

66222-146

09/25/2009

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

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

SEP 25 2009

Mrs. Christie Hitchcock  
Regulatory Specialist  
Makhteshim Agan of North America, Inc.  
4515 Falls of Neuse Rd., Suite 300  
Raleigh, NC 27609

RE: Notification for Alternate Brand Name: "Quali-Pro MSM Turf"  
EPA Registration Number: 66222-146  
Date of Submission: August 20, 2009

Dear Mrs. Hitchcock:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 dated, August 20, 2009, for the above mentioned product. The Registration Division (RD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the actions 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 me directly at 703-305-6249 or Joyce Edwards of my staff at 703-308-5479.

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



United States  
Environmental Protection Agency  
Washington, DC 20460

Registration  
 Amendment  
 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	PM# 15 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

Amendment - Explain below.  Final printed labels in response to Agency letter dated \_\_\_\_\_

Resubmission in response to Agency letter dated \_\_\_\_\_  "Me Too" Application.

Notification - Explain below.  Other - Explain below.

**NOTIFICATION**

**SEP 25 2009**

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

Notification of Alt Brand name: Quali-Pro MSM Turf.  
This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula for this product. I understand that it is a violation of 18 USC 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.

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  
 Label  Container

4. Size(s) Retail Container

5. Location of Label Directions

6. Manner in Which Label is Affixed to Product  
 Lithograph Paper glued Stenciled  Other \_\_\_\_\_

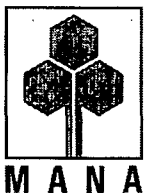
Section - IV

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

Name Christie Hitchcock	Title Regulatory Specialist	Telephone No. (Include Area Code) 919-256-9342
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**Certification**  
I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

2. Signature <i>Christie Hitchcock</i>	3. Title Regulatory Specialist	6. Date Application Received (Stamped)
4. Typed Name Christie Hitchcock	5. Date 08-20-09	



August 20, 2009

Document Processing Desk (NOTIF)  
Registration Division (7504P)  
OPP, USEPA  
Ariel Rios Building  
1200 Pennsylvania Ave, NW  
Washington DC 20460

Re: MSM Turf: EPA Reg. No. 66222-146  
Notification of Alternate Brand Name

To Whom It May Concern:

Maktheshim Agan of North America, Inc. is submitting a notification for an alternate brand name for the product referenced above. The label will be marketed as **Quali-Pro MSM Turf**.

This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula for this product. I understand that it is a violation of 18 USC 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:

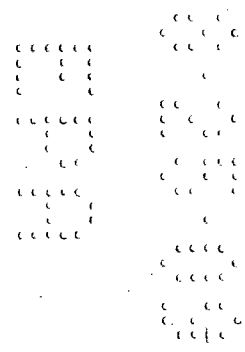
- Application for registration (EPA Form 8570-1)
- One copy of labeling

Should you have any questions regarding this submission, please contact me at 919-256-9342 or by email at [chitchcock@manainc.com](mailto:chitchcock@manainc.com).

Sincerely,

Christie Hitchcock  
Regulatory Specialist

Enclosures





# MSM Turf

Herbicide

**ACTIVE INGREDIENT:**  
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%

EPA Reg. No. 66222-146 EPA Est. No. 37429-GA-001<sup>1</sup>; 37429-GA-002<sup>2</sup>

Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

## KEEP OUT OF REACH OF CHILDREN CAUTION

For additional precautionary, handling, and use statements, see inside of this booklet.

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

**Net Contents: 8 Ounces**

13396

EPA 041609/Rev B

**NOTIFICATION**  
**SEP 2 5 2009**

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# MSM Turf

*Herbicide*

**ACTIVE INGREDIENT:**

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%

EPA Reg. No. 66222-146

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

For additional precautionary, handling, and use statements, see inside of this booklet.

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

FIRST AID	
<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. For medical emergencies involving this product, call Prosar at 1-877-250-9291.</p>	

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**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, 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.

Quali-Pro MSM Turf Herbicide is for use on Ornamental Turf, such as Lawns, Parks, Cemeteries, and Golf Courses (Fairways, Aprons, Tees and Roughs). This product may also be used on Sod Farms.

#### 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 Quali-Pro 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 Quali-Pro 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  
Aster  
Bittercress  
Blue mustard  
Buckhorn  
Bur buttercup  
Canada thistle  
Chicory  
Clover (white)  
Common chickweed

Henbit  
Hoary cress (whitetop)  
Kochia  
Lambsquarters  
Miners lettuce  
Pennsylvania smartweed  
Plantain  
Prickly lettuce  
Prostrate knotweed  
Redroot pigweed

Common groundsel  
Common mullein  
Common purslane  
Common sunflower  
Common yarrow  
Conical catchfly  
Cow cockle  
Crown vetch  
Curly dock  
Dandelion  
Dogfennel  
False chamomile  
Fiddleneck tarweed  
Field pennycress  
Flixweed  
Goldenrod

Redstem filaree  
Shepherdspurse  
Smallseed flaxweed  
Smooth pigweed  
Spurge (prostrate)  
Sweet clover  
Tansy mustard  
Treacle mustard  
Tumble mustard  
Virginia buttonweed  
Wild carrot  
Wild celery  
Wild lettuce  
Wild mustard  
Wild onion  
Woodsorrel (oxalis)

For use only on Kentucky Bluegrass, Fine Fescue, Bermudagrass, and St. Augustine-grass turf areas.

**USE PRECAUTIONS**

Use lowest rates for minimum chlorosis of the turf.

Do not apply Quali-Pro 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.

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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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide (except as recommended) 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 Quali-Pro 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

Blue mustard

Bur buttercup

Chickweed

Chicory

Clover (white)

Creeping beggarweed

Dandelion

Field pennycress

Ground ivy (Fall)

Parsley-piert

Prostrate spurge

Redstem filaree

Spurweed

Wild carrot

#### **0.33 TO 0.5 OZ. PRODUCT/ACRE**

Annual sowthistle

Aster

Carolina geranium

Common yarrow

Crown vetch

Florida betony

Ground ivy (Spring\*)

Ryegrass (fairways)

Seedling dogfennel

Shepherdspurse

Smooth pigweed

Smallseed falseflax

Sweet clover

Tansy mustard

Henbit

Lambsquarters

Lespedeza

Miners lettuce

Plantain

Prickly lettuce

Ragweed

Redroot pigweed

Treacle mustard

Tumble mustard

Wild celery

Wild garlic

Wild lettuce

Wild onion

Woodsorrel (oxalis)

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**0.25 TO 0.75 OZ. PRODUCT/ACRE**

Bahiagrass\*

**0.5 TO 1 OZ. PRODUCT/ACRE**

Brazil pusley

Buckhorn plantain

Canada thistle\*\*

Curly dock

Common groundsel

Common purslane

Florida pusley

Foxtail

Hoary cress (whitetop)

Kochia

Pennsylvania smartweed

Plantain

Common sunflower

Crabgrass

Dogfennel

Dollarweed\*

Prostrate knotweed

Sida (southern)

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 Quali-Pro 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro 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

Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide specified for the most difficult to control species on the site.

**Southeast**—Apply up to 4 ounces per acre for loblolly and slash pines. Transplant the following planting season.

**Northeast and Lake States**—Apply up to 2 ounces 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.

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**West**—Apply up to 2 ounces 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 Quali-Pro MSM Turf Herbicide.

#### **Accord<sup>2</sup>**

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

#### **Arsenal<sup>1</sup> Applicator's Concentrate**

Tank mix 1 to 2 ounces of Quali-Pro 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, hophornbeam, persimmon, oaks (red, white, and water), sassafras, sweetgum, Vaccinium species and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, and red maple.

#### **Accord<sup>2</sup> + Arsenal<sup>1</sup> Applicator's Concentrate**

Tank mix ½ to 1 ounce of Quali-Pro 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.

#### **VELPAR<sup>®</sup> L or VELPAR<sup>®</sup> DF**

Tank mix 1 to 2 ounces of Quali-Pro MSM Turf Herbicide per acre with VELPARL or VELPARDF 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.

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### **OUST EXTRA<sup>7</sup> (or Generic Sulfometuron Methyl)**

Tank mix ½ to 1 ½ ounces of Quali-Pro MSM Turf Herbicide with 2 to 3 ounces of OUST EXTRA<sup>7</sup> (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 Quali-Pro MSM Turf Herbicide with 3 ounces of OUST EXTRA<sup>7</sup> (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**

Quali-Pro MSM Turf Herbicide is used for application over the top of established slash and loblolly pines 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 Quali-Pro MSM Turf Herbicide.

#### **Arsenal Applicator's Concentrate**

A tank mix of 1 to 2 ounces of Quali-Pro 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.

#### **VELPAR<sup>®</sup> L or VELPAR<sup>®</sup> DF**

Tank mix 1 to 2 ounces of Quali-Pro 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.

### **Release**

#### **Herbaceous Weed Control**

Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide:

**Arsenal Applicator's Concentrate<sup>1</sup>**

Tank mix 1/2 to 1 ounce of Quali-Pro MSM Turf Herbicide with 4 ounces of Arsenal Applicator's Concentrate per acre. The tank mix may be used on loblolly pine.

**OUST XP<sup>2</sup>**

Tank mix 1/2 to 1 1/2 ounces of Quali-Pro MSM Turf Herbicide with 2 to 3 ounces of OUST XP<sup>2</sup> (or generic equivalent) per acre. Best results are obtained when Quali-Pro MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

The tank mix may be used on loblolly and slash pines.

**VELPAR® L or VELPAR® DF**

Tank mix 1/2 to 1 ounce of Quali-Pro 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.

**IMPORTANT PRECAUTIONS—CONIFER PLANTATIONS ONLY**

- Applications of Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide to conifers grown as ornamentals.
- Quali-Pro 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**

Quali-Pro 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" section 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 preplanting site preparation treatment for red alder in tank mixes with other herbicides labeled for this use.

Quali-Pro 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**

Quali-Pro 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 Quali-Pro MSM Turf Herbicide is applied just before weed emergence until shortly after weed emergence.

### **Tank Mix Combinations**

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

### **IMPORTANT PRECAUTIONS—HARDWOOD PLANTATIONS ONLY**

- Application of VELPAR® L and Quali-Pro 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 Quali-Pro 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.

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NON-AGRICULTURAL USES

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**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	Shepherdspurse
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
Broom snakeweed*	Wild roses
Buckhorn plantain	Musk thistle***
Bull thistle	Oxeye daisy
Common crupina	Plumeless thistle
Common sunflower	Prostrate knotweed
Curly dock	Rosering gaillardia
Dewberry	Seaside arrowgrass
Dyer's woad	Sericea lespedeza
Gorse	Tansy ragwort
Halogeton	Teasel
Henbit	Wild caraway

**1 to 2 ounces per acre**

Common mullein  
Common tansy  
Field bindweed\*\*  
Greasewood  
Gumweed  
Houndstongue  
Lupine  
Old world climbing fern  
(Logodium)  
Perennial pepperweed  
Poison hemlock

Purple loosestrife  
Purple scabious  
Scotch thistle  
Scouringrush  
Salsify  
Snowberry  
St. John's wort  
Sulfur cinquefoil  
Western salsify  
Whitetop (hoary cress)  
Wild Iris

**1 1/2 to 2 ounces per acre**

Canada thistle\*\*  
Dalmation toadflax\*\*  
Duncecap larkspur  
Russian knapweed\*\*

Tall larkspur  
Wild parsnip  
Yellow toadflax\*\*

**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 Quali-Pro MSM Turf Herbicide and may be controlled with rates of 1/4 to 1/2 ounce per acre. Treatments of Quali-Pro MSM Turf Herbicide may be applied from rosette through bloom stages of development.

\*\*\*\* Certain biotypes of maretail/horsetail are less susceptible to Quali-Pro 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide with 8 fluid ounces of dicamba and 16 fluid ounces of 2,4-D for the **suppression of rush skeletonweed**.

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**NON-CROP (INDUSTRIAL) SITES**

**Application Information**

Quali-Pro 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.

Quali-Pro 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, Quali-Pro 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 Quali-Pro 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	Quali-Pro 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	Quali-Pro 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
Grama, Blue	1/2 - 2	1
Grama, Sideoats	1/2	2
	>1/2	> 3
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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide. If

species other than those listed above are to be planted into areas treated with Quali-Pro 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**

Quali-Pro 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. Quali-Pro MSM Turf Herbicide may also be used for the control of certain noxious and troublesome weeds in turf.

In addition to conventional spray equipment, Quali-Pro MSM Turf Herbicide may also be applied with invert emulsion equipment. When using an invert emulsion, mix the prescribed rate of Quali-Pro 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 Quali-Pro MSM Turf Herbicide per acre.

##### **Crested Wheatgrass and Smooth Brome**

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

##### **Bermudagrass**

Apply 1/4 to 2 ounces of Quali-Pro 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**

Quali-Pro 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**

Quali-Pro MSM Turf Herbicide may be tank mixed with Embark<sup>®</sup> for improved performance in the regulation of growth and seedhead suppression. Tank mix 1/4 to 1/2 ounce of Quali-Pro MSM Turf Herbicide with 1/8 to 1/4 pint of Embark.

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### 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide is applied to turf that is under stress from drought, insects, disease, cold temperatures (winter injury), or poor fertility.
- Quali-Pro MSM Turf Herbicide is not for use on bahiagrass.

### NATIVE GRASSES

Quali-Pro 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 Quali-Pro 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\*, cut-leaf 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, 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

Quali-Pro 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

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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, Quali-Pro 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 (Preplant) or After Planting but Prior to Grass Emergence (Preemergence)**

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

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

Do not apply preplant or preemergence to orchardgrass or Russian wildrye grass, as severe crop injury may result.

##### **Early Postemergence 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 anytime after grass emergence.

Do not use a spray adjuvant other than a 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 Quali-Pro 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 Quali-Pro 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 Quali-Pro 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/a)	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

All Areas With Soil pH of 7.5 Or Less	Durum, barley, oats	1/10 to 2/10	10
	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.

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**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**

Quali-Pro 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, Quali-Pro 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
	Quali-Pro MSM Turf Herbicide Rate oz/100 gal	Quali-Pro 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>Allanthus</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 Quali-Pro MSM Turf Herbicide per 100 gallons of spray solution.

### Application Timing

Make a foliar application of the specified rate of Quali-Pro 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

### Accord<sup>2</sup>

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of Quali-Pro 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.

### Arsenal<sup>1</sup> Herbicide

Combine 1 to 2 ounces of Quali-Pro 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 gallons per acre spray volume. In addition to species listed above controlled by Quali-Pro MSM Turf Herbicide, this combination controls black gum, hophornbeam, sassafras, sweetgum, Vaccinium species, dogwood, myrtle dahoon, hickories, and persimmon.

### Garlon<sup>4</sup> 3A or Garlon 4 (or generic equivalents)

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of Quali-Pro 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.

### KRENITE<sup>3</sup> S

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of Quali-Pro 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 K<sup>5</sup>

After consulting the "Brush Species Controlled" table, tank mix the prescribed rate of Quali-Pro 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 K<sup>5</sup> + Arsenal<sup>1</sup> Herbicide

Combine 1 to 1 1/2 ounce of Quali-Pro 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 Quali-Pro MSM Turf Herbicide by mixing 1 ounce per gallon of water. Mix vigorously until the Quali-Pro 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 Quali-Pro 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 Quali-Pro MSM Turf Herbicide application, do not use the sprayer or mixing equipment for application to agricultural crops, except that it may be used to treat pasture, range, and wheat. This is extremely important, as low rates of Quali-Pro MSM Turf Herbicide can kill or severely injure most agricultural crops. The selected sprayer should be equipped with an agitation system to keep Quali-Pro 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 Quali-Pro MSM Turf Herbicide.
3. Continue agitation until the Quali-Pro MSM Turf Herbicide is fully dispersed, at least 5 minutes.
4. Once the Quali-Pro MSM Turf Herbicide is fully dispersed, maintain agitation and continue filling tank with water. Quali-Pro MSM Turf Herbicide should be thoroughly mixed with water before adding any other material.

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5. As the tank is filling, add tank mix partners (if desired); then add the necessary volume of non-ionic 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 Quali-Pro MSM Turf Herbicide and a tank mix partner are to be applied in multiple loads, pre-slurry the Quali-Pro 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 Quali-Pro MSM Turf Herbicide.

### **SPRAYER CLEANUP**

Spray equipment must be cleaned before Quali-Pro 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 Quali-Pro MSM Turf Herbicide are applied, at the end of each day of spraying the interior of the tank should 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 gals. 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 clean-

er 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 Quali-Pro 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.

### 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.

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