

66222-146

03-08-2010

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Ms. Jennifer Yentel
Product Registration
MANA/
Makhteshim-Agen of North America, Inc.
4515 Falls of Nause Rd., Suite 300
Raleigh, N.C. 27609

MAR 8 2010

SUBJECT: Application for Pesticide Notification (PRN 98-10
Request General Label Change (State Use Site on Additional Page)
EPA Reg. No. 66222-146
Application Dated February 2, 2010

Dear: Registrant,

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 dated 02/01/10 for the above product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action(s) requested fall within the scope of PRN 98-10. The label submitted with the application has been stamped "Notification" and will be placed in our records.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Arrington".

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

Please read instructions on reverse before completing form.

Form Approved - OMB No. 2070-0060, Approval expires 2-28-95



United States
Environmental Protection Agency
Washington, DC 20460

<input type="checkbox"/>	Registration
<input type="checkbox"/>	Amendment
<input checked="" type="checkbox"/>	Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number 66222-146	2. EPA Product Manager Linda Arrington	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) MSM Turf Herbicide	PM# 25 Registration Support Branch	
5. Name and Address of Applicant (Include ZIP Code) Makhteshim Agan of North America, Inc. 4515 Falls of Neuse Rd., Suite 300 Raleigh, NC 27609 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____	

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

NOTIFICATION

MAR 8 - 2010

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

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

Section - III

1. Material This Product Will Be Packaged In:					
Child-Resistant Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	2. Type of Container <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____		
* Certification must be submitted		If "Yes" Unit Packaging wgt.	No. per container	If "Yes" Package wgt	No. per container
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input type="checkbox"/> on label	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled			<input type="checkbox"/> Other _____		

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)			
Name Jennifer Yentel	Title Regulatory Specialist	Telephone No. (Include Area Code) 919-256-9315	
<p align="center">Certification</p> <p>I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.</p>			6. Date Application Received (Stamped)
2. Signature 	3. Title Regulatory Specialist		
4. Typed Name Jennifer Yentel	5. Date 02/02/2010		



Makhteshim Agan of North America, Inc.

February 2, 2010

Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
US EPA
One Potomac Yard
2777 S. Crystal Drive, Room S-4900
Arlington, VA 22202

Re: MSM Turf Herbicide, EPA Reg. No. 66222-146
Notification of label updates per PRN 98-10

To Whom It May Concern,

Makhteshim Agan of North America, Inc. (MANA) is notifying the Agency of label updates for the above referenced product. The following changes have been made to page 3 of the attached label:

- Wild garlic has been added under the section titled "Controls the Following Broadleaf (dicot) Weeds" allowed per PRN 98-10§II(B) as wild garlic is already listed as a pest on page 4 of the label in the "How to Use" section "0.33 to 0.5 oz Product/Acre" .
- Centipedegrass and Zoysiagrass (Meyers and Emerald) have been added to sentence beginning "For use only on..." . These two use sites are already listed on page 5 of the most recent EPA stamped approved label.

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

In support of this submission, the following documents are attached:

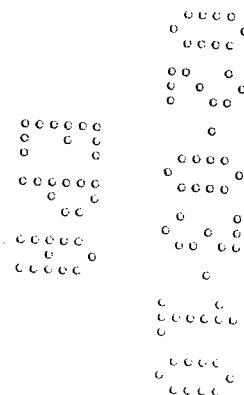
- Application for Pesticide Registration (EPA Form 8570-1)
- One copy of annotated label
- One copy of the Final Printed Labeling

Should you have any questions about this application, please contact me at 919-256-9315 or e-mail at jyentel@manainc.com.

Sincerely,

Jennifer Yentel
Regulatory Specialist

Enclosures



MSM Turf Herbicide

NOTIFICATION
MAR 8 - 2010

ACTIVE INGREDIENT:	% BY WT.
Metsulfuron Methyl	
Methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino]carbonyl]amino]sulfonyl]benzoate	60.0%
INERT INGREDIENTS:	40.0%
TOTAL:	100.0%

KEEP OUT OF REACH OF CHILDREN CAUTION

Manufactured for:
Makhteshim Agan of North America, Inc.
4515 Falls of Neuse Road, Suite 300
Raleigh, NC 27609

EPA Reg. No. 66222-146

EPA Est. No. XXXXXXXXXX

Net Contents: ___ OZ

FIRST AID	
IF IN EYES:	<ul style="list-style-type: none"> • 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:	<ul style="list-style-type: none"> • 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.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact PROSAR at 1-877-250-9291 for emergency medical treatment information.	

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, and clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

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

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes and socks
- Chemical-resistant gloves category A such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber

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

ENGINEERING CONTROL STATEMENTS

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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "Applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

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.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff water may flow during periods of intense rainfall or to water-saturated soils, as off-target movement and injury may occur. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Do not apply this product through any type of irrigation system.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. READ ENTIRE LABEL BEFORE USING THIS PRODUCT. USE STRICTLY IN ACCORDANCE WITH LABEL PRECAUTIONARY STATEMENTS AND DIRECTIONS.

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 4 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, shoes, socks and chemical-resistant gloves category A such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber.

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. Do not enter treated areas without protective clothing until sprays have dried.

(Note to label editor: the statement below is a voluntary state specific restriction added that may be dropped at such time that Arizona allows use of Mesulfuron Methyl on agricultural uses)

State Specific Restrictions:

The state of Arizona has not approved this product for use on agricultural sites. Do not use this product on uses considered by the Arizona statutes to be agricultural uses.

SPRAYER CLEANUP

Immediately after spraying, thoroughly remove all traces of MSM Turf Herbicide from mixing and spray equipment as follows:

- 1) Drain tank, rinse interior surface of tank, then flush tank, boom and hoses with clean water for a minimum of 5 minutes.
- 2) Fill the tank with clean water, then add an ammonia cleaning solution. Use one gallon ammonia (containing 3% active) per 100 gallons of water. Turn on sprayer long enough to flush through boom, hoses and nozzles. Stop spraying, but keep agitator working in the tank for 15 minutes, then drain.
- 3) Repeat Step 2.
- 4) Repeat Step 1.
- 5) Nozzles and screens should then be removed and cleaned separately. To remove traces of cleaning solution, rinse the tank thoroughly with clean water and flush through hoses and boom.
- 6) Flush boom and hoses with clean water for 5 minutes just prior to using the sprayer for the first time after the MSM Turf Herbicide application.

**ORNAMENTAL TURF, SUCH AS LAWNS, PARKS, CEMETERIES, AND GOLF COURSES
(FAIRWAYS, APRONS, TEES AND ROUGHS) - NON AGRICULTURAL USE
SOD FARMS - AGRICULTURAL USE**

Controls the following perennial and annual weedy grasses:

- | | | |
|------------|---------|----------|
| Bahiagrass | Foxtail | Ryegrass |
|------------|---------|----------|

Controls the following broadleaf (dicot) weeds:

- | | |
|--------------------|------------------------|
| Annual sowthistle | Hoary cress (whitetop) |
| Aster | Kochia |
| Bittercress | Lambsquarters |
| Blue mustard | Miners lettuce |
| Buckhorn | Pennsylvania smartweed |
| Bur buttercup | Plantain |
| Canada thistle | Prickly lettuce |
| Chicory | Prostrate knotweed |
| Clover (white) | Redroot pigweed |
| Common chickweed | Redstem filaree |
| Common groundsel | Shepherdspurse |
| Common mullein | Smallseed flaxweed |
| Common purslane | Smooth pigweed |
| Common sunflower | Spurge (prostrate) |
| Common yarrow | Sweet clover |
| Conical catchfly | Tansy mustard |
| Cow cockle | Treacle mustard |
| Crown vetch | Tumble mustard |
| Curly dock | Virginia buttonweed |
| Dandelion | Wild carrot |
| Dogfennel | Wild celery |
| False chamomile | Wild lettuce |
| Fiddleneck tarweed | Wild mustard |
| Field pennycress | Wild onion |
| Flixweed | Wild garlic |
| Goldenrod | Woodsorrel (oxalis) |
| Henbit | |

For use only on Kentucky Bluegrass, Fine Fescue, Bermudagrass, Centipedegrass, Zoysiagrass (Meyers and Emerald) and St. Augustinegrass turf areas.

USE PRECAUTIONS

Use lowest rates for minimum chlorosis of the turf.

Do not apply MSM Turf Herbicide to turf under stress from drought, insects, disease, cold temperatures, high temperatures of above 85°F on cool season grasses, or poor fertility as injury may result.

Do not apply to turf less than 1 year old.

Do not use on Bahiagrass where it is the desired turf, as severe injury may result.

Do not plant ornamentals such as shrubs and trees in treated areas for at least 1 year after the last application, or bedding plants for at least 2 years.

IMPORTANT

Addition of a nonionic surfactant of at least 80% active ingredient at 0.25 percent by volume (1 qt./100 gal) provides maximum performance, but may temporarily increase chlorosis of the turf.

When an adjuvant is to be used with this product, Makhteshim Agan of North America, Inc. suggests the use of a Chemical Producers and Distributors Association certified adjuvant.

Allow one week between the application of MSM Turf Herbicide and other pesticide products. (This guideline can be relaxed where severe insect or disease attack requires immediate treatment).

DO NOT USE ON FOOD OR FEED CROPS. Injury to or loss of desirable trees or other plants may result from failure to observe the following: Do not apply MSM Turf Herbicide (except as directed) or drain or flush equipment

on or near desirable trees or other plants, or on areas where their roots may extend or in locations where the chemical may be washed or moved into contact with their roots.

When overseeding, wait 2 months (8 weeks) after application. Do not apply to any body of water, including streams, irrigation water or wells. Do not apply where runoff water may flow onto agricultural land, as injury to crops may result.

Do not allow spray drift onto adjacent crops or other desirable plants or trees as injury may occur.

Follow these practices to minimize drift:

- Stop spraying if wind speed becomes excessive. Spray drift can occur at wind speeds less than 10 mph. If sensitive plants are downwind, extreme caution must be used. Do not spray if winds are gusty.
- High temperatures, drought and low relative humidity increase the possibility of harmful spray drift. Caution must be used when these conditions are present and sensitive plants are nearby.
- Use large droplet size sprays to minimize drift.
- Use spray pressures of 35 psi or less when applying this product.

HOW TO USE

Use spray volumes of 20 to 80 gal/acre and pressures of 25 to 35 psi at the following rates of MSM Turf Herbicide from the weeds listed below:

0.125 TO 0.25 OZ PRODUCT/ACRE

Ryegrass (greens)

0.25 TO 0.33 OZ PRODUCT/ACRE

- | | |
|---------------------|-------------------|
| Bittercress | Field pennycress |
| Blue mustard | Ground ivy (Fall) |
| Bur buttercup | Parsley-piert |
| Chickweed | Prostrate spurge |
| Chicory | Redstem filaree |
| Clover (white) | Spurweed |
| Creeping beggarweed | Wild carrot |
| Dandelion | |

0.33 TO 0.5 OZ PRODUCT/ACRE

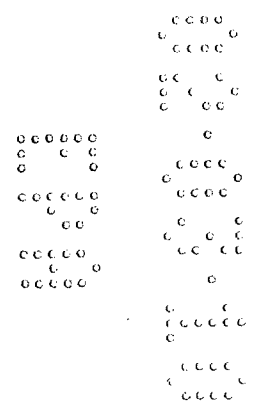
- | | |
|----------------------|---------------------|
| Annual sowthistle | Ryegrass (fairways) |
| Aster | Seedling dogfennel |
| Carolina geranium | Shepherdspurse |
| Common yarrow | Smooth pigweed |
| Crown vetch | Smallseed falseflax |
| Florida betony | Sweet clover |
| Ground ivy (Spring*) | Tansy mustard |
| Henbit | Treacle mustard |
| Lambsquarters | Tumble mustard |
| Lespedeza | Wild celery |
| Miners lettuce | Wild garlic |
| Plantain | Wild lettuce |
| Prickly lettuce | Wild onion |
| Ragweed | Woodsorrel (oxalis) |
| Redroot pigweed | |

0.25 TO 0.75 OZ PRODUCT/ACRE

Bahiagrass*

0.5 TO 1 OZ PRODUCT/ACRE

- | | |
|-------------------|------------------------|
| Brazil pusley | Florida pusley |
| Buckhorn plantain | Foxtail |
| Canada thistle** | Hoary cress (whitetop) |
| Curly dock | Kochia |
| Common groundsel | Pennsylvania smartweed |
| Common purslane | Plantain |
| Common sunflower | Prostrate knotweed |
| Crabgrass | Sida (southern) |



Dogfennel
Dollarweed*

Virginia buttonweed***
Wild mustard

* A repeat application may be required in 4 to 6 weeks.

** Suppression only involving a visual reduction in competition compared to an untreated area.

*** Controls seedling Virginia buttonweed. Suppression only of more mature plants. Repeat application may be required in 4 to 6 weeks.

The required amount of MSM Turf Herbicide should be added when the spray tank is half full of water and, with agitator running, add the proper amount of product. Finish adding the required amount of water. Continuous agitation is required to keep the product in suspension.

Spray preparations of this product may degrade in acid solutions if not used in 24 hours; it is stable in alkaline solutions. Thoroughly re-agitate before using.

Tank mixes with other registered herbicides should be tested for compatibility before full scale mixing. Use mechanical or bypass agitation to thoroughly mix the spray suspension. It is not necessary to premix this product with water in a separate container prior to adding it to the spray tank. This product should always be added to the tank first, before any other herbicides or adjuvants.

Kentucky Bluegrass and Fine Fescue: Apply 0.25 to 0.5 oz of MSM Turf Herbicide per acre for control of the listed weeds. Do not exceed a total of 0.5 oz per acre within a 9-month period.

St. Augustinegrass, Bermudagrass and Zoysiagrass (Meyers and Emerald): Apply 0.25 to 1.0 oz of MSM Turf Herbicide per acre for weed control. Some chlorosis or stunting of the turfgrass may occur following application.

Bahiagrass Control: For the selective control of Bahiagrass in Bermudagrass turf, use 0.25 to 0.75 oz of MSM Turf Herbicide per acre. Use the higher rates of the range on Argentine, Common and Paraguayan Bahiagrass. Apply a repeat treatment in 4 to 6 weeks if necessary. Some chlorosis or stunting of the Bermudagrass may occur following the application.

Centipedegrass: Apply 0.25 to 0.5 oz of this product per acre for weed control. Some chlorosis or stunting of the turfgrass may occur following the application.

IMPORTANT: Addition of a nonionic surfactant of at least 80% active ingredient at 0.25 percent by volume (1 qt/100 gal) provides maximum performance, but may temporarily increase chlorosis of the turf.

Allow one week between the application of MSM Turf Herbicide and other pesticide products. (This guideline can be relaxed where a severe insect or disease attack requires immediate treatment.)

**AGRICULTURAL USES
CONIFER PLANTATIONS**

Application Information

MSM Turf Herbicide is used to control many species of weeds and deciduous trees on sites where conifers are growing or are to be planted. Apply by ground equipment or by air (helicopter only). Refer to the "Weeds Controlled" and "Brush Species Controlled" for a listing of susceptible species.

Application Timing

Apply MSM Turf Herbicide after weeds have emerged or after undesirable hardwoods have broken winter dormancy and have reached the point of full leaf expansion.

Conifer Site Preparation

Application Before Transplanting

After consulting the "Weeds Controlled" and "Brush Species Controlled" tables apply the rates of MSM Turf Herbicide specified for the most difficult to control species on the site.

Southeast--Apply up to 4 oz per acre for loblolly and slash pines. Transplant the following planting season.

Northeast and Lake States--Apply up to 2 oz per acre for red pine. Transplant the following planting season. Apply up to 2 ounces per acre for black, white and Norway spruce. Transplant the following spring.

West--Apply up to 2 oz per acre prior to planting Douglas fir, Sitka Spruce, Western Red Cedar, Western Hemlock, Ponderosa Pine, and Grand Fir in the Coast Rangeland and western slope of the Cascades in Oregon and Washington. These conifer species listed can be planted any time after application. Other conifer species

can be planted providing the user has prior experience indicating acceptable tolerance to soil residues of this product.

In the absence of prior experience, in order to avoid unacceptable injury, other species should be planted on a small scale to determine safety before large-scale plantings are made. Makhteshim Agan of North America, Inc. will not be responsible for injury to any conifers not listed on this label.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide.

Accord²

Tank mix 1 to 2 ounces of MSM Turf Herbicide with 2 to 10 quarts of Accord per acre. Refer to the product container for a list of species controlled.

Arsenal¹ Applicator's Concentrate

Tank mix 1 to 2 ounces of MSM Turf Herbicide with 10 to 24 fluid ounces of Arsenal Applicator's Concentrate per acre. Loblolly and slash pines may be transplanted the planting season following application. The combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophorn beam, persimmon, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, and red maple.

Accord² + Arsenal¹ Applicators Concentrate

Tank mix 1/2 to 1 ounce of MSM Turf Herbicide with 16 to 64 fluid ounces of Accord and 10 to 12 fluid ounces of Arsenal Applicator's Concentrate per acre. Slash and loblolly pines may be transplanted the planting season following application. The combination controls cherry, dogwood, elms, oaks (red and water), persimmon, sassafras, sweetgum and suppresses hickory.

VELPAR⁸ L or VELPAR⁸ DF

Tank mix 1 to 2 ounces of MSM Turf Herbicide per acre with VELPAR L or VELPAR DF at the rates specified on the container for various soil textures. Loblolly and slash pines may be transplanted the planting season following application. Refer to the product container for a list of species controlled.

OUST EXTRA⁷ (or Generic Sulfometuron Methyl)

Tank mix 1/2 to 1 1/2 ounces of MSM Turf Herbicide with 2 to 3 ounces of OUST EXTRA⁷ (or generic equivalent) per acre for herbaceous weed control. Refer to the product container and the "Weeds Controlled" section of this label for a listing of the weeds controlled. Loblolly and slash pines may be transplanted the planting season following application.

Tank mix 2 ounces of MSM Turf Herbicide with 3 ounces of OUST EXTRA⁷ (or generic equivalent) per acre for herbaceous weed control and early spring suppression of bull thistle and Canada thistle in the Coast Rangeland and western slope of the Cascade Mountains. Douglas fir may be transplanted at least 90 days following application.

Release

Hardwood Control and Suppression

MSM Turf Herbicide is used for application over the top of established slash and loblolly pine to control the species listed in "Weeds Controlled" and "Brush Species Controlled" section of this label. Apply 1 to 4 ounces per acre to control the species indicated, including kudzu.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide.

Arsenal Applicator's Concentrate

A tank mix of 1 to 2 ounces of MSM Turf Herbicide with 8 to 16 fluid ounces of Arsenal Applicator's Concentrate per acre may be applied to loblolly pine. Refer to the Arsenal Applicator's Concentrate label regarding the use of surfactants and the appropriate application timing with respect to the age and development stage of the pines. The combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophornbeam, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, persimmon, and red maple.

VELPAR⁸ L or VELPAR⁸ DF

Tank mix 1 to 2 ounces of MSM Turf Herbicide with VELPAR L OR VELPAR DF at the rates specified on the container for various soil textures. The combination may be applied to loblolly and slash pines.

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Release

Herbaceous Weed Control

MSM Turf Herbicide may be applied to transplanted loblolly and slash pine for the control of herbaceous competition. Consult the "Weeds Controlled" section for a listing of the susceptible species and specified application rates. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations

For broader spectrum control the following products may be used in combination with MSM Turf Herbicide:

Arsenal Applicators Concentrate¹

Tank mix 1/2 to 1 ounce of MSM Turf Herbicide with 4 ounces of Arsenal Applicators Concentrate per acre. The tank mix may be used on loblolly pine.

OUST XP⁷

Tank mix 1/2 to 1 1/2 ounces of A MSM Turf Herbicide with 2 to 3 ounces of OUST XP⁷ (or generic equivalent) per acre. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence. The tank mix may be used on loblolly and slash pine.

VELPAR⁸ L or VELPAR⁸ DF

Tank mix 1/2 to 1 ounce of MSM Turf Herbicide with VELPAR⁸ L or VELPAR⁸ DF at the rates specified on the container for various soil textures. The combination may be applied to loblolly and slash pines.

IMPORTANT PRECATIONS--CONIFER PLANTATIONS ONLY

- Applications of MSM Turf Herbicide made to conifers that are suffering from loss of vigor caused by insects, diseases, drought, winter damage, animal damage, excessive soil moisture, planting shock, or other stresses may injure or kill the trees.
- Applications of MSM Turf Herbicide made for herbaceous release should only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- Do not apply MSM Turf Herbicide to conifers grown as ornamentals.
- MSM Turf Herbicide applications may result in damage and mortality to other species of conifers when they are present on sites with those listed in the preceding section for conifer plantations.

HARDWOOD PLANTATIONS

Application Information

MSM Turf Herbicide may be used to control many species of weeds on sites where yellow poplar is growing or is to be planted, and on sites where red alder is to be planted. Apply at up to 2 ounces per acre by ground equipment or by air (helicopter only). Refer to the "Weeds Controlled" sections of this label for a listing of susceptible species.

Application Timing

This product may be applied as a site preparation treatment prior to planting red alder or yellow poplar, and may also be applied as a pre-planting site preparation treatment for red alder in tank mixes with other herbicides labeled for this use.

MSM Turf Herbicide may also be applied over the top of planted yellow poplar seedlings after the soil has settled around the root systems but before the seedlings have broken dormancy (prior to bud break).

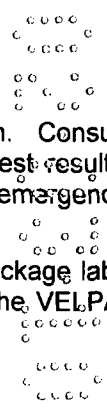
Release

Herbaceous Weed Control

MSM Turf Herbicide may be applied to yellow poplar for the control of herbaceous competition. Consult the "Weeds Controlled" for a listing of the susceptible species and specified application rates. Best results are obtained when MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations

Tank mix 1/2 ounce of MSM Turf Herbicide with 4 to 6 pints of VELPAR⁸ L as directed on the package label for "RELEASE-HERBACEOUS WEED CONTROL" in pine plantations in the eastern U.S. Follow the VELPAR⁸ L label instructions regarding altering the application rate by soil texture.



IMPORTANT PRECAUTIONS--HARDWOOD PLANTATIONS ONLY

- Application of VELPAR⁸ L and MSM Turf Herbicide made to yellow poplar that are suffering from loss of vigor caused by insects, disease, drought, winter damage, animal damage, excessive soil moisture, planting shock or other stresses may injure or kill the seedlings.
- Applications of MSM Turf Herbicide made for release should only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- A surfactant may not be used for applications made over the tops of trees.
- Careful consideration must be given by an experienced and knowledgeable forester to match the requirements of yellow poplar to the conditions of the site. Treatment of yellow poplar planted on a site inadequate to meet its requirements may injure or kill the seedlings.

NON-AGRICULTURAL USES

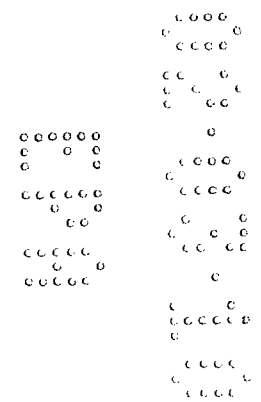
WEEDS CONTROLLED

1/3 to 1/2 ounce per acre

- | | |
|--------------------|----------------------------|
| Annual sowthistle | Goldenrod |
| Aster | Lambsquarters |
| Bahiagrass | Marestail/horseweed**** |
| Beebalm | Maximillion sunflower |
| Bittercress | Miners lettuce |
| Bitter sneezeweed | Pennsylvania smartweed |
| Blackeyed-susan | Plains coreopsis |
| Blue mustard | Plantain |
| Bur buttercup | Redroot pigweed |
| Chicory | Redstem filaree |
| Clover | Rough fleabane |
| Cocklebur | Shepherd's purse |
| Common chickweed | Silky crazyweed (locoweed) |
| Common groundsel | Smallseed falseflax |
| Common purslane | Smooth pigweed |
| Common yarrow | Sweet clover |
| Conical catchfly | Tansymustard |
| Corn cockle | Treacle mustard |
| Cow cockle | Tumble mustard |
| Crown vetch | Wild carrot |
| Dandelion | Wild garlic |
| Dogfennel | Wild lettuce |
| False chamomile | Wild mustard |
| Fiddleneck tarweed | Wooly croton |
| Field pennycress | Wood sorrel |
| Flixweed | Yankeeweed |

1/2 to 1 ounce per acre

- | | |
|-------------------|--------------------------------------|
| Blackberry | Honeysuckle |
| Black henbane | Multiflora rose and other wild roses |
| Broom snakeweed* | Musk thistle*** |
| Buckhorn plantain | Oxeye daisy |
| Bull thistle | Plumeless thistle |
| Common crupina | Prostrate knotweed |
| Common sunflower | Rosering gaillardia |
| Curly dock | Seaside arrowgrass |
| Dewberry | Sericea lespedeza |
| Dyer's woad | Tansy ragwort |
| Gorse | Teasel |
| Halogeton | Wild caraway |
| Henbit | |



1 to 2 ounces per acre

- | | |
|---------------------------------------|------------------------|
| Common mullein | Purple loosestrife |
| Common tansy | Purple scabious |
| Field bindweed** | Scotch thistle |
| Greasewood | Scouringrush |
| Gumweed | Salsify |
| Houndstongue | Snowberry |
| Lupine | St. Johnswort |
| Old world climbing fern
(Logodium) | Sulfur cinquefoil |
| Perennial pepperweed | Western salsify |
| Poison hemlock | Whitetop (hoary cress) |
| | Wild Iris |

1 1/2 to 2 ounces per acre

- | | |
|----------------------|-------------------|
| Canada thistle** | Tall larkspur |
| Dalmation toadflax** | Wild parsnip |
| Duncecap larkspur | Yellow toadflax** |
| Russian knapweed** | |

3 to 4 ounces per acre

- Kudzu

- * Apply fall through spring
- ** Suppression, which is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Apply as a full coverage spray for best performance.
- *** Certain biotypes of musk thistle are more sensitive to MSM Turf Herbicide and may be controlled with rates of 1/4 to 1/2 ounce per acre. Treatments of MSM Turf Herbicide may be applied from rosette through bloom stages of development.
- **** Certain biotypes of maretail/horsetail are less susceptible to MSM Turf Herbicide and may be controlled by tank mixes with herbicides with a different mode of action.

Tank Mix Combinations for Problem Weed Control

For broader spectrum control and for use on certain biotypes of broadleaf weeds which may be resistant to MSM Turf Herbicide and herbicides with the same mode of action, the following tank mixes may be used:

Dicamba + 2,4-D

Combine 1/2 ounce of MSM Turf Herbicide with 8 fluid ounces of dicamba and 16 fluid ounces of 2,4-D for the **control of kochia**.

Combine 1/2 ounce of MSM Turf Herbicide with 8 ounces of dicamba and 16 fluid ounces of 2,4-D for the **control of spotted knapweed**.

Combine 1 ounce of MSM Turf Herbicide with 8 fluid ounces of dicamba and 16 fluid ounces of 2,4-D for the **suppression of rush skeletonweed**.

NONCROP (INDUSTRIAL) SITES

Application Information

MSM Turf Herbicide may be used for general weed and brush control on non-crop and outdoor industrial sites such as airports, military installations, fence rows, roadsides and associated rights-of-way, petroleum tank farms, pipeline and utility rights-of-way, pumping stations, railroads, storage areas, plant sites and governmental and private lands. It may also be used for the control of certain noxious and troublesome weeds.

Consult the "Weeds Controlled" and "Brush Species Controlled" tables to determine the appropriate application rate.

MSM Turf Herbicide may be applied in tank mixture with other herbicides labeled for use on non-crop sites. Fully read the labels and follow all directions and restrictions on each label.

Application Timing

For best results, MSM Turf Herbicide should be applied postemergence to young, actively growing weeds. Application may be made at any time of the year, except when the ground is frozen.

GRASS REPLANT INTERVALS

Following an application of MSM Turf Herbicide to non-crop areas, the treated sites may be replanted with various species of grasses at the intervals specified below.

For soils with a pH of 7.5 or less observe the following replant intervals:

Species	MSM Turf Herbicide Rate oz/a	Replant Interval (months)
Brome, Meadow	1/2 - 1	2
	1 - 2	3
Brome, Smooth	1/2 - 1	2
	1 - 2	4
Fescue, Alta	1/2 - 1	2
	1 - 2	4
Fescue, Red	1/2 - 1	2
	1 - 2	4
Fescue, Sheep	1/2 - 1	1
	1 - 2	4
Foxtail, Meadow	1/2 - 1	2
	1 - 2	4
Green Needlegrass	1/2 - 2	1
Orchardgrass	1/2 - 1	2
	1 - 2	4
Russian wildrye	1/2 - 1	1
	1	2
	2	3
Switchgrass	1/2 - 1	1
	1 - 2	3
Timothy	1/2 - 1	2
	1 - 2	4
Wheatgrass, Western	1/2 - 1	2
	1 - 2	3

For soils with a pH of 7.5 or greater observe the following replant intervals:

Species	MSM Turf Herbicide Rate oz/a	Replant Interval (months)
Alkali Sacaton	1/2 - 1	1
	1 - 2	3
Bluestem, Big	1/2 - 1	3
Brome, Mountain	1/2 - 1	1
	1 - 2	2
Gamma, Blue	1/2 - 2	1
Gamma, Sideoats	1/2	2
	>1/2	> 3
	1/2	2
Switchgrass	1/2	2
	>1/2	> 3
Wheatgrass, Thickspike	1/2 - 2	1
Wheatgrass, Western	1/2 - 1	2
	1 - 2	3

The specified intervals are for applications made in the Spring to early Summer. Because MSM Turf Herbicide degradation is slowed by cold or frozen soils, applications made in the late Summer or Fall should consider the intervals as beginning in the Spring following treatment.

Testing has indicated that there is considerable variation in response among the species of grasses when seeded into areas treated with MSM Turf Herbicide. If species other than those listed above are to be planted into areas treated with MSM Turf Herbicide a field bioassay should be performed, or previous experience may be used, to determine the feasibility of replanting treated sites.

TURF, INDUSTRIAL (UNIMPROVED ONLY)

Application Information

MSM Turf Herbicide may be used for selective weed control in unimproved industrial turf where certain grasses are well established and desired as ground cover. MSM Turf Herbicide may also be used for the control of certain noxious and troublesome weeds in turf.

In addition to conventional spray equipment, MSM Turf Herbicide may also be applied with invert emulsion equipment. When using an invert emulsion, mix the prescribed rate of MSM Turf Herbicide in the water phase.

Consult the "Weeds Controlled" table to determine which weeds will be controlled by the following specified rates.

Fescue and Bluegrass

Apply 1/4 to 1/2 ounce of MSM Turf Herbicide per acre.

Crested Wheatgrass and Smooth Brome

Apply 1/4 to 1 ounce of MSM Turf Herbicide per acre

Bermudagrass

Apply 1/4 to 2 ounces of MSM Turf Herbicide per acre.

Application Timing

Applications may be made at any time of the year, except when the soil is frozen.

When a spring application is made on fescue or bluegrass, a second application may be made during the summer after full seedhead maturation.

**Growth Suppression and Seedhead Inhibition
(Chemical Mowing)**

Application Information

MSM Turf Herbicide may be used for growth suppression and seedhead inhibition in well-established fescue and bluegrass turf at the use rate of 1/4 to 1/2 ounce per acre.

Tank Mix Combination

MSM Turf Herbicide may be tank mixed with Embark³ for improved performance in the regulation of growth and seedhead suppression. Tank mix 1/4 to 1/2 ounce of MSM Turf Herbicide with 1/8 to 1/4 pint of Embark.

Application Timing

Application may be made after at least 2 to 3 inches of new growth has emerged until the appearance of the seed stalk.

Fescue Precautions:

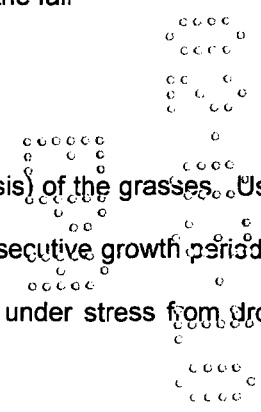
This product may temporarily stunt tall fescue, cause it to turn yellow, or cause seedhead suppression. To minimize these symptoms, take the following precautions:

- Do not use more than 4/10 ounce of MSM Turf Herbicide per acre
- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make application later in the spring after the new growth is 5 to 6 inches tall, or in the fall
- Do not use a surfactant if liquid nitrogen is used as a carrier
- Do not use a spray adjuvant unless it is a non-ionic surfactant

Yields from the first cutting may be reduced.

IMPORTANT PRECAUTIONS--INDUSTRIAL TURF ONLY

- An application of MSM Turf Herbicide may cause temporary discoloration (chlorosis) of the grasses. Use the lower specified rates for minimum discoloration.
- With fescue and bluegrass, sequential applications made during the same or consecutive growth periods (i.e. spring and fall) may result in excessive injury to turf.
- Excessive injury may result when MSM Turf Herbicide is applied to turf that is under stress from drought, insects, disease, cold temperatures (winter injury) or poor fertility.
- MSM Turf Herbicide is not for use on bahiagrass.



NATIVE GRASSES

MSM Turf Herbicide may be used for weed control and suppression in the establishment and maintenance of native grasses. It may be used where blue grama, bluestems (big, little, plains, sand, ww spar) bromegrasses (meadow), buffalograss, green sprangletop, Indiangrass, kleingrass, lovegrasses (atherstone, sand, weeping, wilman), orchardgrass, sideoats grama, switchgrass (Blackwell), wheatgrass (bluebunch, intermediate, pubescent siberian, slender, streamband, tall, thickspike, western), and Russian wildrye are established. It may also be applied over these species in the seedling stage, except for orchardgrass and Russian wildrye.

Application Information

Apply MSM Turf Herbicide at the rate of 1/10 ounce per acre for the control and suppression* of bur buttercup (testiculate), common purslane, common sunflower*, cutleaf eveningprimrose*, flixweed*, lambsquarters* (common and slimleaf), marestail*, pigweed (redroot and tumble), snow speedwell, tansymustard* and tumble mustard (Jim Hill mustard).

*Suppression is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Degree of suppression will vary with the size of weed and environmental conditions following treatment.

Application Timing

For established grasses, apply when weeds are in the seedling stage.
For grasses in the seedling stage, apply preplant or preemergence where the soil (seed bed) has been cultivated.

IMPORTANT PRECAUTIONS – NATIVE GRASSES

Grass species or varieties may differ in their response to this herbicide. Consult with your state experiment station, university, or extension agent or other local experts as to sensitivity to this herbicide. If inadequate information is available, limit the initial use of this product to a small area. The types of grass in a grass seed mixture will vary in tolerance to this product, so the grasses in the final stand may not reflect the same ratio as in the seed mix.

Do not apply to grass that is stressed by severe weather conditions, drought, low fertility, water-saturated soils, disease or insect damage as grass injury may result. Severe winter stress, drought, disease or insect damage before or following application also may result in grass injury.

RANGELAND

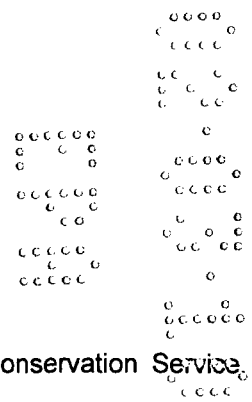
This product can be used to control broadleaf weeds in forage grasses growing in rangeland. It may also be tank-mixed with other pesticides labeled for use on rangeland. Read and follow the labels on all products used in a tank mix, and observe the most restrictive precautions on each product's label.

This product may be applied to rangeland by air or ground. Use an adequate spray volume to obtain thorough coverage of the target weeds. In Idaho, Oregon, and Washington states, use at least 3 gallons of spray solution per acre.

WHEN ESTABLISHING GRASS IN RANGELAND

MSM Turf Herbicide can be used to control or suppress broadleaf weeds when establishing the following grasses planted in rangeland:

- | | |
|-------------------|----------------|
| Blue Grama | Sideoats grama |
| Bluestems- | Switchgrass- |
| Big | Blackwell |
| Little | Wheatgrasses- |
| Plains | bluebunch |
| Sand | crested |
| WW spar | intermediate |
| Buffalograss | pubescent |
| Green sprangletop | Siberian |
| Kleingrass | slender |
| Lovegrasses- | steambank |
| Atherstone | tall |
| Sand | thickspike |
| Weeping | western |
| Wilman | Wildgrass- |
| Orchardgrass | Russian |



If you need more information or advice, consult with the Natural Resource and Conservation Service, other government agencies or local experts.

Newly planted grasses often cannot compete effectively with weeds, and because of the severity of weed pressure in new grass stands, MSM Turf Herbicide alone may not provide satisfactory results. An additional herbicide application or mowing may be necessary.

Establishing Grass in Rangeland:

Prior to Planting (Pre-Plant) or After Planting but Prior to Grass Emergence (Pre-Emergence)

Do not use more than 1/10 ounce MSM Turf Herbicide per acre when establishing grass in rangeland.

Use 1/10 ounce/acre Pre-Plant on all labeled grasses except orchardgrass and Russian wildrye grass.

Do not apply Pre-Plant or Pre-Emergence to orchardgrass or Russian wildrye grass as severe crop injury may result.

Early Post-Emergence to New Plantings

Use 1/10 ounce/acre, plus a non-ionic surfactant (at 2 to 4 pints/100 gallons of spray solution) on all labeled grasses any time after grass emergence.

Do not use a spray adjuvant other than non-ionic surfactant. Grass species will differ in time of emergence, so apply only after a majority of grasses are in the 3 to 4 leaf stage.

Postemergence to Stands With 1 to 5 Leaf Grasses Planted the Previous Season

Apply at 1/10 ounce per acre plus a non-ionic surfactant at the rate of 2 to 4 pints/100 gallons of spray solution on all labeled grasses when the majority of the grasses have one or more leaves. Do not use a spray adjuvant other than a non-ionic surfactant.

APPLICATION TO ESTABLISHED GRASSES IN RANGELAND

Rates

Use up to 1 ounce MSM Turf Herbicide per acre as a broadcast spray when applying to established grasses in rangeland. **For Spot Applications**, use 1 ounce per 100 gallons of water. Do not apply more than 1 2/3 ounces per acre per year.

Refer to "Weeds Controlled" for a listing of weeds controlled and appropriate rates.

Timing

Apply to established native grasses such as bluestems and grama, and on other established grasses such as bermudagrass, bluegrass, bromegrass, fescue, orchardgrass and timothy that were planted during the previous growing season or earlier and are fully tillered, unless otherwise directed on this label. Timing information for application to several of these grass species are as follows:

Grass Minimum Time From Grass Establishment to Application

Bermudagrass	2 months
Bluegrass, Bromegrass, Orchardgrass	6 months
Timothy	12 months
Fescue	24 months

Precautions:

Fescue:

Tall fescue that has been treated with this product may experience temporary stunting, yellowing, or seedhead suppression. To minimize these effects, observe the following:

- Do not use more than 4/10 ounce/acre
- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make application later in the spring after the new growth is 5 to 6 inches tall, or apply in the fall
- Do not use a surfactant if liquid nitrogen is used as a carrier
- Do not use a spray adjuvant unless it is a non-ionic surfactant

Yields from the first cutting may be reduced.



Timothy:

Do not apply unless timothy is at least 6 inches tall and actively growing, or crop yellowing and/or stunting may occur. To minimize these effects, observe the following:

- Do not use more than 4/10 ounce/acre
- Use a tank mix with 2,4-D
- Use the lowest specified rate for the target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make applications in the late summer or fall
- Do not use a surfactant if liquid nitrogen is used as a carrier
- Do not use a spray adjuvant unless it is a non-ionic surfactant

Other Rangeland Grasses:

Application to Pensacola bahiagrass, ryegrass (Italian or perennial) and Garrison's creeping foxtail may cause severe injury to and/or loss of forage.

Forage grasses differ in their tolerance to this product. When treating a particular grass with MSM Turf Herbicide for the first time, use only on a small area. Larger areas may be treated the next season if no injury occurs.

Broadleaf forages such as alfalfa and clover will be severely stunted or damaged by treatment with MSM Turf Herbicide.

CROP ROTATION CONSIDERATIONS

To maintain flexibility in crop rotation plans, do not treat your entire pasture, rangeland or CRP acreage with this product at the same time.

Rotation Intervals

Minimum crop rotation intervals depend on breakdown rates of this product in the soil of treated areas. A number of conditions affect the breakdown rate, including soil moisture, soil temperature, soil pH, and soil microorganisms present. The rate of breakdown is faster in soils with low pH, high soil temperature and high soil moisture and is slower in soils with high pH, low soil temperature and low soil moisture. While soil pH remains relatively constant, soil temperature and soil moisture can vary from time to time and area to area, and these conditions should be monitored when making crop rotation decisions.

The minimum crop rotation interval from the last application of this product until the next planting date are shown below:

**Minimum Rotation Intervals
(Pasture, Rangeland, and CRP for Overseeding and Renovation)**

Location	Crop/Grass	Maximum Rate Used (oz/ac)	Minimum Rotation Interval (months)
AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, WV	Alfalfa, red clover, white clover, sweet clover, bermudagrass, bluegrass, ryegrass, tall fescue	1/10 to 3/10	4
	Wheat (except durum)	1/10 to 3/10	1
	Durum, barley, oats	1/10 to 3/10	10
All Other States	Red clover, white clover, sweet clover	1/10 to 2/10	12
	Bermudagrass, bluegrass, ryegrass	1/10 to 2/10	6
	Tall fescue	1/10 to 2/10	18
	Wheat (except durum)	1/10 to 2/10	1
	Durum, barley, oats	1/10 to 2/10	10

All Areas With Soil pH of 7.5 Or Less	Russian wildrye	1/10 to 1/2	1
	Green needlegrass, switchgrass, sheep fescue	1/10 to 1	1
	Meadow brome, smooth brome, alta fescue, red fescue, meadow foxtail, orchardgrass, Russian wildrye, timothy	1/10 to 1	2
All Areas With Soil pH of 7.9 Or Less	Alkali sacaton, mountain brome, blue grass, thickspike wheatgrass	1/10 to 1	1
	Sideoats grama, switchgrass	1/10 to 1/2	2
	Western wheatgrass	1/10 to 1	2
	Sideoats grama, Switchgrass, big bluestem	1/10 to 1	3

Important Soil pH Limitations

This product should not be used on soils with a pH above 7.9 because soil residues will not break down quickly and could remain in the soil for 34 months or more, injuring wheat, barley and other crops.

Before using, check soil pH by taking several soil samples at a depth of 0 to 4 inches from representative areas of the field. Analyze the samples separately for pH value. If needed, obtain additional information on soil sampling procedures from your local extension service or local experts.

BIOASSAY PROCEDURES

Conduct a field bioassay on treated soils before planting a rotated crop or grass species not listed in the Rotation Interval table above, or if the soil pH is above 7.9, or if use rates other than those listed in the Rotation Interval table above were used. Plant test strips of the crops or grasses that you plan to grow the following year in treated fields and observe crop response. Do not plant until the test strips demonstrate that the crop response is acceptable. Consult local experts for further information.

GRAZING AND HAYING RESTRICTIONS:

NONE. However, coveralls and shoes plus socks must be worn if cutting within 4 hours of treatment.

RANGELAND PRECAUTIONS:

- Do not apply more than 1 2/3 ounces per acre per year.
- Limit the initial use of this product to small areas unless local response to this herbicide by the grass species or variety is known.
- Grass seed mixtures will vary in tolerance to this product, so final stands may not reflect the same ratio as in the seed mix.
- Do not apply to grass that is stressed by severe weather conditions, drought, low fertility, disease, insect damage, or water saturated soils, as injury is likely. Stress by these factors following application may also cause injury.
- This product may injure legumes that are undersown in rangeland or are found in seeding mixtures.
- When applying by ground to dry, dusty fields, control in the wheel-track areas may be reduced. Tank mixtures with 2,4-D or MCPA often improve weed control in such situations.
- Do not apply this product in California or on the following counties in Colorado: Alamosa, Conejos, Costilla, Rio Grande, and Saguache.

BRUSH CONTROL

Application Information

MSM Turf Herbicide may be used for the control of undesirable brush growing in non-crop areas. Applications may be made by air, high volume ground application, low volume ground application and ultra-low volume ground application. Except as noted for multiflora rose, MSM Turf Herbicide should be applied as a spray to the foliage.

The application volume required will vary with the height and density of the brush and the application equipment used. Generally, aerial application will require 15 to 25 gallons of water per acre; high volume ground application will require 100 to 400 gallons of water per acre; low volume ground application will require 20 to 50 gallons of water per acre; and ultra-low volume ground application will require 10 to 20 gallons of water per acre.

Regardless of the application volume and equipment used, thorough coverage of the foliage is necessary to optimize results.

BRUSH SPECIES CONTROLLED

Species	High Volume	Broadcast
	MSM Turf Herbicide Rate oz/100 gal	MSM Turf Herbicide Rate oz/a
Ash	1-2	1-3
Aspen	1-2	1-3
Black locust	1-2	1-3
Blackberry	1-2	1-3
Camelthorn	1-2	1-3
Cherry	1-2	1-3
Cottonwood	1-2	2-3
Eastern red cedar	1-2	2-3
Elder	1-2	2-3
Elm	1-2	1-3
Firs	3	1-2
Hawthorn	1-2	1-3
Honeysuckle	1-2	1/2-1
Mulberry	1-2	2-3
Multiflora rose	1-2	1-3
Muscadine (wild grape)	1-2	2-3
Oaks	1-2	1-3
Ocean spray (<i>Holodiscus</i>)	1-2	2-3
Osage orange	1-2	2-3
Red maple	1-2	2-3
Salmonberry	1/2-1	1-3
Snowberry	1/2-1	1-3
Spruce (black and white)	3	2-3
Thimbleberry	1/2-1	1-3
Tree of Heaven (<i>Ailanthus</i>)	1-2	1-2
Tulip tree	1/2-1	1-3
Wild roses	1/2-1	1-3
Willow	1/2-1	1-3

For low volume and ultra-low volume ground applications, mix 4 to 8 ounces of MSM Turf Herbicide per 100 gallons of spray solution.

Application Timing

Make a foliar application of the specified rate of MSM Turf Herbicide during the period from full leaf expansion in the spring until the development of full fall coloration on deciduous species to be controlled. Coniferous species may be treated at anytime during the growing season.

Tank Mix Combinations

Accord²

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of Accord indicated for the various application methods on the Accord label. Refer to the Accord label for list of species controlled.

Arsenal¹ Herbicide

Combine 1 to 2 ounces of MSM Turf Herbicide with 1 to 4 pints of Arsenal Herbicide per acre and apply as a broadcast spray. Aerial application should use a minimum of 15 gallon per acre spray volume. In addition to species listed above controlled by MSM Turf Herbicide, this combination controls black gum, hopbeam, sassafras, sweetgum, Vaccinium species, dogwood, myrtle dahoon, hickories, and persimmon.

Garlon⁴ 3A or Garlon 4 (or generic equivalents)

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of Garlon indicated for the various application methods on the Garlon label. Refer to the Garlon label for list of species controlled.

KRENITE⁹ S

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of KRENITE S indicated for the various application methods on the KRENITE S label. Refer to the KRENITE S label for list of species controlled.

Tordon K⁵

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of MSM Turf Herbicide with the rate of Tordon K indicated for the various application methods on the Tordon K label. Refer to the Tordon K label for list of species controlled.

Tordon K⁵ + Arsenal¹ Herbicide

Combine 1 to 1 1/2 ounce of MSM Turf Herbicide with 2 to 8 fluid ounces of Arsenal and 1 to 2 pints of Tordon K per 100 gallons of water. Apply as a high volume spray. The tank mix controls cherry, elms, box elder, maples, hackberry, redbud, ash, oaks (including shingle oak), black locust and sassafras.

*Tordon K is a restricted use pesticide.

Spotgun Basal Soil Treatment

For control of muliflora rose, prepare a spray suspension of MSM Turf Herbicide by mixing 1 ounce per gallon of water. Mix vigorously until the MSM Turf Herbicide is dispersed and agitate periodically while applying the spray suspension. Apply the spray preparation with an exact delivery handgun applicator. Apply at the rate of 4 milliliters for each 2 feet of rose canopy diameter. Direct the treatment to the soil within 2 feet of the stem union. When treating large plants and more than one delivery is required, make applications on opposite sides of the plant. Applications should be made from early spring to summer.

IMPORTANT PRECAUTIONS--NON-CROP BRUSH ONLY

When using tank mixtures of MSM Turf Herbicide with companion herbicides, read and follow all use instructions, application rates, warnings and precautions appearing on the labels. Follow the most restrictive label instruction for each of the herbicides used.

SPRAY EQUIPMENT

Following a MSM Turf Herbicide application, do not use the sprayer or mixing equipment for application to agricultural crops, except that it may used to treat pasture, range and wheat. This is extremely important as low rates of MSM Turf Herbicide can kill or severely injure most agricultural crops. The selected sprayer should be equipped with an agitation system to keep MSM Turf Herbicide suspended in the spray tank. Use a sufficient volume of water to thoroughly cover the foliage of undesirable weeds, generally 10 to 40 gallons per acre. Select a spray volume and delivery system that will deliver a uniform spray pattern. Be sure the sprayer is calibrated before use. Avoid overlapping and shut off spray booms while starting, turning, slowing or stopping to avoid injury to desired plants.

Refer to the brush control section of this label for information unique to that particular use.

MIXING INSTRUCTIONS

1. Fill the tank 1/4 to 1/3 full of water.
2. While agitating, add the required amount of MSM Turf Herbicide.
3. Continue agitation until the MSM Turf Herbicide is fully dispersed, at least 5 minutes.
4. Once the MSM Turf Herbicide is fully dispersed, maintain agitation and continue filling tank with water. MSM Turf Herbicide should be thoroughly mixed with water before adding any other material.
5. As the tank is filling, add tank mix partners (if desired) then add the necessary volume of nonionic surfactant. Always add surfactant last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re-agitate before using.
7. Metsulfuron Methyl spray preparations are stable if they are pH neutral or alkaline, and stored at or below 100°F.
8. If MSM Turf Herbicide and a tank mix partner are to be applied in multiple loads, pre-slurry the MSM Turf Herbicide in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of the MSM Turf Herbicide.

SPRAYER CLEANUP

Spray equipment must be cleaned before MSM Turf Herbicide is sprayed. Follow the cleanup procedures specified on the labels of previously applied products. If no directions are provided, follow the six steps outlined below.

At the End of the Day

When multiple loads of MSM Turf Herbicide are applied, at the end of each day of spraying, the interior of the tank be rinsed with fresh water and then partially filled, and the boom and hoses flushed. This will prevent the buildup of dried pesticide deposits that can accumulate in the application equipment.

1. Drain tank; thoroughly rinse spray tanks, boom, and hoses with clean water. Loosen and physically remove any visible deposits.
2. Fill the tank with clean water and 1 gal of household ammonia* (contains 3% active) for every 100 gal of water. Flush the hoses, boom, and nozzles with the cleaning solution. Then add more water to completely fill the tank. Circulate the cleaning solution through the tank and hoses for at least 15 min. Flush the hoses, boom, and nozzles again with the cleaning solution, and then drain the tank.
3. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.
4. Repeat step 2.
5. Rinse the tank, boom, and hoses with clean water.
6. If only Ammonia is used as a cleaner, the rinsate solution may be applied back to the crop(s) specified on this label. Do not exceed the maximum labeled use rate. If other cleaners are used, consult the cleaner label for rinsate disposal instructions. If no instructions are given, dispose of the rinsate on site or at an approved waste disposal facility.

*Equivalent amounts of an alternate-strength ammonia solution or other specified cleaners can be used in the cleanout procedure. Carefully read and follow the individual cleaner instructions. Consult your agricultural dealer, applicator, or extension agent for a listing of approved cleaners.

Notes:

- **Attention:** Do not use chlorine bleach with ammonia, as dangerous gases will form. Do not clean equipment in an enclosed area.
- Steam-clean aerial spray tanks prior to performing the above cleanout procedure to facilitate the removal of any caked deposits.
- When MSM Turf Herbicide is tank mixed with other pesticides, all required cleanout procedures should be examined and the most rigorous procedure should be followed.
- In addition to this cleanout procedure, all pre-cleanout guidelines on subsequently applied products should be followed as per the individual labels.

STORAGE AND DISPOSAL

PESTICIDE STORAGE: Always use original container to store pesticides in a secured warehouse or storage building. Do not store near open containers of fertilizers, seeds, or other pesticides. Do not contaminate water, food or feed by storage or disposal.

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

CONTAINER HANDLING:

Nonrefillable Container (flexible-bag-all weights): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available or reconditioning; or puncture and dispose of in a sanitary landfill, by incineration, or by burning, if allowed by State and local authorities. If burned, stay out of smoke.

Nonrefillable Container (rigid-fifty lbs. or less): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water 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. Offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, by incineration, or by burning, if allowed by State and local authorities. If burned, stay out of smoke.

Nonrefillable Container (rigid-greater than fifty lbs.): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling or reconditioning,

or puncture and dispose of in a sanitary landfill, by incineration, or by burning, if allowed by State and local authorities. If burned, stay out of smoke.

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

FOR 24-HOUR EMERGENCY ASSISTANCE (SPILL, LEAK, OR FIRE), CALL INFOTRAC AT 1-800-535-5053.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES and LIMITATIONS OF LIABILITY.**

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

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Makhteshim Agan of North America, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Makhteshim Agan of North America, Inc.'s election, the replacement of product.

MSM Turf Herbicide (66222-146)(EPA app 04-16-09)(Notif to EPA 02-02-10)

