reached early head or early bud stage of growth.
Tules, Common	Scirpus acutus	1.25	1.8-3	Apply to actively growing plants; after application, visual symptoms will be slow to appear and my not occur for 3 or more weeks.

Weed Species	Scientific Name	Spot Spray % v/v	Quarts Per Acre	Application Timing and Remarks
Waterhyacinth	*Eichhornia crassipes*	0.6-1.25	2-3	Apply when plants are actively growing and at or beyond the early bloom stage of growth. After application, visual symptoms may require 3 or more weeks to appear with complete necrosis and decomposition usually occurring within 60-90 days. For faster results, use higher rates or tank mix with Reward Herbicide.
Waterlettuce	*Pistia stratiotes*	0.6-1.25	1.8-3	Use higher rates when infestations are heavy. Spring applications may require retreatment.
Waterprimrose	*Ludwigia* spp.	0.6	1.8-3	Apply to plants that are actively growing at or beyond the bloom stage of growth, but before fall color changes occur. Thorough coverage is necessary for best control.

STORAGE AND DISPOSAL

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

Pesticide Storage

Keep container closed to prevent spills and contamination.

Pesticide Disposal

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

Container Handling [less than 5 gallons]

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Container Handling [greater than five gallons]

Refillable container. Refill the container with Refuge Herbicide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or 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.

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

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Manufactured for:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, North Carolina 27419-8300

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358800

GROUP 9 HERBICIDE

Refuge™

Herbicide

A Broad-Spectrum Systemic Nonselective Herbicide for Weed Control and Vegetation Management

Active Ingredient:

*Glyphosate: N-(phosphonomethyl) glycine, in the form of the monopotassium salt	52.3%
Other Ingredients:	47.7%
Total:	100.0%

*Contains 745 grams per liter (6.22 pounds per U.S. gallon) of the active ingredient glyphosate, in the form of its mono-potassium salt. Equivalent to 599 grams per liter (5 pounds per U.S. gallon) of the acid, glyphosate.

See additional precautionary statements and directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

EPA Reg. No. 100-1362
EPA Est. 100-LA-001

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KEEP OUT OF REACH OF CHILDREN.

CAUTION

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.

FIRST AID

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

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

HOT LINE NUMBER: For 24 Hour Medical Emergency Assistance (Human or Animal) Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident), Call **1-800-888-8372**.

Environmental Hazards

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters.

Physical and Chemical Hazards

Do not store, mix or apply this product or spray solutions of this product in unlined steel (except stainless steel), galvanized steel containers, or sprayer tanks. This product or spray solutions of this product will react with these containers and tanks and produce hydrogen gas which may form a highly combustible mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by spark, open flame, lighted cigarette, welder torch, or other ignition source.

Spray solutions of this product should be mixed, stored and applied using only stainless steel, fiberglass, plastic, or plastic-lined steel containers.

STORAGE AND DISPOSAL

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

Pesticide Storage

Keep container closed to prevent spills and contamination.

Pesticide Disposal

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

Container Handling

Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

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

2.5 gallons

Net Contents

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