PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
MAINE DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E. WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

BOARD OF PESTICIDES CONTROL

May 16, 2014

AMHI Complex, 90 Blossom Lane, Deering Building, Room 319, Augusta, Maine

AGENDA

8:30 AM

1. Introductions of Board and Staff

2. Minutes of the February 21, 2014 Board Meeting

   Presentation By: Henry Jennings
   Director

   Action Needed: Amend and/or Approve

3. Consideration of the Syngenta Crop Protection Company's Special Local Need [FIFRA Section 24(c)] Registration Request for Dual Magnum, EPA Reg. No. 100-816, to Reduce the Pre-plant Interval in Various Field Crops

   Syngenta Crop Protection, Inc. is requesting a Special Local Needs Registration for Dual Magnum to reduce the pre-plant interval for various field crops grown in Maine. Certain vegetable crops grown in Maine currently lack efficacious weed management options and the 60 day pre-plant interval is an impediment in this climate. The Maine Cooperative Extension is supporting this request, which has approved for other states.

   Presentation By: Mary Tomlinson
   Registrar and Water Quality Specialist

   Action Needed: Approve/Disapprove 24(c) Registration Request

4. Consideration of a Request for Variances from Chapters 22 and 29 from Asplundh Tree Expert Company–Railroad Division, to Treat Railroad Rights-of-way in Maine

   Asplundh Tree Expert Company–Railroad Division, is seeking variances from Chapter 22, Section 2(C), Identification of Sensitive Areas, and Chapter 29, Section 6, Buffer Requirements, in order to treat the St. Lawrence and Atlantic Railroad rights-of-way in Maine. Board policy indicates that first-time variance requests must be considered by the Board. Policy further stipulates that railroad variance requests need to be consistent with the Maine Department of Transportation standards.

   Presentation By: Henry Jennings
   Director

   Action Needed: Approve/Disapprove the Variance Requests

5. Review of Potential Rulemaking Concepts by Chapter

At the February and March 2014 meetings, the Board reviewed a series of potential rulemaking topics that had been discussed at various times over the previous year. At the March meeting, Board members narrowed the list of rulemaking chapters to 20, 22, 28, 31, 32, 33 and 41. The staff will present a summary of the rulemaking concepts by chapter in order to ensure that there is alignment over the precise nature of the proposed changes, prior to initiating rulemaking.

Presentation By: Henry Jennings
Director

Action Needed: Refine the Rulemaking Concepts

6. Overview of the Board of Pesticides Control Software Application Development Process Underway to Improve Work Flow Efficiency and Constituent Service

In February, the Department entered into a Memorandum of Understanding with the Office of Information Technology to undertake an information technology (IT) application development process intended to modernize and integrate the Board's IT systems and create an internet interface. Because all work processes are reviewed and analyzed as part of the development, the staff would like to provide an overview of the process to date and seek the Board's input.

Presentation By: Gary Fish
Manager of Pesticide Programs

Action Needed: Provide Input to the Staff

7. Consideration of a Consent Agreement with Remedy Compassion of Auburn, Maine

On June 3, 1998, the Board amended its Enforcement Protocol to authorize staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involved use of pesticides inconsistent with the product labels.

Presentation By: Raymond Connors
Manager of Compliance

Action Needed: Approve/Disapprove the Consent Agreement Negotiated by Staff

8. Consideration of a Consent Agreement with Plants Unlimited of Rockport, Maine

On June 3, 1998, the Board amended its Enforcement Protocol to authorize staff to work with the Attorney General and negotiate consent agreements in advance on matters not involving substantial threats to the environment or public health. This procedure was designed for cases where there is no dispute of material facts or law, and the violator admits to the violation and acknowledges a willingness to pay a fine to resolve the matter. This case involved use of pesticides at a nursery/greenhouse operation in violation of certain state and federal pesticide laws.

Presentation By: Raymond Connors
Manager of Compliance

Action Needed: Approve/Disapprove the Consent Agreement Negotiated by Staff

9. Review of Board Authority to Direct Staff to Participate in Legislative Hearings and Work Sessions

At the March meeting, Board members expressed the importance of having the staff represent the Board at legislative policy events. At the same time, the Administration exerts supervisory authority over executive branch employees and administers polices covering legislative functions intended to maintain efficient and consistent executive branch participation. The Board has asked Assistant Attorney General Randlett to clarify the Board's authority with respect to staff participation in legislative events.

Presentation By: Mark Randlett, Assistant Attorney General

Action Needed: None, Informational Only

10. Election of Officers

The Board's statute requires an annual election of officers. The members will choose a chair and vice-chair to serve for the coming year.

Presentation By: Henry Jennings
Director

Action Needed: Nominations and Election of Officers

11. Other Old or New Business

a. ERAC update—L. Hicks
b. RWC, Inc. variance permits for Chapters 22 and 29 for railroad rights-of-way—H. Jennings
c. MDOT variance permit for chapter 29 for control of phragmites—H. Jennings
    - Sherman Marsh Phragmites Control On-Going Treatment Plan

12. Schedule of Future Meetings

June 27, August 18, and September 12, 2014, are tentative Board meeting dates. The June 27 meeting is planned to be held at Madison High School following a tour of Backyard Farms. The Board will decide whether to change and/or add dates.

Action Needed: Adjustments and/or Additional Dates?

13. Adjourn

NOTES

- The Board Meeting Agenda and most supporting documents are posted one week before the meeting on the Board website at www.thinkfirstspraylast.org.
- Any person wishing to receive notices and agendas for meetings of the Board, Medical Advisory Committee, or Environmental Risk Advisory Committee must submit a request in writing to the Board's office. Any person with technical expertise who would like to volunteer for service on either committee is invited to submit their resume for future consideration.
- On November 16, 2007, the Board adopted the following policy for submission and distribution of comments and information when conducting routine business (product registration, variances, enforcement actions, etc.):
    - *For regular, non-rulemaking business*, the Board will accept pesticide-related letters, reports, and articles. Reports and articles must be from peer-reviewed journals. E-mail, hard copy, or fax should be sent to the attention of Anne Bills, at the Board's office or anne.bills@maine.gov. In

order for the Board to receive this information in time for distribution and consideration at its next meeting, all communications must be received by 8:00 AM, three days prior to the Board meeting date (e.g., if the meeting is on a Friday, the deadline would be Tuesday at 8:00 AM). Any information received after the deadline will be held over for the next meeting.

- During rulemaking, when proposing new or amending old regulations, the Board is subject to the requirements of the APA (Administrative Procedures Act), and comments must be taken according to the rules established by the Legislature.

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
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WALTER E. WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

To: Members of the Board of Pesticides Control
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: EPA Special Local Need (SLN) [FIFRA, Section 24(c)] application to approve the use of Dual Magnum, EPA Reg. No. 100-816, to control yellow nutsedge and hairy galinsoge in asparagus, seeded cabbage, carrots, garden beets, Swiss chard, dry bulb and green onions, spinach, and pumpkins.
Date: May 8, 2014
****

Enclosed is the above referenced Special Local Needs (SLN) [FIFRA, Section 24(c)] application and supporting documents for your consideration.

The Special Local Needs (SLN) application for use of Dual Magnum (EPA Reg. No. 100-816) expands use to asparagus, seeded cabbage, carrots, garden beets, Swiss chard, dry bulb and green onions, spinach, and pumpkins. The request is in response to the lack of effective herbicides to control yellow nutsedge (Cyperus esculentus) and hairy galinsoge (Galinsoga ciliata). The expanded use would provide Maine growers an additional control option to cultivation and hand weeding in the above listed crops.

The Section 3 label includes groundwater and surface water advisories. Depending on soil type, metolachlor is mobile to highly mobile and is persistent to moderately persistent in surface soils (EPA, 1995). Compared to metolachlor, S-metolachlor has a lower solubility and lower adsorption potential (Koc); thus, a greater potential to move through soil (Table). However, a much lower half-life in surface soil and an application rate that is approximately one-third lower than metolachlor indicate residues are less likely to appear in groundwater. In addition, the likely total acreage in Maine for the listed crops would be negligible as compared to the use of metolachlor in corn and potato production and the total pounds of material applied would be similarly negligible.

WIN-PST Results

Name	PC_CODE	SOL	KOC	HL	PLP	PSRP
S-Metolachlor	108800	480	137	43	HIGH	HIGH
Metolachlor	108801	530	200	90	HIGH	HIGH

SOL – solubility
Koc – affinity to adsorb
HL – half-life in days
PLP – pesticide leaching potential
PSRP - Pesticide solution run-off potential

Please review the attached documents and let me know if you have any questions.

- FIFRA, Section 24(c) application
- Letters of request from Patricia Dinnen, Regulatory Manager, Syngenta Crop Protection, LLC
- Two letters of support from Mark Hutton, Ph.D., Vegetable Specialist, University of Maine Cooperative Extension
- Memo to Board from Lebelle Hicks, Ph.D. DABT
- Dual Magnum multi-crop draft Maine SLN label
- Dual Magnum Section 3 label
- Dual Magnum MSDS

Citations

EPA. 1995. Reregistration Eligibility Decision Metochlor.
WIN-PST 3.1.20. Windows Pesticide Screening Tool. NRCS. Version: 3.1.0020.

Form Approved, OMB No. 2070–0055

United States Environmental Protection Agency
Office of Pesticide Programs. Registration Division (7505C)
Washington, DC 20460

Application for/Notification of State Registration of a Pesticide To Meet a Special Local Need

(Pursuant to section 24(c) of the Federal Insecticide, Fungicide, and Rodenticide Act as Amended

For State Use Only
Registration No. Assigned
Date Registration Issued

1. Name and Address of Applicant for Registration
Syngenta Crop Protection, LLC
PO Box 18300
Greensboro, NC 27419

2. Product is (Check one)

EPA-Registered	EPA Registration Number
☒	100-816
New (not EPA-registered) ☐ Attach EPA Form 8570–4, Confidential Statement of Formula for new products.	EPA Company Number 100

3. Active Ingredient(s) in Product
S-Metolachlor

4. Product Name
Dual Magnum

5. If this is a food/feed use, a tolerance or other residue clearance is required. Cite appropriate regulations in 40 CFR Part 180. 186, and/or 186. 40CFR 180.368

6. Type of Registration (Give details in Item 13 or on a separate page, properly identified and attached to this form):

- ☐ a. To permit use of a new product.
- ☒ b. To amend EPA registration for one or more of the following purposes:
  - ☐ (1) To permit use on additional crops or animals.
  - ☐ (2) To permit use at additional rates.
  - ☐ (3) To permit use against additional pests.
  - ☐ (4) To permit use of additional application techniques or equipment.
  - ☐ (5) To permit use at different application sites.
  - ☒ (6) Other (specify below) See paragraph 13

7. Nature of Special Local Need (check one)
X – See paragraph 13

- ☐ There is no pesticide product registered by EPA for such use.
- ☒ There is no EPA–registered pesticide product which, under the conditions of use within the State, would be as safe and/or as efficacious for such use within the terms and conditions of EPA registration.
- ☐ As appropriate EPA–registered pesticide product is not available.

8. If this registration is an amendment to an EPA–registered product, is it for a "new use" as defined in 40 CFR 152.3?
☐ Yes (discuss in Item 13 below) ☒ No

9. Has an EPA Registration or Experimental Use Permit for this chemical even been (check applicable box(es), if known):
☒ Sought ☒ Issued ☐ Denied ☐ Cancelled ☐ Suspended
☒ Registration ☐ Experimental Use Permit ☐ No Previous Permit Action

10. Has FIFRA section 24(c) registration for this use of the product ever, by another State, been (check appropriate box(es), if known):
☒ Sought ☒ Issued ☐ Denied ☐ Revoked

If any of the above are checked, list States in Item 13 below.

☐ No FIFRA section 24(c) Action

11. Endangered Species Act: (Give details in Item 13 or on a separate page, properly identified and attached to this form.)

Identify the counties where this pesticide will be used. If Statewide, indicate "all."
ALL
Provide a list of Federally protected endangered/threatened species which occur in the areas of proposed use.

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.

12. Indicate use status of Special Local Need, i.e.. planned dates of use:
From: May 2014 **To:** December 31, 2019

Signature of Applicant or Authorized Representative
Pat Dinnen

Title Pat Dinnen
Regulatory Manager

Telephone Number 336-632-2494
Date May 5, 2014

13. Comments (attach additional sheet. if needed)
Comments to Item 6.b.(6): To permit use on crops where permanent tolerances have been established for S-metolachlor (Federal Register dated xxxxxxx.

Comments to Item 10: Similar SLN's exist MA, MI, NJ, NY, OH, TX, WI

Determination by State Agency
This registration is for a Special Local Need and is being issued in accordance with section 24(c) of FIFRA, as amended. To the best of our knowledge, the information above is correct, except as noted in "Comments" below or in attachments

Name, Title. and Address of State Agency Official
Mary Tomlinson
Maine Board of Pesticides Control
28 State House Station
Augusta, ME 04333-0028

Title
Pesticides registrar/Water Quality Specialist

Telephone Number 207-287-2731
Date 5-8-2014

Comments (by State Agency Only)

Received by EPA

Patricia (Pat) Dinnen
Regulatory Manager
State Registration/State Affairs

Syngenta Crop Protection, LLC
P.O. Box 18300
Greensboro, NC 27419-8300
www.syngenta.com

Tel. 336 632 2494
Fax: 336 632 2884
pat.dinnen@syngenta.com

May 5, 2014

Ms. Mary E. Tomlinson
Pesticide Registrar and Water Quality Specialist
Board of Pesticides Control
ME Dept. of Agriculture
28 State House Station
Augusta, ME 04333-0028

Subject: Dual Magnum® Herbicide, EPA Reg. No. 100-816
SLN Request for Control of Weeds in Asparagus, Bell Pepper, Cabbage, Carrots, Garden Beets, Dry Bulb Onions, Green Onions, Spinach, Swiss Chard, Pumpkin

Dear Ms. Tomlinson:

Syngenta Crop Protection, LLC is requesting a Section 24(c) for Dual Magnum Herbicide for control of weeds, in asparagus, bell pepper, cabbage, carrots, garden beets, dry bulb onions, green onions, spinach, swiss chard, and pumpkin. The active ingredient in Dual Magnum is S-metolachlor. Dr. Mark Hutton has written a letter of support stating that S-metolachlor provides excellent control of yellow nutsedge (*Cyperus esculentus*) and hairy galinsoga (*Galinsoga citiata*).

Enclosed in support of this submission are:

- Draft SLN Label
- EPA SLN Application Form 8570-25
- Letter of support from Dr. Mark Hutton of The University of Maine
- Efficacy Data
- EPA Memorandum, DP Barcode D296904, S-metolachlor: Summary of Analytical Chemistry and Residue Data
- Federal Register Notice approving S-metolachlor tolerances dated August 31, 2005
- Federal Label for Dual Magnum Herbicide
- MSDS for Dual Magnum Herbicide

If you have any questions please do not hesitate to call me at 336-632-2494 or email me at pat.dinnen@syngenta.com.

Sincerely,

Pat Dinnen

Pat Dinnen
Regulatory Manager

Enclosures

Highmoor Farm
P.O. Box 179
Monmouth, ME 04259-0179
207-933-2100
Fax 207-933-4647
ceshmf@umext.maine.edu

May 6, 2014

Mary Tomlinson
Pesticide Registrar/Water Quality Specialist
28 State House Station
Augusta, ME 04333-0028

Dear Mary,

I am writing to request expanding the current Dual Magnum (EPA 100-816) registration for transplanted pepper and transplanted cabbage to include asparagus, seeded cabbage, carrots, garden beets, Swiss chard, dry bulb and green onions, spinach, and pumpkins.

Yellow nutsedge (Cyperus esculentus) and hairy galinsoge (Galinsoga ciliata) are two of the most difficult weeds to control in vegetable crops, particularly in the crops listed above. The lack of effective chemical herbicides for these crop/weed combinations forces growers to rely on expensive cultivation or hand weeding operations. Metolachlor provides excellent control of these species and is very cost effective compared to cultivation and hand weeding.

The current label has worked extremely well for us and I feel that it is time to add additional crops to match the options that growers in New York and Massachusetts have available to them.

Sincerely,

Mark Hutton, Ph.D.
Vegetable Specialist
Assoc. Professor Vegetable Crops
University of Maine Cooperative Extension
Highmoor Farm, P.O. Box 179
Monmouth, ME 04259-0179

cc. Mary Tomlinson, Pesticide Registrar, Maine Board of Pesticide Control

Highmoor Farm
P.O. Box 179
Monmouth, ME 04259-0179
207-933-2100
Fax 207-933-4647
ceshmf@umext.maine.edu

May 2, 2014

Dennis Kelly
Syngenta Crop Protection
410 Swing Road
Greensboro, NC 27409

Dear Dennis,

I am writing in support of expanding the current Dual Magnum registration for transplanted pepper and transplanted cabbage (EPA 100-816) to include asparagus, seeded cabbage, carrots, garden beets, Swiss chard, dry bulb and green onions, spinach, and pumpkins.

Yellow nutsedge (Cyperus esculentus) and hairy galinsoge (Galinsoga ciliata) have been two of the most difficult weeds to control in vegetable crops. Metolachlor provides excellent control of these species and is very cost effective compared to cultivation and hand weeding.

The current label has worked extremely well for us and I feel that it is time to add additional crops to match the options that growers in New York and Massachusetts have available to them.

Sincerely,

Mark Hutton, Ph.D.
Vegetable Specialist
Assoc. Professor Vegetable Crops
University of Maine Cooperative Extension
Highmoor Farm, P.O. Box 179
Monmouth, ME 04259-0179

cc. Mary Tomlinson, Pesticide Registrar, Maine Board of Pesticide Control

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
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WALTER E. WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

TO: Members of the Board of Pesticides Control
FROM: Lebelle Hicks PhD DABT
RE: Dietary Risks from the proposed Syngenta Request for a 24(c) label for Dual Magnum Herbicide (EPA# 100-816) in Maine
May 8, 2014

****

S-metolachlor is the active ingredient in Dual Magnum herbicide (EPA# 100-816). It is the active isomer of metolachlor (racemic [50:50] mixture of the R and S isomers). When Syngenta changed to S-metolachlor, the use rates decreased. The use rate for S-metolachlor is 0.63 times that of metolachlor (EPA 20003c).R-metolachlor is still present in the current formulations but at a lower concentration. EPA bridged the toxicity database for metolachlor and S-metolachlor and considers the combined toxicity database complete, with the exception of a 28-day inhalation toxicity study (EPA 2013t).

The toxicity endpoints used by EPA are presented in Table 1. These endpoints are found in EPA's most recent risk assessment and used for establishing the tolerances for S-metolachlor in food, the reference doses, and population adjusted doses. All doses are presented in mg/kg/day (EPA 2013t).

Table 1. Most Current Toxicity Endpoints for S-metolachlor (EPA 2013t)

Study	Doses [a]		Effects at LOAEL	UF [d]	RfD [e]	FQPA SF [f]	PAD [g]
	NOAEL [b]	LOAEL [c]					
Rat Develop-mental	300	1,000	Deaths, Multiple Clinical effects, ↓ Body weight gain	100	3	1	3
Dog Chronic Diet	9.7	33	↓ Body weight gain ♀	100	0.097	1	0.097
S-metolachlor is classified as a "C" possible human carcinogen based on an increase in liver tumors in female (EPA 2013t). A quantitative cancer risk assessment was not performed.							

a) All doses are in mg/kg/day
b) NOAEL = no observable adverse effect level
c) LOAEL = lowest observable adverse effect level
d) UF = uncertainty factors to account for inter-species extrapolation (10X for using animal data to determine human risk), intra-species (10X to account for variability in humans)
e) RfD = Reference dose, daily doses of a residue which may be consumed by the population and sub-populations of people with no expectation of adverse responses

f) FQPA SF = Food Quality Protection Act Safety Factor of 10X, this is reduced to 1X, when there is no evidence of increased sensitivity in the developing fetus
g) PAD = Population Adjusted Dose, specific daily exposure dose for selected subpopulations

Exposure Assessment

In addition to the S-metolachlor, food tolerances include the R-isomer and the two most common animal and plant metabolites (EPA 2013t). There are existing tolerances for S-metolachlor (40CFR180.368, 2014) in these commodities (Table 2).

Table 2. Tolerances for s-Metolachlor for Commodities Listed on the Proposed 24(c) for Dual Magnum (EPA# 100-816) (40CFR180.368)

Commodity	EPA tolerance Group (40CFR180.41)	Tolerance (ppm)
Asparagus	Not Applicable	0.1
Bell Pepper	8	0.1
Cabbage	5A	0.6
Carrot	1B	0.4
Garden Beets	1B	0.3
Dry Onion bulbs	3	0.1
Green Onions	3	2
Spinach	4A	0.5
Swiss chard	4B	0.1
Pumpkin	9B	0.1

In the 2013 risk assessment for S-metolachlor in which EPA assumed 100% of the listed crops would be treated and residues would exist at the tolerance levels (EPA 2013t), EPA states that children less than 1 year old are the most highly exposed subpopulation. This subpopulation receives a daily dose of 1.5% of the acute and 11.6% of the chronic population doses. The issuance of this 24(c) will not increase the risk from S-metolachlor and its metabolites of concern.

Citations

40CFR180.41 2007, Crop Group Tables

40CFR180.368 (a) (2), 2014 Tolerances for S-Metolachlor as of 5-2-14

EPA 2003b, S-metolachlor; Pesticide Tolerances Final Rule FR Vol 68 (63) 15845-15958

EPA 2013t, S-Metolachlor, PP#2F8115 Human Health Risk Assessment for the petition for higher tolerances on Corn, field, forage; Corn, sweet, forage; and Corn, stover

Section 24(c) Special Local Need Label

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF MAINE

DUAL MAGNUM
FOR WEED CONTROL IN ASPARAGUS, BELL PEPPER, CABBAGE, CARROTS, GARDEN BEETS, DRY BULB ONIONS, GREEN ONIONS, SPINACH, SWISS CHARD, PUMPKIN

EPA Reg. No. 100-816
EPA SLN No. ME-xxxxxx

This label expires and must not be distributed or used in accordance with this SLN registration after December 31, 2019

SYNGENTA'S SPECIAL CONDITIONS, RISKS OF USE AND DISCLAIMER FOR USE OF DUAL MAGNUM ON CROPS ON THIS 24(c) LABEL

IMPORTANT- READ BEFORE USE
THESE CONDITIONS RISKS OF USE AND DISCLAIMER ARE REQUIRED BY SYNGENTA CROP PROTECTION LLC AND NOT SPECIFIED BY U.S. EPA OR THE OF STATE OF MAINE

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, SYNGENTA CROP PROTECTION, LLC INTENDS THAT THE PRODUCT THAT IS THE SUBJECT OF THIS SECTION 24(c) LABEL BE PURCHASED ONLY BY END USERS WHO AGREE BY ELECTRONIC SIGNATURE ON SYNGENTA CROP PROTECTION'S INTERNET SITE TO THE TERMS AND CONDITIONS REQUIRED BY SYNGENTA CROP PROTECTION, LLC INCLUDING A WAIVER AND RELEASE FROM ALL LIABILITY AND INDEMNIFICATION BY THE USER AND/OR GROWER OF SYNGENTA AND OTHERS FOR FAILURE TO PERFORM AND FOR CROP INJURY, CROP YIELD REDUCTION, AND/OR CROP LOSS FROM USE OF DUAL MAGNUM HERBICIDE ON CROPS ON THIS 24(c) LABEL. IF SUCH TERMS AND CONDITIONS ARE UNACCEPTABLE, RETURN THE DUAL MAGNUM AT ONCE UNOPENED OR USE THE DUAL MAGNUM FOR A DIFFERENT APPROVED USE IN ACCORDANCE WITH THE LABEL AFFIXED TO THE PRODUCT CONTAINER.

USE OF DUAL MAGNUM (THE "PRODUCT") ON CROPS LISTED (THE "CROP") FOR THIS SPECIAL LOCAL NEED MAY RESULT IN CROP INJURY, CROP YIELD REDUCTION AND/OR CROP LOSS AS FURTHER DISCUSSED BELOW. READ AND UNDERSTAND THESE CONDITIONS AND RISKS OF USE FOR SPECIAL LOCAL NEED BEFORE USING THE PRODUCT ON THE CROP. SYNGENTA RECOMMENDS THAT THE USER TEST THIS PRODUCT TO DETERMINE ITS SUITABILITY FOR SUCH INTENDED USE.

Syngenta Crop Protection, LLC makes the Product available for use in the manner described in this Supplemental Labeling on the basis that, in the sole opinion of the user, the benefits and utility derived from the use of the Product on the Crop outweigh the potential risk of Crop injury, Crop yield reduction or Crop loss.

The decision to use this Product in the manner described in this Supplemental Labeling must be made by each individual user on the basis of anticipated benefits versus (i) the potential risk of Crop injury, Crop yield reduction and Crop loss, (ii) the severity of the target pest infestation, (iii) the cost and availability of alternative pest controls and (iv) any other relevant factors. Syngenta recommends that the user test this Product to determine its suitability for such intended use.

By purchasing the Product for use, or using the Product in the manner described in this Supplemental Labeling, you acknowledge and accept that, to the extent consistent with applicable law:

1) you assume all risk of Crop injury, Crop yield reduction and Crop loss;
2) Syngenta Crop Protection, LLC do not make, and do not authorize any agent or representative to make, any representations or recommendations regarding the use of this Product on the Crop other than the statements on this Supplemental labeling;
3) Syngenta Crop Protection, LLC do not make, and do not authorize any agent or representative to make, any warranties, express or implied, with respect to the use of the Product on the Crop and disclaim all warranties, expressed or implied, including any implied warranty of merchantability;
4) Syngenta Crop Protection, LLC disclaim all liability for any damages, losses, expenses, claims or causes of actions arising out of or relating to Crop injury, Crop yield reduction and/or Crop loss;
5) these conditions and Risks of Use for Special Local Need supersede any contrary representations or recommendations by Syngenta Crop Protection, LLC or their respective agents or representatives, and any provisions in or on any Product literature or labeling including any provisions on the label affixed to the Product container.

If these Conditions and Risks of Use for Special Local Need are not acceptable, the unopened Product may be returned to the seller for a refund or used for a different labeled use in accordance with the label affixed to the Product container.

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

DIRECTIONS FOR USE

- It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
- This label must be in the possession of the user at the time of application.
- Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the EPA-registered label.

ASPARAGUS

Apply a single broadcast treatment of Dual Magnum at 1.33 - 2.0 pt/A after the harvest season (i.e. post-harvest treatment), or to dormant established asparagus beds in the spring, prior to asparagus emergence. In that rate range, use lower rates on soils relatively coarse- textured and higher rates on fine-textured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Make uniform applications in a minimum of 15 gallons of water per treated acre. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means.

Restrictions: (1) Make only one application per crop. (2) Do not harvest asparagus within 16 days following application.

Note: Applications of Dual Magnum may cause significant injury to asparagus resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

BELL PEPPER, TRANSPLANTED

Apply a single broadcast treatment of Dual Magnum at 0.5 to 1.0 pt/A to the soil surface prior to transplanting or a broadcast application within 48 hours after transplanting bell pepper, but before weeds emerge. In that rate range, use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means. Weed control may be reduced on muck soils.

Restrictions: (1) Do not incorporate. (2) Do not apply to direct seeded bell peppers. (3) Do not flood or sprinkler irrigate immediately following application. (4) Do not exceed more than 1.0 pt/A Dual Magnum. (5) Do not harvest within 60 days of application of application.

Precautions: (1) In general, the risk of crop injury is less with post-transplant applications than from pretransplant surface applications, and the risk of crop injury is less with post-directed than from post over-the-top applications. To minimize the risk of crop injury, apply as a postdirected spray in a way that minimizes contact with the crop foliage. (2) Muck soils (>20%) normally require the higher use rate (1.0 pt/A), however, weed control may be reduced on muck soils. (3) The use addition of another registered herbicide as a tank mixture with Dual Magnum will increase the risk of crop injury from postemergence applications. (4) The application of Dual Magnum prior to bed formation may result in crop injury due to concentration of Dual Magnum near the transplanted crop's root system.

Note: Applications of Dual Magnum may cause significant injury to transplanted bell peppers resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

CABBAGE, DIRECT SEEDED AND TRANSPLANTED

Apply a single broadcast treatment of Dual Magnum at 0.5-1.33 pt/A prior to transplanting or within 48 hours after transplanting, the latter often being less injurious. Apply to direct seeded cabbage only at the four-leaf stage. In that rate range, use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means. Weed control may be reduced on muck soils.

Restrictions: (1) Make only one application per crop. (2) Do not incorporate Dual Magnum. (3) Do not use in combination with Goal®. (4) Crop maturity may be delayed by Dual Magnum application. (5) Do not harvest cabbage within 60 days following application.

Note: Applications of Dual Magnum may cause significant injury to cabbage resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

CARROTS

Carrots grown on mineral soils: Make a single broadcast application of Dual Magnum at 0.67 – 1.33 pt/A preemergence to clean-tilled soil. Use lower rates on coarse-textured soils and higher rates on fine-textured soils. In general, the risk of crop injury from the use of Dual Magnum on this crop is greater from preplant incorporated than from preplant non-incorporated or preemergence applications.

Note: (1) Do not apply more than 1.33 pt/A of Dual Magnum per crop. (2) Harvest at normal maturity. (3) Do not apply to Carrots grown on muck soils

Precautions: To avoid crop injury, do not apply Dual Magnum in areas where water is likely to "pond". To avoid concentration in the seed furrow, do not make broadcast applications of Dual Magnum to carrots planted in furrows more than 2 inches deep. Band applications may be made to carrots planted in furrows deeper than 2 inches, but the band width should not exceed the width of the bottom of the furrow.

Note: Applications of Dual Magnum may cause significant injury to carrots resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

GARDEN BEETS

Make a single broadcast application of Dual Magnum at a rate of 0.67 pt/A (0.64 lb ai/acre) to the soil surface after planting, but before the weeds or crop emerge (pre-emerge). For effective weed control, Dual Magnum must be applied to clean-tilled soil where existing weeds are controlled by another labeled herbicide. Dual Magnum will not control emerged weeds.

Make uniform applications in a minimum of 15 gallons of water per treated acre. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Irrigate after application to activate the herbicide if rainfall is not expected. If the crop is irrigated, use 0.5 inches of water shortly after planting to incorporate the herbicide. Excessive irrigation may increase the risk of crop injury. Do not mechanically incorporate Dual Magnum. **Do not use Dual Magnum if the planting operation creates a furrow or trough over the seed-row into which rain or irrigation water will collect and thus concentrate the herbicide over the row.**

Restrictions and Precautions

- Do not use on coarse textured soils with less than 1.5% OM. Do not use on soils with greater than 10% OM.
- Do not exceed a total of 0.67 pt/A of Dual Magnum in any single application, nor in total, per crop.
- Follow instructions for use of Dual Magnum under Application Procedures on the EPA- registered label.
- Harvest at normal timing.

Note: Applications of Dual Magnum may cause significant injury to crops on this label resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

DRY BULB ONIONS

Fall Preplant Application

For pre-emergent control or suppression of yellow nutsedge the following spring in dry bulb onions apply 1 to 1.33 pt/A of Dual Magnum in the fall after the harvest of the previous crop but before freeze-up. Fall applications of Dual Magnum can be surface-applied or incorporated. To reduce the risk of crop injury apply at least 100 days prior to the planting of onion (seed, sets, or transplants).

Precautions: 1) In general, the risk of crop injury is greater on lighter textured soils and with higher application rates. 2) The addition of another registered herbicide as a tank mixture or in a program with Dual Magnum can increase the risk of crop injury. 3) Deep tillage in the spring may reduce the effectiveness of fall applications.

Restrictions: (1) Make no more than one fall application per crop. (2) Apply not more than 1.33 pt/A in a single fall preplant application. (3) Do not apply this product, for this use, through any types of irrigation system. (4) Do not apply to frozen ground.

Note: Applications of Dual Magnum may cause significant injury to dry bulb onions resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower’s risk.

Postemergent Application to the Crop

For suppression and control of yellow nutsedge, grass, and some broadleaf weeds (see **Weeds Controlled** on the Dual Magnum label), apply Dual Magnum at the two (2) true leaf stage of onions at rates of 0.67 - 1.33 pints (0.64-1.27 lb active ingredient) per acre, depending on soil type and target weed. Use the lower rate on light, sandy soils and where a general weed spectrum is targeted. The higher rate will provide improved yellow nutsedge control, but comes with an increase risk of crop injury. One additional application of 0.67-1.33 pints may be applied 21 days or more after the first treatment, if needed, provided no fall preplant applications of Dual Magnum were made. Dual Magnum provides good to excellent control of yellow nutsedge. **If nutsedge is not a target weed delaying Dual Magnum application until onions have three true leaves may reduce the risk of crop injury.**

Onion tolerance to Dual Magnum increases with increasing onion size. However, growers must weigh the need to control early nutsedge flushes with the potential risk of crop injury.

Restrictions: (1) Do not apply within 60 days of harvest. (2) Do not harvest green onions. (3) Do not apply this product through any types of irrigation system. (4) Do not graze animals on green forage or stubble. (5) If a fall preplant application of Dual Magnum was used for nutsedge, only one post-emergent application at a maximum rate of 1.33 pints/A is allowed. (6) Do not apply more than 2.66 pints per acre to dry bulb onions as a combined total across all application timings and use patterns to produce that crop.

GREEN ONIONS

Apply a broadcast application of Dual Magnum at 0.67-1.33 pt/A postemergence at the two true-leaf stage of the green onions. In that rate range, use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Make uniform applications in a minimum of 15 gallons of water per treated acre. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means.

Precautions: (1) There is risk of crop injury from the use of Dual Magnum on green onions. In general, the risk of crop injury is greater on lighter textured soils and with higher application rates. (2) The addition of another registered herbicide as a tank mixture with Dual Magnum will increase the risk of crop injury.

Restrictions: (1) Make only one application per crop. (2) Do not harvest within 21 days of application.

Note: Applications of Dual Magnum may cause significant injury to green onions resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

SPINACH

Dual Magnum will not control emerged weeds. For effective weed control, Dual Magnum must be applied to clean-tilled soil.

Apply Dual Magnum at a broadcast rate of 0.33 – 0.67 pt/A to the soil surface as a preemergence application i.e. prior to crop and weed emergence. In that rate range, use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. A band application may also be used if the crop is not planted in a trench or depressed bed, applying proportionally less spray mixture on the area actually treated. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means. For irrigated spinach: Irrigate with sprinkler or by furrow irrigation within two days of Dual Magnum application.

Restrictions: (1) Do not incorporate. (2) Do not apply this product through any type of irrigation system. (3) Only one application of Dual Magnum permitted per spinach growing season on the same ground in one calendar year. (4) Do not exceed more than 0.67 pt/A Dual Magnum. (5) Do not harvest within 50 days of application.

Note: Applications of Dual Magnum may cause significant injury to spinach resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

SWISS CHARD

Apply a single broadcast treatment of Dual Magnum at 0.5 to 1.0 pt/A to the soil surface after planting, but before weeds or crop emerge (i.e., preemergence). In that rate range, use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means.

Restrictions: (1) At application, do not exceed 40-psi spray nozzle pressure. (2) Do not apply when temperatures exceed 85°F. (3) Do not apply as a tank mixture with nitrogen or fertilizer solutions, or other pesticides, as injury to the crop may result. (4) Do not flood or sprinkler irrigate immediately following application. (5) Do not exceed a total of 1.4 pt/A per year. (6) Do not harvest within 62 days of application.

Note: Applications of Dual Magnum may cause significant injury to Swiss chard resulting in reduced yields. This product is available to the end user/grower solely to the extent that the benefit and utility, in the opinion of the end user/grower, outweigh the extent of potential injury associated with the use of this product. Due to the risk of crop damage, all such use is at the end user/grower's risk.

PUMPKIN – DUAL MAGNUM ALONE

Apply Dual Magnum at a rate of 0.67 to 1.33 pt/A preemergence before crop or weeds have emerged, post-transplant (within 72 hrs) or postemergence to a crop having at least 4 true leaves following cultivation. Applications may be made broadcast or to row middles (inter-row). If Dual Magnum is applied as a broadcast spray over the planted row or hill, injury to the pumpkin crop can occur. Under heavy rain conditions, pumpkins may show significant stunting. Low rates, needed for crop safety on low organic matter soils, may not provide season-long weed control. Use the lower Dual Magnum rate on soils light in texture (loamy sand or lighter) and low in soil organic matter (less than 3%).

Restrictions:

1. Do not harvest pumpkins for 30 days following the application of Dual Magnum.
2. Do not exceed 1.33 pt/A of Dual Magnum per crop.
3. Do not apply during the fall or to frozen soils.

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24(c) Registrant:
Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, NC 27419-8300

Label Code: ME0816019AA0514

Note: It is illegal to sell, use or distribute this product within, or into, Nassau County or Suffolk County, New York.

PULL HERE TO OPEN

Dual Magnum®
Herbicide

syngenta®

For weed control in corn; cotton; grasses grown for seed; horseradish; peanuts; beans, peas, and lentils; potatoes; pumpkin; rhubarb; safflowers; sugar beets; sunflowers; sweet, grain or forage sorghum, soybean; soybean, immature seed; and tomatoes

Active Ingredient:

S-metolachlor (CAS No. 87392-12-9)	83.7%
Other Ingredients:	16.3%
Total:	**100.0%**

Dual Magnum contains 7.62 lbs. of active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-816 EPA Est. 070989-IA-001

Product of Switzerland Formulated in the USA

SCP 816A-L1U 1210
337398

2.5 gallons
Net Contents

™

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with eyes, skin, or clothing. May cause skin sensitization reactions in certain individuals.

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

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or Viton®
- Shoes plus socks

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

Mixers and loaders supporting aerial applications are required to use closed systems. The closed system must be used in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)]. When using the closed system, the mixers' and loaders' PPE requirements may be reduced or modified as specified in the WPS.

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.

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PRECAUTIONARY STATEMENTS (*continued*)

User Safety Recommendations

Users should:

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

Environmental Hazards

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 contaminate water when disposing of equipment wash water or rinsate.

Ground Water Advisory

The active ingredient in Dual Magnum has the potential to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

Surface Water Advisory

The active ingredient in Dual Magnum has the potential to contaminate surface water through ground spray drift. Under some conditions, the active ingredient may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying extremely shallow ground water, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlaying tile drainage systems that drain to surface water.

Mixing/Loading Instructions

Care must be taken when using this product to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check-valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

This product may not be mixed or loaded within 50 ft. of perennial or intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be mixed/loaded or used within 50 ft. of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 ft. of any well are prohibited, unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or wash water, and rain water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading site.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

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

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

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

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

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

DIRECTIONS FOR USE

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

Dual Magnum should be used only in accordance with recommendations on this label or in separately published EPA accepted supplemental labeling recommendations for this product.

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

AGRICULTURAL USE REQUIREMENTS

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

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 24 hours. Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

continued…

AGRICULTURAL USE REQUIREMENTS *(continued)*

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Chemical-resistant gloves, such as barrier laminate or Viton
- Shoes plus socks

FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN POOR WEED CONTROL, CROP INJURY, OR ILLEGAL RESIDUES.

To avoid spray drift, do not apply under windy conditions. Avoid spray overlap, as crop injury may result.

Note: Not for sale, use or distribution in Nassau County or Suffolk County, New York.

PRODUCT INFORMATION

Observe all precautions and limitations on the labels of each product used in tank mixtures. Tank mixtures are permitted only in those states where the tank mix partner is registered. Refer to and follow the label for each tank mix product used for precautionary statements, directions for use, geographic and other restrictions.

Dual Magnum is a selective herbicide recommended as a preplant surface-applied, preplant incorporated, or preemergence treatment in water or fluid fertilizer for control of most annual grasses and certain broadleaf weeds in corn (all types); cotton; grasses grown for seed; peanuts; beans, peas, and lentils; potatoes; safflowers; sugar beets; sunflowers; grain or forage sorghum; soybeans; soybean, immature seed; and tomatoes.

Note: Do not use in nurseries, turf, or landscape plantings.

Do not apply under conditions which favor runoff or wind erosion of soil containing this product to nontarget areas.

To prevent off-site movement due to runoff or wind erosion:

- Avoid treating powdery dry or light sand soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.
- Do not apply to impervious substrates, such as paved or highly compacted surfaces.
- Do not use tailwater from the first flood or furrow irrigation of treated fields to treat nontarget crops, unless at least 1/2 inch of rainfall has occurred between application and the first irrigation.

Where directions specify a Dual Magnum tank mixture with AAtrex® formulations, other brands of atrazine may be used. Follow the rates, recommendations, and limitations on the AAtrex or respective atrazine product label if other brands of atrazine are used.

Note: Certain states may have established rate limitations for atrazine within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.

If Dual Magnum is incorporated, any supplemental tillage before planting must not exceed the depth of incorporation.

Dry weather following preemergence application of Dual Magnum or a tank mixture may reduce effectiveness. Cultivate if weeds develop.

Where reference is made to weeds partially controlled, partial control can either mean erratic control from good to poor, or consistent control at a level below that generally considered acceptable for commercial weed control.

Precaution: Injury may occur following the use of Dual Magnum under abnormally high soil moisture conditions during early development of the crop.

SOIL TEXTURES AND HERBICIDE RATES

Where rates are based on coarse-, medium-, or fine-textured soils, it is understood that soil textural classes are generally categorized as follows:

Coarse	Medium	Fine	
Sand	Loam	Sandy clay loam	Sandy clay
Loamy sand	Silt loam	Silty clay loam	Silty clay
Sandy loam	Silt	Clay loam	Clay

Within rate ranges in the rate tables and elsewhere on this label, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter.

Note: Dual Magnum may be applied preemergence alone, or in combination with tank mix partners specified on this label, following preplant incorporated herbicides when used according to their label recommendations, provided that such use is not prohibited on the respective labels.

Thoroughly clean sprayer or other application device before using. Dispose of cleaning solution in a responsible manner. Do not use a sprayer or applicator contaminated with any other materials, or crop damage or clogging of the application device may result.

DUAL MAGNUM APPLIED ALONE

WEEDS CONTROLLED

Dual Magnum is taken up by the shoots and/or roots of emerging weeds. This uptake results in the inhibition of shoot and root tissue growth soon after weed germination. Because of this, Dual Magnum will not control emerged weeds and should be applied prior to weed emergence.

If Dual Magnum is incorporated, do not exceed a 2-3 inch depth. Any tillage after the Dual Magnum incorporation and before planting should not exceed 2-3 inches.

Dry weather following application of Dual Magnum may reduce weed control. Cultivate if weeds develop.

Where reference is made to weeds partially controlled, partial control can either mean erratic control from good to poor, or consistent control at a level below that generally considered acceptable for commercial weed control. Control of these weeds can be erratic, due partially to variable weather conditions. The following procedures may improve the control of weeds listed as partially controlled in Table 1:

- Thoroughly till soil to destroy germinating and emerged weeds.
- Plant crop into moist soil immediately after tillage. If Dual Magnum is to be used preemergence, apply at planting or immediately after planting.
- If available, sprinkler irrigate within 2 days after application. Apply 1/2-1 inch of water. Use lower water volume (1/2 inch) on *coarse-textured soils* and higher volume (1 inch) on *fine-textured soils*. Also, refer to the section on **Center Pivot Irrigation Application** for this method of applying Dual Magnum.
- If irrigation is not possible and rain does not occur within 2 days after planting and application, weed control may be decreased. Under these conditions, a uniform, shallow cultivation is recommended as soon as weeds emerge.

Table 1: Weeds Controlled or Partially Controlled by Dual Magnum Applied Prior to Weed Emergence

Common Name	Scientific Name	Weed Type	Control (C) or Partial Control (PC)
Barnyardgrass	*Echinochloa crus-galli*	Grass	C
Crabgrass, large	*Digitaria ischaemum*	Grass	C
Crabgrass, smooth	*Digitaria sanguinalis*	Grass	C
Crowfootgrass	*Dactyloctenium aegyptium*	Grass	C
Cupgrass, Prairie	*Eriochloa contracta*	Grass	C
Cupgrass, Southwestern	*Eriochloa acuminata*	Grass	C

continued…

Table 1: Weeds Controlled or Partially Controlled by Dual Magnum Applied Prior to Weed Emergence *(continued)*

Common Name	Scientific Name	Weed Type	Control (C) or Partial Control (PC)
Cupgrass, woolly	*Eriochloa villosa*	Grass	PC[1]
Foxtail, bristly	*Setaria verticillata*	Grass	C
Foxtail, giant	*Setaria faberi*	Grass	C
Foxtail, green	*Setaria viridis*	Grass	C
Foxtail, millet	*Setaria italica*	Grass	C
Foxtail, yellow	*Setaria pumila*	Grass	C
Goosegrass	*Eleusine indica*	Grass	C
Johnsongrass (seedling)	*Sorghum halepense*	Grass	PC
Millet, wild-proso	*Panicum miliaceum*	Grass	PC[1]
Panicum, fall	*Panicum dichotomiflorum*	Grass	C
Panicum, Texas	*Panicum texanum*	Grass	PC
Rice, red	*Oryza punctata*	Grass	C
Sandbur, field	*Cenchrus spinifex*	Grass	PC
Ryegrass, Italian	*Lolium multiflorum*	Grass	C
Sandbur, Southern	*Cenchrus echinatus*	Grass	PC
Shattercane	*Sorghum bicolor*	Grass	PC
Signalgrass, broadleaf	*Urochloa platyphylla*	Grass	C
Sorghum (volunteer)	*Sorghum bicolor*	Grass	PC
Witchgrass	*Panicum capillare*	Grass	C
Amaranth, Palmer	*Amaranthus palmeri*	Broadleaf	C
Amaranth, Powell	*Amaranthus powellii*	Broadleaf	C
Beggarweed, Florida	*Desmodium tortuosum*	Broadleaf	PC
Carpetweed	*Mollugo verticillata*	Broadleaf	C
Eclipta	*Eclipta prostrata*	Broadleaf	PC
Galinsoga, hairy	*Galinsoga quadriradiata*	Broadleaf	C
Galinsoga, smallflower	*Galinsoga parviflora*	Broadleaf	C
Nightshade, Eastern black	*Solanum ptychanthum*	Broadleaf	C
Nightshade, hairy	*Solanum physalifolium*	Broadleaf	PC
Pigweed, prostrate	*Amaranthus blitoides*	Broadleaf	C
Pigweed, redroot	*Amaranthus retroflexus*	Broadleaf	C
Pigweed, smooth	*Amaranthus hybridus*	Broadleaf	C
Pigweed, tumble	*Amaranthus albus*	Broadleaf	C

Common Name	Scientific Name	Weed Type	Control (C) or Partial Control (PC)
Purslane, common	*Portulaca oleracea*	Broadleaf	PC
Pusley, Florida	*Richardia scabra*	Broadleaf	C
Spiderwort, tropical	*Commelina benghalensis*	Broadleaf	C
Waterhemp, common	*Amaranthus rudis*	Broadleaf	C
Waterhemp, tall	*Amaranthus tuberculatus*	Broadleaf	C
Nutsedge, yellow	*Cyperus esculentus*	Sedge	C

[1] Refer to the corn section of this label for additional recommendations.

PREPLANT AND ROTATIONAL CROPS SECTION

Replanted Crop Directions:

This section covers replant crops that may be planted following a lost crop that has had an application of Dual Magnum.

If a crop treated with Dual Magnum is lost, any crop on this label, or on a supplemental Dual Magnum label, may be replanted immediately provided that the rate of Dual Magnum applied to the previous crop was not greater than the labeled rate for the crop to be replanted. If the first application was banded and the replant crop is planted in the center of the untreated bands, a second banded treatment may be applied at the rate for the use-pattern for the replant crop, provided the application does not overlap the first application band.

Rotational Crop Directions:

Do not rotate to food or feed crops other than those listed below. For all crops not listed, wait at least 12 months following the last application of Dual Magnum before planting.

Barley, oats, rye, or wheat may be planted 4 1/2 months following treatment.

Alfalfa may be planted 4 months following application. Clover may be seeded 9 months following application.

Important Notes: To avoid injury to rotational alfalfa or clover: 1) do not apply more than 1.9 lb. active ingredient per acre (2.0 pt. of Dual Magnum) in the previous crop, and 2) do not make lay-by or other postemergence applications of Dual Magnum in the previous crop.

Tobacco, buckwheat, and rice, may be planted in the next spring following treatment.

Below in the rotational crop subsections A through C is a listing of rotational crop options that are made possible through *S*-metolachlor tolerances which were established by the EPA as crop groupings.

Precautions: 1) Rotating to crops within these crop groupings at less than 60 days may result in crop injury. 2) If the rate of Dual Magnum applied in the previous crops was greater than the rate listed here (Sections A-C below), these crops cannot be planted until the following spring.

A. If not more than 1.33 pt./A of Dual Magnum was applied to the field, the following crops (as well as any listed under subsections B or C below) may be planted 60 days after the last application. A second application of a *S*-metolachlor containing product to the following crops is prohibited within 60 days of the original application.

Crop Subgroup 1B Root Vegetables – garden beet, edible burdock, carrot, celeriac, turnip-rooted chervil, chicory, ginseng, horseradish, turnip-rooted parsley, parsnip, radish, oriental radish, rutabaga, salsify, black salsify, Spanish salsify, skirret, and turnip.

Bulb Crops - garlic, green onion, dry bulb onion, shallot.

Winter squash (including pumpkins)

B. **If not more than 1.67 pt./A of Dual Magnum was applied to the field, the following crops (as well as any listed under subsection C below) may be planted 60 days after the last application. A second application of a *S*-metolachlor containing product to the following crops is prohibited within 60 days of the original application.**

Crop Group 8 Fruiting Vegetables, except Cucurbits and Tabasco Peppers – eggplant, groundcherry (*Physalis* spp.), pepino, peppers (bell, chili, cooking, pimento and sweet), tomatillo and tomato.

C. **If not more than 2.0 pt./A of Dual Magnum was applied to the field, the following crops may be planted 60 days after the last application. A second application of a *S*-metolachlor containing product to the following crops is prohibited within 60 days of the original application.**

Crop Subgroup 1C Tuberous and Corm Vegetables – arracacha, arrowroot, Chinese artichoke, Jerusalem artichoke, edible canna, bitter and sweet cassava, chayote (root), chufa, dasheen (taro), ginger, leren, potato, sweet potato, tanier, tumeric, yam bean, yam, true.

Bulb Crops – garlic, dry bulb and green onion, shallot.

Crop Subgroup 4B Leaf Petiole Vegetables – cardoon, celery, Chinese celery, celtuce, Florence fennel, rhubarb, and Swiss chard.

Crop Subgroup 5A Head and Stem Brassica Vegetables – broccoli, Chinese broccoli, brussel sprouts, cabbage, Chinese (napa) cabbage, Chinese mustard, cauliflower, cavalo broccolo and kohlrabi.

APPLICATION PROCEDURES

Application Timing

Dual Magnum alone or in tank mixtures with other labeled herbicides may be applied for weed control in certain crops at various times. Refer to the given crop section of the label to determine if application timings listed below are recommended.

- **Preplant Surface-Applied:** For minimum-tillage or no-tillage systems only, Dual Magnum alone and some Dual Magnum tank mixtures may be applied up to 45 days before planting certain crops. Use only split applications for treatments made 30-45 days before planting, with 2/3 the recommended broadcast rate for the crop and soil texture applied initially and the remaining 1/3 at planting. Treatments less than 30 days before planting may be made either as a split or a single application. Refer to individual crop section on this label to determine if early preplant surface application is recommended. If weeds are present at the time of treatment, apply in a tank mixture combination with a contact herbicide (for example, Gramoxone Inteon®, Touchdown® brands, or Roundup® brands). Observe directions for use, precautions, and restrictions on the label of the contact herbicide. To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.
- **Preplant Incorporated:** Apply Dual Magnum to the soil and incorporate into the top 2 inches of soil within 14 days before planting, using a finishing disk, harrow, rolling cultivator, or similar implement capable of providing uniform 2-inch incorporation. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. If crop will be planted on beds, apply and incorporate Dual Magnum after bed formation, unless specified otherwise.
- **Preemergence:** Apply Dual Magnum during planting (behind the planter) or after planting, but before weeds or crops emerge.
- **Postemergence:** Dual Magnum will not control emerged weeds so it must be applied to a weed-free soil surface or in tank mixture with products that provide postemergence control of weeds present at the time of application. Refer to the individual crop section of this label if a postemergence application is recommended.

Special Application Procedures

- **CA Only (Corn; Safflowers; Beans, Peas, and Lentils): Preplant Incorporated:** Broadcast Dual Magnum alone or with tank mix partners listed on this label to the soil and thoroughly incorporate with a disk or similar implement set to till 4-6 inches deep. For more thorough incorporation, till the soil in 2 different directions (cross-till). Crops may be planted on flat surface or on beds. Caution should be used when forming the beds that only soil from the Dual Magnum treated zone is used (i.e., untreated soil should not be brought to soil surface). If the application is made to preformed beds, incorporate Dual Magnum with a tillage implement set to till 2-4 inches deep. Care should be taken during tilling to keep the tilled (Dual Magnum treated) soil on the beds. **Preemergence:** Apply Dual Magnum after planting. Water with sprinkler or flood irrigation within 7-10 days.

- **Fall Application for Spring Weed Control (Only in IA, MN, ND, SD, WI, and portions of NE and IL - See specific instructions in the Corn; Soybeans; and Beans, Peas, and Lentils sections of this label for timing of application and other information):** Do not apply to frozen ground. Use on medium and fine soils with greater than 2.5% organic matter that will be planted to corn or soybeans the next spring. Ground may be tilled before or after application. Do not exceed a 2 to 3-inch incorporation depth if tilled after treatment. **Note:** If a spring application is made, the total rate of the fall plus spring applications must not exceed the maximum total rate for the specific crop, or illegal residues may result.
- **Fall Application for Italian Ryegrass Control (Corn, Cotton, Grain and Forage Sorghum, and Soybean Only – See specific instructions in the Corn, Cotton, Grain and Forage Sorghum, and Soybean sections of this label for timing of application and other information):** Dual Magnum may be applied in the fall (September 1-December 1) for residual control of glyphosate-resistant Italian ryegrass (*Lolium multiflorum*). A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Dual Magnum. **Notes:** 1) Do not apply Dual Magnum to frozen ground. 2) All crops on the Dual Magnum label may be planted the following spring after application. 3) If a spring application is made, the combined total amount of Dual Magnum applied in the fall plus the spring must not exceed the maximum seasonal *S*-metolachlor rate for the specific crop planted, or illegal residues may result. 4) Refer to the crop sections on this label for specific directions.

Ground Application: Apply Dual Magnum alone or in tank mixtures by ground equipment in a minimum of 10 gals. of spray mixture per acre, unless otherwise specified.

Use sprayers that provide accurate and uniform application. For Dual Magnum tank mixtures with wettable powder or dry flowable formulations, screens and strainers should be no finer than 50-mesh. Rinse sprayer thoroughly with clean water immediately after use.

Calculate the amount of herbicide needed for band treatment by the formula:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{amount needed per acre of field}$$

For information on applying in lower volumes of carrier, see **Low Carrier Application** section.

For application by air or through center pivot systems, see **Aerial Drift Management** and **Aerial Drift Reduction Advisory Information** sections.

For information on impregnating dry fertilizer, see **Dry Bulk Granular Fertilizers** section.

For information on application using variable-rate technologies, see **Variable-Rate Application** section.

SPRAY EQUIPMENT

LOW CARRIER APPLICATION

For Broadcast Ground Application Only

Use sprayers, such as Ag-Chem RoGator®, Hagie, John Deere Hi-Cycle™, Melroe Spra-Coupe, Tyler Patriot™, or Willmar Air Ride®, that provide accurate and uniform application. **Only water may be used as a carrier.** Screens in suction and in-line strainers should be 50-mesh. Manufacturers may require that tip screens as fine as 100-mesh be used with some nozzles. Use a pump with capacity to: (1) maintain up to 35-40 psi at the nozzles, and (2) provide sufficient agitation in tank to keep mixture in suspension. Use a minimum of 5.0 gals. of spray mixture per acre. Maximum recommended sprayer speed is 15 mph. Rinse sprayer thoroughly with clean water immediately after each use.

Note: Low pressure nozzles are recommended to reduce drift and increase application accuracy. Care should be taken when using automatic rate controlling devices to spray the material within the rated working pressure and flow ranges of the nozzles selected. Nozzle screens should be used when recommended by the manufacturer. All nozzles should be placed on 20-inch centers, except flooding types which should be placed on 40-inch centers. When Flat Fan-type nozzles are used, angles of 80° or 110° are recommended. Always read and follow the manufacturer's directions for optimum setup and performance of their nozzles or tips.

AERIAL APPLICATION

Apply Dual Magnum in water alone or in tank mixtures with AAtrex, Lorox®, or Sencor® in a minimum total volume of 2.0 gals./A by aircraft. Dual Magnum may also be applied by air in combination with Balan®, Prowl®, or Treflan®. Avoid application under conditions where uniform coverage cannot be obtained or where excessive spray drift may occur. In order to assure that spray will be controllable within the target area when used according to label directions, make applications at a maximum height of 10 ft., using low-drift nozzles at a maximum pressure of 40 psi, and restrict application to periods when wind speed does not exceed 10 mph. To assure that spray will not adversely affect adjacent sensitive nontarget plants, apply Dual Magnum alone or Dual Magnum + AAtrex by aircraft at a minimum upwind distance of 400 ft. from sensitive plants, or apply Dual Magnum, Lorox, or Sencor at a minimum upwind distance of 300 ft. from sensitive plants.

Aerial Drift Management

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

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

- The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
- Nozzles must always point backward parallel with the air stream and never be pointed downward more than 45 degrees.

Where states have more stringent regulations, they must be observed.

The applicator should be familiar with and take into account the information covered in the **Aerial Drift Reduction Advisory Information** section below.

Aerial Drift Reduction Advisory Information

Information on Droplet Size

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

Controlling Droplet Size

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

Application Height

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

Swath Adjustment

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

Wind

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

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is greatest when conditions are both hot and dry.

Temperature Inversions

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

Sensitive Areas

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

Avoid application to humans or animals. Flagmen and loaders should avoid inhalation of spray mist and prolonged contact with skin.

CENTER PIVOT IRRIGATION APPLICATION

Dual Magnum alone or in tank mixture with other herbicides on this label, which are registered for center pivot application, may be applied in irrigation water preemergence (after planting, but before weeds or crop emerge) at rates recommended on this label. Dual Magnum also may be applied postemergence to the crop and preemergence to weeds in crops where postemergence applications are allowed on this label. Follow all restrictions (height, timing, rate, etc.) to avoid illegal residues. Apply this product only through a center pivot irrigation system. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension specialists, equipment manufacturers, or other experts. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label-prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Operating Instructions

- The system must contain a functional check-valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water-source contamination from backflow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check-valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

- The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump or piston pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.
- Prepare a mixture with a minimum of 1 part water to 1 part herbicide(s) and inject this mixture into the center pivot system. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide in suspension.
- Meter into irrigation water during entire period of water application.
- Apply in 1/2-1 inch of water. Use the lower water volume (1/2 inch) on *coarse-textured soils* and the higher volume (1 inch) on *fine-textured soils*. More than 1 inch of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

Precaution for center pivot applications: Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, crop injury may result.

DRY BULK GRANULAR FERTILIZERS

Many dry bulk granular fertilizers may be impregnated or coated with Dual Magnum alone or selected Dual Magnum tank mixtures which are registered for preplant incorporated or preplant surface applications which are used to control weeds in crops on the Dual Magnum label and are not prohibited from use on dry bulk granular fertilizers.

When applying Dual Magnum or Dual Magnum mixtures with dry bulk granular fertilizers, follow all directions for use and precautions on the respective product labels, regarding target crops, rates per acre, soil texture, application methods (including timing of application), and rotational crops.

All individual state regulations relating to dry bulk granular fertilizer blending, registration, labeling, and application are the responsibility of the individual and/or company selling the herbicide/fertilizer mixture.

Prepare the herbicide/fertilizer mixtures by using any closed drum, belt, ribbon, or other commonly used dry bulk fertilizer blender. Nozzles used to spray Dual Magnum and Dual Magnum mixtures onto the fertilizer must be placed to provide uniform spray coverage. Care should be taken to aim the spray directly onto the fertilizer only and to avoid spraying the walls of the blender.

If the herbicide/fertilizer mixture is too wet, add a highly absorptive material, such as Agsorb® or Celatom MP-79®, or similar granular clay or diatomaceous earth materials, to obtain a dry, free-flowing mixture. Absorptive materials should be added only after the herbicide has been thoroughly blended into the fertilizer mixture. Best application results will be obtained by using a granule of 6/30 particle size or of a size similar to that of the fertilizer material being used. Generally, less than 2% by weight of absorptive material will be needed. Avoid using more than 5% absorptive material by weight.

Calculate amounts of Dual Magnum, AAtrex, AAtrex + Princep®, Balance® Pro, Princep, Sencor, or Sonalan® by the following formula:

$$\frac{2000}{\text{lbs. of fertilizer per acre}} \times \text{pts./A of liquid or flowable product} = \text{pts. of liquid or flowable product per ton of fertilizer}$$

$$\frac{2000}{\text{lbs. of fertilizer per acre}} \times \text{lbs./A of dry product} = \text{lbs. of dry product per ton of fertilizer}$$

Pneumatic (Compressed Air) Application (Dual Magnum Alone): High humidity, high urea concentrations, low fertilizer use rates, and dusty fertilizer may cause fertilizer mixture to build up or plug the distributor head, air tubes, or nozzle deflector plates. To minimize buildup, premix Dual Magnum with Exxon Aromatic 200 at a rate of 1.0-4.0 pts./gal. of Dual Magnum. Aromatic 200 is a noncombustible/nonflammable petroleum product. Aromatic 200 may be used in either a fertilizer blender or through direct injection systems. Drying agents should not be used when using Aromatic 200.

Notes: (1) Mixtures of Dual Magnum and Aromatic 200 must be used on dry fertilizer only. Poor results or crop injury may result if these mixtures are used in water or liquid fertilizer solutions for spraying applications. (2) When impregnating Dual Magnum in a blender before application, a drier mixture can be attained by substituting a drying agent for Aromatic 200. The use of Agsorb FG or drying agents of 6/30 particle size are recommended. (3) Drying agents are not recommended for use with On-The-Go impregnation equipment.

Precautions: To avoid potential for explosion, (1) Do not impregnate Dual Magnum or Dual Magnum mixtures on ammonium nitrate, potassium nitrate, or sodium nitrate, either alone or in blends with other fertilizers. (2) Do not use Dual Magnum or Dual Magnum mixtures on straight limestone, since absorption will not be achieved. Fertilizer blends containing limestone can be impregnated.

Application

Apply 200-700 lbs. of the herbicide/fertilizer mixture per acre. For best results, apply the mixture uniformly to the soil with properly calibrated equipment immediately after blending. Uniform application of the herbicide/fertilizer mixture is essential to prevent possible crop injury. Nonuniform application may also result in unsatisfactory weed control. In areas where conventional tillage is practiced, a shallow incorporation of the mixture into the soil may improve weed control. On fine- or medium-textured soils in areas where soil incorporation is not planned, i.e., reduced tillage situations or in some conventional till situations, make applications approximately 30 days before planting to allow moisture to move the herbicide/fertilizer mixture into the soil. On coarse-textured soils, make applications approximately 14 days prior to planting.

Precaution: To avoid crop injury, do not use the herbicide/fertilizer mixture on crops where bedding occurs.

MIXING INSTRUCTIONS

Dual Magnum Alone: Mix Dual Magnum with water or fluid fertilizer and apply as a spray. Fill the spray tank 1/2-3/4 full with water or fluid fertilizer, add the proper amount of Dual Magnum, then add the rest of the water or fluid fertilizer. Provide sufficient agitation during mixing and application to maintain a uniform emulsion.

Tank Mixtures: Fill the spray tank 1/4 full with water, and start agitation; add 2,4-D, AAtrex, Balance Pro, Balan, Banvel®, Basagran®, Butoxone®, Butyrac®, Canopy®, Caparol® 4L, Command®, Cotoran®, Eptam®, Liberty® Herbicide, Liberty ATZ Herbicide, Lorox, Marksman®, MSMA, Princep, Prowl, Pursuit®, AAtrex + Princep, Scepter®, Sencor, Sonalan, or Treflan, and allow it to become dispersed; then add Dual Magnum; then add Gramoxone Inteon, Landmaster® BW, Touchdown, or Roundup (glyphosate products) if these products are being used; and finally the rest of the water. For tank mixtures with AAtrex, Balance, Banvel, Canopy, Caparol 4L, Command, Cotoran*, Eptam, Lorox, Marksman, Princep, Prowl*, Pursuit, AAtrex + Princep, Scepter, Sencor, Sonalan, or Treflan, fluid fertilizers may replace all or part of the water as carrier, except in the AAtrex postemergence and the Banvel postemergence tank mixes. For tank mixtures with AAtrex, see additional mixing instructions on the AAtrex label. For each mixture, check compatibility with fluid fertilizer, as described below, before mixing in spray tank. For all tank mixtures, agitate during mixing and application to maintain a uniform suspension.

*See **Special Mixing Instructions** for tank mixtures with Cotoran and with AAtrex or Princep + Prowl under the appropriate tank mixture section.

For directions on how to conduct a compatibility test, see the **Compatibility Test** section.

COMPATIBILITY TEST

A jar test is recommended before tank mixing to ensure compatibility of Dual Magnum with other pesticides. The following test assumes a spray volume of 25 gals./A. For other spray volumes, make appropriate changes in the ingredients.

Note: Nitrogen solutions or complete fluid fertilizers may replace all or part of the water in the spray. Because liquid fertilizers vary, even within the same analysis, **always check compatibility with pesticide(s) before use**. Incompatibility of tank mixtures is more common with suspensions of fertilizer and pesticides.

Test Procedure

1. Add 1.0 pt. of carrier (fertilizer or water) to each of 2 one qt. jars with tight lids. **Note:** Use the same source of water that will be used for the tank mix and conduct the test at the temperature the tank mix will be applied.

2. To one of the jars, add 1/4 tsp. or 1.2 milliliters of a compatibility agent approved for this use, such as Compex or Unite (1/4 tsp. is equivalent to 2.0 pts./100 gals. spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of pesticide(s) in their relative proportions based on recommended label rates. If more than one pesticide is used, add them separately with dry pesticides first, flowables next, and emulsifiable concentrates last. After each addition, shake or stir gently to thoroughly mix.
4. After adding all ingredients, put lids on and tighten, and invert each jar ten times to mix. Let the mixtures stand 15-30 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar, or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates, but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (a) Slurry the dry pesticide(s) in water before addition, or (b) add 1/2 the compatibility agent to the fertilizer or water and the other 1/2 to the emulsifiable concentrate or flowable pesticide before addition to the mixture. If incompatibility is still observed, do not use the mixture.
5. After compatibility testing is complete, dispose of any pesticide wastes in accordance with the **Storage and Disposal** section in this label.

CROP USE DIRECTIONS

CORN (ALL TYPES) – DUAL MAGNUM ALONE

Apply Dual Magnum, either preplant surface, preplant incorporated, preemergence, or lay-by, using the appropriate rate specified below.

PREPLANT SURFACE-APPLIED

Refer to instructions for use of Dual Magnum alone under **Application Procedures**.

Fall Application for Spring Weed Control:

- Apply after September 30 in ND, SD, MN, WI, and north of Route 30 in IA.
- Apply after October 15 north of Route 91 in NE and south of Route 30 in IA.
- Apply after October 31 north of Route 136 in IL.

In all locations, apply to crop stubble after harvest when the sustained soil temperature at a 4-inch depth is less than 55°F and falling. In minimum-till or no-tillage systems on soils having greater than 2.5% organic matter, use 1.67-2.0 pts./A on *medium-textured* and 2.0 pts./A on *fine-textured soils*. Do not apply to frozen ground. A tillage operation may precede the application. A fall and/or a spring tillage may follow application, but do not exceed an incorporation depth greater than 2-3 inches. Minimize furrow and ridge formation in the tillage operations. **Note:** If a spring application is made, the total rate of the fall plus spring applications must not exceed the maximum total rate for corn, or illegal residues may result.

Fall Application for Italian Ryegrass Control: Dual Magnum may be applied for residual control of glyphosate-resistant Italian ryegrass (*Lolium multiflorum*). Apply Dual Magnum at 1.33-1.67 pints/Acre in the fall (September 1–December 1) after harvest of the previous crop and prior to Italian ryegrass emergence. Use the lower Dual Magnum rate for coarse-textured soils and the higher rate for fine-textured soils. A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Dual Magnum. For fall applications after emergence of glyphosate-resistant Italian ryegrass, Gramoxone Inteon can be tank mixed with Dual Magnum to control emerged ryegrass. Refer to the Gramoxone Inteon label for specific rates, application instructions and restrictions. Other registered herbicides may be tank mixed with Dual Magnum for control or improved control of other weeds present at the time of application. *Precautions: (1) Do not apply Dual Magnum to frozen ground. (2) If a spring application is made, the combined total amount of Dual Magnum applied in the fall plus the spring must not exceed the maximum seasonal S-metolachlor rate for corn (3.9 pt/A depending on soil texture), or illegal residues may result.*

Fall Application for Control or Suppression of Yellow Nutsedge (ID, OR and WA only): For pre-emergent control or suppression of yellow nutsedge the following spring, apply 1.33 pt/A of Dual Magnum in the fall after the harvest of the previous crop but before freeze-up. Fall applications of Dual Magnum can be surface-applied or incorporated. **Restrictions:** (1) Make no more than one fall application per crop. (2) Apply not more than 1.33 pt/A in a single fall preplant application. (3) Do not apply to frozen ground. (4) If a spring application is made, the combined total amount of Dual Magnum applied in the fall plus the spring must not exceed the maximum seasonal *S*-metolachlor rate for corn (3.9 pt/A depending on soil texture), or illegal residues may result.

Early Preplant Applications

A. Use on medium- and fine-textured soils with minimum-tillage or no-tillage systems in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, TN, WI, and WY. Apply 2/3 the recommended rate of Dual Magnum (1.67 pts./A on *medium soils* and 2.0 pts./A on *fine soils*) as a split treatment 30-45 days before planting and the remainder at planting. Applications made less than 30 days prior to planting may be as either a split or single treatment. Apply 1.33 pts./A on *coarse soils* not more than 2 weeks prior to planting. **Note:** If a spring application is made, the total rate of the fall plus spring application must not exceed the maximum total rate for corn, or illegal residues may result.

B. On medium- and fine-textured soils with minimum- or no-tillage systems in CT, DE, MA, MD, ME, MI, NH, NY, OH, PA, RI, VA, VT, and WV, preplant surface applications may be applied following the directions for use above. If the amount of rainfall results in unsatisfactory length of weed control following the earlier treatment, a postemergence application of an appropriately labeled broadleaf and/or grass weed herbicide may be used, i.e., AAtrex, Beacon®, Bicep Magnum, Bicep II Magnum®, Exceed®, Accent®, Banvel, Basagran, bromoxynil (Brominal® or Buctril®), or 2,4-D. If the postemergence treatment includes the herbicide used preplant surface-applied, do not exceed the total labeled rate for corn on a given soil texture. Observe all directions for use, precautions, and limitations on the label of the postemergent herbicide.

PREPLANT INCORPORATED OR PREEMERGENCE

Follow instructions for use of Dual Magnum alone under **Application Procedures**. On *coarse soils*, apply 1.0-1.33 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.33 pts./A if organic matter content is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.67-2.0 pts./A if organic matter content is 3% or greater.

POSTEMERGENCE OR LAY-BY

To extend the duration of weed control in corn, a maximum rate of 2.0 pts./A of Dual Magnum may be applied after corn emergence until the corn plants reach 40 inches in height, following any preplant surface-applied, preplant incorporated, or preemergence herbicide application, including Dual Magnum. For best results, applications should be made to soil free of emerged weeds and directed toward the base of corn plants in excess of 5 inches tall. The total Dual Magnum rate applied on corn during any one crop year should not exceed 3.9 pts./A, depending on soil texture.

Note for all applications to corn: To avoid possible illegal residues, (1) do not graze or feed forage from treated areas for 30 days following application and (2) do not harvest sweet corn ears from treated areas for 30 days following application.

PROBLEM WEED CONTROL DIRECTIONS

Shattercane, Wild Proso Millet, Woolly Cupgrass, and Eclipta – Partial Control: For more consistent partial control of shattercane, wild proso millet, woolly cupgrass, or eclipta, apply 1.0-1.33 pts./A of Dual Magnum preplant incorporated followed by 1.0-1.33 pts./A of Dual Magnum preemergence. Make the preemergence application during or after planting, but before weeds and corn emerge. Apply the 1.33 pts./A rate of Dual Magnum when a heavy infestation of shattercane, wild proso millet, woolly cupgrass, or eclipta is expected. A shallow cultivation may be needed to control any late emerging weeds.

Woolly Cupgrass and Wild Proso Millet Control Program: For control of these species, use the following 3-step program: (1) Apply Dual Magnum early preplant, preplant incorporated, or preemergence at 1.67 pts./A on *medium soils* and 2.0 pts./A on *fine-textured soils*, up to the maximum label rate. Lightly incorporate with a rotary hoe if rainfall does not occur within 5-7 days; (2) Apply a postemergence tank mix of Beacon at 0.38 oz./A or Exceed at 1 packet per 4 acres plus Accent SP at 0.33 oz./A plus 1.0 qt. of crop oil concentrate plus 1.0 gal./A of 28% nitrogen, or the equivalent amount of ammonium sulfate, when grasses are 2-3 inches tall and the corn is at least 4 inches tall; and (3) Cultivate 14-21 days after the postemergence application.

Notes: (1) Do not apply more than the labeled application rate for a given soil texture per year, either as a single or split treatment, or illegal residues may result. (2) In corn, Dual Magnum may be used up to 2.6 pts./A as either a preplant surface, preplant incorporated, or preemergence treatment on soils having an organic matter content between 6% and 20%. (3) In the event of escape of annual weeds following a preplant surface, preplant incorporated, or preemergence treatment of Dual Magnum, follow with a postemergence application of an appropriately labeled broadleaf and/or grass weed herbicide, i.e., AAtrex, Beacon, Bicep II Magnum, Exceed, Accent, Banvel, Basagran, Brominal, Buctril, or 2,4-D. If the postemergence treatment includes the herbicide used in the earlier treatment, do not exceed the total labeled rate for corn on a given soil texture. (4) Brominal or Buctril may be applied postemergence alone or in tank mix combination with AAtrex. Do not exceed 1.2 lbs. a.i./A of AAtrex in tank mix combination with Brominal or Buctril postemergence. Refer to the AAtrex, Brominal, and Buctril labels for specific rates and precautions. (5) Do not use Dual Magnum on peat or muck soils.

CORN – DUAL MAGNUM COMBINATIONS

Dual Magnum in any tank mixture for corn may be applied in water or fluid fertilizer before corn emerges. Use only water as a carrier when Dual Magnum is applied after corn emergence.

Note: For all applications to corn, (1) do not graze or feed forage from treated areas for 30 days following application, or possible illegal residues may result and (2) do not harvest sweet corn ears from treated areas for 30 days following application.

IMPORTANT: FOR TANK MIXTURES WITH AATREX (OR OTHER BRANDS OF ATRAZINE) – If applying Dual Magnum in tank mixture with AAtrex, all the restrictions and rate limitations on the AAtrex label must be followed if more restrictive/ protective than those on this label. In addition, if AAtrex is/must be applied at rates lower than those recommended on this label, broadleaf weed control may be affected. Refer to the AAtrex label for weeds controlled at the reduced rates.

Table 2: Dual Magnum Tank Mixtures for Corn – Additional Weeds Controlled and Special Instructions

	Dual Magnum + AAtrex and/or Princep (Preplant Surface, PPI, PRE)	Dual Magnum + AAtrex (Post)	Dual Magnum + Banvel (Field Corn)	Dual Magnum + AAtrex + Lorox	Dual Magnum + AAtrex or Princep + Prowl	Dual Magnum + Marksman	Dual Magnum + Balance Pro*
Special Mixing Instructions					1		
Comments	2,3,4,5,7,8	2,3,4,5		2,3,4,5,6	2,3,4,5	7	2,3,7
Browntop panicum	●			●	●		
Cocklebur	●	O	O	●	●	●	
Common purslane	●			●	●	●	●
Hairy nightshade	●			●	●	●	
Jimsonweed		●	O			●	●
Kochia		●				●	●
Lambsquarters	●	●	●	●	●	●	●
Morningglory	●	O	O	●	●	●	
Mustard		●				●	●
Pigweed				●	●	●	●
Prickly sida		●				●	
Ragweed	●	●	●	●	●	●	●
Smartweed	●	●	●	●	●	●	●
Velvetleaf	●	●	O	●	●	●	O-●

● = control; O = partial control; O-● = partial to full control depending on ratio of products used or on weed population

*Field corn only

Comments

1. **Special Mixing Instructions for Dual Magnum + AAtrex or Princep and Prowl:** (A) Fill the spray tank 1/4 full with water or fluid fertilizer and start agitation. (B) To aid compatibility, add a compatibility agent, such as Unite or X-77®, at 4.0 pts./100 gals. of spray mixture. (C) Then add the AAtrex or Princep and allow it to become dispersed. (D) Then add Dual Magnum and Prowl 4E. (E) Add the rest of the water.
2. Although a single formulation for AAtrex or Princep is listed in the rate tables, other formulations may be substituted, using the following formula:
   - 1.0 lb. of AAtrex Nine-O® or Princep Caliber 90® = 1.8 pts. of AAtrex 4L or Princep 4L.
3. Although directions specify AAtrex formulations in tank mixture with Dual Magnum, other brands of atrazine may be used. Follow the rates, recommendations, and limitations on the atrazine label.
4. See additional mixing instructions on the AAtrex label.
5. *Precaution: Do not exceed a total of 2.5 lbs. a.i. of atrazine per acre per year. However, certain states may have established rate limitations for atrazine within specific geographical areas. Consult your state lead pesticide control agency for additional information. It is a violation of this label to deviate from state use regulations.*
6. Other formulations of Lorox can be used: 1.0 lb. of Lorox DF = 1.0 pt. of Lorox L.
7. In Minimum-Tillage and No-Tillage systems, mix with Gramoxone Inteon for control of most emerged annual weeds and suppression of perennial weeds; or with Landmaster BW for suppression of emerged field bindweed and control or suppression of annual weeds; or with Touchdown brands or Roundup brands for control of most emerged annual and perennial weeds.
8. Refer to the **Corn – Dual Magnum Combinations – Tank Mixture with AAtrex or AAtrex + 2,4-D; or AAtrex + 2,4-D + Banvel for Minimum Tillage or No-Tillage Systems** section for specific directions for 2,4-D or Banvel burndown combinations with Minimum-Tillage and No-Tillage systems.

Dual Magnum in any tank mixture for corn may be applied in water or fluid fertilizer, except as noted.

Notes: (1) For all applications to corn, do not graze or feed forage from treated areas for 30 days following application and do not harvest sweet corn ears from treated areas for 30 days following application, or possible illegal residues may result. (2) When applying Dual Magnum in tank mixture with AAtrex, do not exceed a total of 2.5 lbs. a.i. of atrazine per acre per year. (3) Refer to **Corn (All Types) – Dual Magnum Alone**, for recommended sequential postemergence treatments if escape weeds develop.

TANK MIXTURE WITH AATREX OR PRINCEP, OR AATREX + PRINCEP – PREPLANT SURFACE, PREPLANT INCORPORATED, OR PREEMERGENCE

In addition to the weeds controlled by Dual Magnum alone, Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep, applied preplant surface, preplant incorporated, or preemergence, also controls the following weeds: browntop panicum, cocklebur, common purslane, hairy nightshade, lambsquarters, morningglory, ragweed, smartweed, and velvetleaf.

Apply Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep either preplant surface, preplant incorporated, or preemergence.

Preplant Surface-Applied: Follow instructions for use of Dual Magnum alone under **Application Procedures** and under application instructions for Dual Magnum alone on corn. Apply Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep on *medium soils* (1.67 pts./A of Dual Magnum + 3.2-4.0 pts./A of AAtrex 4L or Princep 4L, or AAtrex 4L + Princep 4L combined) and on *fine soils* (1.67-2.0 pts./A of Dual Magnum + 4.0 pts./A of AAtrex 4L or 4.0-5.0 pts./A of Princep 4L, or AAtrex 4L + Princep 4L combined) in minimum-tillage and no-tillage systems in CO, IA, IL, IN, KS, KY, MN, MO, MT, ND, NE, SD, TN, WI, and WY. Apply the tank mixtures as a split or single treatment in those states and as indicated in the **Dual Magnum Alone – Preplant Surface-Applied** section of the label for corn. On *coarse soils*, apply 1.33 pts./A of Dual Magnum and 3.2 pts./A of AAtrex 4L or Princep 4L, or AAtrex 4L + Princep 4L combined.

Preplant Incorporated or Preemergence: Follow instructions for use of Dual Magnum alone under **Application Procedures**. Apply Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep, using the appropriate rates from Table 3.

Note: Do not apply more than the labeled rate for a given soil texture per year, either as a split or single treatment, or illegal residues may result.

Shattercane and Wild Proso Millet – Partial Control

For more consistent partial control of shattercane or wild proso millet, where Dual Magnum is applied in tank mixture or sequentially with other registered corn herbicides, the following applications may be made:

- Apply 1.0-1.33 pts./A of Dual Magnum + 2.0 lbs. a.i./A of AAtrex or Princep preplant incorporated, followed by 1.0-1.33 pts./A of Dual Magnum preemergence. Make the preemergence application during or after planting, but before weeds and corn emerge.
- Apply Dual Magnum at 1.33 pts./A alone or in tank mix combination with up to 2.0 lbs. a.i./A of AAtrex or Princep preplant incorporated. Do not exceed the total rate of triazine herbicide recommended in combination with Dual Magnum for corn grown on a given soil texture. Follow with a post-directed application of Evik® 80W at 2.5 lbs./A. Refer to the Evik 80W label for specific directions for the post-directed application.
- Apply Eradicane® (or equivalent EPTC or butylate formulations) at labeled rates preplant incorporated, followed by a preemergence application of Dual Magnum at 1.0-1.33 pts./A. Do not use Eradicane on soils where rapid degradation has been shown to occur. Make the preemergence application during or after planting, but before weeds and corn emerge.

Precaution: When following the application regimes in numbers 1-3 above, a shallow cultivation may be needed after the preemergence or postemergence application to help control any late emerging shattercane or wild proso millet plants.

Note: Do not exceed a total of 1.9 lbs. a.i./A (2.0 pts. of Dual Magnum) in the preplant incorporated plus preemergence application on soils with less than 6% organic matter, or crop injury may occur.

Table 3: Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep, Preplant Incorporated or Preemergence – Corn (All Types)

Soil Texture	Broadcast Rates Per Acre					
	<3% Organic Matter			3% Organic Matter or Greater		
	Dual Magnum + AAtrex Nine-O* or Princep Caliber 90*	or	Dual Magnum + AAtrex Nine-O** + Princep Caliber 90**	Dual Magnum + AAtrex Nine-O* or Princep Caliber 90*	or	Dual Magnum + AAtrex Nine-O** + Princep Caliber 90**
Coarse	0.8-1.0 pt. + 1.1-2.2 lbs.		0.8-1.0 pt. + 0.6-1.1 lbs. + 0.6-1.1 lbs.	1.0 pt. + 1.3-2.2 lbs.		1.0 pt. + 0.7-1.1 lbs. + 0.7-1.1 lbs.
Medium	1.0-1.33 pts. + 1.3-2.2 lbs.		1.0-1.33 pts. + 0.7-1.1 lbs. + 0.7-1.1 lbs.	1.33 pts. + 1.8-2.2 lbs.		1.33 pts. + 0.9-1.1 lbs. + 0.9-1.1 lbs.
Fine	1.33 pts. + 1.8-2.2 lbs.		1.33 pts. + 0.9-1.1 lbs. + 0.9-1.1 lbs.	1.33-1.67 pts. + 1.8-2.2 lbs.***		1.33-1.67 pts. + 0.9-1.1 lbs.*** + 0.9-1.1 lbs.***
Muck or Peat (soils with >20% organic matter)	**DO NOT USE**					

*Use Princep in preference to AAtrex when heavy infestations of crabgrass or fall panicum are expected. On soils having between 6% and 20% organic matter, Dual Magnum may be used up to 2.33 pts./A in tank mix combination with 2.2 lbs./A of AAtrex Nine-O, or equivalent rates of AAtrex 4L. Refer to the AAtrex label for weeds controlled at this reduced rate.

**When using the tank mixture of Dual Magnum + AAtrex Nine-O + Princep Caliber 90, use equal rates of each as shown when heavy broadleaf weed infestations are expected. When heavy infestations of crabgrass or fall panicum are expected, use a 1:2 ratio of AAtrex + Princep instead of the 1:1 ratio given in Table 3. (*Example:* Total AAtrex Nine-O + Princep Caliber 90 = 1.2 lbs./A, use 0.4 lb. of AAtrex + 0.8 lb. of Princep, respectively.) Refer to Comment No. 2 following Table 2 for AAtrex 4L and Princep 4L conversions.

***For cocklebur, yellow nutsedge, and velvetleaf control on *fine-textured soils* above 3% organic matter, apply 2.25 lbs./A of AAtrex Nine-O, or equivalent rates of AAtrex 4L, or the same total amount of AAtrex + Princep with 1.33-1.67 pts./A of Dual Magnum.

TANK MIXTURE WITH AATREX – POSTEMERGENCE

Weeds Controlled				Weeds Partially Controlled
Barnyardgrass	giant foxtail	lambsquarters	ragweed	cocklebur
(watergrass)	green foxtail	mustard	smartweed	morningglory
crabgrass	yellow foxtail	pigweed	velvetleaf	yellow nutsedge
crowfootgrass	jimsonweed	prickly sida		
fall panicum	kochia	purslane		

Apply 1.0 pt./A of Dual Magnum + 1.3 lbs./A of AAtrex Nine-O* on *coarse soils*, 1.33 pts./A of Dual Magnum + 1.8 lbs./A of AAtrex Nine-O on *medium soils*, or 1.33-1.67 pts./A of Dual Magnum + 1.8-2.2 lbs./A** of AAtrex Nine-O on *fine soils*. Apply this tank mixture before grass and broadleaf weeds pass the 2-leaf stage and before corn exceeds 5 inches in height. Application to weeds larger than the 2-leaf stage will generally result in unsatisfactory control.

Lay-by: Apply to corn plants not more than 12 inches tall. Applications to corn in excess of 5 inches should be directed to the base of the corn plants; whereas, applications to corn plants less than 5 inches tall may be made over the top. Occasionally, some corn leaf burn may result, but this should not affect later growth or yield. Do not apply this postemergence tank mixture in fluid fertilizer, or severe crop injury may occur.

*When using AAtrex 4L, use equivalent rates. One lb. of AAtrex Nine-O = 1.8 pts. of AAtrex 4L.

**For better control of cocklebur, morningglory, velvetleaf, and yellow nutsedge on *fine-textured soils* above 3% organic matter, apply 2.2 lbs./A of AAtrex Nine-O, or equivalent rate of AAtrex 4L, with 1.33-1.67 pts./A of Dual Magnum.

Tank mixtures of Dual Magnum + AAtrex may be applied following use of any registered preplant surface-applied, preplant incorporated, or preemergence corn herbicide, including Dual Magnum + AAtrex.

Note: The total Dual Magnum rate should not exceed 3.9 pts., nor the AAtrex rate more than 2.5 lbs. a.i./A during any one crop year, or illegal residues may result. Refer to the AAtrex label for geographic, soil-texture, and rotational restrictions.

TANK MIXTURE WITH BANVEL

Preemergence: Use this tank mixture only on field corn which is flat-planted (no furrows) in CO, IA, IL, IN, KS, MN, NE, OH, SD, and WI.

In addition to the weeds controlled by Dual Magnum alone, Dual Magnum + Banvel, applied preemergence, also controls lambsquarters, ragweed, smartweed, cocklebur*, jimsonweed*, morningglory*, and velvetleaf*.

*Partially controlled.

Apply Dual Magnum + Banvel preemergence. Broadcast 1.0 pt./A of Banvel with 1.33 pts./A of Dual Magnum on *medium soils*, or with 1.33-1.67 pts./A of Dual Magnum on *fine soils*. Do not apply on *coarse soils* or on soils with less than 2.5% organic matter. Apply this tank mixture to the soil surface at planting or after planting, but before corn emerges. Plant corn at least 1.5 inches deep and apply behind planting equipment, avoiding incorporation by the planter wheel or other seed covering device. Do not incorporate before corn emergence. If it is necessary to rotary hoe to break the soil crust, do not disturb the soil more than 1/2 inch deep.

Postemergence for Control of Pigweed (Mid-Atlantic states, including DE, MD, PA, VA, and WV): Apply 1.0-1.5 pts. of Dual Magnum + 0.5-1.0 pt./A of Banvel or Clarity® by ground equipment when pigweed plants are less than 3 inches tall and before corn exceeds 5 inches in height in a minimum of 20 gals. of spray per acre. Use the lower rate on coarse-textured and low organic matter soils. Use the higher rate on fine-textured and high organic matter soils.

Precautions: (1) Avoid drift to sensitive nontarget plants, such as soybeans, during application, or injury may occur. (2) Do not apply with aircraft.

TANK MIXTURE WITH AATREX OR PRINCEP + PROWL FOR PROLONGED CONTROL OF LAMBSQUARTERS AND PIGWEED IN FIELD CORN ONLY (NORTHEAST U.S., INCLUDING MI, IN, KY, AND STATES EAST OF THESE)

For prolonged control of lambsquarters and pigweed, in addition to a broad spectrum of annual broadleaf and grass weeds, Dual Magnum in tank mix combination with AAtrex* or Princep + Prowl 4E may be applied after planting, but before corn or weeds emerge. Apply by ground equipment in a minimum of 10 gals. of water or 20 gals. of liquid fertilizer. Apply by air in a minimum of 5.0 gals. of water. Refer to Table 3 of this label for rates of Dual Magnum, AAtrex, or Princep to be applied. Apply Prowl 4E according to the following rates in Table 4.

* Do not apply Dual Magnum in tank mix combination with AAtrex 80W + Prowl, as this combination is not compatible. Other AAtrex formulations may be used.

Mixing Instructions: See Comment No. 1 following Table 2.

Table 4: Prowl 4E – Broadcast Rates Per Acre

	Percent Organic Matter in Soil		
Soil Texture	**Less Than 1.5%**	**1.5-3%**	**Over 3%**
COARSE	1.5-2.0 pts.	2.0 pts.	3.0 pts.
MEDIUM	2.0 pts.	3.0 pts.	3.0 pts.
FINE	2.0 pts.	3.0 pts.	3.0 pts.

Observe all directions for use, precautions, and limitations on the respective product labels when applying these products in tank mix combination. Refer to the Prowl 4E label for replanting instructions in the event of crop loss.

TANK MIXTURE OF DUAL MAGNUM WITH AATREX OR PRINCEP, OR AATREX + PRINCEP WITH GRAMOXONE INTEON, LANDMASTER BW, TOUCHDOWN OR ROUNDUP FOR MINIMUM-TILLAGE OR NO-TILLAGE SYSTEMS

In minimum-tillage or no-tillage systems where corn is planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, the contact herbicides Gramoxone Inteon, Landmaster BW, Touchdown brands or Roundup brands should be tank mixed with Dual Magnum + AAtrex, Dual Magnum + Princep, or Dual Magnum + AAtrex + Princep. See Comment No. 7 following Table 2. The Dual Magnum, Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep portion of the tank mixture provides preemergence control of the weeds listed on this label in the tank mixture section for **Dual Magnum, Dual Magnum + AAtrex or Princep, or Dual Magnum + AAtrex + Princep – Preplant Surface, Preplant Incorporated, or Preemergence**.

Application: Apply before, during, or after planting, but before the corn emerges. Add Gramoxone Inteon, Landmaster BW, Touchdown brands or Roundup brands and apply as directed on the product label.

Gramoxone Inteon: Apply as directed on the product label. This treatment will not control weeds taller than 6 inches.

Note: Do not apply combinations containing Gramoxone Inteon in suspension-type liquid fertilizers, because the activity of paraquat will be reduced.

Landmaster BW: 27-54 oz./A depending on weed species and size. See the Landmaster BW label for weeds controlled, recommended rates for specific weeds, and other information concerning use.

Touchdown Brands or Roundup Brands: See the Touchdown brand or Roundup brand labels for weeds controlled, recommended rates, and other use directions.

Apply in 20-60 gals. of water or fluid fertilizer per acre with ground equipment.

On *coarse soils*, apply 1.0 pt./A of Dual Magnum with 1.3 lbs. of AAtrex Nine-O* or Princep Caliber 90*, or with 0.7 lb. of AAtrex Nine-O** + 0.7 lb. of Princep Caliber 90**. On *medium soils*, apply 1.33 pts./A of Dual Magnum with 1.8 lbs. of AAtrex Nine-O or Princep Caliber 90, or with 0.9 lb. of AAtrex Nine-O + 0.9 lb. of Princep Caliber 90. On *fine soils****, apply 1.33-1.67 pts./A of Dual Magnum with 1.8-2.2 lbs. of AAtrex Nine-O or Princep Caliber 90, or with 0.9-1.1 lbs. of AAtrex Nine-O + 0.9-1.1 lbs. of Princep Caliber 90.

*Use Princep in preference to AAtrex when heavy infestations of crabgrass or fall panicum are expected.

**When using the tank mixture of Dual Magnum + AAtrex Nine-O + Princep Caliber 90, use equal rates of AAtrex and Princep as shown when heavy broadleaf weed infestations are expected. When heavy infestations of crabgrass or fall panicum are expected, use a 1:2 ratio of AAtrex + Princep instead of the 1:1 ratio given. (*Example*: Total AAtrex Nine-O + Princep Caliber 90 = 1.8 lbs./A, use 0.6 lb. of AAtrex + 1.2 lbs. of Princep, respectively.) Refer to Comment No. 2 following Table 2 for AAtrex 4L and Princep 4L conversions.

***For cocklebur, yellow nutsedge, and velvetleaf control on *fine-textured soils* above 3% organic matter, apply 2.25 lbs./A of AAtrex Nine-O, or equivalent rate of AAtrex 4L, or the same total amount of AAtrex + Princep, with 1.33-1.67 pts./A of Dual Magnum.

TANK MIXTURE WITH AATREX; OR AATREX + 2,4-D; OR AATREX + 2,4-D + BANVEL FOR MINIMUM-TILLAGE OR NO-TILLAGE SYSTEMS

In minimum-tillage or no-tillage systems where corn is planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, Dual Magnum applied in combination with AAtrex will kill most emerged small annual weeds. Apply Dual Magnum + AAtrex before, during, or after planting, but before corn emerges, according to the rates in Table 3.

Where heavy crop residues exist, add 0.8-1.6 pts./A of an appropriately labeled 3.8 lbs. a.i./gal. of 2,4-D amine (such as Weedar 64, Weedar 64A, DMA-4 Herbicide, Weedone® 638, or Formula 40) to the spray tank last and apply in a minimum of 25 gals. of carrier per acre.

As carriers, nitrogen solutions and complete liquid fertilizers, applied before corn emergence, enhance burndown of existing weeds, and therefore are recommended instead of water. Add X-77 surfactant at 1.0-2.0 qts./100 gals. of diluted spray, or another appropriate surfactant at its recommended rate, or add crop oil concentrate plus 28% liquid nitrogen (or equivalent). Apply before weeds exceed 3 inches in height. If alfalfa is present, add Banvel to the spray mixture at 0.33-0.5 pt./A and apply before alfalfa exceeds 6 inches in height.

For fields with existing sod grasses (e.g., bromegrass, orchardgrass, rye, or timothy), when existing weeds exceed 3 inches in height or when very dry conditions exist, add Gramoxone Inteon at the rate indicated on the product label in place of or in addition to 2,4-D as indicated above. Do not apply Gramoxone Inteon in suspension-type liquid fertilizer. Observe all directions for use, precautions, and limitations on the respective product labels when applying these products in tank mix combination. Use Balance combinations only on field corn.

TANK MIXTURE WITH MARKSMAN IN CONSERVATION TILLAGE – FIELD AND SILAGE CORN

In conservation tillage systems where corn is planted directly into a cover crop or previous crop residue, Dual Magnum + Marksman will kill most emerged small annual weeds. Apply Dual Magnum + Marksman before, during, or after planting, but before corn emergence on *medium* and *fine soils* with greater than 2.5% organic matter. For fields with existing vegetation exceeding 3 inches in height or when very dry conditions exist, add Gramoxone Inteon at its standard rate. Dual Magnum + Marksman may be applied postemergence to corn less than 3 inches tall and before weedy grasses exceed the 2-leaf stage.

As carriers, nitrogen solutions and complete liquid fertilizers, applied before corn emergence, enhance burndown of existing weeds. Do not apply Gramoxone Inteon in suspension-type liquid fertilizer or use on emerged corn.

Refer to the Marksman label and follow all directions, limitations, precautions, and information regarding application and use in corn.

TANK MIXTURE WITH BALANCE PRO – FIELD CORN ONLY

Dual Magnum and Balance PRO have a complementary crop response and weed control profile which allows various tank mix rate combinations to be considered. The addition of Balance PRO will improve the control of certain problem weeds including Texas panicum, woolly cupgrass, and wild proso millet. Dual Magnum improves both the duration and spectrum of annual grass and small seeded broadleaf weed control, in particular foxtails (yellow foxtail), witchgrass, and yellow nutsedge.

To reduce the risk of an adverse crop response, the Balance PRO label does not allow applications to *coarse-textured* soils with less than 1.5% organic matter and warns about applications to all soils with less than 1.5% organic matter or with pH greater than 7.5, as well as applications made to areas in fields with clay knolls, eroded hillsides, and exposed subsoil. Dual Magnum has no adverse crop response warnings or use restrictions.

Listed below are compensating rate options for combinations of Dual Magnum and Balance PRO, i.e. higher rates of Dual Magnum are combined with lower rates of Balance PRO, and vice versa. Select a rate option for Dual Magnum plus Balance PRO by weighing the intensity of problem weed pressure (population presence and density) and your acceptance for risk of an adverse crop response. For example, where Texas panicum, woolly cupgrass, or wild proso millet are a primary target weed, use a tank mix combination with a higher Balance PRO rate for the given soil type.

Where your acceptance of an adverse crop response risk is low and/or a more general weed spectrum is targeted (especially yellow foxtail, witchgrass or yellow nutsedge), use a tank mix combination with a higher Dual Magnum rate for the given soil type. Where a target weed is listed as controlled on both product labels, a tank mix combination option including intermediate rates of both products may be used. Where a target weed is listed as controlled on only one product label, do not apply a rate of that product below what is recommended for that weed on the individual product label, or unacceptable control may result. Follow all other directions for use, rate limitations, precautions and restrictions on both the Dual Magnum and Balance PRO product labels.

Dual Magnum plus Balance PRO tank mix rate options when applied preplant (incorporated or surface applied) up to 7 days before planting or preemergence in field corn:

For *coarse-textured* soils, where 1.5 or 1.88 oz./A of Balance PRO is used, 1.0-1.33 pts./A of Dual Magnum may be applied. Do not use Balance PRO on *coarse-textured* soils with less than 1.5% organic matter.

For *medium-textured* soils, where 1.5 oz./A of Balance PRO is used, rates as low as 1.33 pts./A of Dual Magnum may be applied. Where 1.88 or 2.25 oz./A of Balance PRO is used, rates as low as 1.0 pts./A of Dual Magnum may be applied. Dual Magnum can be used in combinations with Balance PRO at rates up to 1.67 pts./A on *medium-textured* soils.

For *fine-textured* soils, where 1.5 oz./A of Balance PRO is used, rates as low as 1.33 pts./A of Dual Magnum may be applied if the soil organic matter is less than 3% – if the soil organic matter content is 3% or greater, 1.67 pts./A of Dual Magnum should be applied. Where 1.88 or 2.25 oz./A of Balance PRO is used, rates as low as 1.33 pts./A of Dual Magnum may be applied. Where 3.0 oz./A or more of Balance PRO are used, rates as low as 1.0 pts./A of Dual Magnum may be applied. Dual Magnum can be used in combinations with Balance PRO at rates up to 2.0 pts./A on *fine-textured* soils if the soil organic matter content is 3% or greater.

TANK MIXTURES FOR POSTEMERGENCE SALVAGE WEED CONTROL IN FIELD CORN ONLY

For postemergence control of weeds in specific types of field corn, the Dual Magnum combinations listed below may be used. Full season weed control from early preplant, preplant incorporated, or preemergence treatments can lead to maximum yield potential under competition-free conditions. However, if control of emerged weeds is needed, a postemergence program listed below can be applied to provide residual control for the remainder of the season.

Notes: (1) Follow all label directions, instructions, precautions, and limitations for each product used. (2) Do not use fluid fertilizer with these mixtures or corn injury may occur. (3) For each tank mixture with Dual Magnum, apply only to the specific field corn type specified on the tank mix product label. (4) In-row weed control may be reduced because of lack of coverage when applied to corn over 4 inches tall.

Dual Magnum + Liberty Herbicide or Ignite® 280 SL Herbicide: Postemergence Use in LibertyLink® Corn or Corn Warranted by Bayer CropScience as Being Tolerant to Liberty Herbicide or Ignite 280 SL Herbicide

These tank mixtures can be applied postemergence to weeds and corn from seed designated as LibertyLink or corn warranted by Bayer CropScience as being tolerant to Liberty Herbicide or Ignite 280 SL Herbicide. Liberty provides postemergence control of a broad spectrum of grass and broadleaf weeds and the Dual Magnum provides residual control of grasses and certain broadleaf weeds listed in the label section **Dual Magnum Applied Alone – Weeds Controlled**. Refer to the **Dual Magnum Alone – Preplant Incorporated or Preemergence** section and use the minimum rate per soil texture and organic matter classification for season-long residual control from this tank mix combination with Liberty. Refer to the Liberty Herbicide or Ignite 280 SL Herbicide labels for the postemergence application rates according to weed species and their maximum height at the time of postemergence application. Where multiple weed species are present, use the highest Liberty rate recommended to control the species and growth stages present.

Follow all applicable use directions, limitations, precautions, and information regarding application to corn on the Dual Magnum, and Liberty Herbicide, or Ignite 280 SL Herbicide labels. Where difficult species and/or severe weed populations are expected, use the maximum rate where rate ranges are listed.

Dual Magnum + Touchdown Brands or Roundup Brands for Postemergence Application to Glyphosate-Tolerant Corn (e.g., Roundup Ready® or Agrisure™ GT)

The tank mixture of Dual Magnum + Touchdown or Roundup brands can be applied postemergence to weeds and to corn designated as glyphosate-tolerant. Application may be applied postemergence to glyphosate-tolerant corn from emergence until corn reaches 30 inches tall or the V8 stage (8 leaves with collars), whichever comes first. This mixture will provide postemergence control of weed species on the Touchdown brand or Roundup brand label and residual control of weed species on the Dual Magnum label. Use the minimum Dual Magnum rate postemergence with Touchdown or Roundup in glyphosate-tolerant corn as specified in the **Corn – Dual Magnum Alone – Preplant Incorporated or Preemergence** section of this label according to soil texture and organic matter. Refer to the Touchdown brand or Roundup brand label and follow appropriate use directions, application procedures, precautions, and limitations. Refer to the Touchdown brand or Roundup brand label for directions for control of problem species.

Follow all applicable use directions, limitations, precautions, and information regarding application to corn on the Dual Magnum and Touchdown brand or Roundup Ultra brand labels, and on the **Supplemental Labeling of Roundup Ultra for Postemergence Application to Corn with the Roundup Ready Gene**. Where difficult species and/or severe weed populations are expected, use the maximum rate where rate ranges are listed.

Dual Magnum + Touchdown Brands or Roundup Brands + AAtrex for Postemergence Application to Glyphosate-Tolerant Corn (e.g., Roundup Ready or Agrisure GT)

The tank mixture of Dual Magnum + AAtrex + Touchdown brands or Roundup brands can be applied postemergence to weeds and to corn designated as glyphosate-tolerant. Application may be applied postemergence to glyphosate-tolerant corn from emergence up to 12 inches in height. This mixture will provide postemergence control of weed species on the Touchdown brand or Roundup brand label and residual control of weed species on the Dual Magnum + AAtrex label. Use the minimum Dual Magnum + AAtrex rate postemergence with Touchdown or Roundup in glyphosate-tolerant corn as specified in the **Corn – Dual Magnum Combinations – Tank Mixture With AAtrex or Princep, or AAtrex + Princep – Preplant Incorporated or Preemergence** section and **Table 3** of this label according to soil texture and organic matter.

Follow all applicable use directions, limitations, precautions, and information regarding application to corn on the Dual Magnum, AAtrex, and Touchdown brand or Roundup brand labels for application to glyphosate-tolerant corn. Where difficult species and/or severe weed populations are expected, use the maximum rate where rate ranges are listed.

COTTON – DUAL MAGNUM ALONE

Application: Apply Dual Magnum preemergence only in Area 1* at the rate of 0.5-1.0 pt./A on sandy loams, 0.66-1.33 pts./A on *medium soils*, or 1.0-1.33 pts./A on *fine soils*. Apply Dual Magnum preplant incorporated or preemergence in Area 2** at 1.0 pt./A on sandy loams, 1.0-1.33 pts./A on *medium soils*, or 1.33 pts./A on *fine soils*. Apply Dual Magnum postemergence to cotton and preemergence to weeds at 0.5-1.33 pts./A, according to the state rate limitations in the following **Postemergence** section. **Do not use on sands and loamy sand**.

*Area 1 = AR, KS, LA, MS, TN, and Bootheel of MO
**Area 2 = NM, OK, and TX

Fall Application for Italian Ryegrass Control: Dual Magnum may be applied for residual control of glyphosate-resistant Italian ryegrass (*Lolium multiflorum*). Apply Dual Magnum at 1.33-1.67 pints/Acre in the fall (September 1 – December 1) after harvest of the previous crop and prior to Italian ryegrass emergence. Use the lower Dual Magnum rate for coarse-textured soils and the higher rate for fine-textured soils. A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Dual Magnum. For fall applications after emergence of glyphosate-resistant Italian ryegrass, Gramoxone Inteon can be tank mixed with Dual Magnum to control emerged ryegrass. Refer to the Gramoxone Inteon label for specific rates, application instructions and restrictions. Other registered herbicides may be tank mixed with Dual Magnum for control or improved control of other weeds present at the time of application. *Precautions: (1) Do not apply Dual Magnum to frozen ground. (2) If a spring application is made, the combined total amount of Dual Magnum applied in the fall plus the spring must not exceed the maximum seasonal S-metolachlor rate for cotton (2.6 pt/A, depending on soil texture), or illegal residues may result.*

Preplant Incorporated (NM, OK, and TX Only): Apply to the soil and incorporate into the top inch of soil immediately before planting, at planting, or after planting, but before crop or weeds emerge. Use a rolling cultivator or similar implement to uniformly incorporate not more than 1 inch deep. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. Where furrow irrigation is used, wet the top of the bed for best results. If the crop is to be planted on beds, apply and incorporate after bed formation. Cotton should be planted below the zone of incorporation; i.e., at least 1 inch on *fine soils* and 1.5 inches on *coarse* and *medium soils*. If incorporated prior to planting, use a planter that will result in a minimum of soil disturbance.

Note: For best control of yellow nutsedge and suppression of seedling johnsongrass, apply Dual Magnum preplant incorporated at the maximum rate for the soil texture, whether applied alone or mixed with Caparol 4L.

Preemergence: Apply to the soil surface at planting or after planting, but before weeds or crop emerge.

Postemergence: Apply Dual Magnum broadcast over-the-top or directed to the soil surface according to the rate limitations listed below by state. Over-the-top postemergence application may be made not later than 100 days before harvest, and directed-postemergence application may be made not later than 80 days before harvest. Application before weeds emerge or after clean cultivation to remove existing weeds is necessary since Dual Magnum will not control emerged weeds. Dual Magnum postemergence may be applied over any previous registered herbicide treatment. In sprinkler-irrigated areas, sprinkler irrigate after application with 1/2-1 inch of water (1/2 inch on *coarse-textured soils* to 1 inch on *fine-textured soils*) to incorporate Dual Magnum. In furrow-irrigated areas, apply Dual Magnum, incorporate with a rolling cultivator or similar implement that provides uniform shallow incorporation (2 inches or less), and then irrigate. In nonirrigated areas, if at least 1/2 inch of rainfall does not occur within 10 days after application, cultivate with a rolling cultivator or similar implement that provides uniform shallow incorporation of Dual Magnum.

VA, NC, SC, GA, FL, and AL: Apply Dual Magnum postemergence at 1.0-1.33 pts./A.

TN, AR, KS, MS, MO, and LA: Apply Dual Magnum postemergence at 0.5-1.33 pts./A.

TX, OK, NM, AZ, CA, and Clay Soils in AR: Apply Dual Magnum postemergence at 1.0-1.33 pts./A before August 1.

Multiple Applications: Where weed pressure is heavy, difficult to control species are expected, or reinfestation may occur, and a weed control program is used, multiple applications of Dual Magnum are effective when used as part of the weed control program. Apply as a preplant incorporated or preemergence treatment and follow with an application postemergence to cotton before weeds emerge or after clean cultivation to remove existing weeds, since Dual Magnum will not control emerged weeds. Apply Dual Magnum postemergence over a previous preplant or preemergence Dual Magnum application as shown in the following table.

	Multiple Dual Magnum Applications to Cotton		
State	**Preplant Incorporated or Preemergence Pts./A**	**+**	**Postemergence Pts./A**
MS, LA, TN, AR, KS, MO	0.5-1.33 (Preemergence Only)	+	0.5-1.33
TX, OK, NM	1.0-1.33	+	1.0-1.33 before August 1
NC, VA	1.0-1.33 (Preemergence Only)	+	1.0-1.33

In sprinkler-irrigated areas, sprinkler irrigate after application with 1/2-1 inch of water (1/2 inch on *coarse-textured soils* to 1 inch on *fine-textured soils*) to incorporate Dual Magnum. In furrow-irrigated areas, apply Dual Magnum, incorporate with a rolling cultivator or similar implement that provides uniform shallow incorporation (2 inches or less), and then irrigate. In nonirrigated areas, if at least 1/2 inch of rainfall does not occur within 10 days after application, cultivate with a rolling cultivator or similar implement that provides uniform shallow incorporation of Dual Magnum.

Notes: For best control of yellow nutsedge and suppression of seedling johnsongrass, apply Dual Magnum preplant incorporated, preemergence, or postemergence to cotton and preemergence to weeds at the maximum rate for the soil texture, whether applied alone or in combinations. Do not apply more than a total of 2.0 pts./A on *coarse soils* or 2.6 pts./A of Dual Magnum on *medium* and *fine soils* during a growing season. These treatments may be applied over previous registered herbicide treatments.

Precautions: To avoid crop injury, (1) Do not apply Dual Magnum on sand or loamy sand soils, or in areas where water is likely to "pond" over the bed; (2) To avoid concentration in the seed furrow, do not make broadcast applications of Dual Magnum to cotton planted in furrows more than 2 inches deep. Band applications may be made to cotton planted in furrows deeper than 2 inches, but band width should not exceed the width of the bottom of the furrow; (3) In furrow-planted cotton, to avoid concentration in the furrow and potential injury, do not apply Dual Magnum postemergence until after first "knifing" or cultivation to level soil surface. (4) Do not apply over-the-top in fluid fertilizer or any other adjuvant, surfactant, oil, or other pesticide not recommended in the cotton section of this label, or injury may occur; and (5) Do not apply on Taloka silt loam. (6) Do not use in Gaines County, TX.

Note: Do not graze or feed forage or fodder from cotton to livestock, or illegal residues may result.

COTTON – DUAL MAGNUM COMBINATIONS

TANK MIXTURE WITH CAPAROL 4L

Dual Magnum tank mixtures with Caparol 4L may be applied preplant incorporated or preemergence in water or fluid fertilizer. When fluid fertilizer is used as a carrier for Dual Magnum, either alone or in combination with Caparol 4L, mix only the amount that will be sprayed in one operation. These mixtures should not be allowed to stand without agitation. Only water may be used as a carrier for postemergence-directed application.

In addition to those weeds controlled by Dual Magnum alone, Dual Magnum + Caparol 4L, applied preplant incorporated or preemergence, also controls the following weeds: junglerice, wild oats, annual morningglory, groundcherry, hairy nightshade, lambsquarters, malva, mustard, prickly sida (teaweed), purslane, ragweed, and shallow-germinating seedlings of cocklebur and coffeeweed. As a postemergence-directed application, Caparol provides postemergence control and residual control of weeds on its label, while Dual Magnum provides residual control of weed species on its label. Dual Magnum will not control emerged weeds.

Preplant Incorporated or Preemergence: Apply Dual Magnum + Caparol 4L, either preplant incorporated or preemergence, using the appropriate rate from Table 3. Cotton should be planted below the zone of incorporation; i.e., at least 1.0 inch on *fine soils* and 1.5 inches on *coarse* and *medium soils*. If incorporated before planting, use a planter that will result in a minimum of soil disturbance.

Table 5: Dual Magnum + Caparol 4L – Cotton (NM, OK, TX)

Use Areas	Soil Texture	Broadcast Rates Per Acre	
		Dual Magnum	Caparol 4L
ALL	Sand, loamy sand	DO NOT USE	
OK, Blacklands and Gulf Coast of TX	Loams	0.8-1.33 pts.	2.4 pts.
	Clays	1.33 pts.	4.8 pts.
Rio Grande Valley of TX	Loams	0.8-1.33 pts.	3.2 pts.
	Clays	1.33 pts.	4.8 pts.
NM; High Plains, Rolling Plains, Edwards Plateau of TX; and Southwest TX	Sandy loam	0.8-1.0 pt.	1.6 pts.
	Loams	0.8-1.33 pts.	2.4 pts.
	Sandy clay loams	1.33 pts.	2.4 pts.
	Other clay soils	1.33 pts.	3.2 pts.

Postemergence-Directed (AR, AZ, CA, LA, MS, NM, OK, TN, TX, and MO): Dual Magnum may be tank mixed with Caparol 4L in water and applied postemergence-directed in cotton for control of emerged weeds listed on the Caparol 4L label and residual preemergence control of weeds controlled by Dual Magnum and Caparol 4L. Or application may be made after cultivation for residual preemergence control. These treatments may be applied over previous registered treatments, including Dual Magnum, provided the maximum label rate of any product is not exceeded. Do not apply over-the-top of cotton, or injury may occur.

Apply Dual Magnum + Caparol 4L in a minimum of 20 gals. of spray volume per acre. Follow the directions, limitations, and precautions on the Caparol 4L label when Caparol is applied as a postemergence-directed application. Refer to the directions, limitations, and precautions for use of Dual Magnum under the **Cotton – Dual Magnum Alone – Postemergence** section.

Precautions: (1) To avoid concentration in the seed furrow, do not make broadcast applications of Dual Magnum + Caparol 4L to cotton planted in furrows more than 2 inches deep. Band applications may be made to cotton planted in furrows deeper than 2 inches, but band width should not exceed the width of the bottom of the furrow. To avoid crop injury, (2) Do not apply on sand or loamy sand soils, or in areas where water is likely to "pond" over the bed; (3) Do not apply in cut areas of newly leveled fields, or in areas of excess salt; (4) Do not apply to glandless cotton varieties; and (5) Do not apply on Taloka silt loam. (6) Do not use in Gaines County, TX.

Note: Do not graze or feed forage or fodder from cotton to livestock, or illegal residues may result.

Refer to the Caparol 4L label for further instructions and limitations.

TANK MIXTURE WITH COTORAN DF

Dual Magnum may be applied in tank mixture with Cotoran DF preemergence for control of those weeds controlled by Dual Magnum alone and those as listed on the Cotoran DF label. This combination will also control spotted spurge, hyssop spurge, nodding spurge, and prostrate spurge. Apply to the soil surface at planting or after planting, but before weeds or crop emerge, using the appropriate rates from Table 4. The tank mixture may be applied postemergence to cotton, but preemergence to weeds, or it may be applied postemergence to both cotton and broadleaf weeds for control of weeds on the Cotoran label. Apply as a directed, semi-directed, or over-the-top spray. Dual Magnum will not control emerged weeds, but will provide preemergence control of species on its label.

Mixing Instructions: Incompatibility may occur when tank mixing Dual Magnum and Cotoran DF. To help overcome this condition, fill the spray tank 1/4 full with water or fluid fertilizer and start agitation, add the Cotoran DF and allow it to become dispersed. Add X-77 at 0.5% volume/volume final spray (4.0 pts./100 gals.), then add the Dual Magnum and finally the rest of the water or fluid fertilizer. Agitate during mixing and application to maintain a uniform suspension. Do not use fluid fertilizer as a carrier for postemergence applications.

Table 6: Dual Magnum + Cotoran DF – Cotton

Soil Texture	Broadcast Rates Per Acre		
	Dual Magnum (pts.)		Cotoran DF*** (lbs.)
	Area 1*	Area 2**	
Sand, loamy sand	DO NOT USE		
Sandy loam	0.5-1.0	0.8-1.0	1.2
Loam, silt loam, silt	0.66-1.33	1.0-1.33	1.2-1.9
Fine soil	1.0-1.33	1.33	1.9-2.4

*Area 1 = AR, LA, MS, Bootheel of MO and TN

**Area 2 = Eastern OK, Gulf Coast, Rio Grande Valley, and Eastern TX

***When using Cotoran 4L, use equivalent rates. Multiply lbs. of Cotoran DF by 1.7 to get pts. of Cotoran 4L.

Postemergence: This tank mixture may be applied postemergence to cotton, but preemergence to weeds or postemergence to both cotton and weeds for control of weeds on the Cotoran label. Apply as a directed, semi-directed, or over-the-top spray. Dual Magnum will not control emerged weeds, but will provide preemergence control of species on its label. Where rate ranges are given for Cotoran DF, use the higher rate when applying postemergence to weeds that are 2 inches or less. These treatments may be applied over previous registered treatments, including Dual Magnum, provided the maximum label rate of any product is not exceeded.

Precautions: (1) Do not apply Dual Magnum + Cotoran on sand or loamy sand soils, or in areas where water is likely to "pond" over the bed, or crop injury may occur. (2) To avoid concentration in the seed furrow, do not make broadcast applications of Dual Magnum + Cotoran to cotton planted in furrows more than 2 inches deep. Band applications may be made to cotton planted in furrows deeper than 2 inches, but band width should not exceed the width of the bottom of the furrow. (3) The use of Cotoran following the use of a systemic insecticide at planting may result in crop injury. (4) Do not use on Taloka silt loam, or crop injury may occur. (5) Do not use in Gaines County, TX.

Refer to the Cotoran labels for further instructions, precautions, and limitations.

Note: To avoid possible illegal residues, do not feed treated forage or gin trash to livestock, or graze treated areas.

TANK MIXTURE OF DUAL MAGNUM OR DUAL MAGNUM + COTORAN WITH GRAMOXONE INTEON, TOUCHDOWN BRANDS OR ROUNDUP BRANDS FOR MINIMUM-TILLAGE OR NO-TILLAGE SYSTEMS

In minimum-tillage or no-tillage systems where cotton is planted directly into a cover crop, stale seedbed, or previous crop residues, the contact herbicides Gramoxone Inteon, Touchdown brands or Roundup brands may be added to a tank mix of either Dual Magnum or Dual Magnum + Cotoran. When used as directed, the Gramoxone Inteon portion of the tank mixture controls most emerged weeds and suppresses many perennial weeds. Touchdown or Roundup combinations will control emerged annual and perennial weeds when applied as directed on the Touchdown or Roundup label. The Dual Magnum and Dual Magnum + Cotoran portion of the tank mixture provides preemergence control of the weeds listed on this label in the Dual Magnum and Dual Magnum + Cotoran sections, respectively.

Refer to the label of each product used in combination and observe the planting details, information regarding application, geographical restrictions, and all other precautions and limitations. Refer to **Mixing Instructions** under T**ank Mixture with Cotoran DF** section.

Application: Apply before, during, or after planting, but before the cotton emerges. Apply Dual Magnum at 0.8-1.0 pt./A on sandy loams, *medium-*, and *fine-textured soils*. Refer to Table 6 for the Cotoran DF rates.

Gramoxone Inteon: Apply as directed on the product label. This treatment will not control weeds taller than 6 inches.

Note: Do not apply combinations containing Gramoxone Inteon in suspension-type liquid fertilizers, as the activity of paraquat will be reduced.

Touchdown Brands or Roundup Brands: See the Touchdown or Roundup label for weeds controlled, recommended rates, and other use directions.

Note: Do not apply Dual Magnum + Cotoran 4L + Roundup in tank mixture because of compatibility problems.

Apply in 20-60 gals. of water or fluid fertilizer per acre with ground equipment.

*Precautions: (1) If heavy rain occurs soon after application, crop injury may result, especially in poorly drained areas where water stands for several days, or where the seeding slit has not been properly closed. (2) Refer to the Cotoran labels and the **Tank Mixture with Cotoran DF** section of this label for further instructions, precautions, and limitations. (3) Do not use in Gaines County, TX.*

TANK MIXTURE WITH MSMA, MSMA + CAPAROL, OR MSMA + COTORAN

Dual Magnum may be tank mixed with MSMA in water and applied postemergence-directed for control of emerged weeds listed on the MSMA product label and residual preemergence control of weeds controlled by Dual Magnum. The addition of Caparol or Cotoran will add control of weed species on their respective labels.

Postemergence-Directed (AL, AR, AZ, CA, FL, GA, LA, MS, NC, NM, OK, SC, TN, TX, VA, and Bootheel of MO): Apply Dual Magnum + MSMA postemergence-directed to cotton at least 3 inches tall according to the directions, limitations, and precautions on the MSMA product label, as well as the directions, limitations, and precautions for use of Dual Magnum in the section for **Cotton – Dual Magnum Alone – Postemergence**. Do not apply after first cotton bloom. These treatments may be applied over previous registered treatments, including Dual Magnum, provided the maximum label rate of any product is not exceeded. Cotoran or Caparol may be added to the Dual Magnum + MSMA tank mixture according to the respective label directions for application to cotton at least 3 inches tall. When these mixtures are used, follow the mixing instructions for Dual Magnum + Caparol or Cotoran and then add the MSMA product.

Do not use Dual Magnum in tank mix with premixes of MSMA plus herbicides other than those registered for use in tank mixture with Dual Magnum on cotton.

TANK MIXTURE WITH TREFLAN FOR POST-DIRECTED FOLLOWED BY SOIL INCORPORATION APPLICATIONS

Dual Magnum may be applied as a tank mixture with Treflan in cotton for improved late-season weed control when used as an incorporated lay-by type application. This combination may be applied after the cotton is at least 3 inches tall and has reached the 4 true-leaf stage. Make the application directed to the soil surface and away from the crop foliage. Incorporate using a sweep or rolling type cultivator to provide uniform and shallow mixing into the top 2 inches of soil. Refer to each product label for the appropriate application rates by soil type and for this application timing -- and follow all product use limitations and restrictions.

TANK MIXTURE WITH TOUCHDOWN BRANDS OR ROUNDUP BRANDS FOR USE ON ROUNDUP READY COTTON ONLY

Apply Dual Magnum as a tank mixture with Touchdown or Roundup in water postemergence over-the-top or postemergence-directed for control of emerged weeds listed on the Touchdown or Roundup labels and for residual preemergence control of weeds listed on the Dual Magnum label. See the **Cotton – Dual Magnum Alone – Postemergence** section of this label for rates and timings of Dual Magnum and follow the Touchdown or Roundup label for their respective rates, application method, and application timing restrictions. Do not add additional spray adjuvants, surfactants, fertilizer additives, or pesticides to this tank mixture if applied postemergence over-the-top, or unacceptable injury may occur. Refer to the Touchdown brand or Roundup brand label and follow appropriate use directions, application procedures, precautions, and limitation.

Precaution: Do not apply this tank mixture postemergence to any cotton variety unless it is designated Roundup Ready and unless the Touchdown or Roundup formulation being used is registered for postemergence use in Roundup Ready Cotton. Postemergence over-the-top applications of this tank mixture may cause temporary injury in the form of necrotic spotting to exposed cotton leaves, which will not affect normal plant development. Do not apply Touchdown or Roundup postemergence over-the-top to cotton past the growth stage limit specified on their respective labels. Do not use on sand or loamy sand soils in Gaines County, TX.

SOYBEAN, IMMATURE SEED

Dual Magnum may be applied preplant or preemergence for the control or suppression of grass and small seeded broadleaf weeds in immature-seed soybean or other food-grade soybeans. For specific rates, see the rate table listed below.

Preplant Surface-Applied: For minimum-tillage or no-tillage systems only, Dual Magnum alone may be applied up to 45 days before planting. Use only split applications for treatments made 30-45 days before planting, with 2/3 the recommended broadcast rate for the crop and soil texture applied initially and the remaining 1/3 applied at planting. Treatments less than 30 days before planting may be made either as a split or a single application. If weeds are present at the time of treatment, apply in a tank mixture combination with a contact herbicide (for example, Gramoxone Inteon, Touchdown, or Roundup). Observe directions for use, precautions, and restrictions on the label of the contact herbicide. To the extent possible, do not move treated soil out of the row or move untreated soil to the surface during planting, or weed control will be diminished.

Preplant Incorporated: Apply Dual Magnum to the soil and incorporate into the top 2 inches of soil within 14 days before planting, using a finishing disk, harrow, rolling cultivator, or similar implement capable of providing uniform 2-inch incorporation. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application is expected. If crop will be planted on beds, apply and incorporate Dual Magnum after bed formation, unless specified otherwise.

Preemergence: Apply Dual Magnum during planting (behind the planter) or after planting, but before weeds emerge.

Dual Magnum Broadcast Rates Per Acre

	Percent Organic Matter in Soil	
Soil Texture	**< 3%**	**≥ 3%**
Coarse	1 – 1.33 pt	1.33 pt
Medium	1.33 – 1.67 pt	1.33 – 1.67 pt
Fine	1.33 – 1.67 pt	1.67 – 2.0 pt

Precautions: (1) Dual Magnum will not control emerged weeds. (2) Do not cut for hay within 120 days following a Dual Magnum application. (3) Do not use for forage within 60 days following a Dual Magnum application. (4) Do not apply more than 2.0 pt/A of Dual Magnum during any one crop year.

GRASSES GROWN FOR SEED (ID, OR, WA) – DUAL MAGNUM APPLIED ALONE

To control weeds and volunteer grasses in established grasses grown for seed, apply Dual Magnum to established stands of tall fescue, orchardgrass, perennial ryegrass, fine fescue, bentgrass, and Kentucky bluegrass just before, during, or immediately following the first fall rains or just before or during a late summer or early fall irrigation, but before target grasses emerge. The seed crop must have had one seed harvest or been established at least one year. The postharvest residue (straw) should be evenly spread, removed, or burned before applying Dual Magnum. Rainfall or irrigation is required after application and before weed emergence for best control. Dual Magnum will provide preemergence control/suppression of volunteer seedlings of perennial ryegrass, fine fescue spp., tall fescue, orchardgrass, bentgrass and Kentucky bluegrass. Dual Magnum will control those weed species listed in the **Dual Magnum Alone** section of the Dual Magnum label and will suppress or control rattail fescue, annual bluegrass, Italian ryegrass, California brome, downy brome, and roughstalk bluegrass.

Apply Dual Magnum by ground equipment in a minimum of 10 gallons of water per acre using the rate listed below according to grass species.

Established Grass Crop Grown for Seed	Pts./A
Fine fescue spp.	1.0
Perennial ryegrass	1.0
Bentgrass	1.0-1.33
Kentucky bluegrass	1.0-1.33
Orchardgrass	1.0-1.33
Tall fescue	1.0-1.33

Precautions: (1) Apply Dual Magnum only once per crop year. (2) Do not apply after the 15th of November or poor control may result. (3) Tank mixtures with other pesticides, or the addition of an adjuvant, can increase the risk of crop injury. (4) Application to perennial ryegrass and fine fescue stands under stress may cause crop injury. (5) If weed escapes occur following a Dual Magnum application, an application of a postemergence herbicide may be necessary to control escapes. When making such an application, follow all directions, precautions and limitations on the label of the postemergence herbicide. (6) Control may be decreased if excessive straw from the previous harvest is present at application and/or insufficient rainfall/irrigation occurs.

Notes: To avoid possible illegal residues: (1) Do not graze forage regrowth for 60 days following application west of the Cascades. (2) In areas east of the Cascades, do not graze forage regrowth for 150 days following application. (3) Hay may be harvested anytime between seed harvest and the next application of *S*-metolachlor.

HORSERADISH

Apply a single application of Dual Magnum at a broadcast rate of 1.0-1.33 pt./A to the soil surface after planting, but before weeds or crop emergence (i.e., preemergence). Use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical means.

Restrictions: (1) Make only one application of Dual Magnum per crop. (2) Do not apply more than 1.33 pt./A of Dual Magnum per crop. (3) Harvest horseradish at normal timing.

PEANUTS – DUAL MAGNUM ALONE

Apply Dual Magnum, either preplant incorporated, postplant incorporated, preemergence, or lay-by, using the appropriate rate specified below. **Preplant Incorporated or Preemergence:** Follow instructions for use of Dual Magnum alone under **Application Procedures**. **Postplant Incorporated:** Apply and shallowly incorporate Dual Magnum into the soil after planting, but before peanut germination. Incorporation depth and incorporating implements must be kept above the seed, or seed will be damaged. **Lay-by:** Apply Dual Magnum to the soil immediately after the last normal cultivation.

Apply Dual Magnum alone, preplant incorporated, postplant incorporated, preemergence, or lay-by, at a broadcast rate of 1.0-1.33 pts./A in the Southeast* and 0.8-1.33 pts./A in NM, OK, and TX.

*In the Southeast, use 1.33-2.0 pts./A and apply preemergence for partial control of Florida beggarweed.

Notes: (1) Dual Magnum alone may be applied as directed after any of the following preplant incorporated herbicides when used according to their label recommendations: Balan at 3.0-4.0 qts./A; Treflan E.C. at 1.0 pt./A; Sonalan at 1.25-3.0 pts./A; Pursuit at 0.25 pt./A; or Prowl at 1.0-2.0 pts./A. (2) Do not graze or feed peanut forage or fodder to livestock for 30 days following application, and (3) Do not apply within 90 days of harvest, or illegal residues may result.

PEANUTS – DUAL MAGNUM COMBINATIONS

TANK MIXTURE WITH BALAN L.C.

Dual Magnum + Balan tank mixture applied preplant incorporated controls those weeds listed under **Dual Magnum Applied Alone** and those weeds as listed on the Balan label.

Apply 1.0-1.33 pts./A of Dual Magnum + 3.0-4.0 qts./A of Balan in a minimum of 10 gals. of spray volume per acre for ground application or in a minimum of 5.0 gals. of spray volume per acre for aerial application. Follow the recommended procedures for Balan on the Balan label for soil preparation and incorporation of this tank mix. Apply and incorporate Dual Magnum + Balan up to 14 days prior to planting.

Note: Follow all restrictions and precautions on the Balan label.

Multiple Applications: Where weed pressure is heavy or where species difficult to control are expected, Dual Magnum is most effective when used as follows:

Southeast Only (AL, FL, GA, NC, SC, VA)

Preplant Incorporated: Apply Dual Magnum preplant incorporated as directed under **Peanuts – Dual Magnum Alone** or apply Dual Magnum + Balan preplant incorporated as directed previously in this section. Refer to the respective section for weeds controlled.

OR

Preemergence before "ground cracking": Apply Dual Magnum any time from preemergence up to "ground cracking" at 1.0-2.0 pts./A for extended control of weeds not yet emerged. Refer to the **Dual Magnum Applied Alone** section for a list of weeds controlled.

Follow the PPI or PRE application by:

Lay-by: Apply Dual Magnum at lay-by as directed under **Peanuts – Dual Magnum Alone**. Use only when late germinating weeds are expected to be a problem. Refer to the **Dual Magnum Applied Alone** section for a list of weeds controlled.

Notes: (1) Do not apply more than the equivalent of 2.67 lbs. of active ingredient of Dual Magnum per acre during any one year, or illegal residues may result. If Dual II Magnum is used as a sequential treatment, the lbs. of active ingredient (1.0 pt. = 0.95 lb.) plus the lbs. of active ingredient of Dual Magnum should not exceed 2.67 lbs. **Do not use Dual II Magnum, or Dual IIG Magnum after peanuts have emerged.** (2) Do not graze or feed peanut forage or fodder to livestock for 30 days following application, and (3) Do not apply within 90 days of harvest, or illegal residues may result.

Southwest Only (NM, OK, TX)

1st Application: Apply Dual Magnum preplant incorporated or preemergence or at-cracking as directed previously in this section. Refer to the respective section for weeds controlled.

2nd Application: Apply Dual Magnum at lay-by as directed under **Peanuts – Dual Magnum Alone** on that label. Use only when late germinating weeds are expected to be a problem. Refer to the **Dual Magnum Applied Alone** section for a list of weeds controlled.

Notes: (1) Do not apply more than the equivalent of 2.67 lbs. of active ingredient of Dual Magnum per acre during any one year, or illegal residues may result. If Dual II Magnum® is used as a sequential treatment, the lbs. of active ingredient (1.0 pt. = 0.95 lb.) plus the lbs. of active ingredient of Dual Magnum should not exceed 2.67 lbs. **Do not use Dual II Magnum, or Dual IIG Magnum after peanuts have emerged.** (2) Do not graze or feed peanut forage or fodder to livestock for 30 days following application, and (3) Do not apply within 90 days of harvest, or illegal residues may result.

TANK MIXTURE OR SEQUENTIALLY WITH PURSUIT

The tank mixture or sequential treatment of Dual Magnum and Pursuit controls all weeds controlled by Dual Magnum alone and by Pursuit alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Pursuit label for weeds controlled by Pursuit.

Refer to the respective labels for application methods, timing, rates, restrictions, and precautions; and use in accordance with the more restrictive label. Do not exceed the label rate of either product. Dual Magnum will not control emerged weeds.

TANK MIXTURE WITH SONALAN

The tank mixture controls all weeds controlled by Dual Magnum alone and by Sonalan alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Sonalan label for weeds controlled by Sonalan.

Apply Dual Magnum + Sonalan preplant incorporated using the appropriate rate from Table 7. Follow recommended soil preparation procedures for Sonalan.

Table 7: Dual Magnum + Sonalan – Peanuts

	Broadcast Rates Per Acre			
	Southeast		NM, OK, TX	
Soil Texture	**Dual Magnum**	**Sonalan**	**Dual Magnum**	**Sonalan**
COARSE	1.0-1.33 pts.	1.25-2.0 pts.	0.8-1.33 pts.	1.25-2.0 pts.
MEDIUM	1.0-1.33 pts.	1.75-2.5 pts.	0.8-1.33 pts.	1.75-2.5 pts.
FINE	1.0-1.33 pts.	2.25-3.0 pts.	0.8-1.33 pts.	2.25-3.0 pts.

Note: Follow all use directions, limitations, precautions, and information regarding application to peanuts on the Dual Magnum and Sonalan labels.

TANK MIXTURE WITH PROWL

Dual Magnum + Prowl applied preplant incorporated controls all weeds controlled by Dual Magnum alone plus Texas panicum, field sandbur, johnsongrass from seed, lambsquarters, kochia, annual spurge, and other species on the Prowl label. Apply Dual Magnum + Prowl by ground or by aerial equipment within 14 days before planting. Incorporate into the top 1-2 inches of soil before planting and within 7 days of application, using a finishing disk or similar implement capable of providing uniform incorporation. If peanuts will be planted on beds, apply and incorporate after bed formation. Refer to the **Incorporation** instructions of the respective labels for additional directions.

Apply Dual Magnum + Prowl preplant incorporated, using the appropriate rates from Table 8.

Table 8: Dual Magnum + Prowl – Peanuts

	Broadcast Rates Per Acre	
	NM, OK, TX	**Other Peanut Growing States**
Soil Texture	**Dual Magnum + Prowl**	**Dual Magnum + Prowl**
Sand, loamy sand	0.8 + 1.0-1.5 pts.	1.0-1.33 + 1.5-2.0 pts.
Sandy loam	0.8-1.0 + 1.0-1.5 pts.	1.0-1.33 + 1.5-2.0 pts.
Fine soil	1.33 + 1.0-1.5 pts.	1.33 + 1.5-2.0 pts.

Note: Follow all use directions, limitations, precautions, and information regarding application to peanuts on the Dual Magnum and Prowl labels.

TANK MIXTURE OR SEQUENTIALLY WITH GRAMOXONE INTEON

Dual Magnum + Gramoxone Inteon applied at ground cracking or sequentially will control or suppress small (1-6 inch) emerged annual grass and broadleaf weeds and provide residual control of weed species listed in the **Dual Magnum Applied Alone** section of this label. Apply Gramoxone Inteon plus the appropriate Dual Magnum rate from the **Peanuts – Dual Magnum Alone** section in a minimum spray volume of 20 gals./A with ground equipment. A second application of Dual Magnum + Gramoxone Inteon may be made 28 days after ground cracking. (Refer to the **Peanuts – Dual Magnum Combinations – Multiple Applications** section of this label for geographical areas where multiple applications are recommended.) Refer to the Gramoxone Inteon label and follow all directions, limitations, and restrictions.

TANK MIXTURE OR SEQUENTIALLY WITH GRAMOXONE INTEON + BASAGRAN

The addition of Basagran to the Dual Magnum + Gramoxone Inteon mixture will result in improved control of such problem broadleaf weeds as prickly sida, cocklebur, smartweed, and bristly starbur. Dual Magnum + Gramoxone Inteon + Basagran applied at ground cracking or sequentially will control or suppress small (1-6 inch) emerged annual grass and broadleaf weeds and provide residual control of weed species listed in the **Dual Magnum Applied Alone** section of this label. Apply Basagran + Gramoxone Inteon with the appropriate Dual Magnum rate from the **Peanuts – Dual Magnum Alone** section in a minimum spray volume of 20 gals./A with ground equipment. A second application of Dual Magnum + Gramoxone Inteon + Basagran may be made 28 days after ground cracking. (Refer to the **Peanuts – Dual Magnum Combinations – Multiple Applications** section of this label for geographical areas where multiple applications are recommended.) Refer to the Gramoxone Inteon and Basagran labels and follow all directions, limitations, and restrictions.

TANK MIXTURE OR SEQUENTIALLY WITH GRAMOXONE INTEON + BUTYRAC 200 OR BUTOXONE 200

The addition of Butyrac 200 or Butoxone 200 to the Dual Magnum + Gramoxone Inteon mixture will result in improved control of such problem broadleaf weeds as sicklepod, morningglory, and cocklebur. Dual Magnum + Gramoxone Inteon + Butyrac 200 or Butoxone 200 applied at ground cracking or sequentially will control or suppress small (1-6 inch) emerged annual grass and broadleaf weeds and provide residual control of weed species listed in the **Dual Magnum Applied Alone** section of this label. Apply Gramoxone Inteon + Butyrac 200 or Butoxone 200 with the appropriate Dual Magnum rate from the **Peanuts – Dual Magnum Alone** section in a minimum spray volume of 20 gals./A with ground equipment. A second application of Dual Magnum + Gramoxone Inteon + Butyrac 200 or Butoxone 200 may be made 28 days after ground cracking. (Refer to the **Peanuts – Dual Magnum Combinations – Multiple Applications** section of this label for geographical areas where multiple applications are recommended.) Refer to the Gramoxone Inteon, Butyrac 200 or Butoxone 200 labels and follow all directions, limitations, and restrictions.

TANK MIXTURE OR SEQUENTIALLY WITH BASAGRAN

Dual Magnum + Basagran applied at ground cracking or sequentially will control species on the Basagran label and provide residual control of species listed in the **Dual Magnum Applied Alone** section of this label. Apply 1.0-2.0 pts./A of Basagran in 20 gals./A, depending on weed species and stage of growth as specified on the Basagran label, with the appropriate Dual Magnum rate from the **Peanuts – Dual Magnum Alone** section. A second application of the combination may be made before peanut pegging. (Refer to the **Peanuts – Dual Magnum Combinations – Multiple Applications** section of this label for geographical areas where multiple applications are recommended.) A second Basagran application may be made in all peanut growing areas, if needed. Refer to the respective labels and follow all directions, limitations, and restrictions for each product.

TANK MIXTURE OR SEQUENTIALLY WITH BASAGRAN + BUTYRAC 200 OR BUTOXONE 200

Dual Magnum + Basagran + Butyrac 200 or Butoxone 200 applied at ground cracking or sequentially will control species on the Basagran label and on the Butyrac or Butoxone labels, especially morningglories. Apply 1.5-2.0 pts./A of Basagran + 8.0 fl. oz./A of Butyrac 200 or Butoxone 200 in 20 gals./A, depending on weed species and stage of growth as specified on the Basagran label, with the appropriate Dual Magnum rate from the **Peanuts – Dual Magnum Alone** section. A second application of the combination may be made before peanut pegging. (Refer to the **Peanuts – Dual Magnum Combinations – Multiple Applications** section of this label for geographical areas where multiple applications are recommended.) A second Basagran + Butyrac 200 or Butoxone 200 application may be made in all peanut growing areas, if needed. Refer to the respective labels and follow all directions, limitations, and restrictions for each product.

TANK MIXTURE OR SEQUENTIALLY WITH STORM®

Dual Magnum + Storm applied at ground cracking through 2 expanded tetrafoliate leaves or Dual Magnum applied according to the directions for **Dual Magnum Alone** and followed with an at-cracking through postemergence treatment of Storm as specified on its label will control species on the Storm label and provide residual control of species listed in the **Dual Magnum Applied Alone** section of this label. Dual Magnum will not control emerged weeds. Refer to the **Peanuts – Dual Magnum Alone** section and to the Storm label and follow all directions, limitations, and restrictions for each product.

BEANS, PEAS, AND LENTILS – DUAL MAGNUM ALONE

Beans, peas, and lentils, including garbanzo, great northern beans, kidney beans, lima beans, mung beans, navy beans, peas (English*; southern peas, such as blackeye, pinkeye, crowder, etc.), pinto beans, snap beans (green, wax, string), lentils, and lupines (sweet, white, white sweet, and grain).

Fall Application:

- Apply after September 30 in ND, SD, MN, WI, and north of Route 30 in IA.
- Apply after October 15 north of Route 91 in NE and south of Route 30 in IA.
- Apply after October 31 north of Route 136 in IL.

In all locations, apply to crop stubble after harvest when the sustained soil temperature at a 4-inch depth is less than 55°F and falling. In minimum-till or no-tillage systems on soils having greater than 2.5% organic matter, use 1.67-2.0 pts./A on *medium-textured* and 2.0 pts./A on *fine-textured soils*. Do not apply to frozen ground. A tillage operation may precede the application. A fall and/or a spring tillage may follow application, but do not exceed an incorporation depth greater than 2-3 inches. Minimize furrow and ridge formation in the tillage operations. **Note:** If a spring application is made, the total rate of the fall plus spring applications must not exceed the maximum total rate for beans, peas, and lentils, or illegal residues may result.

Spring Application:

Apply Dual Magnum, either preplant incorporated or preemergence, using the appropriate rate specified below. **Preplant Incorporated or Preemergence:** Follow instructions for use of Dual Magnum alone under **Application Procedures**. On *coarse soils* with less than 3% organic matter, apply 1.0-1.33 pts./A of Dual Magnum or 1.33 pts./A if organic matter is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.67-2.0 pts./A if organic matter content is 3% or greater.

*On English peas, use only preemergence applications. If soils are cold and wet during pea germination and emergence, the use of Dual Magnum may delay maturity and/or reduce yields.

Notes: To avoid possible illegal residues, (1) Do not cut for hay within 120 days following a Dual Magnum application, (2) Do not use for forage within 60 days following a Dual II Magnum application, and (3) Do not apply more than 2.0 pts./A of Dual Magnum during any one crop year.

BEANS, PEAS, AND LENTILS – DUAL MAGNUM COMBINATIONS

Note: When applying Dual Magnum in combination on beans, peas, and lentils, do not cut for hay within 120 days following application, or illegal residues may result.

TANK MIXTURE AND SEQUENTIAL APPLICATIONS WITH EPTAM – BEANS (GREEN OR DRY)

This mixture controls all weeds controlled by Dual Magnum alone and by Eptam alone. Refer to the **Dual Magnum Applied Alone** section of this label for weeds controlled by Dual Magnum alone and to the Eptam label for weeds controlled by Eptam.

Preplant Incorporated: Follow instructions for use of Dual Magnum alone under **Application Procedures**. **Sequential:** Apply Eptam alone preplant incorporated, as specified on that label. Follow with a preemergence application of Dual Magnum, at rates specified for Dual Magnum alone, during planting (behind the planter) or after planting, but before the weeds or crop emerge.

Refer to the **Product Information** section of this label and to the Eptam label for weather, cultural practices, and all other precautions and limitations that affect performance of these products.

Apply 2.5-4.5 pts./A of Eptam 7E* with Dual Magnum as specified. On *coarse soils*, apply 0.8 pt./A of Dual Magnum if organic matter content is less than 3%, or 1.0 pt./A if organic matter content is 3% or greater. On *medium soils*, apply 1.0 pt./A of Dual Magnum if organic matter content is less than 3%, or 1.33 pts./A if organic matter content is 3% or greater. On *fine soils*, apply 1.33 pts./A of Dual Magnum if organic matter is less than 3%, or 1.33-1.67 pts./A if organic matter is 3% or greater.

*Refer to the Eptam label for rate limitations depending on geographical area, and for species and varietal restrictions.

Precaution: Do not exceed 3.5 pts./A of Eptam 7E on small white beans or green beans grown on coarse-textured soils.

TANK MIXTURE WITH TREFLAN – BEANS (DRY – KIDNEY, NAVY, PINTO, ETC.; LIMA; AND SNAP)

Dual Magnum + Treflan tank mix applied preplant incorporated controls those weeds listed under **Dual Magnum Applied Alone** and those weeds listed for Treflan alone on the Treflan label. Dual Magnum + Treflan may be applied by ground or by aerial equipment and incorporated up to 14 days prior to planting. Follow the recommended procedures on this label and on the respective Treflan label, using equipment that provides uniform 2-inch incorporation.

Apply Dual Magnum + Treflan tank mix using the appropriate Dual Magnum rate specified for Dual Magnum alone, and the Treflan rate from the Dry Beans, and the Lima and Snap Beans sections of the respective Treflan label. Choose the product rate for the specific soil texture/organic matter classification and weed species expected.

Note: Follow all restrictions and precautions on the respective Treflan label and in the **Beans, Peas, and Lentils – Dual Magnum Alone** section of this label.

POTATOES – DUAL MAGNUM ALONE

Apply Dual Magnum, either incorporated, preemergence, or postemergence to potatoes after hilling/lay-by, according to directions specified below for control of weeds listed under the **Product Information** section. Within a rate range, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter. Effectiveness will be reduced if later cultural practices expose untreated soil. For applications by center pivot irrigation, see the **Center Pivot Irrigation Application** section of this label.

Incorporated: Apply Dual Magnum at 1.0-2.0 pts./A to the soil and incorporate into the top 3 inches before planting, using a finishing disk, harrow, rolling cultivator, or similar implement. Planting and later cultural practices should not bring untreated soil to the surface. Postplant incorporated application may be made any time after planting to drag-off, but before potato emergence. Use an implement that evenly distributes Dual Magnum in the top 2 inches of soil. Do not damage potato seed pieces or sprouts with incorporation equipment.

Preemergence: Apply Dual Magnum at 1.0-2.0 pts./A, either after planting as a preemergence, delayed preemergence, after drag-off or hilling treatment, but before weeds emerge. Up to 2.6 pts./A of Dual Magnum alone may be used where soil organic matter is between 6% and 20%.

Postemergence After Hilling/Lay-by: Apply 1.67 pts./A of Dual Magnum postemergence to potatoes through after hilling/at lay-by to control Dual Magnum-sensitive species for remainder of the growing season. This application will not control emerged weeds. It may be applied over a previous Dual Magnum application, but do not apply more than 3.6 pts./A of Dual Magnum in a single crop season.

Precautions: (1) Do not use on muck or peat soils. If cool, wet soil conditions occur after application, Dual Magnum may delay maturity and/or reduce yield of Superior and other early maturing potato varieties. (2) These directions for use do not apply to sweet potatoes or yams. (3) Do not apply both as a preemergence and an incorporated treatment.

Note: Potatoes treated with Dual Magnum should not be harvested within 60 days after the at-planting to drag-off application, or within 40 days after a lay-by application, or illegal residues may result.

POTATOES – DUAL MAGNUM COMBINATIONS

TANK MIXTURE WITH SENCOR

In addition to those weeds controlled by Dual Magnum alone, Dual Magnum applied in tank mix combination with, or sequentially with, any of the registered Sencor formulations, also controls the following broadleaf weeds: cocklebur*, hairy nightshade*, hemp sesbania, jimsonweed*, lambsquarters, prickly sida, ragweed, smartweed, velvetleaf, Venice mallow, and wild mustard.

*Partially controlled.

Dual Magnum at 1.0-2.0 pts./A plus the labeled Sencor use rate may be used preemergence or postemergence to potatoes through after last hilling. Apply 1.0-1.33 pts./A of Dual Magnum on *coarse soils* and 1.33-2.0 pts./A on other soil textures. Within this rate range, use the lower rate on soils relatively coarse-textured or low in organic matter; use the higher rate on soils relatively fine-textured or high in organic matter. Effectiveness will be reduced if later cultural practices expose untreated soil. Dual Magnum will not control emerged weeds.

Refer to the Sencor label for precautionary statements, restrictions, application information, center pivot irrigation application, weeds controlled, and varietal limitations.

Precautions: (1) Postemergence applications to potatoes except center pivot should be made only as a directed or semi-directed spray to avoid chlorosis, minor necrosis, or leaf distortion. (2) These directions for use do not apply to sweet potatoes or yams. (3) Do not use this tank mixture on muck or peat soils.

Notes: (1) Potatoes treated with Dual Magnum in tank mixture with Sencor cannot be harvested within 60 days after application, or illegal residues may result. (2) Potatoes may not be harvested within 40 days after a lay-by application of Dual Magnum, or illegal residues may result.

DUAL MAGNUM + LOROX TANK MIXTURE (EAST OF ROCKY MOUNTAINS)

Dual Magnum may be applied in a tank mix combination with any of the registered Lorox formulations as a preemergence broadcast application to potatoes. Apply to the soil surface after planting and before emergence of the crop or after final drag-off according to the rates specified in Table 9.

Table 9: Dual Magnum + Lorox – Potatoes (East of Rocky Mountains)

	Broadcast Rates Per Acre			
	1% to Less Than 3% Organic Matter		3-5% Organic Matter	
Soil Texture	**Dual Magnum**	**Lorox***	**Dual Magnum**	**Lorox***
COARSE Sandy loam	1.0 pt.	1.0-1.5 lbs.	1.33 pts.	1.5-2.0 lbs.
MEDIUM Loam, silt loam, silt	1.33 pts.	1.5-2.0 lbs.	1.67-2.0 pts.	2.0-2.5 lbs.

***When using Lorox L or Lorox DF, use equivalent rates. One pt. of Lorox L equals 1.0 lb. of Lorox DF.

Precautions: To avoid crop injury, (1) Do not use on sands or loamy sands. (2) Do not incorporate or spray over the top of emerged potatoes.

Refer to the **Product Information** section of this label and to the Lorox label for precautionary statements, restrictions, application information, and weeds controlled.

TANK MIXTURE WITH PROWL 4E

In addition to the weeds controlled by Dual Magnum alone, this tank mixture with Prowl 4E controls such problem species as kochia, lambsquarters, purslane, annual spurge, stinging nettle, and others specified on the Prowl 4E Alone label. Apply Dual Magnum + Prowl 4E preemergence, preemergence incorporated, or early postemergence according to the specific directions on the Prowl 4E label, using the rates in Table 10.

Table 10: Dual Magnum + Prowl 4E – Potatoes

	Broadcast Rates Per Acre	
	Less Than 3% Organic Matter	More Than 3% Organic Matter
Soil Texture	**Dual Magnum + Prowl 4E***	**Dual Magnum + Prowl 4E***
COARSE	1.0-1.33 pts. + 1.0-1.5 pts.	1.0-1.33 pts. + 1.0-1.5 pts.
MEDIUM	1.33 pts. + 1.5-2.0 pts.	1.33-1.67 pts. + 2.0-3.0 pts.
FINE	1.33-1.67 pts. + 2.0-3.0 pts.	1.67-2.0 pts. + 3.0 pts.

***When using other formulations of Prowl, use equivalent rates of active ingredient.**

Refer to the Dual Magnum and Prowl 4E labels and observe all directions, timings, limitations, precautions, and restrictions concerning the use of these products on potatoes and follow the most restrictive.

TANK MIXTURE WITH PROWL 4E + EPTAM

In addition to the weeds controlled by Dual Magnum alone, this tank mixture will control those species on the Prowl 4E and Eptam labels. Refer to the Dual Magnum + Prowl 4E labels for rates of those products and add Eptam 7E at 3.5-7.0 pts./A, depending on geographical area. Refer to the respective Dual Magnum, Prowl 4E, and Eptam labels and observe all directions, limitations, precautions, and restrictions concerning the use of these products on potatoes and follow the most restrictive.

PUMPKIN – DUAL MAGNUM ALONE

Preemergence

Apply Dual Magnum preemergence (before the weeds have emerged) at 1.0 to 1.33 pint/A as an inter-row or inter-hill application in pumpkin. Leave 1 foot of untreated area over the row, or 6 inches to each side of the planted hill and/or any emerged pumpkin foliage (inter-row or inter-hill means not directly over the planted seed or young pumpkin plants). Use the lower Dual Magnum rate on soils light in texture (loamy sand or lighter) and low in soil organic matter (less than 3%). Dual Magnum applied as a broadcast spray over the planted row or hill, or applications made directly to crop foliage will increase the risk of injury to the pumpkin crop such as stand loss, delayed maturity, and loss of yield. Do not apply Dual Magnum closer than 30 days before pumpkin harvest.

Dual Magnum will not control emerged weeds, and thus should be applied before the weeds emerge. Weeds that are present should be controlled by another means, e.g., by mechanical means or by another herbicide.

RHUBARB

Apply Dual Magnum at a broadcast rate of 0.67-1.33 pt./A to the soil surface in early spring, prior to crop emergence. Use lower rates on soils relatively coarse-textured and higher rates on fine-textured soils. A band application may also be used, applying proportionally less spray mixture on the area actually treated. Dual Magnum will not control emerged weeds. Control emerged weeds with an appropriate registered foliar herbicide or by mechanical or physical means.

Restrictions: (1) Make only one application of Dual Magnum per crop. (2) Do not apply more than 1.33 pt./A of Dual Magnum per crop. (3) Do not harvest rhubarb within 62 days of the Dual Magnum application.

SAFFLOWERS – DUAL MAGNUM ALONE

Preplant Incorporated or Preemergence: Follow instructions for use of Dual Magnum alone under **Application Procedures**.

On *coarse soils*, apply 1.0-1.33 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.33 pts./A if organic matter is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.67-2.0 pts./A if organic matter content is 3% or greater.

GRAIN OR FORAGE SORGHUM (SEED TREATED WITH CONCEP®) – DUAL MAGNUM ALONE

Apply Dual Magnum preplant surface, preplant incorporated, preemergence or postemergence using the appropriate rate specified below. Apply Dual Magnum alone only when the sorghum seed has been properly treated with Concep seed treatment. Preplant or preemergence applications of Dual Magnum to sorghum not treated with Concep seed treatment will result in crop death.

Fall Application for Italian Ryegrass Control: Dual Magnum may be applied for residual control of glyphosate-resistant Italian ryegrass (*Lolium multiflorum*). Apply Dual Magnum at 1.33-1.67 pints/Acre in the fall (September 1-December 1) after harvest of the previous crop and prior to Italian ryegrass emergence. Use the lower Dual Magnum rate for coarse-textured soils and the higher rate for fine-textured soils. A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Dual Magnum. For fall applications after emergence of glyphosate-resistant Italian ryegrass, Gramoxone Inteon can be tank mixed with Dual Magnum to control emerged ryegrass. Refer to the Gramoxone Inteon label for specific rates, application instructions and restrictions. Other registered herbicides may be tank mixed with Dual Magnum for control or improved control of other weeds present at the time of application. *Precautions: (1) Do not apply Dual Magnum to frozen ground. (2) If a spring application is made, do not apply Dual Magnum or any other product containing S-metolachlor the following spring to grain or forage sorghum, or illegal residues may result.*

Preplant Surface-Applied: Refer to instructions for use of Dual Magnum under **Application Procedures** section on this label. For minimum-tillage or no-tillage systems only, Dual Magnum may be applied up to 45 days before planting in CO, IA, IL, KS, MO, NE, and SD. Use only split applications for treatments made 30-45 days prior to planting, with $^{2}/_{3}$ of the broadcast rate applied initially and the remaining $^{1}/_{3}$ at planting. Apply 1.5 pts./A of Dual Magnum on *medium soils* or 1.67 pts./A on *fine soils*. Treatments less than 30 days prior to planting may be made either as a split or single application. Apply 1.33 pts./A of Dual Magnum on *coarse soils* not more than 2 weeks prior to planting. Under dry conditions, irrigation after application is recommended to move Dual Magnum into the soil.

Preplant Incorporated or Preemergence: Refer to instructions for use of Dual Magnum under **Application Procedures** section on this label. Broadcast 1.0-1.33 pts./A of Dual Magnum on *coarse soils*, 1.33-1.5 pts./A on *medium soils*, or 1.33-1.67 pts./A on *fine soils*.

Postemergence: Refer to instructions for use of Dual Magnum under **Application Procedures** section on this label. Dual Magnum may be applied broadcast postemergence at 1.0-1.33 pt./A on *coarse soils*, 1.33-1.5 pt./A on *medium soils*, or 1.33-1.67 pt./A on *fine soils*. Dual Magnum will not control emerged weeds. Therefore, emerged weeds must be controlled by cultural or chemical means. When applied alone, Dual Magnum will be safe to emerged sorghum. The risk of sorghum injury increases when adjuvants (e.g., non-ionic, crop oil), Nitrogen sources (e.g., AMS, UAN) or fertilizers are applied with Dual Magnum.

Precautions: (1) If sorghum seed is not properly treated with Concep seed treatment, preplant and preemergence applications of Dual Magnum will severely injure the crop. (2) Under high soil moisture conditions prior to sorghum emergence, injury may occur following preplant and preemergence application of Dual Magnum. The crop will normally outgrow this effect. (3) Do not use Dual Magnum on sorghum grown under dry mulch tillage, or injury may occur. (4) Except for the split preplant surface treatment, do not make more than one application per year, or illegal residues may result. (5) Do not apply Dual Magnum postemergence within 75 days of harvest.

GRAIN OR FORAGE SORGHUM (SEED TREATED WITH CONCEP) – DUAL MAGNUM TANK MIXTURES

Dual Magnum preplant or preemergence (prior to sorghum emergence) tank mixtures with AAtrex may be applied in water or fluid fertilizer. Apply Dual Magnum preplant or preemergence tank mixtures only when the sorghum seed has been properly treated with Concep seed treatment. Preplant or preemeergence applications of Dual Magnum to sorghum not treated with Concep seed treatment will result in crop death.

IMPORTANT: FOR TANK MIXTURES WITH AATREX (OR OTHER BRANDS OF ATRAZINE) – If applying Dual Magnum in tank mixture with AAtrex, all the restrictions and rate limitations on the AAtrex label must be followed if more restrictive/protective than those on this label. In addition, if AAtrex is/must be applied at rates lower than those recommended on this label, broadleaf weed control may be affected. Refer to the AAtrex label for weeds controlled at the reduced rates.

Precautions: (1) Applications of Dual Magnum + AAtrex on highly alkaline soils or on eroded areas where calcareous subsoils are exposed may cause sorghum injury. (2) If sorghum seed is not properly treated with Concep, preplant and preemerence applications of Dual Magnum + AAtrex may severely injure the crop. (3) Under high soil moisture conditions prior to sorghum emergence, injury may occur following the use of preplant and preemergence applications of Dual Magnum + AAtrex. The crop will normally outgrow this effect. (4) Do not use Dual Magnum + AAtrex on sorghum grown under dry mulch tillage, or injury may occur. (5) Except for the split preplant surface treatment, do not make more than one application per year, or illegal residues may result.

TANK MIXTURE WITH AATREX

In addition to the weeds controlled by Dual Magnum alone, Dual Magnum + AAtrex also controls the following broadleaf weeds when applied either preplant surface, preplant incorporated, or preemergence: cocklebur, common purslane, hairy nightshade, lambsquarters, morningglory, ragweed, smartweed, and velvetleaf.

Preplant Surface-Applied: Refer to instructions for use of Dual Magnum under **Application Procedures** on this label. For minimum-tillage or no-tillage systems only, Dual Magnum + AAtrex may be applied up to 45 days prior to planting in IA, IL, eastern KS, MO, NE, and SD. Use only split applications for treatments made 30-45 days prior to planting, with 2/3 of the broadcast rate applied initially and the remaining 1/3 at planting. Apply 1.5 pts./A of Dual Magnum + 1.7-2.0 lbs./A of AAtrex Nine-O* on *medium soils* with 1.5% organic matter or greater. Apply 1.5 pts./A of Dual Magnum + 1.7-2.0 lbs./A of AAtrex Nine-O on *fine soils* with less than 1.5% organic matter, or apply 1.67 pts./A of Dual Magnum + 2.0-2.2 lbs./A of AAtrex Nine-O on *fine soils* with 1.5% organic matter or greater. Treatments less than 30 days prior to planting may be made either as a split or single application. Under dry conditions, irrigation after application is recommended to move Dual Magnum + AAtrex into the soil.

Precautions: To avoid crop injury, (1) Do not use on coarse soils. (2) Do not use on medium soils with less than 1.5% organic matter.

Preplant Incorporated or Preemergence: Refer to instructions for use of Dual Magnum under **Application Procedures** on this label. On *medium soils* with 1.5% organic matter or greater, apply 1.0 pt./A of Dual Magnum + 1.3 lbs./A of AAtrex Nine-O*. On *fine soils* with less than 1.5% organic matter, apply 1.0 pt./A of Dual Magnum + 1.3 lbs./A of AAtrex Nine-O; on *fine soils* with 1.5% organic matter or greater, apply 1.2-1.33 pts./A of Dual Magnum + 1.6-1.8 lbs./A of AAtrex Nine-O.

*When using AAtrex 4L, use equivalent rates. One lb. of AAtrex Nine-O = 1.8 pts. of AAtrex 4L.

Precautions: To avoid crop injury, (1) Do not use on coarse soils; (2) Do not use on medium soils with less than 1.5% organic matter; (3) Do not use in NM, OK, or TX, except in northeast OK and the TX Gulf Coast and Blacklands areas; and (4) Do not apply preplant incorporated in AZ or the Imperial Valley of CA.

TANK MIXTURE OF DUAL MAGNUM OR DUAL MAGNUM + AATREX WITH GRAMOXONE INTEON, LANDMASTER BW, TOUCHDOWN BRANDS OR ROUNDUP BRANDS FOR MINIMUM-TILLAGE OR NO-TILLAGE SYSTEMS

In minimum-tillage or no-tillage systems where sorghum (seed treated with Concep) is planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, the contact herbicides Gramoxone Inteon, Landmaster BW, Touchdown or Roundup may be tank mixed with Dual Magnum or Dual Magnum + AAtrex. See Comment No. 7 following Table 2. The Dual Magnum or Dual Magnum + AAtrex portion of the tank mixture provides preemergence control of the weeds listed on this label under the respective sections.

Refer to the label of each product used in combination and observe the planting details, restrictions, and all other precautions and limitations.

Application: Apply before, during, or after planting, but before sorghum emerges. Add Gramoxone Inteon, Landmaster BW, Touchdown brands or Roundup brands and apply as directed on the product labels.

Gramoxone Inteon: Apply as directed on the product label. This treatment will not control weeds taller than 6 inches.

Landmaster BW: 27-54 oz./A depending on weed species and size. See the Landmaster BW label for weeds controlled, recommended rates for specific weeds, and other information concerning use.

Touchdown Brands or Roundup Brands: See the Touchdown brand or Roundup brand label for weeds controlled, recommended rates, and other use directions.

SWEET SORGHUM (SEED TREATED WITH CONCEP)

Apply Dual Magnum, preplant surface, preplant incorporated, preemergence or postemergence using the appropriate rate specified below. Apply Dual Magnum only when the sweet sorghum seed has been properly treated with Concep seed treatment. Preplant or preemergence applications of Dual Magnum to sweet sorghum not treated with Concep seed treatment will result in crop death.

Soil-Applied: Dual Magnum may be applied up to 45 days before planting. Use only split applications for treatments made 30-45 days prior to planting, with 2/3 of the broadcast rate applied initially and the remaining 1/3 at planting. Treatments less than 30 days prior to planting may be made either as a split or single application. Under dry conditions, irrigation after application is recommended to move Dual Magnum into the soil.

Dual Magnum rates for soil applications to sweet sorghum

Soil Type	30-45 days prior to planting[1]	< 30 days prior to planting	At Planting[2]
Coarse	Not Recommended	1.33 pts	1.0 - 1.33 pts
Medium	1.5 pts	1.5 pts	1.33 - 1.5 pts
Fine	1.67 pts	1.67 pts	1.33 - 1.67 pts

[1]Use only as a split application with 2/3 of the broadcast rate applied initially and the remaining 1/3 applied at planting.
[2]Preplant Incorporated or preemergence

Post-Applied: Dual Magnum may be applied postemergence to sweet sorghum for residual control of grasses and small seeded broadleaf weeds. Postemergence application to sweet sorghum may be made to crop up to 5 inches in height. Dual Magnum will not control emerged weeds. Therefore, emerged weeds must be controlled by cultural or chemical methods. When applied alone, Dual Magnum will be safe to emerged sweet sorghum. Use of adjuvants is prohibited on sweet sorghum.

Dual Magnum rates for postemergence applications to sweet sorghum

Soil Type	Postemergence Rate
Coarse	1.0 – 1.33 pts
Medium	1.33 pts
Fine	1.33 pts

Precautions: (1) If sweet sorghum seed is not properly treated with Concep seed treatment, soil applications of Dual Magnum prior to sorghum emergence will severely injure the crop. (2) Under high soil moisture conditions prior to sweet sorghum emergence, injury may occur following soil applications of Dual Magnum. The crop will normally outgrow this effect. (3) Do not use Dual Magnum on sorghum grown under dry mulch tillage, or injury may occur. (4) Only one application per season is allowed. Dual Magnum may be applied either as a soil applied treatment or a postemergence treatment but not both. (5) Do not apply Dual Magnum postemergence within 90 days of harvest.

SOYBEANS – DUAL MAGNUM ALONE

Apply Dual Magnum, preplant surface-applied, preplant incorporated, preemergence, or postemergence using the appropriate rate specified below. Follow instructions for use of Dual Magnum alone under **Application Procedures** section of this label.

Fall Application for Spring Weed Control

- Apply after September 30 in ND, SD, MN, WI, and north of Route 30 in IA.
- Apply after October 15 north of Route 91 in NE and south of Route 30 in IA.
- Apply after October 31 north of Route 136 in IL.

In all locations, apply to crop stubble after harvest when the sustained soil temperature at a 4-inch depth is less than 55°F and falling. In minimum-till or no-tillage systems on soils having greater than 2.5% organic matter, use 1.67-2.0 pts./A of Dual Magnum on *medium-textured* and 2.0 pts./A of Dual Magnum on *fine-textured soils*. Do not apply to frozen ground. A tillage operation may precede the application. A fall and/or a spring tillage may follow application, but do not exceed an incorporation depth greater than 2-3 inches. Minimize furrow and ridge formation in the tillage operations. **Note:** If a spring application is made, the total rate of the fall plus spring applications must not exceed the maximum total rate for soybeans of 2.6 pts./A depending on soil texture, or illegal residues may result.

Fall Application for Italian Ryegrass Control: Dual Magnum may be applied for residual control of glyphosate-resistant Italian ryegrass (Lolium multiflorum). Apply Dual Magnum at 1.33-1.67 pints/Acre in the fall (September 1-December 1) after harvest of the previous crop and prior to Italian ryegrass emergence. Use the lower Dual Magnum rate for coarse-textured soils and the higher rate for fine-textured soils. A tillage operation may precede the application. Do not incorporate to a depth greater than 2-3 inches if tillage follows the application of Dual Magnum. For fall applications after emergence of glyphosate-resistant Italian ryegrass, Gramoxone Inteon can be tank mixed with Dual Magnum to control emerged ryegrass. Refer to the Gramoxone Inteon label for specific rates, application instructions and restrictions. Other registered herbicides may be tank mixed with Dual Magnum for control or improved control of other weeds present at the time of application. *Precautions: (1) Do not apply Dual Magnum to frozen ground. (2) If a spring application is made, the combined total amount of Dual Magnum applied in the fall plus the spring must not exceed the maximum seasonal S-metolachlor rate for soybeans (2.6 pt/A, depending on soil texture), or illegal residues may result.*

Preplant Surface – Spring Applied: Use on *medium* and *fine soils* with minimum-tillage or no-tillage systems in CO, CT, DE, IA, IL, IN, KS, KY, MA, MD, ME, MI, MN, MO, MT, ND, NE, NH, NY, OH, PA, RI, SD, TN, VA, VT, WI, WV, and WY. Apply $^{2}/_{3}$ the recommended rate of Dual Magnum (1.67 pts./A on *medium soils* and 2.0 pts./A on *fine soils*) as a split treatment 30-45 days prior to planting and the remainder at planting. Applications made less than 30 days before planting may be as either a split or single treatment. Apply 1.33 pts./A of Dual Magnum on *coarse soils* not more than 2 weeks prior to planting.

Note: (1) On soybeans, Dual Magnum may be used up to 2.6 pts./A as a preplant surface treatment on soils having organic matter content between 6% and 20%. (2) The total Dual Magnum rate applied to soybeans during any one crop should not exceed 2.6 pts./A. (3) Do not graze or feed treated soybean forage, hay, or straw to livestock 30 days following treatment, or illegal residues may result.

Preplant Incorporated or Preemergence: On *coarse soils*, apply 1.0-1.33 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.33 pts./A if organic matter content is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum if organic matter content is less than 3%, or 1.67-2.0 pts./A if organic matter content is 3% or greater.

Note: (1) On soybeans, Dual Magnum may be used up to 2.6 pts./A as a preplant incorporated or preemergence treatment on soils having an organic matter content between 6% and 20%. (2) The total Dual Magnum rate applied to soybeans during any one crop should not exceed 2.6 pts./A. (3) Do not graze or feed treated soybean forage, hay, or straw to livestock 30 days following treatment, or illegal residues may result.

Postemergence: Apply 1.0-1.33 pts./A of Dual Magnum as a postemergence treatment to soybeans from emergence up through the third trifoliate leaf stage. Dual Magnum will not control emerged weeds so it must be applied to a weed-free soil surface or in a tank mixture with products that provide postemergence control of weeds present at the time of application.

Dual Magnum can also be applied as part of a sequential soybean weed control program. If Dual Magnum was applied as a preplant surface, preplant incorporated, or a preemergence treatment, a second treatment of Dual Magnum can be applied postemergence provided that the total Dual Magnum rate during any one crop does not exceed 2.6 pt./A.

Note: (1) Do not apply more than 1.33 pts./A of Dual Magnum postemergence to soybeans. (2) The total Dual Magnum rate applied preplant, preemergence or postemergence to soybeans during any one crop should not exceed 2.6 pt./A (2.5 lb. a.i./A of *S*-metolachlor). (3) Make postemergence applications at least 90 days before harvest. (4) Do not graze or feed treated forage or hay from soybeans to livestock following a postemergence application of Dual Magnum.

SOYBEANS – DUAL MAGNUM COMBINATIONS

Water or fluid fertilizer may be used as carrier for Dual Magnum in combination with Sencor, Lorox, Canopy, Pursuit, Scepter, Sonalan, or Command.

Note: For all of the following combinations, Dual Magnum may be used up to 2.33 pts./A on soils having an organic matter content between 6% and 20%. The total Dual Magnum rate applied to soybeans during any one crop year should not exceed 2.6 pts./A.

TANK MIXTURE WITH SENCOR

In addition to those weeds controlled by Dual Magnum alone, Dual Magnum + Sencor, when applied as directed, also controls the following broadleaf weeds: cocklebur*, hairy nightshade, hemp sesbania, jimsonweed*, lambsquarters, prickly sida, ragweed, smartweed, velvetleaf, Venice mallow, and wild mustard.

*Partially controlled.

Apply Dual Magnum and Sencor preplant incorporated or preemergence, using the appropriate rates from Table 11. **Preplant Incorporated or Preemergence:** Follow instructions for use of Dual Magnum alone under **Application Procedures**.

Sequential: Apply Dual Magnum alone **Preplant Incorporated**, as specified in Table 11 for this tank mixture. Follow with a preemergence application of Sencor during planting (behind the planter) or after planting, but before weeds or soybeans emerge.

Refer to the Sencor label for planting details and soybean variety restrictions.

Table 11: Dual Magnum + Sencor – Soybeans

	Broadcast Rates Per Acre					
	0.5% to Less Than 3% Organic Matter			3% Organic Matter or Greater		
Soil Texture**	**Dual Magnum**	**+**	**Sencor DF***	**Dual Magnum**	**+**	**Sencor DF***
COARSE Loamy sand (over 2% organic matter), sandy loam	0.8-1.0 pt.	+	0.33 lb.	1.0 pt.	+	0.5 lb.
MEDIUM	1.0-1.33 pts.	+	0.5 lb.	1.33 pts.	+	0.67 lb.***
FINE	1.33 pts.	+	0.67 lb.	1.33-1.67 pts.	+	0.67 lb.
Mississippi Delta only Silty clay, clay	1.33 pts.	+	1.0 lb.	1.33-1.67 pts.	+	1.0 lb.
Muck or Peat (soils with more than 20% organic matter)	DO NOT USE					

*When using Sencor 4, multiply lbs. of DF by 1.5 to get pts./A.

**On all sand and on loamy sand with less than 2% organic matter, do not use this tank mixture preemergence, or the sequential treatment. Do not use the tank mixture preplant incorporated on any sand, loamy sand, or sandy loam, or crop injury may occur.

***Use 0.5 lb./A if applied preplant incorporated.

Precautions: (1) Do not use the tank mix or sequential application on soil with less than 0.5% organic matter or on alkaline soil with a pH over 7.4, or crop injury may occur. (2) If heavy rain occurs soon after application, crop injury may result, especially in poorly drained areas where water stands for several days.

Note: Follow most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Sencor label.

TANK MIXTURE WITH LOROX

In addition to those weeds controlled by Dual Magnum alone, Dual Magnum + Lorox, applied preemergence, also controls the following broadleaf weeds: cocklebur*, jimsonweed*, lambsquarters, morningglory*, prickly sida, ragweed, smartweed, velvetleaf*, Venice mallow, and wild mustard.

*Partially controlled.

Preemergence: Apply during planting (behind planter) or after planting, but before weeds or soybeans emerge. Refer to the Lorox label for planting details. Apply the appropriate rates from Table 12.

Precaution: Do not use on soil with less than 0.5% organic matter, or crop injury may occur.

Table 12: Dual Magnum + Lorox – Soybeans

	Broadcast Rates Per Acre					
	0.5% to Less Than 3% Organic Matter			3% Organic Matter or Greater		
Soil Texture*	**Dual Magnum**	**+**	**Lorox DF*** **	**Dual Magnum**	**+**	**Lorox DF*** **
COARSE**	0.8 pt.	+	1.0 lb.	1.0 pt.	+	1.0-1.5 lbs.
MEDIUM	1.0 pt.	+	1.0-1.5 lbs.	1.33 pts.	+	1.5-2.0 lbs.
FINE	1.33 pts.	+	2.0 lbs.	1.33-1.67 pts.	+	2.5-3.0 lbs.
Muck or Peat (soils with more than 20% organic matter)	DO NOT USE					

*Do not use on sand, gravelly soils, or exposed subsoils.

**Do not use on loamy sand, except in the northeastern U.S. on loamy sand with over 1% organic matter.

***When using Lorox L or Lorox DF, use equivalent rates. One pt. of Lorox L equals 1.0 lb. of Lorox DF.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Lorox labels.

TANK MIXTURE WITH TREFLAN

Dual Magnum + Treflan tank mix applied preplant incorporated controls those weeds listed under the **Dual Magnum Applied Alone** section and those weeds listed for Treflan Alone on the Treflan label. Dual Magnum + Treflan may be applied by ground or by aerial equipment and incorporated up to 14 days before planting. Follow the recommended procedures on the Treflan and Dual Magnum labels, using equipment that provides uniform 2-inch incorporation.

Apply Dual Magnum + Treflan tank mix using the appropriate rate from the **Soybeans – Dual Magnum Alone** section of this label and the Treflan Alone section of the Treflan label for the specific soil texture/organic matter classification and weed species expected.

To control DNA-resistant goosegrass* and other species on the respective labels where the soil organic matter is 3% or less, apply the rate in Table 13.

Table 13: Dual Magnum + Treflan – Organic Matter Content Less Than 3%

Soil Texture	Broadcast Rates Per Acre		
	Dual Magnum	Treflan E.C.**	
	Organic Matter Less Than 3%	Organic Matter	
		Less Than 2%	2-3%
COARSE*	0.8-1.0 pt.	1.0 pt.	1.5 pts.
MEDIUM	1.0 pt.	1.5 pts.	1.5 pts.
FINE	1.33 pts.	2.0 pts.	2.0 pts.

***Where a range of rates is given for Dual Magnum, use the minimum rate where DNA-resistant goosegrass is the predominant species.

****When Treflan MTF or Treflan 5 is used, use comparable rates. Multiply pts. of Treflan E.C. by 1 for Treflan MTF and by 0.8 for Treflan 5.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Treflan labels.

TANK MIXTURE WITH SCEPTER

This tank mixture controls all weeds controlled by Dual Magnum alone and by Scepter alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Scepter label for weeds controlled by Scepter. Refer to the Scepter label for geographical locations where this tank mixture may be applied.

Apply Dual Magnum + Scepter preplant incorporated or preemergence, using rates in Table 14. Follow use directions under **Application Instructions** on the Scepter label. For preplant incorporated applications, apply and incorporate within 30 days before planting. Observe all other precautions and limitations on the Scepter labels.

Table 14: Dual Magnum + Scepter – Soybeans

Soil Texture	Broadcast Rates Per Acre			
	Less Than 3% Organic Matter		3% or More Organic Matter	
	Dual Magnum	Scepter	Dual Magnum	Scepter
COARSE	0.8 pt.	0.67 pt.	1.0 pt.	0.67 pt.
MEDIUM	1.0 pt.	0.67 pt.	1.33 pts.	0.67 pt.
FINE	1.33 pts.	0.67 pt.	1.33-1.67* pts.	0.67 pt.
Muck or Peat (soils with more than 20% organic matter)	DO NOT USE			

***Use the higher rate of Dual Magnum if heavy weed infestations are expected.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Scepter labels.

TANK MIXTURE WITH CANOPY

This tank mixture controls all weeds controlled by Dual Magnum alone and by Canopy alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Canopy label for weeds controlled by Canopy.

Apply preplant incorporated or preemergence, using the appropriate rates from Table 15. **Preplant Incorporated:** Apply within 2 weeks of planting. Uniformly incorporate into the top 1-2 inches of soil before planting soybeans. **Preemergence:** Apply after planting, but before soybeans emerge.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Canopy labels including varietal restrictions.

Table 15: Dual Magnum + Canopy – Soybeans

	Broadcast Rates Per Acre		
	Less Than 3% Organic Matter	3% or More Organic Matter	
Soil Texture	**Dual Magnum**	**Dual Magnum**	**Canopy**
COARSE	0.8 pt.	1.0 pt.	*
MEDIUM	1.0 pt.	1.33 pts.	*
FINE	1.33 pts.	1.33-1.67 pts.	*

*Refer to the Canopy label for appropriate rate, according to geographical location, soil and organic matter classification, and pH limitations.

Precaution: Do not apply to sand, or to any soil with less than 0.5% organic matter, or to any soil with pH greater than 7.0, except as noted on the Canopy label.

TANK MIXTURE WITH COMMAND

This tank mixture controls all weeds controlled by Dual Magnum alone and by Command alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Command label for weeds controlled by Command.

Apply Dual Magnum + Command preplant incorporated, using rates in Table 16. Follow all Command application instructions as to incorporation interval, geographical location, equipment operation, soil moisture conditions, etc.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Command labels including rotational restrictions.

Table 16: Dual Magnum + Command – Soybeans

	Broadcast Rates Per Acre			
	Dual Magnum		Command 4E	
Soil Texture	0.5-3% Organic Matter	Greater Than 3% Organic Matter	Northern Area	Southern Area
COARSE	0.8 pt.	1.0 pt.	1.5-2.0 pts.	2.0-2.5 pts.
MEDIUM	1.0 pt.	1.33 pts.	1.5-2.0 pts.	2.0-2.5 pts.
FINE	1.33 pts.	1.33-1.67 pts.	1.5-2.0 pts.	2.0-2.5 pts.

TANK MIXTURE WITH SONALAN

This tank mixture controls all weeds controlled by Dual Magnum alone and by Sonalan alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Sonalan label for weeds controlled by Sonalan.

Apply Dual Magnum and Sonalan preplant incorporated, using the appropriate rates from Table 17.

Preplant Incorporated: Follow recommended soil preparation procedures for Sonalan.

Sequential: Apply Sonalan alone preplant incorporated as specified on the Sonalan label. Follow with a preemergence application of Dual Magnum during planting (behind the planter) or after planting, but before weeds or soybeans emerge.

Table 17: Dual Magnum + Sonalan – Soybeans

Soil Texture	Broadcast Rates Per Acre			
	Less Than 3% Organic Matter		3% or More Organic Matter	
	Dual Magnum	Sonalan	Dual Magnum	Sonalan
COARSE	1.0-1.33 pts.	1.25-2.0 pts.	1.33 pts.	1.25-2.0 pts.
MEDIUM*	1.33-1.67 pts.	1.75-2.5 pts.	1.33-1.67 pts.	1.75-2.5 pts.
FINE*	1.33-1.67 pts.	2.25-3.0 pts.	1.67-2.0 pts.	2.25-3.0 pts.
Muck or Peat (soils with more than 20% organic matter)	DO NOT USE			

*For eastern black nightshade on these soils, apply Sonalan at 3.0 pts./A on *medium-* and 3.5 pts./A on *fine-textured soils*, and follow with 2 incorporation passes.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Sonalan labels.

TANK MIXTURE WITH PURSUIT

This tank mixture controls all weeds controlled by Dual Magnum alone and by Pursuit alone. Refer to the **Dual Magnum Applied Alone** section for weeds controlled by Dual Magnum and to the Pursuit label for weeds controlled by Pursuit. Refer to the Pursuit label for geographical locations where this tank mixture may be applied.

Apply Dual Magnum + Pursuit early preplant, preplant incorporated, or preemergence after planting, using rates in Table 18. Application can be made in water or liquid fertilizer. Follow all use directions under Soil Applications on the Pursuit label. For early preplant and preplant incorporated applications, apply within 30 days before planting.

Note: Follow the most restrictive limitations and precautions on the **Dual Magnum – Soybeans Alone** section of the Dual Magnum label and the Soybean directions on the Pursuit labels including rotational restrictions.

Table 18: Dual Magnum + Pursuit – Soybeans

	Broadcast Rates Per Acre		
	Less Than 3% Organic Matter	3% or More Organic Matter	Less Than 3% - 3% or More Organic Matter
Soil Texture	**Dual Magnum**	**Dual Magnum**	**Pursuit**
COARSE	0.8 pt.	1.0 pt.	0.25 pt.
MEDIUM	1.0 pt.	1.33 pts.	0.25 pt.
FINE	1.33 pts.	1.33-1.67 pts.	0.25 pt.

Sequential: Apply Dual Magnum early preplant, preplant incorporated, or preemergence after planting at 0.8 pt./A on *coarse soils* and 1.0 pt./A on *medium-* and *fine-textured soils*. Follow with a sequential postemergence application of Pursuit to control emerged weeds according to the Pursuit label. Dual Magnum will improve the consistency and level of control from Pursuit on most grass species. Refer to the Pursuit postemergence label for a listing of weeds controlled, application rate, and growth stage limitations.

TANK MIXTURE WITH SENCOR, SCEPTER, LOROX, CANOPY, OR PURSUIT, PLUS GRAMOXONE INTEON, TOUCHDOWN BRANDS OR ROUNDUP BRANDS FOR MINIMUM-TILLAGE OR NO-TILLAGE SYSTEMS

In minimum-tillage or no-tillage systems where soybeans are planted directly into a cover crop, stale seedbed, established sod, or previous crop residues, the contact herbicides Gramoxone Inteon, Touchdown brands or Roundup brands may be added to a tank mix of either Dual Magnum + Sencor, Dual Magnum + Scepter, Dual Magnum + Lorox, Dual Magnum + Canopy, or Dual Magnum + Pursuit. When used as directed, the Gramoxone Inteon portion of the tank mixture controls most emerged weeds and suppresses many perennial weeds. Touchdown or Roundup combinations will control emerged annual and perennial weeds when applied as directed on the Touchdown or Roundup label. The Dual Magnum + Sencor, Scepter, Lorox, Canopy, or Pursuit portion of the tank mixture provides preemergence control of the weeds listed on this label in the tank mixture section for Dual Magnum + Sencor, Dual Magnum + Scepter, Dual Magnum + Lorox, Dual Magnum + Canopy, and Dual Magnum + Pursuit, respectively.

Refer to the label of each product used in combination and observe the planting details, soybean variety restrictions, information regarding application to soybeans, geographical restrictions, and all other precautions and limitations.

Application: Apply before, during, or after planting, but before the soybeans emerge. Add Gramoxone Inteon, Touchdown brands or Roundup brands and apply as directed on the product labels.

Gramoxone Inteon: Apply as directed on the product label. This treatment will not control weeds taller than 6 inches.

Note: Do not apply combinations containing Gramoxone Inteon in suspension-type liquid fertilizers, as the activity of paraquat will be reduced.

Touchdown or Roundup: See the Touchdown brand or Roundup brand label for weeds controlled, recommended rates, and other use directions.

Apply in 20-60 gals. of water or fluid fertilizer per acre with ground equipment.

Dual Magnum + Sencor + Gramoxone Inteon, Touchdown Brands or Roundup Brands

On loamy sand with over 2% organic matter, apply 1.0 pt./A of Dual Magnum + 0.33-0.5 lb./A of Sencor DF. On *medium soils*, apply 1.33 pts./A of Dual Magnum + 0.5-0.67 lb./A of Sencor DF. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum + 0.67 lb./A of Sencor DF.

*****When using Sencor 4, multiply lbs. of DF by 1.5 to get pts./A.

Precautions: To avoid crop injury, (1) Do not use this tank mixture on soil with less than 0.5% organic matter, on alkaline soil with a pH over 7.4, or on all sand and on loamy sand with less than 2% organic matter. (2) If heavy rain occurs soon after application, crop injury may result, especially in poorly drained areas where water stands for several days, or where the seeding slit has not been properly closed.

Dual Magnum + Scepter + Gramoxone Inteon, Touchdown Brands or Roundup Brands

On *coarse soils*, apply 1.0 pt./A of Dual Magnum + 0.67 pt./A of Scepter. On *medium soils*, apply 1.33 pts./A of Dual Magnum + 0.67 pt./A of Scepter. On *fine soils*, apply 1.67 pts./A of Dual Magnum + 0.67 pt./A of Scepter.

Note: (1) Do not apply within 90 days of harvest, and (2) Do not graze or feed treated soybean forage, hay, or straw to livestock, or illegal residues may result.

Dual Magnum + Lorox + Gramoxone Inteon, Touchdown Brands or Roundup Brands

On *coarse soils******, apply 1.0 pt./A of Dual Magnum + 1.0-1.5 lbs./A of Lorox DF******. On *medium soils*, apply 1.33 pts./A of Dual Magnum + 1.0-2.0 lbs./A of Lorox DF. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum + 2.0-3.0 lbs./A of Lorox DF.

*****Do not use on loamy sand, except in the northeastern U.S. on loamy sand with over 1% organic matter, or injury may occur. Do not use on sand, gravelly soils, or exposed subsoils, or injury may occur.

******When using Lorox L or Lorox DF, use equivalent rates. One pt. of Lorox L equals 1.0 lb. of Lorox DF.

Precaution: Do not use on soil with less than 0.5% organic matter, or crop injury may occur.

Dual Magnum + Canopy + Gramoxone Inteon, Touchdown Brands or Roundup Brands

Use only where soils have 0.5-5% organic matter. On *coarse soils* (except sand), apply 1.0 pt./A of Dual Magnum, on *medium soils*, apply 1.33 pts./A of Dual Magnum, and on *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum. Refer to the Canopy label for appropriate rate, according to geographical location, soil and organic matter classification, pH limitations, and all other use directions.

Precaution: Do not apply to sand, or to any soil with less than 0.5% organic matter, or to any soil with pH greater than 7.0, except as noted on the Canopy label.

Dual Magnum + Pursuit + Gramoxone Inteon, Touchdown Brands or Roundup Brands

On *coarse soils*, apply 1.0 pt./A of Dual Magnum + 0.25 pt./A of Pursuit. On *medium soils*, apply 1.33 pts./A of Dual Magnum + 0.25 pt./A of Pursuit. On *fine soils*, apply 1.67 pts./A of Dual Magnum + 0.25 pt./A of Pursuit.

POSTEMERGENCE USE ON SOYBEANS – DUAL MAGNUM TANK MIXTURES

Tank Mixture with Glyphosate Products (e.g., Touchdown Brands or Roundup Brands)

Dual Magnum at 1.0-1.33 pts./A may be tank mixed with glyphosate products at labeled rates and applied from emergence up through the third trifoliate leaf stage of Roundup Ready or glyphosate-tolerant soybeans. Dual Magnum alone will not control emerged weeds. Use this treatment only on soybeans designated for use with glyphosate (e.g., Roundup Ready or glyphosate-tolerant soybeans). The glyphosate product must be registered for postemergence use in Roundup Ready or glyphosate-tolerant soybeans.

Tank Mixture with Pursuit

Dual Magnum at 1.0-1.33 pts./A may be tank mixed with Pursuit at labeled rates and applied from emergence up through the third trifoliate leaf stage of soybeans. Dual Magnum alone will not control emerged weeds.

Tank Mixture with Liberty Herbicide or Ignite 280 SL

Dual Magnum at 1.0-1.33 pts./A may be tank mixed with Liberty Herbicide or Ignite 280 SL Herbicide at labeled rates and applied from emergence up through the third trifoliate leaf stage of soybeans. Dual Magnum alone will not control emerged weeds. Use this treatment only on soybeans designated for use with glufosinate (e.g., LibertyLink).

Note: Follow the tank mix product label for adjuvant recommendations. The use of COC or UAN with Dual Magnum may result in temporary crop injury. To avoid possible illegal residues when Dual Magnum is applied postemergence to soybeans: (1) Do not apply more than 1.33 pts./A postemergence. (2) Make postemergence applications at least 90 days before harvest. (3) Do not graze or feed treated forage or hay from soybeans to livestock following a postemergence application of Dual Magnum.

SUGAR BEETS – DUAL MAGNUM ALONE

Postemergence Applications

Dual Magnum may be applied postemergence to sugar beets after the sugar beets have reached the first true leaf stage. However, because Dual Magnum is primarily a soil-active herbicide, it must be applied prior to weed emergence in order to provide consistent control of listed weeds. As such, weeds that are emerged with or before the crop, or that are present at the time Dual Magnum is applied, must be controlled with another appropriately labeled herbicide. Apply Dual Magnum at 1 pt./A on *coarse soils*, 1.33 pts./A on *medium soils*, and 1.67 pts./A on *fine soils*. More than one postemergence application may be applied, but the total should not exceed 2.6 pts./A. Weeds present at the time of application will not be controlled.

Note: To avoid possible illegal residues: (1) Do not apply more than 2.67 pts./A postemergence. (2) Do not harvest within 60 days after the last application.

Precaution: In coarse soils, Dual Magnum applied before emergence of sugar beets (i.e., other than postemergence) may cause injury.

SUGAR BEETS – DUAL MAGNUM TANK MIX COMBINATIONS

Dual Magnum may tank mixed with Assure® II, Betamix®, Betanex®, Poast®, Progress®, Select®, Stinger™, or Upbeet® and applied to sugar beets. Tank mixtures of these products with Dual Magnum will increase the risk of crop injury over that of either product applied alone, as the Dual Magnum formulation has some adjuvant properties. The addition of a spray adjuvant such as crop oil concentrates (COC's) or methylated seed oils (MSO's) can further increase the risk of crop injury. Injury risk can be reduced by using the lowest effective rate of the tank mix partner(s) and/or adjuvant and by avoiding applications under adverse growing conditions or high soil or air humidity. Refer to the individual product labels and follow all use restrictions and limitations.

SUNFLOWERS – DUAL MAGNUM ALONE

Preplant Incorporated or Preemergence

Within the rate ranges given below. Use the higher rate of Dual Magnum if heavy weed infestations are expected. On *coarse soils* with organic matter of less than 3%, apply 1.0-1.33 pts./A of Dual Magnum; 1.33 pts./A if organic matter is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils* with organic matter of less than 3%, apply 1.33-1.67 pts./A of Dual Magnum; 1.67-2.0 pts./A if organic matter content is 3% or greater.

Note: To avoid possible illegal residues: (1) Do not allow livestock to graze or feed in treated area. (2) Do not exceed the maximum label rates given above for sunflowers for the soil type.

TOMATOES – DUAL MAGNUM ALONE

Transplanted

Dual Magnum may be applied preplant incorporated or preplant before transplanting. If the latter method is used, keep soil disturbance to a minimum during the transplanting operation. Application may also be made post-directed to transplants after the first settling rain or irrigation. When an application is made post-directed, apply in a minimum of 20 gallons of water per acre and minimize contact with tomato plants. Dual Magnum will not control emerged weeds. In bedded transplanted tomatoes, apply Dual Magnum preplant non-incorporated to the top of the pressed bed, as the last step, prior to laying plastic. Dual Magnum may also be used to treat row-middles in bedded tomatoes, as long as the total amount of Dual Magnum does not exceed the maximum allowed per crop.

Seeded

Dual Magnum may be applied post-directed to direct seeded tomatoes. Tomato plants must be at least 4 inches tall at the time of application and the product must be applied in a minimum of 20 gallons of water per acre. Minimize spray contact with tomato plants. Dual Magnum will not control emerged weeds.

Tomato Use Rates: On *coarse soils*, apply 1.0-1.33 pts./A of Dual Magnum if organic matter content is less than 3% or 1.33 pts./A if organic matter is 3% or greater. On *medium soils*, apply 1.33-1.67 pts./A of Dual Magnum. On *fine soils*, apply 1.33-1.67 pts./A of Dual Magnum if organic matter content is less than 3% or 1.67-2.0 pts./A if organic matter content is 3% or greater.

Precautions: (1) Do not apply to varieties or cultivars with unknown tolerance to Dual Magnum. (2) Dual Magnum may damage transplants that have been weakened by any cause. To prevent damage, plant only healthy transplants. Do not plant when wet, cool, or unfavorable growing conditions exist. (3) In transplanted tomatoes, if Dual Magnum is applied preplant incorporated, incorporate to a depth less than the depth of transplanting, and use the lower end of the rate range for the given soil type, or damage may occur. (4) For row middle applications where tomatoes are grown on sandy soils and where high soil moisture conditions can exist (e.g., low binding and high evaporation conditions), as may be found in the States of Florida, Georgia, Maryland, and Virginia, there is potential for crop injury in the form of leaf epinasty. The risk of this type of injury can be reduced by: a) incorporating the Dual Magnum immediately following application, b) applying the Dual Magnum seven or more days before transplanting (but only after the beds have been formed), c) minimizing the application of Dual Magnum onto the plastic of the bed, or d) any combination of the above.

Note: To avoid possible illegal residues: (1) Do not exceed the maximum label rate for the soil texture per year. (2) Apply only by ground application.

Restrictions:

90 Day PHI - If the single application rate of Dual Magnum is greater than 1.33 pt./A (up to 2.0 pt./A) do not harvest tomatoes within 90 days of application.

30 Day PHI - If the application rate of Dual Magnum does not exceed 1.33 pt./A do not harvest tomatoes within 30 days of application.

When applying at 1.33 pt./A with a 30 day PHI, the following restrictions apply:

- **Do not exceed two applications per growing season.**
- **The use of adjuvants is prohibited.**
- **Applications may be made using ground equipment, in concentrated spray volumes.**
- **Applications may be made as a foliar broadcast spray to the soil within a week of transplanting and again at blooming/fruiting to the row middles as a banded/directed application 38-77 days after the first treatment.**

STORAGE AND DISPOSAL

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

Pesticide Storage

This product may be stored at temperatures down to 30 degrees below 0°F.

Pesticide Disposal

Open dumping is prohibited. Wastes resulting from the use of this product are toxic. Improper disposal of unused pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state, or local procedures. For guidance in proper disposal methods, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office.

Container Handling [less than 5 gallons]

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

Container Handling [Bulk/Mini-Bulk]

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

AAtrex®, AAtrex Nine-O®, Beacon®, Bicep II Magnum®, Caparol®, Concep®, Dual Magnum®, Dual II Magnum®, Dual IIG Magnum®, Eptam®, Eradicane®, Evik®, Exceed®, Gramoxone Inteon®, Princep®, Princep® Caliber 90®, Touchdown®, the ALLIANCE FRAME the SYNGENTA Logo and the PURPOSE ICON are Trademarks of a Syngenta Group Company

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For non-emergency (e.g., current product information) call
Syngenta Crop Protection at 1-800-334-9481.

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

SCP 816A-L1U 1210
337398

Note: It is illegal to sell, use or distribute this product within, or into, Nassau County or Suffolk County, New York.

Dual Magnum®

Herbicide

For weed control in corn; cotton; grasses grown for seed; horseradish; peanuts; beans, peas, and lentils; potatoes; pumpkin; rhubarb; sugar beets; sunflowers; safflowers; sweet, grain or forage sorghum; soybean; soybean, immature seed; and tomatoes

Active Ingredient:
S-metolachlor
(CAS No. 87392-12-9) 83.7%

Other Ingredients:	16.3%
Total:	100.0%

Dual Magnum contains 7.62 lbs. of active ingredient per gallon.

See directions for use in attached booklet.

AGRICULTURAL USE REQUIREMENTS

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

EPA Reg. No. 100-816
EPA Est. 070989-IA-001

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

SCP 816A-L1U 1210
337398

BAR CODE # IS
(01) 0 07 02941 53275
LAST DIGIT IS CHECK DIGIT
UCC/EAN 128

2.5 gallons

Net Contents

KEEP OUT OF REACH OF CHILDREN.

CAUTION

Precautionary Statements

Hazards to Humans and Domestic Animals

Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with eyes, skin, or clothing. May cause skin sensitization reactions in certain individuals.

FIRST AID

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

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

If swallowed: Call a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

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

Have the product container or label with you when calling a Poison Control Center or doctor, or going for treatment.

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

Environmental Hazards: 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 contaminate water when disposing of equipment wash water or rinsate.

Ground Water Advisory: The active ingredient in Dual Magnum has the potential to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground water contamination.

Surface Water Advisory: The active ingredient in Dual Magnum has the potential to contaminate surface water through ground spray drift. Under some conditions, the active ingredient may also have a high potential for runoff into surface water (primarily via dissolution in runoff water) for several months post-application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying extremely shallow ground water, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlaying tile drainage systems that drain to surface water.

Mixing/Loading Instructions: Care must be taken when using this product to prevent back-siphoning into wells, spills, or improper disposal of excess pesticide, spray mixtures, or rinsates.

Check-valves or antisiphoning devices must be used on all mixing and/or irrigation equipment.

This product may not be mixed or loaded within 50 ft. of perennial or intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be mixed/loaded or used within 50 ft. of all wells, including abandoned wells, drainage wells, and sink holes.*

*For exceptions to this restriction, see the **Environmental Hazards** section of the **Precautionary Statements** in attached booklet.

Aerial Drift Management Requirements: Do not apply this product by air, unless the supplemental labeling on **Aerial Drift Management** in attached booklet is followed.

Chemigation: Refer to supplemental labeling in attached booklet for use directions for chemigation. Do not apply this product through any irrigation system, unless the supplemental labeling on chemigation is followed.

STORAGE AND DISPOSAL

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

Pesticide Storage: This product may be stored at temperatures down to 30 degrees below 0°F.

Pesticide Disposal: Open dumping is prohibited. Wastes resulting from the use of this product are toxic. Improper disposal of unused pesticide, spray mixture, or rinsate is a violation of federal law. Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to federal, state, or local procedures. For guidance in proper disposal methods, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office.

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

For minor spills, leaks, etc., follow all precautions indicated on this label and clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes. In the event of a major spill, fire, or other emergency, call 1-800-888-8372, day or night.

To be used in accordance with directions for use in Dual Magnum label booklet. See Dual Magnum label booklet for pesticide disposal instructions.

syngenta®

MATERIAL SAFETY DATA SHEET

Syngenta Crop Protection, Inc.
Post Office Box 18300
Greensboro, NC 27419

In Case of Emergency, Call
1-800-888-8372

1. PRODUCT IDENTIFICATION

Product Name: **DUAL MAGNUM** Product No.: A9793D

EPA Signal Word: Caution

Active Ingredient(%): s-Metolachlor (83.7%) CAS No.: 87392-12-9

Chemical Name: Acetamide, 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl]-,(S)

Chemical Class: Chloroacetanilide Herbicide

EPA Registration Number(s): 100-816 **Section(s) Revised: 14**

2. HAZARDS IDENTIFICATION

Health and Environmental

Harmful if inhaled. May be harmful if swallowed or in contact with skin. Irritating to eyes and skin. May cause an allergic skin reaction. May cause drowsiness or dizziness. May be harmful if swallowed and enters airway.

Hazardous Decomposition Products

None known.

Physical Properties

Appearance: Golden brown liquid

Odor: Sweet

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Petroleum Solvent	Not Established	Not Established	100 mg/m³ (15-17 ppm) TWA *	No
1,2,4-Trimethylbenzene (< 1%)	Not Established	25 ppm TWA	25 ppm TWA **	No
Naphthalene (< 1%)	10 ppm TWA	10 ppm TWA (skin)	10 ppm TWA **	See "Toxicity", Sec. 11
s-Metolachlor (83.7%)	Not Established	Not Established	10 mg/m³ TWA ***	No

* recommended by manufacturer

** recommended by NIOSH

*** Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.
Syngenta Hazard Category: C, S

4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison

contol center or doctor, or going for treatment.

Ingestion:	If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
Eye Contact:	If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
Skin Contact:	If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
Inhalation:	If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

Contains petroleum distillate - vomiting may cause aspiration pneumonia.

Medical Condition Likely to be Aggravated by Exposure

None known.

5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	> 200°F (Setaflash)	
Flammable Limits (% in Air):	Lower: Not Applicable	Upper: Not Applicable
Autoignition Temperature:	Not Available	
Flammability:	Not Applicable	

Unusual Fire, Explosion and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Ingestion:	Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
Eye Contact:	Where eye contact is likely, use chemical splash goggles. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Skin Contact:	Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber or Viton), coveralls, socks and chemical-resistant footwear.
Inhalation:	A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits. In case of emergency spills, use a NIOSH approved respirator with any R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Golden brown liquid
Odor:	Sweet
Melting Point:	Not Applicable
Boiling Point:	Not Available
Specific Gravity/Density:	1.09 g/cm³ @ 68°F (20°C)
pH:	5 - 7 (1% solution in H2O @ 77°F (25°C))

Solubility in H2O

s-Metolachlor:	0.48 g/l @ 77°F (25°C)

Vapor Pressure

s-Metolachlor:	2.8 x 10(-5) mmHg @ 77°F (25°C)

10. STABILITY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	None known.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	None known.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:		
	Oral (LD50 Rabbit) :	3425 mg/kg body weight
Dermal:		
	Dermal (LD50 Rat) :	> 2000 mg/kg body weight
Inhalation:		
	Inhalation (LC50 Rat) :	> 2.61 mg/l air - 4 hours
Eye Contact:	Moderately Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Sensitizing (Guinea Pig)	

Reproductive/Developmental Effects

s-Metolachlor: None observed.

Chronic/Subchronic Toxicity Studies

s-Metolachlor: None observed.

Carcinogenicity

s-Metolachlor: Benign liver tumors at high dose levels (female rats).

Other Toxicity Information

None

Toxicity of Other Components

1,2,4-Trimethylbenzene (< 1%)

Test results reported in Section 11 for the final product take into account any acute hazards related to the 1,2,4-trimethylbenzene in the formulation.

Naphthalene (< 1%)

Test results reported in Section 11 for the final product take into account any acute hazards related to the naphthalene in the formulation.
Chronic overexposure to naphthalene can affect the liver, kidney, respiratory tract and blood.
Carcinogen Status:
NTP: Anticipated Carcinogen
IARC: Group 2B Possible Human Carcinogen

Petroleum Solvent

May cause irritation to the eyes, skin and respiratory system. Excessive inhalation causes headache, dizziness, nausea and loss of motor skills.

Target Organs

Active Ingredients

s-Metolachlor: Liver

Inert Ingredients

1,2,4-Trimethylbenzene: Not Applicable

Naphthalene: Liver, kidney, respiratory tract, blood

Petroleum Solvent: Eye, skin, respiratory system, central nervous system

12. ECOLOGICAL INFORMATION

Ecotoxicity Effects

s-Metolachlor:

Fish (Rainbow Trout) 96-hour LC50 11.9 ppm

Green Algae 5-day EC50 0.008 ppm

Bird (Bobwhite Quail) LD50 Oral > 2510 mg/kg

Invertebrate (Water Flea) 48-hour EC50 26 ppm

Environmental Fate

s-Metolachlor:

The information presented here is for the active ingredient, s-metolachlor.
Low bioaccumulation potential. Not persistent in soil. Stable in water. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA

Packages < 1700 gal. - Not regulated.

Packages > 1700 gal.

Proper Shipping Name: RQ Other Regulated Substances, Liquid, N.O.S. (Naphthalene)

Hazard Class or Division: Class 9

Identification Number: NA 3082

Packing Group: PG III

Comments

Water Transport - International

Proper Shipping Name:

< 1700 gal.

Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor), Marine Pollutant

> 1700 gal.

RQ Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor, Naphthalene), Marine Pollutant

Hazard Class or Division: Class 9

Identification Number: UN 3082

Packing Group: PG III

IMDG EMS #: F-A, S-F

Air Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (s-Metolachlor)

Hazard Class or Division: Class 9

Identification Number: UN 3082

Packing Group: PG III

Note: This product is currently not regulated for airfreight within the NAFTA region. However, effective 01/01/2011 the above classification must be used.

15. REGULATORY INFORMATION

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes:	Acute Health Hazard Chronic Health Hazard
Section 313 Toxic Chemicals:	1,2,4-Trimethylbenzene (< 1%) (CAS No. 95-63-6) Naphthalene (< 1%) (CAS No. 91-20-3)

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

Report product spills > 1,700 gal. (based on naphthalene [RQ = 100 lbs.] content in the formulation)

RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings		HMIS Hazard Ratings	
Health:	2	Health:	2
Flammability:	1	Flammability:	1
Instability:	0	Reactivity:	0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 9/26/1996
Revision Date: 7/13/2010 Replaces: 6/11/2010

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

End of MSDS

BOARD OF PESTICIDES CONTROL
APPLICATION FOR VARIANCE PERMIT
(Pursuant to Chapter 22 of the Board's Regulations)

I. Gerald L. Blase (215) 603-1841
Name Telephone Number

Asplundh Tree Expert Co- Railroad Division
Company Name

740 County Road 400 Ironton OH 45638
Address City State Zip

II. Gerald L. Blase CMA 1303
Master Applicator License Number

919 Phillips Rd Warminster PA 18974
Address City State Zip

III. Area(s) where pesticide will be applied:

St Lawrence and Atlantic Railroad Right of Way-24' pattern(12' each side of center of track) leaving a minimum of 10' buffer zone from Lakes, Streams, Rivers and flowing surface water

IV. Pesticide(s) to be applied:
Accord XRTII (EPA# 62719-517) 1-2 pts/ac ; Esplanada 200SC (EPA#432-1516) 3-4oz/ac
Streamline (EPA# 352-848) 6 oz/ac ; Oust Extra (EPA# 352-622) 3-4 oz/ac
all products mixed and applied in 25-30 gal of water / acre

V. Purpose of pesticide application:
The purpose of the application is to maintain the rail ballast and shoulder adjacent to the ballast vegetation free for the following reasons including: 1) to allow for proper safety inspection of the ties, switches,and rails.2) to maintain proper drainage. 3) to allow for the inspection of trains. 4) to remove health and safety hazzards for the employees and public. 5) to improve working conditions. 6) to reduce fire hazzards. 7) to improve visibility at road crossings.

VI. Approximate dates of spray application:

Between mid May -2014 through September 2014

VII. Application Equipment:

Hy-Rail Truck equipment with fixed mounted booms approximately 18" above the rail

VIII. Standard(s) to be varied from:

Section 2C of Chapter 22

C Identification and Recording Sensitive Areas

IX. Reason for variance:

Asplundh has chosen to use products that are proven to maintain the ballast weed free by using the lowest use rates possible to achieve the results. By following the State of Maine regulations with regard to buffer zones in which no spraying will occur and the lowest use rates and incorporating a good IPM program including track maintainence, the risk to the Public and the Environment will be minimized

X. Method to assure equivalent protection:

Asplundh will monitor weather conditions in advance of applications and cancel application when rainfall is predicted. The railroad will supply an advance hy-rail truck in which the patrolman will have the track charts that show river and stream crossings, ponds, and grade crossings. Radio communication between the patrolman and the truck operator will allow advance notice to the operator of bridges, culverts, and water courses. Asplundh will leave a minimum 10' buffer from lakes, streams, rivers, and flowing surface water. The railroad will employ alternative methods to control vegetation in those skipped areas if required. Asplundh uses a drift control product (41-A) in every mix, a sticker product (like New Film IR) will also be used to help the mixture "stay in place" on the rail bed, and NO surfactants will be added to any mixture. Asplundh also employs low pump pressures (20-40 psi) and large droplet spray nozzles with check valves at each nozzle tip.

Newspaper ads will be run in five (5) newspapers of statewide circulation.

Signed:_____Date:_____

Return completed form to: **Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028**

OR E-mail to: pesticides@state.me.us

BOARD OF PESTICIDES CONTROL
APPLICATION FOR VARIANCE PERMIT
(Pursuant to Chapter 29, Section 6 of the Board's Regulations)

I. Gerald L. Blase — (215) 603-1841
Name — Telephone Number

Asplundh Tree Expert Co.- Railroad Division
Company Name

740 County Rd 400 — Ironton — OH — 45638
Address — City — State — Zip

II. Gerald L. Blase — CMA 1303
Master Applicator (if applicable) — License Number

919 Phillips Rd — Warminster — PA — 18974
Address — City — State — Zip

III. **As part of your application, please send digital photos showing the target site and/or plants and the surrounding area, particularly showing proximity to wetlands and water bodies, to pesticides@maine.gov**

IV. Area(s) where pesticide will be applied:

St Lawrence & Atlantic Railroad Right of Way- 24' pattern (12' each side of Center of track) leaving a minimum of 10' buffer zone from Lakes, Streams, Rivers, and flowing Surface water.

V. Pesticide(s) to be applied:
Accord XRTII (EPA# 62719-517) 1-2 pts/ac ; Esplanada 200SC(EPA#432-1516) 3-4oz/ac; Streamline(EPA#352-848) 6oz/ac; Oust Extra(EPA#352-622) 3-4oz/ac
all products mixed and applied in 25-30 gal of water/ acre

VI. Purpose of pesticide application:
The purpose of the application is to maintain the rail ballast and shoulder adjacent to the ballast vegetation free for the following reasons including: 1) To allow for proper safety inspection of the ties,switches,and rails 2) to maintain proper drainage. 3) To allow for the inspection of trains. 4) to remove health and safety hazzards for the employees and public. 5) to improve working conditions. 6) To reduce fire hazzards. 7) To improve visibility at road crossings.

VII. Approximate dates of spray application:
between Mid-May2014 through September 2014

VIII. Application Equipment:
Hy-Rail Truck Equipment with fixed mounted booms approximately 18" above the rail

IX. Standard(s) to be varied from:
Refer to Section 2: Standards of conduct for Pesticide Applications

D. Identification of Sensitive Areas

Asplundh has chosen to use products that are proven to maintain the ballast weed free by using the lowest use rates possible to achieve the results. By following the State of Maine regulations with regard to buffer zones in which no spraying will occur and lowest use rates, and incorporating a good IPM program including track maintainence, that the risk to the Public and the Environment will be minimized.

X. Method to ensure equivalent protection:
Asplundh will monitor weather conditions in advance of applications cancel applications when rainfall is predicted. The railroad will supply an advance hy-rail truck in which the patrolman will have the track charts that show river and stream crossings, ponds, and grade crossings. Radio Communicationbetween the patrolman and the spray truck operator will allow advance notice to the operator of bridges , culverts, and water courses. Asplundh will leave a minimum 10' buffer from lakes, streams, rivers, and flowing surface water. The railroad will employ alternative methods to control vegetation in those skipped ares if required. Asplundh uses a drift control product (41-A) in every mix. A sticker product (like New Film IR) will also be used to help the mixture "stay in place" on the rail bed, and NO surfactants will be added to any mixture. None of the proposed herbicides are volatile. Asplund will run newspaper advertisements in five (5) newspapers encompassing the treatment areas, and notify the towns through which the railroad passes, and include a pesticide application form which can be posted concerning the spray program.

Signed:_____ Date:_____

Return completed form to: **Board of Pesticides Control, 28 State House Station, Augusta, ME 04333-0028**
OR E-mail to: pesticides@maine.gov

SPEED
LIMIT
5

Dead River
Company

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E. WHITCOMB
COMMISSIONER

HENRY JENNINGS
DIRECTOR

Memorandum

Date: May 6, 2014
To: Board
From: Henry Jennings
Subject: Description of Rulemaking Concepts

At the March meeting, the Board selected a list of rulemaking topics and directed the staff to further refine and develop the proposed concepts. The table below attempts to summarize the conceptual changes that the Board has discussed.

BPC Rule	Reason for Change	What Language Would Be Changed
20	The Board has a policy requiring the positive identification of the application site. This cannot be enforced unless it's incorporated into a rule. Also, the current policy conflicts in some ways with the verifiable authorization requirements.	A new paragraph would be added to Section 6 stating that applicators must positively identify application sites in a manner approved by the Board.
22 Section 2C	Every year, the Board grants to companies a series of variances from the requirement to identify sensitive areas doing vegetation management along rights-of-way. Since these variances always contain the same requirements (drift reduction & public notice), it may make more sense to just change the rule to reflect what the Board is requiring through a variance.	A new paragraph would be added to Section 2C which would exempt linear rights-of-way applications from the requirement of identifying sensitive areas provided that the applicator implement a drift management plan and publish public notice about the project.
22 Section 2C	When the Board first adopted Chapter 22 and the requirement to identify sensitive areas, it exempted certain types of "residential" pesticide applications from the sensitive area requirement, based on the logic that sensitive areas are a given when conducting residential applications. Instead, outdoor residential applications require the applicator to post the site, which the Board reasoned would provide greater public benefit. However, since the Board adopted the rule, other types of residential applications have become common. Consequently, there is defensible logic to suggest that all common residential applications should be treated equally.	The "residential" exemption for identifying sensitive areas contained in Section 2C would be expanded to include Category 7E – Biting Fly and Other Arthropod Vectors, and non-linear applications under Category 6B – Industrial/Municipal Vegetation Management.

BPC Rule	Reason for Change	What Language Would Be Changed
28 Section 3	If the Board elects to make the second proposed change to Chapter 22 described above, it would then require a change to Chapter 28 to expand the list of categories requiring posting instead of identification of sensitive areas.	The list of application categories requiring posting contained in Section 3 would be expanded to include Category 7E and non-linear applications made under Category 6B.
31 Section 1E	The Board has adopted policies to exempt adults applying repellents to children from the commercial licensing requirements and to exempt persons installing antimicrobial metal hardware from the licensing requirements. Such exemptions are better incorporated into rule when the applicable chapter is undergoing revisions.	A paragraph would be added to section 1E to exempt adults applying repellents to children provided that their parents provide written consent. Another paragraph would be added to 1E to exempt persons installing antimicrobial hardware from the licensing requirement.
31 Section 4	While Title 22 allows the Board to recognize substantially equivalent applicator certification from other states, Section 4 specifies that certified master applicators must pass a written exam covering Maine regulations. When circumstances indicate a need for out-of-state aerial applicators to assist with urgent pest problems, the Board has been forced to adopt an emergency rule to allow out-of-state applicators to quickly assist. An emergency exemption clause may be a more efficient and logical way to address this concern.	A new paragraph would be added to section 4A, which would exempt aerial applicators certified in other states from passing a written regulation exam when the staff determines that an urgent pest issue exists, and when the staff verbally reviews important and pertinent Maine laws with the applicator prior to issuing a reciprocal license.
31 Section 5A(V)a,b	The Board has expressed some concern about the hardship created by the 14 and 30 day waiting periods required when an applicant fails an exam once or twice respectively.	The wait periods would be revised per Board consensus.
32 Section 2A(4)a,b	The Board has expressed some concern about the hardship created by the 14 and 30 day waiting periods required when an applicant fails an exam once or twice respectively.	The wait periods would be revised per Board consensus.
33 Section 2A(4)a,b	The Board has expressed some concern about the hardship created by the 14 and 30 day waiting periods required when an applicant fails an exam once or twice respectively.	The wait periods would be revised per Board consensus.
41 Section 3	Darin Hammond of Jasper Wyman and Son wrote the Board requesting that the special restrictions on hexazinone contained in Section 3 be repealed since all growers producing more than $1,000 worth of plants for human consumption will need to be certified after April 1, 2015, negating the need for the certification requirement in this section.	The Board could repeal all of Section 3 or just the part requiring applicator and dealer licensing.

Proposed Administrative Consent Agreement
Background Summary

Subject: Timothy Smale
Remedy Compassions
730 Center Street
Auburn, Maine 04210

Date of Incident(s): 2012 through April 3, 2013

Background Narrative: On March 5, 2013, a Board inspector completed a marketplace inspection at a pesticide retailer in southwestern Maine. Through the inspection, it was determined that Remedy Compassions, a licensed medical marijuana growing facility purchased four different pesticides during the above time frame, some on multiple occasions. On April 3, 2013, a Board inspector conducted a joint inspection with Dept. of Health and Human Resources personnel at the company's Auburn cultivation site.

From that inspection, Board staff documented that three of the pesticides known to have been purchased were found on site. These were: Milstop Broad Spectrum Foliar Fungicide, Greenshield Disinfectant & Algicide and Oxidate Broad Spectrum Bactericide/Fungicide. PyGanic Crop Protection EC 1.4 was not found on site. Although company owners denied purchase and use of these pesticides at this site, based on the evidence the Board concluded that pesticide applications were made to the medical marijuana.

Neem Oil for the Garden was also applied once every two weeks to control aphids, thrips and mites.

Summary of Violation(s):

CMR 01-026 Chapter 20 Section 1(B), 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471-D(8)(F) Prohibits the use of registered pesticides for other than registered uses

22 M.R.S.A. §1471-D (8)(C). Using a pesticide in a careless, negligent or faulty manner in violation

22 M.R.S.A. §1471-D (8)(D) Prohibits storing, transporting or otherwise distributing pesticides in a careless, faulty or negligent manner or in a manner which is potentially harmful to the environment or to the public health, safety or welfare.

CMR 01-026 Chapter 20 Section 1(A). Prohibits the use of any pesticide not registered by the Maine Board of Pesticides Control.

CMR 01-026 Chapter 20 Section 1(A) and (B) and 22 M.R.S.A § 1471-D(8)(F). Not wearing all the personal protective equipment required by the pesticide label

22 M.R.S. § 1471-D (8)(C).Used or supervised the use of pesticides applied in a manner which is potentially harmful to the public health

Worker Protection Standard, 40 CFR, Part 170 (WPS).Non-compliance with the Federal Worker Protection Standard

Rationale for Settlement: The staff considered the number and duration of pesticide applications. None of the pesticides were registered for use on medical marijuana and one of the pesticides was not registered in Maine. The pesticide applications were potentially harmful to patients using the medical marijuana.

Attachments: Proposed Consent Agreement

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION, AND FORESTRY
BOARD OF PESTICIDES CONTROL

MAR 2 0 2014
Ck# 1272
Ck Date: 2-26-14
Amt 5500.00

Timothy Smale Remedy Compassions 730 Center Street Auburn, Maine 04210	))))	ADMINISTRATIVE CONSENT AGREEMENT AND FINDINGS OF FACT

This Agreement, by and between Remedy Compassions (hereinafter called the Company) and the State of Maine Board of Pesticides Control (hereinafter called the "Board"), is entered into pursuant to 22 M.R.S.A. §1471-M (2)(D) and in accordance with the Enforcement Protocol amended by the Board on June 3, 1998.

The parties to this Agreement agree as follows:

1. That the Company operates a medical marijuana cultivation site and dispensary in Maine and its office is located in Auburn, Maine.

2. That on March 5, 2013, a Board inspector conducted a marketplace inspection at a pesticide dealer in Southwestern Maine.

3. That from the inspection described in paragraph two, it was determined that the company purchased four different pesticides in 2012 and 2013.

   - Milstop Broad Spectrum Foliar Fungicide (EPA reg. # 70870-1-68539) on two occasions in 2012, ten pounds in February, and five pounds in December.
   - PyGanic Crop Production EC 1.4 (EPA reg. # 1021-1771) on two occasions, once in 2012 and once in 2013. The first Pyganic purchase was for one quart, the second was for two quarts.
   - Greenshield Disinfectant & Algicide (EPA reg. # 499-368), one gallon in 2012, four gallons in 2013
   - Oxidate Broad Spectrum Bactericide/Fungicide (EPA reg. # 70299-2), two and a half gallons, one occasion in 2012.

4. That on April 3, 2013, a Board inspector conducted a joint inspection with DHHS personnel at the Company's Auburn cultivation site.

5. That from the inspection described in paragraph four, the inspector documented that three of the pesticides described in paragraph three were found on site. Pyganic, the fourth pesticide listed in paragraph three was not found on site.

6. That the Company's owners denied purchasing or using Pyganic on medical marijuana plants at this facility. An employee also denied ever applying this pesticide to medical marijuana plants at the facility

7. That from the sales records that were obtained that were related to the market place inspection described in paragraph two, the Board concludes that the evidence indicates that the Company did purchase and use PyGanic Crop Production EC 1.4 (EPA reg. # 1021-1771) on medical marijuana at the Company's Auburn facility.

8. That CMR 01-026 Chapter 20 Section 1(B) prohibits the use of registered pesticides for other than registered uses and 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471-D(8)(F) prohibit the use of a pesticide inconsistent with its label.

9. That PyGanic Crop Production EC 1.4 (EPA reg. # 1021-1771) is not registered for use on medical marijuana.

10. That the circumstances in paragraphs one through nine constitute violations of CMR 01-026 Chapter 20 Section 1(B), 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471-D(8)(F).

11. That from the inspection described in paragraph four, when a Company employee was asked about his use of Milstop Broad Spectrum Foliar Fungicide, he only acknowledged mixing one tablespoon of Milstop Broad Spectrum Foliar Fungicide in two gallons of water and applying some of the mixture to one medical marijuana plant leaf on one occasion approximately three months prior to the date of the inspection. The employee said the remaining mixture (almost 2 gallons), was poured down the sink at the facility. The inspector observed that three quarters of the contents of the original container of Milstop Broad Spectrum Foliar Fungicide container was gone when he documented the original container. The container did not have a label affixed to it that met the minimal container label requirement.

12. That the Board finds, based on the evidence obtained from the sales records summarized in paragraph three, the inspectors observation in paragraph eleven, and the fact that there is no other use in a greenhouse setting specified on the Milstop Broad Spectrum Foliar Fungicide label other than its use as a foliar plant fungicide, that Milstop Broad Spectrum Foliar Fungicide was routinely applied to medical marijuana at the Company's Auburn facility. Milstop Broad Spectrum Foliar Fungicide is not registered for use on medical marijuana.

13. That the circumstances in paragraphs one through four, eight, eleven, and twelve, constitute a violation of CMR 01-026 Chapter 20 Section 1(B), 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471-D(8)(F).

14. That pouring excess tank mixed pesticides down the drain of a structure's plumbing system is not a legal method of disposing of pesticides and is using a pesticide in a careless, negligent, or faulty manner.

15. That 22 M.R.S.A. §1471-D (8)(C) prohibits the use of pesticides applied in a careless, negligent or faulty manner or in a manner which is potentially harmful to the public health, safety or welfare or the environment

16. That the circumstances described in paragraphs eleven, fourteen, and fifteen constitute using a pesticide in a careless, negligent or faulty manner in violation of 22 M.R.S.A. §1471-D (8)(C).

17. That 22 M.R.S.A. §1471-D (8)(D) prohibits storing, transporting or otherwise distributing pesticides in a careless, faulty or negligent manner or in a manner which is potentially harmful to the environment or to the public health, safety or welfare.

18. That storing pesticides in a container that lacks the minimum container label requirements is careless, faulty or negligent and could be potentially harmful to the environment or to the public health, safety or welfare.

19. That the circumstances described in paragraphs four, eleven, seventeen and eighteen constitute a violation of 22 M.R.S.A. §1471-D (8)(D)

20. That from the inspection described in paragraph four, the inspector also found and documented an additional pesticide on site. Neem Oil for the Garden (No EPA #). This product makes a pesticidal claim on the label and according to Timothy Smale it was used to control aphids, thrips, and mites on the medical marijuana plants. A Company employee told the inspector that the neem oil was applied once every two weeks.

21. That CMR 01-026 Chapter 20 Section 1(A) prohibits the use of any pesticide not registered by the Maine Board of Pesticides Control.

22. That the Board's pesticide registrar reviewed the registration status of Neem Oil for the Garden and determined that it is not registered in the state of Maine.

23. That the circumstances in paragraphs one, four, eight, twenty, and twenty-one, constitute a violation of CMR 01-026 Chapter 20 Section 1(A).

24. That Neem Oil for the Garden is not registered for use on medical marijuana.

25. That the circumstances in paragraphs one, four, eight, twenty, and twenty-four constitute violations of CMR 01-026 Chapter 20 Section 1(B), 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471-D(8)(F).

26. That wearing the label-required personal protective equipment is specified in 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471 D (8)(F).

27. That from the inspection in paragraph four, it was determined that on March 3, 2013, Greenshield Disinfectant & Algicide was mixed, loaded and applied to plastic containers by a Company employee.

28. That Greenshield Disinfectant & Algicide requires a chemical resistant apron and chemical resistant footwear when mixing and chemical resistant footwear when applying it.

29. That a chemical resistant apron and chemical resistant footwear when mixing and chemical resistant footwear were not worn when mixing and applying the Greenshield Disinfectant & Algicide.

30. That the circumstances described in paragraphs four, and twenty-six through twenty-nine constitute violations of CMR 01-026 Chapter 20 Section 1(A) and (B) and 22 M.R.S.A § 1471-D(8)(F).

31. That the Company raises a commercial agricultural crop at a greenhouse business that utilized pesticides bearing language requiring conformance with the federal Worker Protection Standard, 40 CFR, Part 170 (WPS).

32. That the Company employs one or more workers and handlers as defined under 40 CFR, Part 170.3 to assist in the production of the crops described in paragraph one.

33. That from the inspection done in paragraph four, it was determined that the workers and handlers did not receive WPS training, there was no central information display informing employees which areas were treated, treated areas were not posted, and workers and handlers were not stopped from entering treated areas during restricted entry intervals.

34. That the circumstances described in paragraphs one, four, and thirty-one through thirty-three constitute multiple violations of the federal Worker Protection Standard, 40 CFR, Part 170 (WPS).

35. The Board finds that the use of pesticides in the production of medical marijuana was potentially harmful to the public health, in violation of 22 M.R.S. § 1471-D (8)(C).

36. That the Board has regulatory authority over the activities described herein.

37. That the Company expressly waives:

a. Notice of or opportunity for hearing;

b. Any and all further procedural steps before the Board; and

c. The making of any further findings of fact before the Board.

38. That this Agreement shall not become effective unless and until the Board accepts it.

39. That in assessing a penalty in this circumstance, the Board recognized that the Company was producing a medicinal product intended for use by patients with serious and/or chronic illnesses. The Board further finds the number of violations alleged against the Company and the frequency of the applications as documented by the Board inspections showed a pattern of consistent pesticide applications on the medical marijuana in violation of the pesticide laws.

40. That, in consideration for the release by the Board of the causes of action which the Board has against the Company resulting from the violations referred to in paragraphs ten, thirteen, sixteen, nineteen, twenty-three, twenty-five, thirty, thirty-four, and thirty- five, the Company agrees to pay to the State of Maine the sum of $5,500 (Please make checks payable to Treasurer, State of Maine.)

IN WITNESS WHEREOF, the parties have executed this Agreement of four pages.

REMEDY COMPASSIONS

By: Timothy M. Smale Date: 3/15/14

Type or Print Name: Timothy M. Smale

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____

Henry Jennings, Director

APPROVED

By: _____ Date: _____

Mark Randlett, Assistant Attorney General

Remedy
Compassion Center

March 15, 2014

Raymond Connors
Manager of Compliance
Maine Board of Pesticides Control
State of Maine
Maine Department of Agriculture, Conservation, and Forestry
Augusta, ME 04333-0028

Dear Mr. Connors:

Thank you for your follow up in the matter relating to Remedy Compassion Center. Please contact me if I can be of any further assistance.

Warmest regards,

Timothy Smale
Executive Director

720 Center St. 1-C, Auburn – Tel: 207-312-5798 – Email: info@remedycompassioncenter.org

Proposed Administrative Consent Agreement
Background Summary

Subject: Hammon Buck
Plants Unlimited
629 Commercial Street
Rockport, Maine 04856

Date of Incident(s): June 26, 2011 and 2012 growing season

Background Narrative: On May 2, 2012, a Board inspector completed an inspection at this nursery/greenhouse business. Through the inspection, it was determined that a pesticide application of an outdoor labeled insecticide was made inside a greenhouse.

In addition, no pesticide application records were kept for the 2012 growing season and workers were not trained as required by the Federal Worker Protection Standard.

Summary of Violation(s):

- CMR 01-026 Chapter 50 Section 1 A: No pesticide application records for 2012 season.
- Federal Worker Protection Standard, 40 CFR, Part 170.
- 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471 D (8)(F). Using a pesticide inconsistent with its label directions

Rationale for Settlement: The staff compared the violation to similar cases settled by the Board.

Attachments: Proposed Consent Agreement

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION, AND FORESTRY
BOARD OF PESTICIDES CONTROL

In the Matter of:	)	
Hammon Buck	)	ADMINISTRATIVE CONSENT AGREEMENT
Plants Unlimited	)	AND
629 Commercial Street	)	FINDINGS OF FACT
Rockport, Maine 04856	)	

This Agreement by and between Plants Unlimited (hereinafter called the "Grower") and the State of Maine Board of Pesticides Control (hereinafter called the "Board") is entered into pursuant to 22 M.R.S.A. §1471-M (2)(D) and in accordance with the Enforcement Protocol amended by the Board on June 3,1998.

The parties to this Agreement agree as follows:

1. That the Grower produces agricultural crops for commercial purposes at a greenhouse/nursery business that utilizes pesticides bearing language requiring conformance with the federal Worker Protection Standard, 40 CFR, Part 170 (WPS).

2. That the Grower employs one or more workers as defined under 40 CFR, Part 170.3 to assist in the production of the crops described in paragraph one.

3. That a Board inspector conducted an inspection at the Grower's on May 2, 2012, for the Grower's application of Bayer Advanced All-In-One Rose & Flower Care (EPA Reg. No. 72155-21).

4. That from the inspection done in paragraph three, it was determined that the Grower did not train his agricultural workers, and there was no information at a central information display as required by the federal Worker Protection Standard, 40 CFR, Part 170.

5. That the circumstances in paragraphs one through four constitute multiple violations of the federal Worker Protection Standard, 40 CFR, Part 170.

6. That CMR 01-026 Chapter 10 Section 2 H, specifies that a commercial agricultural producer "means, for the purposes of Chapter 50, any person who produces an agricultural commodity for commercial purposes".

7. That CMR 01-026 Chapter 50 Section 1 A, requires that commercial agricultural producers shall maintain pesticide application records.

8. That from the inspection done in paragraph three, it was determined that the Grower did not maintain pesticide application records as required by CMR 01-026 Chapter 50 Section 1 A for 2012 applications.

9. That the circumstances described in paragraphs three and six through eight, constitute a violation of CMR 01-026 Chapter 50 Section 1 A.

10. That the Bayer Advanced All-In-One Rose & Flower Care label specifies that it is for outdoor residential use only.

11. That from the inspection in paragraph three it was determined that the Bayer Advanced All-In-One Rose & Flower Care was applied inside greenhouse numbers two and six.

12. That the circumstances described in paragraphs three, ten, and eleven constitute use of a pesticide inconsistent with the product labeling and in violation of 7 U.S.C. § 136j (a)(2)(G), 7 M.R.S.A. § 606 (2)(B) and 22 M.R.S.A § 1471 D (8)(F).

13. That the Board has regulatory authority over the activities described herein.

14. That the Grower expressly waives:

    a. Notice of or opportunity for hearing;

    b. Any and all further procedural steps before the Board; and

    c. The making of any further findings of fact before the Board.

15. That this Agreement shall not become effective unless and until the Board accepts it.

16. That in consideration for the release by the Board of the causes of action which the Board has against the Grower resulting from the violations referred to in paragraphs five, nine, and twelve the Grower agrees to pay to the State of Maine the sum of $250. (Please make checks payable to Treasurer, State of Maine).

IN WITNESS WHEREOF, the parties have executed this Agreement of two pages.

PLANTS UNLIMITED

By: _____ Date: 3/20/14

Type or Print Name: HANNAH J. BULK

BOARD OF PESTICIDES CONTROL

By: _____ Date: _____
Henry Jennings, Director

APPROVED:

By: _____ Date: _____
Mark Randlett, Assistant Attorney General

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E. WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

April 25, 2014

Brian Chateauvert
RWC, Inc.
P.O. Box 876
248 Lockhouse Road
Westfield, MA 01086-0876

RE: Variance permits for CMR 01-026, Chapters 22 and 29

Dear Mr. Chateauvert:

This letter will serve as your 2014 variance permits covering Section 2 (C) of Chapter 22 and Section 6 of Chapter 29 for vegetation control within railroad right-of-ways.

The Board appreciates your efforts to reduce off-target movement of pesticides, including the choice of products, equipment and methods.

I will alert the Board at its May 16, 2014 meeting that the variance permits have been issued. If you have any questions concerning this matter, please feel free to contact me at 287-2731.

Sincerely,

Henry Jennings

Henry Jennings
Director
Maine Board of Pesticides Control

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
BOARD OF PESTICIDES CONTROL
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0028

WALTER E. WHITCOMB
COMMISSIONER

HENRY S. JENNINGS
DIRECTOR

April 25, 2014

Deane Van Dusen
Maine Department of Transportation (MDOT)
Environmental Office
16 State House Station
Augusta, ME 04333

RE: 2014 Chapter 29 Variance Permit

Dear Mr. Van Dusen:

Thank you for sending us the On-Going Treatment Plan for Sherman Marsh Phragmites Control. We appreciate your hard work in this area, and I'm sure the Board will be very interested in seeing the detailed plans and preparations that you have made. In making the new policy, their concern was that, if pesticides are used, that they are effective in eliminating the problem long-term, and your plan clearly illustrates that that is your goal.

This letter will serve as your agency's Chapter 29 variance permit for your vegetation control program associated with MDOT wetland mitigation activities until December 2016, with the condition that you notify us if you decide to use any products not listed on the application. Please bear in mind that MDOT's variance permit requires agency contractors and personnel to adhere to the measures outlined in Section IX of the permit application. Also, please ensure that all products are registered for use in Maine.

We will alert the Board at its May 16, 2014 meeting that the variance permit has been issued. If you have any questions concerning this matter, please feel free to contact me at 287-2731.

Sincerely,

Henry Jennings

Henry Jennings
Director
Maine Board of Pesticides Control

Sherman Marsh Phragmites Control

On-Going Treatment Plan

In October 2007, USM researchers reported finding the invasive species common reed (*Phragmites australis* – hereafter *Phragmites*) in small patches within the upper reaches of the marsh. At that time, some plants in several of the patches had formed tassels. The source of *Phragmites* (it was not known to occur in or around the shoreline of Sherman Lake and none has been identified within the immediate vicinity of the marsh or along Route 1) and the timing of the first appearance are uncertain. The *Phragmites* present in Sherman Marsh has been identified by USM students as the introduced genotype.

The salinity levels and the plant assemblages identified in Sherman Marsh to date show that brackish to salt marsh conditions are developing through succession in response to the disturbance caused by the breach of the dam. This suggests that Sherman Marsh is at an increased risk of colonization by *Phragmites* which often occurs in marshes with salinities less than 22 ppt.

During the summer of 2008 research staff from USM, and interns and staff from the MaineDOT Environmental Office continued to map the locations of *Phragmites* patches. Patch location was recorded using a Trimble GeoXT handheld GPS unit with submeter accuracy. As of September 2008, approximately 270 patches of *Phragmites* covering a total area of approximately 1 acre have been identified within the marsh (see attached map). The patches range in size from point locations (< 25 ft^2) up to approximately 1700 ft^2. Most of the patches are located in the uppermost (southern) section of the marsh with fewer known patches occurring in the middle and lower sections closer to the Route 1 bridge. *Phragmites* was found near the upland edge and near the banks of the secondary and main tidal channels with no clear pattern to its distribution within the marsh. In most of the patches, *Phragmites* was growing up through an understory of native salt marsh vegetation, or in association with cattails, however in some areas bare soil was present in all or a portion of the patch.

In 2008 an Interim Treatment Plan was implemented to determine application methods on a group of Phragmites patches and how a marsh wide control plan would be carried out in the future. This Plan is summaries below:

Treatment Plan Herbicide will be applied to *Phragmites* plants growing in selected representative patches within areas of vegetated marsh. Approximately 13 patches will be treated as shown on the attached map. Each treatment patch will be paired with an untreated control patch at a similar elevation.

- The purpose of this trial is to begin to evaluate different application techniques and to determine the relative effectiveness of the treatments. Nearby untreated patches will provide experimental controls. The trial will allow for comparisons between herbicides, application methods and of treated versus non-treated areas.
- Herbicide application will be made in accordance with label directions regarding mix concentrations and appropriate application rates as shown in Table 1.

- Two different application methods will be used: Foliar wick/wipe-on and cut stem treatment. For the foliar wick/wipe-on technique, the herbicide will be applied by hand using commercially available wick applicators, sponges and/or with cotton gloves (worn over rubber or nitrile gloves) sprayed with herbicide and rubbed over the stems and leaves. For the cut stem technique, individual *Phragmites* stems will be cut 2 to 3 feet above the ground (or below the first leaf on the plant), and a small quantity (approx. 3 ml) of herbicide will be dripped into the hollow, cut stem. Cut stems will be bagged and removed from the site to prevent them from being dispersed during a high tide and potentially taking root in a new location. These techniques will significantly reduce or eliminate the potential for herbicide to drift onto other non-target vegetation or into surface water. MaineDOT anticipates that each technique will be tested with each herbicide.
- Herbicide will only be applied using the wick/wipe technique during low wind conditions to minimize the potential for *Phragmites* stems to come into contact with non-target species or the applicator.
- Herbicide will not be applied during periods when spring high tides flood the marsh surface (i.e. tides higher than approximately 10.5 feet as listed on the NOAA tide chart for Portland) or during rain events that lead to runoff from the plants.
- The proposed herbicide application will be conducted in a manner that will not impair water quality within the upper Marsh River.

Table 1. Herbicide Concentration (percent solution)/Treatment Method Matrix

HERBICIDE	BACK PACK APPLICATION
Habitat™ (imazapyr)	1.5 %
Rodeo™ (glyphosate)	33%

Timing of Application

- The initial herbicide treatment took place during the last week of September and/or the first week of October 2008 weather depending. Rodeo™ is most effective when applied to green foliage after the tasseling stage when the plant is supplying nutrients to the rhizomes. Application of Habitat™ toward the end of the growing season will limit the potential for damage to adjacent non-target plants via root grafts or by exudates or through movement of soil particles.
- MaineDOT reported the application took no more than two working days.

Applicator/Agent

- Interim treatment herbicide was applied by MaineDOT personnel under the supervision of MaineDOT staff with Masters and Commercial Level Pesticide Applicators licenses in the Aquatics Category issued by the Maine Board of Pesticide Control (BPC). All spray operations were conducted in accordance with the Plan, as approved by MaineDEP, and all applicable BPC requirements.

Future Control Plan

This Phragmites Control Plan (hereafter the "Plan") describes the herbicide treatments proposed by MaineDOT to control the spread of *Phragmites* within Sherman Marsh from the fall of 2008 into the future. The Plan has been developed in response to the conditions described in the Maine DEP Fact Sheet, Use of Herbicides in Wetlands in Maine, dated April 2006; and in accordance with the terms of a MaineDOT consultation letter, dated July 11, 2008, with NOAA NMFS pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, regarding the proposed Marsh River bridge rehabilitation project.

The Plan addresses the conditions listed in the Maine DEP Fact Sheet that must be met in order to apply aquatic pesticides within wetlands in Maine. It is MaineDOT's understanding that if the Plan satisfactorily addresses the conditions stated in the Fact Sheet and is implemented accordingly, then the proposed treatments will be exempt from Maine DEP Waste Discharge Licensing.

DEP Conditions

The following sections address the conditions listed in the DEP Fact Sheet and include a description of the need for *Phragmites* control at Sherman Marsh, the materials proposed for use, and the herbicide treatment plan.

Demonstration of Need

- The breach of the Route 1 dam resulted in an unprecedented opportunity to restore tidal hydrology to over 200 acres of former salt marsh. Restoration of salt marsh at this site is supported by the state and federal resource and regulatory agencies.
- MaineDOT's involvement stems from its initial decision to allow restoration to proceed rather than replace the roadbed/dam. MaineDOT's decision to take on monitoring and management responsibility at Sherman Marsh is in anticipation that, at a later date, the marsh could be proposed for addition to a statewide MaineDOT wetland mitigation bank.
- Vegetative monitoring of the marsh by research staff from USM identified the presence of numerous patches of non-native *Phragmites* scattered throughout the marsh by the end of the 2007 growing season.
- Hydrologic and salinity data collected in the marsh to date by MaineDOT and USM show that salinity levels within the marsh are often below the 22 ppt *Phragmites* tolerance threshold commonly used as a target in salt marsh restoration projects.

- The increasing prevalence of Phragmites in New England salt marshes is well documented. Phragmites is known to have invaded numerous salt marshes in Maine, notably Scarborough Marsh, and fringing marshes along the Presumpscot and Royal Rivers. Marshes with a dominant cover of Phragmites are functionally impaired and provide fewer ecosystem services.
- There are a limited number of effective *Phragmites* control measures. Treatment with herbicide is a commonly used approach that has successfully reduced *Phragmites* cover and restored important wetland functions in many environmental restoration and wildlife management areas in the United States.

Materials Used

- MaineDOT is planning to control *Phragmites* in Sherman Marsh through the targeted application of herbicide. Two chemicals will be used: 1) Rodeo TM (active ingredient glyphosate), and 2) Habitat TM (active ingredient imazapyr). Both Rodeo and Habitat are registered for the control of invasive emergent vegetation in aquatic settings by the USEPA (Rodeo EPA Reg. No. 62719-324; Habitat EPA Reg. No. 241-426) and the Maine Dept. of Agriculture.
- Rodeo TM is a non-selective systemic herbicide used to control undesirable herbaceous and woody vegetation growing in or near bodies of fresh and brackish water, including estuaries. It is a water-soluble liquid which mixes readily with water and requires the addition of a non-ionic surfactant. Rodeo TM does not control plants which are completely submerged or have a majority of their foliage under water. After application, it moves through the plant from the foliage to the root system where it inhibits enzyme synthesis at points of growth. The effects include gradual wilting and yellowing of the plant and deterioration of underground plant parts.
- Toxicological evaluations reported by the USEPA and others have shown that glyphosate, the active ingredient in Rodeo, has very low potential to accumulate in aquatic food chains; is no more than slightly toxic to wild birds (primarily through ingestion of recently treated plant material); and is practically non-toxic to fish, aquatic invertebrates, and honeybees. Glyphosate binds strongly to soil particles, and suspended organic matter and clay particles in water. Once bound to soil particles it becomes relatively immobile which limits the potential for uptake by aquatic organisms and prevents uptake by the roots of non-target plants. It is broken down by microbial degradation. Application to extensive areas of aquatic plants can result in fish kills due to oxygen depletion from decomposition of dead plant material, especially in shallow water (< 6 inches). The Phragmites patches in Sherman Marsh are small and localized; making it unlikely that plant decomposition would pose a significant risk to fish.
- Rodeo surfactant will be applied. Some surfactants are often highly toxic to fish and wildlife, much more than glyphosate alone. Selection of surfactant should favor materials with little to no toxicity to aquatic organisms.
- Habitat TM is a non-selective herbicide used for the control of a broad range of weeds including emergent aquatic species. It is labeled for use in and around standing and flowing water, including estuarine areas. Habitat TM is an aqueous solution that is mixed with water and a surfactant and applied as a spray solution

to control vegetation. It is applied to the emergent foliage of the target vegetation and has little to no effect on submerged aquatic vegetation. Habitat is absorbed through the leaves and stems and is translocated rapidly throughout the plant, with accumulation in the meristematic tissues. It is also translocated into and kills underground tissues preventing regrowth. Habitat TM inhibits a plant-specific enzyme, causing the plant to stop growing and die as its food and energy reserves are exhausted. This enzyme is not found in animals or humans.

- The environmental fate of imazapyr, the active ingredient in Habitat TM, varies with pH. At pH greater than 5 (i.e. field conditions likely to occur in Sherman Marsh) it does not bind strongly to soil particles and can remain available for plant uptake (soil active), increasing the potential for damage to non-target species. It has also been reported that surrounding vegetation may also be affected by movement of imazapyr via root grafts or exudates. Imazapyr is slowly degraded by microbial degradation in soils, but rapidly by sunlight in aquatic solutions. Given these porperties Habitat TM must be applied carefully to avoid unintended damage to non-target plant species.

Treatment Plan

- Rodeo TM and Habitat TM will be applied to *Phragmites* plants growing in selected patches within areas of vegetated marsh according to a random stratified experimental design (See previous section on Treatment Goals for treatment thresholds).
- Application of Habitat TM and Rodeo TM will be made in accordance with label directions regarding mix concentrations and appropriate application rates. A 1 to 2% solution of Habitat TM mixed with an aquatic surfactant will be used for foliar spray treatment. A 1.5 to 2% solution of Rodeo TM mixed with an aquatic surfactant will be used for foliar spray treatment.
- Application method(s) – Low volume foliar spray application technique will be used. To maximize effectiveness Habitat TM must be applied in a manner that ensures 100% coverage. The best results are achieved when the herbicide covers the crown. Rodeo TM must be applied in a manner that wets at least 80% of the foliage and covers all of the plant growing tips.
- Herbicide will only be applied during low wind conditions (winds < 10 mph at ground level).
- Applications of Habitat TM are rainfast one hour after treatment. The effectiveness of Rodeo TM may be reduced by rainfall up to 6 (one source said 12) hours after application.
- Protection for non-target species will be maintained through the use of low pressure backpack sprayer with a micro-jet applicator.
- Address tidal conditions – e.g. treatment only during mid-tide or below; or treatment discontinued within 2 hours of high tides.
- Violation of State Water Quality Laws – all estuarine and marine waters lying within the boundaries of the State and which are not otherwise classified are Class SB waters (MRS Title 38, Chap 3, Subchapter 1, Article 4-A, subsection 469, Classification of estuarine and marine waters.)

Timing of Application

- The initial interim herbicide treatment will take place in mid-September to October 2008. Habitat TM is applied to actively growing, green foliage after full leaf elongation. Habitat TM can be applied early in the growing season, but adjacent non-target plants may are more susceptible to damage by earlier treatments. Rodeo TM is most effective when applied to green foliage after the tasseling stage when the plant is supplying nutrients to the rhizomes.
- Follow up treatments in future years will be applied in the late summer early fall after the initial treatment depending on the effectiveness as determined by post-treatment monitoring.

Applicator/Agent

- The herbicide will be applied by a landscape contractor certified and licensed in Aquatic Pesticide Control by the Maine Board of Pesticide Control (BPC) under contract to the MaineDOT Environmental Office. MaineDOT anticipates contracting with Municipal Pest Management Services, Inc. of Kittery, Maine to conduct all spray work at Sherman Marsh. The contract will require that the contractor conduct all spray operations in accordance with the Plan, as approved by MaineDEP, and all applicable BPC requirements. Only applicators who are licensed or certified as aquatic pest control applicators and are authorized by a government agency can apply Habitat TM
- MaineDOT staff with a Commercial Pesticide Applicator's license – Master Level - in the Aquatics category will also be applying herbicide as needed and will oversee the implementation of the herbicide treatment and will inspect the Contractor's work for conformance with the contract requirements.

Duration of Application

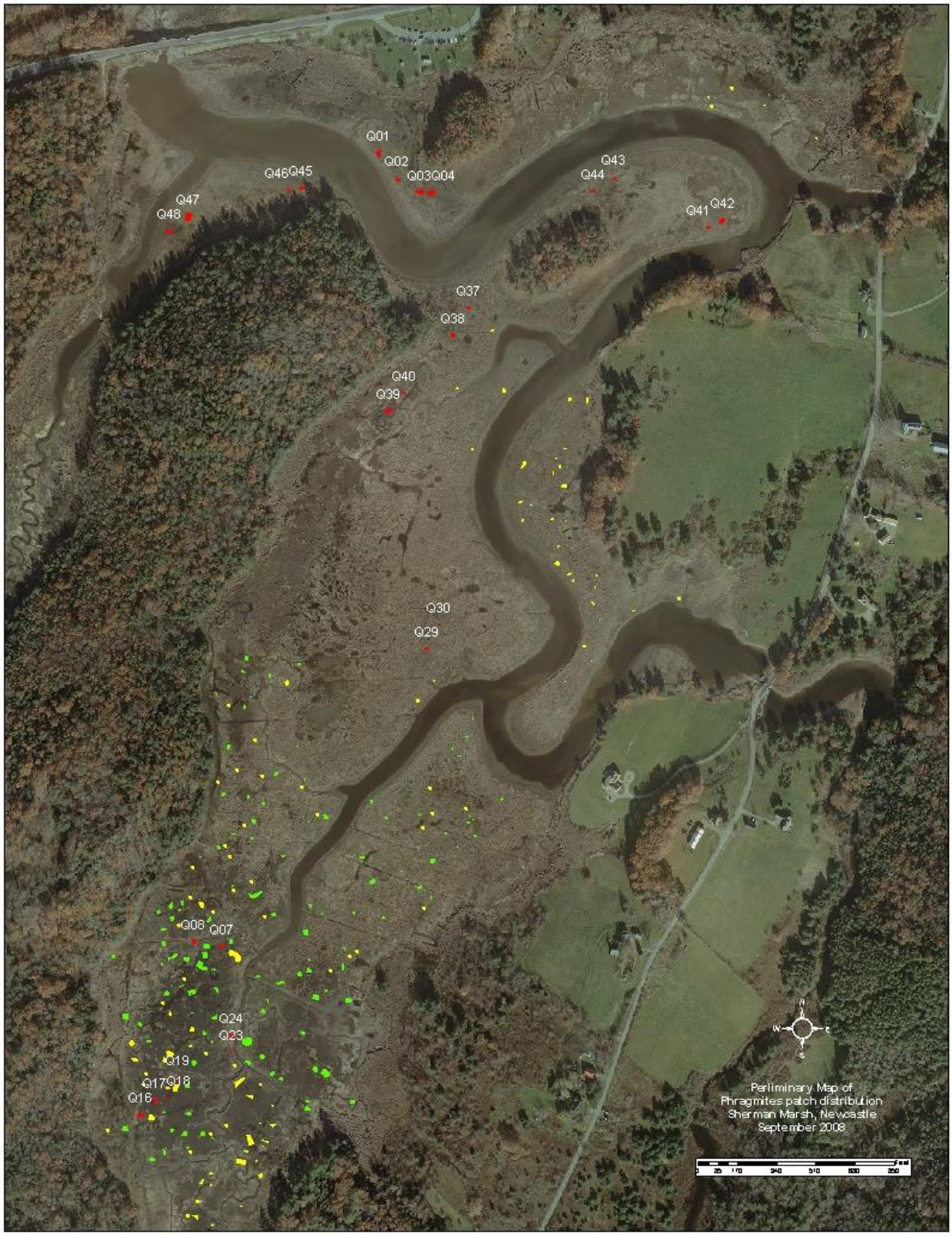
- MaineDOT anticipates conducting spot treatments in late summer/early fall of 2009 and beyond. The results of yearly post-treatment monitoring will be used to determine whether or not additional follow-up treatments are warranted to control existing or new patches.

Photo 1. Typical small patch of *Phragmites* in Sherman Marsh mapped as a point location. August 2008.

Photo 2. Small *Phragmites* patch adjacent to a tidal ditch. August 2008.

Photo 3. Typical small *Phragmites* patch with low stem density in vegetated marsh zone. August 2008.

Photo 4. Phragmites stems showing development of tassels (seed heads) on old dead stems and current years growth. August 2008.



Map showing location of Phragmites patches mapped in 2007 and 2008.