

66222-60

12/11/2013

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

OFFICE OF  
CHEMICAL SAFETY AND  
POLLUTION PREVENTION

December 11, 2013

Jonathan Janis  
Makhteshim Agan of North America, Inc.  
3120 Highwoods Blvd., Suite 100  
Raleigh, NC 27604

Subject: Notification per PR Notice 98-10 (alternate brand name & CA restrictions)  
MANA Arrow 2EC Herbicide  
EPA Reg. No. 66222-60  
Application Dated November 26, 2013

Dear Mr. Janis:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the subject product. The Registration Division (RD) has conducted a review of this request and finds that the action falls within the scope of PRN 98-10. The label submitted with the application has been date-stamped "Notification" and will be placed in our records.

In addition, the alternate brand name "**Arrow 2EC Herbicide**" for this product has been added to our records.

If you have any questions, please contact Mindy Ondish at (703)605-0723 or at [ondish.mindy@epa.gov](mailto:ondish.mindy@epa.gov).

Sincerely,

*Mindy Ondish, for*

Kathryn V. Montague  
Product Manager 23  
Herbicide Branch  
Registration Division (7505P)  
Office of Pesticide Programs

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Please read instructions on reverse before completing form.

Form Approved, OMB No. 2070-0080, Approval expires 05-31-98

	United States <b>Environmental Protection Agency</b> Washington, DC 20460	<input type="checkbox"/> Registration <input type="checkbox"/> Amendment <input checked="" type="checkbox"/> Other	OPP Identifier Number  
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### Application for Pesticide - Section I

1. Company/Product Number Makhteshim Agan of North America, Inc. / 66222-60	2. EPA Product Manager Kathryn Montague	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Makhteshim Agan of North America, Inc. / MANA Arrow 2EC Herbicide	PM# 23	
5. Name and Address of Applicant (Include ZIP Code) Makhteshim Agan of North America, Inc. 3120 Highwoods Blvd., Suite 100 Raleigh, North Carolina 27604  <input type="checkbox"/> Check if this is a new address		6. Expedited Review. In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____

### Section - II

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

**DEC 11 2013**

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

Makhteshim Agan of North America Inc., is notifying the Agency of the addition of adding an alternate brand name and corrects some minor typographical errors and other label edits as permitted to the registered end use product, MANA Arrow 2EC Herbicide, EPA Reg. No. 66222-60. This notification is consistent with the provisions of PR Notice 98-10 and the EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statements to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

### Section - III

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

### Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)			
Name Jonathan A. Janis	Title Federal Regulatory Leader	Telephone No. (include Area Code) 919-256-9322	
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.			6. Date Application Received (Stamped)
2. Signature 	3. Title Federal Regulatory Leader		
4. Typed Name Jonathan A. Janis	5. Date November 26, 2013		

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**REGISTRATION ACTION:  
NOTIFICATION**

**FEE CATEGORY:**

**REGISTRATION FEE:** No fee associated with this action.

26 November 2013

Ms. Kathryn Montague, Product Manager 23  
Document Processing Desk (NOTIF)  
Office of Pesticide Programs (7504P)  
U.S. Environmental Protection Agency  
One Potomac Yard, 2777 South Crystal Drive  
Arlington, VA 22202-4501

Dear Ms. Montague:

**Subject: MANA Arrow 2EC Herbicide, EPA Reg. No. 66222-60.  
Notification adding alternate brand name.**

Makhteshim Agan of North America Inc. (MANA), is notifying the Agency of the addition of adding an alternate brand name to the registered end use product, MANA Arrow 2EC Herbicide, EPA Reg. No. 66222-60. This notification also corrects some minor typographical errors and other label edits as permitted under PR Notice 98-10.

Enclosed in the submission please find:

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

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

Should you have any questions or comments pertaining to MANA's Arrow 2EC Herbicide, EPA Reg. No. 66222-60 registration, please feel free to contact me via email at [jjanis@manainc.com](mailto:jjanis@manainc.com) or via phone at 919-256-9322.

Sincerely,

*Jonathan A. Janis*

Jonathan A. Janis  
Federal Regulatory Leader

[www.manainc.com](http://www.manainc.com)

P: (919) 256-9300  
F: (919) 256-9308

3120 Highwoods Blvd.  
Suite 100  
Raleigh, NC 27604



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# MANA ARROW<sup>®</sup> 2EC HERBICIDE

[Alternate Brand Name: Arrow 2EC Herbicide and Clethodim 2EC.]

Contains clethodim, the active ingredient used in Select Max<sup>®</sup> herbicide and Prism<sup>®</sup> herbicide.

MANA Arrow 2EC Herbicide is not manufactured or distributed by Valent U.S.A. Corporation.

## ACTIVE INGREDIENT:

Clethodim: (E)-2-[1-[[[(3-chloro-2-propenyl)oxy]imino]propyl]-..... 26.4%

5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one

OTHER INGREDIENTS: ..... 73.6%

TOTAL ..... 100.0%

Contains petroleum distillate.

Contains 2.0 lbs clethodim per gallon.

KEEP OUT OF REACH OF CHILDREN

## CAUTION

### Manufactured for:

Makhteshim Agan of North America, Inc.  
3120 Highwood Blvd., Suite 100  
Raleigh, NC 27604

EPA Reg. No. 66222-60

EPA Est. No. [REDACTED]

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

NET CONTENTS: 1 GALLON

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## NOTIFICATION

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FIRST AID	
IF IN EYES:	<ul style="list-style-type: none"><li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
IF SWALLOWED:	<ul style="list-style-type: none"><li>• Call a poison control center or doctor immediately for treatment advice.</li><li>• Do not give any liquid to the person.</li><li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li><li>• Do not give anything by mouth to an unconscious person.</li></ul>
IF INHALED:	<ul style="list-style-type: none"><li>• Move person to fresh air.</li><li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li><li>• Call a poison control center or doctor for further treatment advice.</li></ul>
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact PROSAR at 1-877-250-9291 for emergency medical treatment information.	
NOTE TO PHYSICIAN: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid, which can cause pneumonitis. Contains petroleum distillate.	

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**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
CAUTION**

Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**

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

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or Viton  $\geq 14$  mils
- Shoes plus socks

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

**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 apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment washwater or rinseate.

The use of this product may pose a hazard to the federally designated endangered species of Solano Grass and Wild Rice. Use of this product is prohibited in the following areas where the species are known to exist:

Solano Grass:	Solano County, California: the vernal lakes area bounded by the Union Pacific Railroad and Hastings Road to the north, Highway 113 to the east, Highway 12 to the south, and Travis Air Force Base to the west.
Wild Rice:	Hays County, Texas

**PHYSICAL OR CHEMICAL HAZARDS**

Do not use or store near heat or open flame.

**DIRECTIONS FOR USE**

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

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.

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  $\geq 14$  mils
- Shoes plus socks

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#### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are not within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Keep unprotected persons out of operating areas, or vicinity where there may be drift. Do not enter treated area without protective clothing until sprays have dried.

#### TANK MIXES

NOTICE: Tank mixing or use of this product with any other product which is not specifically and expressly authorized by the label shall be the exclusive risk of user, applicator, and/or application advisor. Read and follow the entire label of each product to be used in the tank mix with this product.

#### PRODUCT INFORMATION

MANA Arrow® 2EC Herbicide may be used on the following crops:

**Alfalfa; Artichoke** (Globe); **Asparagus; Bean (*Lupinus* spp.) (Dry Shelled)**: Grain Lupin, Sweet Lupin, White Lupin, White Sweet Lupin; **Bean (*Phaseolus* spp.) (Dry Shelled)**: Field, Kidney, Lima (Dry), Navy, Pinto, Tepary; **Bean (*Phaseolus* spp.) (Succulent)**, Broad Bean (Succulent), Lima Bean (Green); **Bean (*Phaseolus* spp.) (Edible Podded)**: Runner, Snap, Wax; **Bean (*Vigna* spp.) (Dry Shelled)**: Adzuki Bean, Black-Eyed Pea, Catjang, Cowpea, Crowder Pea, Moth Bean, Mung Bean, Rice Bean, Southern Pea, Urd Bean, Broad (Dry), Chickpea (Garbanzo), Guar, Lablab Bean, Lentil; **Bean (*Vigna* spp.) (Succulent)**: Black-Eyed Pea, Cowpea, Southern Pea; **Bean (*Vigna* spp.) (Edible Podded)**: Asparagus, Chinese Longbean, Moth, Yardlong, Jackbean; **Beet, Garden; Brassica Vegetables (Head and Stem)**: Broccoli, Chinese Broccoli, ~~Cavola-Cavalo~~ Broccoli, Brussels Sprouts, Cabbage, Chinese (Napa) Cabbage, Chinese Mustard, Cauliflower, Kohlrabi; **Bushberry**: Aronia Berry, Blueberry (Highbush), Chilean Guava, Cranberry (Highbush), Black Currant, Buffalo Currant, Native Currant, Red Currant, Elderberry, European Barberry, Gooseberry, Honeysuckle (Edible), Huckleberry, Jostaberry, Juneberry (Saskatoon Berry), Salal, Sea Buckthorn, Cultivars and/or hybrids of these; **Caneberry**: Blackberry, Loganberry, Black Raspberry, Red Raspberry, Wild Raspberry, Cultivars, Varieties and/or hybrids of these; **Canola\***; **Carrot; Clover\*\***; **Clover, Holy; Conifers; Corn, Field\*\*\***; **Cotton; Cranberry; Cucurbits**: Cantaloupes (All), Cucumber, Honeydew Melon, Gherkin, Muskmelons (All), Pumpkin, Squash (All), Watermelon, Chayote (Fruit), Chinese Wax Gourd, Citron Melon, Edible Gourd; **Fallow Land (and other non-producing agricultural areas)**; **Flax\***; **Fruiting Vegetables**: Eggplant, Groundcherry, Pepino, Peppers (All), Tomatillo; **Garlic; Herbs**: Angelica, Balm, Basil, Borage, Burnet, Chamomile, Catnip, Chervil (Dried), Chive, Chinese Chive, Clary, Coriander (Leaf), Costmary, Culantro (Leaf), Curry (Leaf), Dill (Dillweed), Horehound, Hyssop, Lavender, Lovage (Leaf), Marigold, Marjoram (*Origanum* spp.), Nasturtium, Parsley (Dried), Pennyroyal, Rosemary, Rue, Sage, Savory (Summer and Winter), Sweet Bay, Tansy, Tarragon, Thyme, Wintergreen, Woodruff, Wormwood; **Hops; Leafy Greens**: Amaranth (Leafy Amaranth, Chinese Spinach, Tampala), Arugula (Roquette), Chervil, Chrysanthemum (Edible-Leaved And Garland), Corn Salad, Cress (Garden), Cress (Yellow Rock And Winter), Dandelion, Dock (Sorrel), Endive (Escarole), Lettuce (Head And Leaf), Orach, Parsley, Purslane (Garden And Winter), Radicchio (Red Chicory), Spinach, Spinach (New Zealand), ~~Spinach (Leafy Amaranth)~~, Spinach, Vine (Indian Spinach and Malabar Spinach); **Leafy Brassica Greens**: Broccoli Raab, Chinese (Bok Choy) Cabbage, Collards, Kale, Mizuna, Mustard Chinese Cabbage, Mustard Greens, Mustard Spinach, Turnip Greens, Rape Greens; **Leaf Petioles**: Cardoon, Celery, Celtuce, Chinese Celery, Fennel (Florence), Rhubarb, Swiss Chard; **Mint; Mustard Seed\***; **Non-Bearing Food Crops, Non-Crop Or Non-Planted Areas**; **Onions** (Dry Bulbs And Green); **Ornamentals**; **Peach; Peanut** (Including Perennial)\*; **Potato; Radish; Root Vegetables**: Horseradish, Burdock (Edible), Celeriac, Chervil (Turnip-Rooted), Chicory, Ginseng, Parsley (Turnip-Rooted), Parsnip, Radish (Oriental), Rutabaga, Salsify, Salsify (Black), Salsify (Spanish), Skirret, Turnip; **Safflower; Sainfoin; Sesame; Shallots** (Dry Bulbs and Green); **Soybeans\***; **Strawberry; Sugarbeet; Sunflower; Tomato; Trefoil, Birdsfoot; Tuberous And Corm Vegetables**: Arracacha, Arrowroot, Chinese Artichoke, Jerusalem Artichoke, Edible Burdock, Edible Canna, Cassava, Bitter And Sweet Chayote (Root), Chufa, Dasheen (Taro), Ginger, Leren, Sweet Potato, Tanier, Turmeric, Bean Yam, True Yam, Yam; **Pea (*Pisum* spp.) (Dry Shelled)**: Field, Pigeon; **Pea (*Pisum* spp.) (Succulent)**: English Pea, Garden Pea, Green Pea, Pigeon Pea; **Pea (*Pisum* spp.) (Edible Podded)**: Dwarf, Edible-Pod, Snow, Sugar Snap, Pigeon, Sword Bean.

\* Not for use in California unless accompanied by supplemental labeling allowing use in California.

\*\* Grown in Idaho, Oregon, and Washington only

\*\*\* For burndown of existing stand of Roundup Ready® field corn or volunteer Roundup Ready field corn prior to replanting field corn.

Do not use MANA Arrow 2EC Herbicide on vegetable crops being grown for seed production unless specific use directions are provided.

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ArrowMANA Arrow 2EC Herbicide is a selective postemergence herbicide for control of annual and perennial grasses. ArrowMANA Arrow 2EC Herbicide does not control sedges or broadleaf weeds.

Repeated use of ArrowMANA Arrow 2EC Herbicide (or similar postemergence grass herbicide with the same mode of action) can lead to the selection of naturally occurring biotypes that are resistant to these products in some grass species.

If poor performance occurs and cannot be attributed to adverse weather or application conditions, a resistant biotype may be present. This is most likely to occur in fields where other control strategies such as crop rotation, mechanical removal, and other classes of herbicides are not used from year to year.

Do not allow ArrowMANA Arrow 2EC Herbicide to come in contact with desirable grass crops such as corn, rice, sorghum, small grains, or turf, as these and other grass crops will be injured or killed. Minor leaf spotting can occur on treated plants under certain environmental conditions. New foliage is not affected.

#### Control symptoms

Treated grass weeds show a reduction in vigor and growth. Early chlorosis/necrosis of younger plant tissue is followed by a progressive collapse of the remaining foliage. Symptoms will be observed in 7- to 14-days after application depending on grass species treated and environmental conditions.

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

#### APPLICATION INFORMATION

##### Timing of Applications

Apply ArrowMANA Arrow 2EC Herbicide postemergence to actively growing grasses according to rate table directions. Applications made to grass plants stressed by insufficient moisture or hot or cold temperatures or to grass plants exceeding specified growth stages can result in unsatisfactory control. Do not apply under these conditions.

In arid regions where irrigation is used to supplement limited rainfall, apply ArrowMANA Arrow 2EC Herbicide as soon as possible after an irrigation (within 7 days). In arid regions, a second application of ArrowMANA Arrow 2EC Herbicide will provide more effective control of perennial grass weeds than a single application. Make second application to actively growing grass 2 to 3 weeks after emergence of new growth.

Cultivation of treated grasses 7 days prior to or within 7 days after application of ArrowMANA Arrow 2EC Herbicide can reduce weed control. DO NOT APPLY ArrowMANA Arrow 2EC Herbicide if rainfall is expected within one hour since control can be reduced.

#### ADDITION OF ADJUVANT OR CROP OIL CONCENTRATE

CROP	ADJUVANT DIRECTIONS
Alfalfa, Cotton, Dry Shelled Beans and Pea, Edible Podded Legume Vegetables, Peanuts (including perennial), Potato, Soybeans, Succulent Bean & Pea, Sugarbeets, Sunflowers	Always use a crop oil concentrate* at 1.0 qt/A by ground or 1% v/v (but not less than 1 pt/A) in the finished spray volume by air. 1 to 2 qts/A of liquid fertilizer (10-34-0, 28%N or 32%N), or an equivalent amount (2.5 to 4.0 lbs/A) of spray grade ammonium sulfate (AMS) can be added to <u>ArrowMANA Arrow</u> 2EC Herbicide applications in addition to the specified rate of crop oil concentrate. The addition of AMS has shown improved grass control for difficult to control species including: quackgrass, Rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.

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CROP	ADJUVANT DIRECTIONS
Artichoke, Asparagus, Bushberries (including blueberries), Canola, Carrots, Clover, Cranberries, Cucurbits, Flax, Fruiting Vegetables (except tomato), Garden Beets, Garlic, Head and Stem Brassica Vegetables, Herbs, Hops, Leaf Petioles, Leafy Brassica Greens, Leafy Greens, Mint, Mustard Seed, Onions (dry bulbs and green), Peaches, Root Vegetables, Safflower, Sesame, Shallots (dry bulbs and green), Strawberries, Sweet Potatoes (Yams and other tuberous and corn vegetables except potato) and Tomato.	Always use a crop oil concentrate at 1% v/v in the finished spray volume unless tank mix instructions indicate otherwise.  Do not add a liquid fertilizer for these crops.
Non-Bearing Food Crops, Ornamental Plants, Field Corn	Add a non-ionic surfactant containing at least 80% active ingredient at the rate of 1 pt per 50 gals (0.25% v/v). Do not use a crop oil concentrate since it can injure flowers and foliage.
Conifer Trees, Fallow Land (and other non-producing agricultural areas), and Non-Crop or Non-Planted Areas	Always use a crop oil concentrate containing at least 15% emulsifier at 1% v/v (but not less than 1 pt/A) in the finished spray volume.

\*Acceptable crop oil concentrates would be those which contain a minimum of 80% oils and 15% emulsifier. A crop oil concentrate must contain either a petroleum or vegetable oil base and must meet all the following criteria: be non-phytotoxic, contain only EPA-exempt ingredients, provide good mixing quality, and be successful in local experience. Highly refined vegetable oils have proven more satisfactory than unrefined vegetable oils.

#### Ground Application

Use of sufficient spray volumes and pressure is essential to ensure complete coverage. Use a minimum of 5 gals and a maximum of 40 gals of spray solution per acre. Under the following conditions a minimum of 10 gals per acre is required: ultra narrow row cotton, narrow row soybeans, broadleaf herbicide tank mixes, perennial grasses, volunteer corn, drought or stress conditions, heavy grass pressure, or when grasses are at or near maximum height. Failure to use a minimum of 10 gals per acre under these conditions can result in poor coverage and reduced grass control requiring repeat applications. Set spray pressures to a minimum of 30 psi and a maximum of 60 psi at the nozzle. Do not use flood nozzles.

Make applications to onions (dry bulbs and green), garlic, or shallots (dry bulbs and green) in a minimum of 20 gals of spray solution per acre.

#### Air application

Use a minimum of 3 gals of spray solution per acre unless otherwise directed in this label. Increase spray volumes up to 10 gals as grass or crop foliage becomes dense.

For onions (dry bulbs and green), garlic, or shallots (dry bulbs and green): When applying by air do not exceed 8 fl oz/A in a single application. In California, make air applications to onions, garlic, or shallots in a minimum of 20 gals of spray solution per acre. In states other than California, make air application to onions, garlic, or shallot in a minimum of 10 gals of spray solution per acre.

**Note:** Crop injury can occur when ArrowMANA Arrow 2EC Herbicide is applied to onions, garlic, or shallots with aerial equipment.

#### Spot Treatment

When using hand sprayers or high volume sprayers utilizing hand guns, mix 1/4% to 1/2% (0.33 oz to 0.65 oz per gal) ArrowMANA Arrow 2EC Herbicide and treat to wet vegetation while not allowing runoff of spray solution. For uses requiring crop oil concentrate, include crop oil concentrate at 1% (1.3 oz per gal) by volume. For uses requiring non-ionic surfactant, include non-ionic surfactant at 1/4% (0.33 oz per gal) by volume.

**Note:** If ArrowMANA Arrow 2EC Herbicide is applied as a spot treatment, care must be taken not to exceed the maximum rate allowed on a "per acre" basis or crop injury can occur.



**CHEMIGATION**  
**ONIONS (Dry Bulbs and Green) AND GARLIC**  
**SPRINKLER IRRIGATION APPLICATION**

- Do not apply ~~Arrow~~MANA Arrow 2EC Herbicide by chemigation in the states of Idaho, Montana, Oregon, and Washington.

This product can be applied to onions and garlic by sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, travelers, big gun, solid set, or hand move. Do not apply by chemigation to any other crop or to this crop using any other type of irrigation system.

- Apply ~~Arrow~~MANA Arrow 2EC Herbicide at the high rate specified for annual grasses (16 fl oz/A) when the grass height is at the low end of the range (application to larger grasses may not provide adequate control). Add a crop oil concentrate containing at least 15% emulsifier at 1 quart per acre.

- Apply ~~Arrow~~MANA Arrow 2EC Herbicide in 0.1 to 0.2 acre-inch of water either at the end of a regular irrigation set or as a separate application not associated with a regular irrigation using the least amount of water that provides proper distribution and coverage. Application of more than label specified quantities of irrigation water per acre can result in decreased product performance by removing the chemical from the zone of effectiveness. Use a metering device to inject the ~~Arrow~~MANA Arrow 2EC Herbicide into the irrigation water at a constant flow. Constant agitation must be maintained in the chemical supply tank during the entire period of herbicide application. Inject the product with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. Allow time for all lines to flush the herbicide through all nozzles before turning off irrigation water. To ensure the lines are flushed and free of remaining herbicide, a dye indicator can be injected into the lines to mark the end of the application period.

- Do not apply ~~Arrow~~MANA Arrow 2EC Herbicide through an irrigation system connected to a public water system. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

**Use Precautions**

1. Apply this product only through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, travelers, big gun, solid set, or hand move. Do not apply this product through any other type of irrigation system.
2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
3. If you have any questions about calibration, contact State Extension Service specialists, equipment manufacturers, or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the label-prescribed safety devices for public water supplies are in place.
5. A person knowledgeable of the chemigation system and responsible for its operation or under supervision of the responsible person shall shut the system down and make necessary adjustments as needed.
6. 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.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
8. 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.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. 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.
11. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
12. Do not apply when wind speed favors drift beyond the area intended for treatment.

# **RESTRICTIONS AND LIMITATIONS**

Do not apply if rain is expected within 1 hour of application as control can be unsatisfactory.

Do not plant rotational crops until 30 days after application of ArrowMANA Arrow 2EC Herbicide unless the crop is listed on the ArrowMANA Arrow 2EC Herbicide label.

Do not apply a postemergence broadleaf herbicide within one day following application of ArrowMANA Arrow 2EC Herbicide or reduced grass control can result.

Do not use ArrowMANA Arrow 2EC Herbicide on vegetable crops being grown for seed production unless specific use directions are provided. For canola, do not apply more than 6 fl oz of ArrowMANA Arrow 2EC Herbicide (0.09 lb ai) per acre per season. For clover, flax, mustard seed and radish crops, do not apply more than 16 fl oz of ArrowMANA Arrow 2EC Herbicide (0.25 lb ai) per acre per season. For all other crops, do not apply more than 32 fl oz of ArrowMANA Arrow 2EC Herbicide (0.50 lb ai) per acre per season (except where state specific restrictions are noted).

Application on Long Island, New York is restricted to no more than 16 fl oz of ArrowMANA Arrow 2EC Herbicide (0.25 lb ai) per acre per season.

Do not apply more than 8 fl oz/A of ArrowMANA Arrow 2EC Herbicide per application to the following crops: asparagus, brassica vegetables, (head and stem), bean (succulent), carrots, cranberry, cucurbits, flax, fruiting vegetables, (except tomato), garden beet, green onion, herbs, hops, leafy petioles, leafy brassica greens, leafy greens, legume vegetables (edible podded), non-bearing food crops, pea (dry shelled), pea (succulent), root vegetables, safflower, sesame and strawberry.

Do not apply more than 6 fl oz /A of ArrowMANA Arrow 2EC Herbicide per application to canola, or mustard seed. For all other crops, do not apply more than 16 fl oz of ArrowMANA Arrow 2EC Herbicide (0.25 lb ai) per acre per application (except where state specific restrictions are noted). **Exceeding these specifications can result in unacceptable crop injury.**

Do not apply under conditions of stress. Applying ArrowMANA Arrow 2EC Herbicide under conditions that do not promote active grass growth will reduce herbicide effectiveness. These conditions include drought, excessive water, extremes in temperature, low humidity, and grasses either partially controlled or stunted from prior pesticide applications. Grasses under these kinds of stressful conditions will not absorb and translocate ArrowMANA Arrow 2EC Herbicide effectively and will be less susceptible to herbicide activity.

Best perennial grass control can be obtained if rhizomes or stolons are cut up by preplant tillage practices (discing, plowing, etc.) to stimulate maximum emergence of grass shoots. Cultural practices, such as continuous no-tillage in which the perennial grass rhizomes or stolons are not cut up, results in a very staggered, non-uniform weed emergence. Due to this non-uniform weed emergence, make no fewer than two ArrowMANA Arrow 2EC Herbicide applications per season per year at the appropriate weed-growth stage rate under continuous no-till conditions.

Grass crops such as corn, rice, sorghum, small grains, or turf, etc. are highly sensitive to ArrowMANA Arrow 2EC Herbicide.

While all the vegetable crops on this label have been tested and are tolerant to ArrowMANA Arrow 2EC Herbicide, not all specialty varieties of these crops have been tested. It is advised that, before applying ArrowMANA Arrow 2EC Herbicide to specialty varieties of vegetable crops on this label, crop tolerance be investigated first using a small section of the field. It is possible that injury symptoms can occur. Symptoms may appear as leaf speckling or stunting.

Always read and follow the restrictions and limitations for all products whether used alone or in a tank mix. The most restrictive labeling of any product used applies in tank mixtures, including all crop rotational and other crop restrictions.

Tank mixes of ArrowMANA Arrow 2EC Herbicide and broadleaf herbicides can result in reduced grass control. If grass regrowth occurs, an additional application of ArrowMANA Arrow 2EC Herbicide may be necessary.

## **AVOID SPRAY DRIFT**

Do not allow spray from ground or aerial equipment to drift onto adjacent land or crops. When drift may be a problem, do everything possible to reduce spray drift, including:

- Do not spray if wind speeds are or become excessive. Do not spray if wind speed is 10 MPH or greater. If sensitive crops or plants are downwind, extreme caution must be used under all conditions. Do not spray if winds are gusty.

- Use extreme caution when conditions are favorable for drift (high temperatures, drought, low relative humidity), especially when sensitive plants are located nearby.
- Do not apply when a temperature inversion exists. If inversion conditions are suspected, consult with local weather services before making an application.
- Further reductions in drift can be obtained by:
  1. Using large droplet size sprays. Do not use nozzles that produce small droplets. Orient nozzles downward and slightly backward as needed to reduce drift for ground applications.
  2. Orienting nozzles straight back with the wind stream, using straight stream orifices for aerial applications. Use the lowest number of nozzles practical with the largest possible orifice size to obtain the minimum 3 GPA volume. Set application height and boom length according to manufacturer's instructions to minimize drift.
  3. Increasing the volume of spray mixture (for example a minimum of 10 GPA for ground applications) by using higher flow rate nozzles. Using lower pressure with the appropriate nozzle to obtain higher volumes will also reduce drift.
  4. Applying as close to target plants as practical while maintaining a good spray pattern for adequate coverage.

**Do not apply under conditions involving possible drift to food, forage, or other planting that might be damaged or the crops thereof rendered unfit for sale, use, or consumption.**

#### RESISTANCE MANAGEMENT

ArrowMANA Arrow 2EC Herbicide is a Group 1 herbicide: Any weed population may contain or develop plants naturally resistant to ArrowMANA Arrow 2EC Herbicide and other Group 1 herbicides. Weed species with acquired resistance to Group 1 may eventually dominate the weed population if Group 1 herbicides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by ArrowMANA Arrow 2EC Herbicide or other Group 1 herbicides. Repeated use of ArrowMANA Arrow 2EC Herbicide (or similar postemergence grass herbicide with the same mode of action) may lead to the selection of naturally occurring biotypes that are resistant to these products in some grass species.

If poor performance occurs and cannot be attributed to adverse weather or application conditions, a resistant biotype may be present. This is most likely to occur in fields where other control strategies such as crop rotation, mechanical removal and other classes of herbicides are not used from year to year.

To delay herbicide resistance consider:

1. Avoiding the consecutive use of ArrowMANA Arrow 2EC Herbicide or other target site of action Group 1 herbicides that have similar target site of action, on the same weed species.
2. Using tank mixtures or premixes with herbicides from different target site of action groups as long as the involved products are all registered for the same use, have different sites of action, and are both effective at the tank mix or prepack rate on the weed(s) of concern.
3. Basing herbicide use on a comprehensive IPM program.
4. Monitoring treated weed populations for loss of field efficacy.
5. Contacting your local extension specialist, certified crop advisors, and/or manufacturers for herbicide resistance management and/or integrated weed management directions for specific crops and resistant weed biotypes.

#### CROP-SPECIFIC RESTRICTIONS AND LIMITATIONS FOR ARROWMANA ARROW 2EC HERBICIDE

CROPS <sup>(1)</sup>	USE RATES FL OZ PER ACRE	CROP OIL CONCENTRATE RATES PER ACRE <sup>(2)</sup>	SPECIAL USE INSTRUCTIONS
Alfalfa including: (Sainfoin, Holy Clover, Birdsfoot Trefoil) <sup>(3)</sup>	6-16 <sup>(4)</sup>	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	Do not apply more than 16 fl oz/A per application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  Refer to tank mix partners for feeding, grazing and harvesting restrictions. <sup>(5, 6)</sup>

			<p>The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>The Preharvest Interval (PHI) is 15 days before grazing, feeding or harvesting (cutting) for forage or hay.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Artichoke (Globe)</b>	4-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 5 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Asparagus</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 1 day.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Beans, Dry Shelled including:</b> Bean ( <i>Lupinus</i> spp.): Grain, Sweet, White, White Sweet  Bean ( <i>Phaseolus</i> spp.): Field, Kidney, Lima (dry), Navy, Pinto, Tepary  Bean ( <i>Vigna</i> spp.): Adzuki Bean, Black-eyed pea, Catjang Cowpea, Crowder pea, Moth Bean, Mung Bean, Rice bean, Southern Pea, Urd Bean, Broad (dry), Chickpea (garbanzo) Guar, Lablab Bean, Lentil	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	<p>Do not apply more than 16 fl oz/A per application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>The Preharvest Interval (PHI) is 30 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>

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<b>Bean, Succulent Including:</b> Bean ( <i>Phaseolus</i> spp.): Broad bean (succulent) Lima bean (green), Bean ( <i>Vigna</i> spp.), Black-eyed pea-, Cowpea, Southern pea	6-8	1 qt by ground or 1 % v/v (but not less than 1 pt/A) by air. <sup>(5)</sup>	Do not apply more than one (1) application per acre per season.  The addition of AMS has shown improved grass control for difficult to control species including: quackgrass, rhizome Johnsongrass, red rice, wild oats, volunteer cereals and volunteer corn.  The Preharvest Interval (PHI) is 21 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Beet, Garden</b>	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz /A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 30 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Bushberry including:</b> Aronia berry, Blueberry, highbush, Chilean guava, Cranberry highbush, Currant black, Currant buffalo, Currant native, Currant red, Elderberry, European barberry, Gooseberry, Honeysuckle, edible Huckleberry, Jostaberry, Juneberry, Saskatoon berry, Salal, Sea buckhorn, cultivars, varieties and/or hybrids of these	4-8	1 % v/v (but not less than 1 pt/A)	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  The Preharvest Interval (PHI) is 14 days.  For repeat applications make on a minimum of a 14-day interval.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.  <b>See Use Directions for Bushberry, Caneberry and Peach.</b>
<b>Caneberry including:</b> Blackberry, Loganberry, Raspberry, black, Raspberry, red, Raspberry, wild Cultivars, varieties and/or hybrids of these	4-8	1 % v/v (but not less than 1 pt/A)	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 7 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.  <b>See Use Directions for Bushberry, Caneberry and Peach.</b>

<b>Canola*</b> *Not for use in California unless accompanied by supplemental labeling allowing use in California	4-6	1% v/v in the finished spray volume	Do not apply after crop has begun bolting. Crop injury can occur when <del>Arrow</del> MANA Arrow 2EC Herbicide is applied during the bloom period.  Do not apply more than 6 fl oz/A in a single application. Do not apply more than 6 fl oz/A (0.09 lb ai/A) in a season.  The Preharvest Interval (PHI) is 70 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Carrot</b>	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 30 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Clover (Idaho, Oregon, and Washington only)</b>	6-16	1% v/v in the finished spray volume	For use on clover grown in the states of Idaho, Oregon, and Washington only.  Do not exceed 16 fl oz/A (0.25 lb ai/A) in a single application or in a season.  The Preharvest Interval (PHI) is 15-days before grazing, feeding, or harvesting (cutting) for forage or hay.  In Oregon, for use on clover grown for seed, use 6-8 fl oz/A for annual grass control and 8-10 fl oz/A for perennial grass control.
<b>Corn, Field <sup>(1)</sup></b> (For burndown of an existing stand of Roundup Ready field corn or volunteer Roundup Ready field corn prior to replanting field corn.)	3	Do not use COC on field corn. Use NIS at 0.25% v/v	Do not make more than 1 application per season.  Do not apply more than 3 fl oz/A per season.  For burndown of an existing stand of Roundup Ready field corn or volunteer Roundup Ready field corn prior to replanting field corn.  Replant no sooner than 6 days after application.  The Preharvest Interval (PHI) is 90 days.
<b>Cotton</b>	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  Do not graze treated fields or feed treated forage or hay to livestock.  The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.

			<p>The Preharvest Interval (PHI) is 60 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Cranberry</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>Do not apply between the "hook" stage and full fruit set.</p> <p>The Preharvest Interval (PHI) is 30 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Cucurbits including:</b> Chayote (fruit), Chinese Wax Gourd, Citron Melon, Cucumber, Gherkin, Gourd, (Edible), Muskmelons (all) including: Cantaloupes, Honeydew Melon Pumpkin, Squash (all), Watermelon	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 14 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Fallow Land, Conifer Trees (and other non-producing agricultural areas)</b>  <b>Non-Crop or Non-Planted Areas</b>	6-16	1% v/v (but not less than 1 pt/A) in the finished spray volume using a crop oil concentrate containing at least 15% emulsifier.	<p>Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>Do not plant any crop for 30-days after application unless <del>Arrow</del>MANA <del>Arrow</del> 2EC Herbicide is registered for use in that crop.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Flax*</b>  *Not for use in California unless accompanied by supplemental labeling allowing use in California	6-8	1% v/v in the finished spray volume	<p>Apply prior to bloom. Crop injury can occur when <del>Arrow</del>MANA <del>Arrow</del> 2EC Herbicide is applied during the bloom period.</p> <p>Do not apply more than 8 fl oz/A in a single application. Do not exceed 16 fl oz/A (0.25 lb ai/A) in a season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 60 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>

<b>Fruiting Vegetables (except Tomato) including:</b> Eggplant, Groundcherry, Pepino, Peppers (all), Tomatillo	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 20 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Head and Stem Brassica Vegetables including:</b> Broccoli, Cabbage, Cauliflower, Brussels Sprouts Chinese broccoli, Chinese (Napa) cabbage, Chinese mustard, Cavalo broccoli, and Kohlrabi	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 30 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Herbs including:</b> Angelica, Balm, Basil, Borage, Burnet, Chamomile, Catnip, Chervil (dried), Chive, Chive, (Chinese), Clary, Coriander (leaf), Costmary, Culantro (leaf), Curry (leaf), Dill (dillweed), Horehound, Hyssop, Lavender, Lovage (leaf), Marigold, Marjoram ( <i>Origanum</i> spp.), Nasturtium, Parsley (dried), Pennyroyal, Rosemary, Rue, Sage, Savory (Summer and Winter), Sweet Bay, Tansy, Tarragon, Thyme, Wintergreen, Woodruff, Wormwood	6-8	1% v/v in the finished spray volume	<del>Arrow</del> MANA <del>Arrow</del> 2EC Herbicide has not been tested on all herbs, and herb varieties. It is the responsibility of the user to test <del>Arrow</del> MANA <del>Arrow</del> 2EC Herbicide on a small portion of the crop to be treated before treating the entire field.  Verify the crop tolerance to <del>Arrow</del> MANA <del>Arrow</del> 2EC Herbicide on a small area of the herb crop, at the desired <del>Arrow</del> MANA <del>Arrow</del> 2EC Herbicide rate and with the same crop oil concentrate that will be used on the herb field. If no crop response is evident seven (7) days after treatment, <del>Arrow</del> MANA <del>Arrow</del> 2EC Herbicide can be used on the entire field at the rate tested and with the same crop oil used in the tolerance test.  Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications, make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 14 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Hops</b>	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 21 days.  Refer to appropriate table for reduced rate



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			specifications for the control of small annual grasses.
<b>Leafy Greens</b> Including: Amaranth, Chinese spinach, Leafy Amaranth, Tampala, Arugula (roquette), Chervil, Chrysanthemum (Edible leaved), Chrysanthemum (Garland), Corn salad, Cress (garden, upland [yellow rock and winter]), Dandelion, Dock (sorrel), Endive (escarole), Lettuce (Head and Leaf), Orach, Parsley, Purslane (garden, winter), Radicchio (red chicory), Spinach, Spinach (Leafy Amaranth), Spinach (New Zealand), Spinach (Vine [Indian and Malabar])	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 14 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Leaf Petioles including:</b> Cardoon, Celery, Celtuce, Chinese Celery, Fennel, Florence (finochio), Rhubarb, Swiss Chard	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 30 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Leafy Brassica Greens including:</b> Broccoli raab; Cabbage, Chinese (Bok choy); Collards; Kale; Mizuna; Mustard Greens; Mustard Spinach; Rape Green; Turnip Greens	6-8	1% v/v in the finished spray volume	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14 day interval.  The Preharvest Interval (PHI) is 14 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.

<b>Legume Vegetables, Edible Podded including:</b> Bean ( <i>Phaseolus</i> spp.): Runner, Snap, Wax Bean ( <i>Vigna</i> spp.): Asparagus, Chinese Longbean, Moth, Yardlong, Jackbean Pea ( <i>Pisum</i> spp.): Dwarf, Edible-pod, Snow, Sugar Snap, Pigeon, Sword Bean	6-8	1 qt by ground or 1% v/v (but not less than 1 pt per acre) by air <sup>(5)</sup>	Do not apply more than 8 fl oz/A in a single application.  Do not apply more one application per acre per season.  For peas, apply before bloom, but no later than 21- days before harvest.  The addition of AMS has shown improved grass control for difficult to control species including: Quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.  The Preharvest Interval (PHI) is 21 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Mint</b>	6-16 <sup>(4)</sup>	1 qt by ground or 1.0% v/v (but not less than 1 pt per acre by air)	Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 21 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Mustard Seed*</b>  *Not for use in California unless accompanied by supplemental labeling allowing use in California	4-6	1% v/v in the finished spray volume	Do not apply after crop has begun bolting. Crop injury can occur when <del>Arrow</del> <b>MANA Arrow 2EC</b> Herbicide is applied during the bloom period.  Do not apply more than 6 fl oz/A in a single application. Do not exceed 6 fl oz/A (0.09 lb ai/A) in a season.  The Preharvest Interval (PHI) is 75 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Onions (Dry Bulbs Only), Garlic, Shallots (Dry Bulbs Only)</b>	6-16 <sup>(9),(10)</sup>	1% v/v in the finished spray volume	Do not apply more than 16 fl oz/A per application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  Minimum of 20 gals/A spray volume by ground in entire U.S.  Minimum of 20 gals/A spray volume by air in California <sup>(9)</sup>  In states other than California, make air applications to onions, garlic or shallots in a minimum of 10 gals per acre.  For repeat applications make on a minimum of a 14 day interval.

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			<p>The Preharvest Interval (PHI) is 45 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<p><b>Onions, Green</b> including Leeks, Scallions, or Spring Onions, Japanese Bunching Onions, Green Shallots, Green Eschalots</p>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 14 days.</p> <p>Minimum of 20 gals/A spray volume by air in California.<sup>(8)</sup></p> <p>In states other than California, make air applications to onions, garlic or shallots in a minimum of 10 gals per acre.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<p><b>Ornamentals</b> <b>Non-Bearing Food Crops</b></p>	<p>6-16 6-8<sup>(9)</sup></p>	<p>Do not use crop oil concentrate since it can injure flowers and foliage. See Special Use Instructions.</p>	<p>Add a non-ionic surfactant containing at least 80% active ingredient at the rate of 1 pt per 50 gals (0.25%v/v).</p> <p>Sugar maples cannot be tapped for syrup within one year of <del>Arrow</del> <u>MANA Arrow</u> 2EC Herbicide application.</p> <p>Do not apply more than 8 fl oz per acre in a single application to non-bearing food crops. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<p><b>Pea, Dry Shelled</b> including: Pea (<i>Pisum</i> spp.) Field, Pigeon</p>	6-8	1 qt by ground or 1% v/v (but not less than 1 pt per acre) by air. <sup>(5)</sup>	<p>Do not apply more than 8 fl oz/A per application.</p> <p>Do not apply more than one (1) application per acre per season.</p> <p>Apply before bloom but not later than 30 days prior to harvest.<sup>(11)</sup></p> <p>The addition of AMS has shown improved grass control for difficult to control species including: quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>The Preharvest Interval (PHI) is 30 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>

<b>Pea, Succulent</b> including: Pea ( <i>Pisum</i> spp.): English pea, Garden pea, Green pea, Pigeon pea	6-8	1 qt by ground or 1% v/v (but not less than 1 pt per acre) by air. (5)	Do not apply more than 8 fl oz/A per application.  Do not apply more than one (1) application per acre per season.  Apply before bloom but not later than 21 days prior to harvest. (11)  The addition of AMS has shown improved grass control for difficult to control species including: quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals and volunteer corn.  The Preharvest Interval (PHI) is 21 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Peach</b>	6-8	1% v/v (but not less than 1 pt per acre)	Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of 14-day intervals.  The Preharvest Interval (PHI) is 14 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.  <b>See Use Directions for Bushberry, Caneberry and Peach.</b>
<b>Peanuts (including Perennial)*</b>  *Not registered for use in CA unless accompanied by a supplemental label	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air (5)	The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.  Do not apply more than 16 fl oz/A in a single application. Do not apply more 32 fl oz/A (0.5 lb ai/A per season, except in Florida where the limit is 32 fl oz/A per year (perennial peanuts only).  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 40 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Potato</b>	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air (5)	The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 30 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.

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<b>Radish</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 16 fl oz (0.25 lb ai/A) per acre in a season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 15 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Root Vegetables (except Radish) including:</b> Chicory, Ginseng, Horseradish, Turnip Burdock (Edible), Celeriac, Chervil (Turnip-Rooted), Parsley (Turnip-Rooted), Parsnip, Radish (Oriental), Rutabaga, Salsify, Salsify (Black), Salsify (Spanish), Skirret	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai) in a season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 30 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Safflower</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) in a season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 70 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Sesame</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply during flowering.</p> <p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) in a season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 14 days. Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>

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<b>Soybean</b> <u>*Not registered for use in CA unless accompanied by a supplemental label</u>	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	<p>Do not graze treated fields or feed treated forage or hay to livestock.</p> <p>Do not apply more than 16 fl oz/A per application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>The Preharvest Interval (PHI) is 60 days.</p> <p>The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Strawberry</b>	6-8	1% v/v in the finished spray volume	<p>Do not apply more than 8 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 4 days.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Sugarbeet</b>	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	<p>Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 40 days.</p> <p>The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>
<b>Sunflower</b>	6-16	1 qt by ground or 1.0% v/v (but not less than 1 pt/A) by air <sup>(5)</sup>	<p>Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.</p> <p>For repeat applications make on a minimum of a 14-day interval.</p> <p>The Preharvest Interval (PHI) is 70 days.</p> <p>The addition of AMS has shown improved grass control for difficult to control species including quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals, and volunteer corn.</p> <p>Refer to appropriate table for reduced rate specifications for the control of small annual grasses.</p>

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<b>Tuberous and corn vegetables (except potato)</b> Arracacha, Arrowroot, Chinese Artichoke, Jerusalem Artichoke, Edible Burdock, Edible Canna, Cassava, Bitter And Sweet Chayote (Root), Chufa, Dasheen (Taro), Ginger, Leren, Sweet Potato, Tanier, Turmeric, Bean Yam, True Yam, Yam	6-16	1% v/v in the finished spray volume	Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  The Preharvest Interval (PHI) is 30 days.  The addition of AMS has shown improved grass control for difficult to control species including: Quackgrass, rhizome johnsongrass, red rice, wild oats, volunteer cereals and volunteer corn.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.
<b>Tomato</b>	6-16	1% v/v in the finished spray volume	Do not apply more than 16 fl oz/A in a single application. Do not apply more than 32 fl oz/A (0.5 lb ai/A) per season.  For repeat applications make on a minimum of a 14-day interval.  The Preharvest Interval (PHI) is 20 days.  Refer to appropriate table for reduced rate specifications for the control of small annual grasses.

N/A= Not Applicable

- (1) Do not use ArrowMANA Arrow 2EC Herbicide on vegetable crops being grown for seed production unless specific use directions are provided.
- (2) Acceptable crop oil concentrates would be those which contain a minimum of 80% oils and 15% emulsifier. A crop oil concentrate must contain either a petroleum or vegetable oil base and must meet all the following criteria: be non-phytotoxic, contain only EPA-exempt ingredients, provide good mixing quality, and be successful in local experience. Highly refined vegetable oils have proven more satisfactory than unrefined vegetable oils. See the **ADDITION OF ADJUVANT AND CROP OIL CONCENTRATE** section for further information.
- (3) ArrowMANA Arrow 2EC Herbicide can be applied to seedling or established alfalfa grown for seed, hay, silage, green chop, or direct grazing.
- (4) For weed control in established alfalfa and mint, the minimum use rate is 10 fl oz per acre.
- (5) 1 to 2 qts/A of liquid fertilizer (10-34-0, 28%N or 32%N), or an equivalent amount (2.5 to 4.0 lbs/A) of spray grade ammonium sulfate (AMS) can be added to ArrowMANA Arrow 2EC Herbicide applications in addition to the specified rate of crop oil concentrate.
- (6) Do not apply ArrowMANA Arrow 2EC Herbicide and 2,4-DB as a tank mix to alfalfa unless the 60 day feeding, grazing, and harvesting restriction on the 2,4-DB label can be observed.
- (7) For burndown of an existing stand of Roundup Ready field corn or volunteer Roundup Ready field corn prior to replanting field corn. See **DIRECTIONS FOR USE IN ROUNDUP READ FIELD CORN (BURNDOWN)** table.
- (8) For ground applications to garlic or shallots, do not exceed 8 fl oz/A in a single application. For air applications to onions, garlic, or shallots, do not exceed 8 fl oz/A in a single application. For garlic and

shallots, do not exceed 2 applications per season. In California for air applications to onions, do not exceed 2 applications per season.

(9) If ArrowMANA Arrow 2EC Herbicide is applied as a spot treatment to onions, garlic, shallots, or non-bearing food crops, take care not to exceed the maximum rate allowed on a PER ACRE basis or crop injury can occur.

(10) In California, do not apply ArrowMANA Arrow 2EC Herbicide to onions, garlic, or shallots until crop has at least two full leaves. In California, use 14-day spray intervals between the application of ArrowMANA Arrow 2EC Herbicide and Liquid Nitrogen or other herbicide applications. Injury to crop can occur when shorter intervals are observed.

(11) Applications of ArrowMANA Arrow 2EC Herbicide to peas during the bloom period could result in severe crop injury, including loss of yield and delayed maturity.

**IMPORTANT:** Plant tolerance to ArrowMANA Arrow 2EC Herbicide at labeled rates has been found to be acceptable for the indicated genera and species listed below. Due to variability within species, crop growth stage, environmental conditions, and application techniques, determine if herbicide can be used safely on a few plants prior to widespread application. Neither the seller nor the manufacturer of ArrowMANA Arrow 2EC Herbicide have investigated the safety factor to plants not listed on the label.

#### NON-BEARING FOOD CROPS

**DO NOT APPLY ARROWMANA ARROW 2EC HERBICIDE TO NON-BEARING FRUIT OR NUT CROPS WHICH ARE GROWN FOR ROOT STOCK.**

Crop injury to non-bearing fruit and nut crops can occur if ArrowMANA Arrow 2EC Herbicide is improperly applied. Do not apply ArrowMANA Arrow 2EC Herbicide directly over the top of these plant types. Instead, direct the spray at the base of the plant where grassy weeds are growing near the ground.

Non-bearing fruit and nut crops are plants which will not bear fruit or nuts for at least one year following ArrowMANA Arrow 2EC Herbicide application.

COMMON NAME	SCIENTIFIC NAME
Apples	<i>Malus</i> spp.
Berries	<i>Vaccinium</i> spp.
	<i>Rubus</i> spp.
Cherry, Sweet	<i>Prunus avium</i>
Citrus Fruits	<i>Citrus</i> spp.
Grapes	<i>Vitis</i> spp.
Olives	<i>Olea</i> spp.
Peach	<i>Prunus persica</i>
Pears	<i>Pyrus communis</i>
Prunes	<i>Prunus</i> spp.
Stone Fruits	<i>Prunus</i> spp.
Strawberries	<i>Fragaria</i> spp.



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COMMON NAME	SCIENTIFIC NAME
<b>Tree Nuts:</b>	
Almonds	<i>Prunus dulcis</i>
Filbert	<i>Corylus maxima</i>
Pecan	<i>Carya illinoensis</i>
Pistachio	<i>Pistacia vera</i>
Walnut	<i>Juglans spp.</i>

#### CONIFER TREES

ArrowMANA Arrow 2EC Herbicide can be used to control labeled grasses in Christmas tree farms, conifer nurseries, and conifer plantations (but not in forests).

COMMON NAME	SCIENTIFIC NAME
Arborvitae, American	<i>Thuja occidentalis</i>
Cedars	<i>Cedrus spp.</i>
Cypress	<i>Taxodium spp.</i>
Douglas Fir	<i>Pseudotsuga menziesii</i>
Firs	<i>Abies spp.</i>
Hemlock, Canadian	<i>Tsuga canadensis</i>
Hemlock, Western	<i>Tsuga heterophylla</i>
Pines	<i>Pinus spp.</i>
Spruces	<i>Picea spp.</i>
Yew	<i>Taxus spp.</i>

#### NON-CROP OR NON-PLANTED AREAS

The following areas are considered non-crop or non-planted areas: rights-of-way including railroads, highways, roads, dividers, medians, pipelines, public utility lines, pumping stations, transformer stations and substations, around airports, electric utilities, commercial buildings, manufacturing plants, storage yards, rail yards, fence lines, parkways, and post-harvest croplands, also beneath greenhouse benches and around golf courses.

#### DIRECTIONS FOR ANNUAL GRASSES (EXCEPT IN ESTABLISHED ALFALFA AND MINT)

- Apply only to actively growing grasses at specified weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the specified growth stage for treatment.
- Use the high rate under heavy grass pressure and/or when grasses are at maximum height.
- Do not apply more than 8 fl oz/A of ArrowMANA Arrow 2EC Herbicide per application to the following crops: asparagus, carrot, cranberry, cucurbits, flax, fruiting vegetables, (except tomato), garden beets, green onion, head and stem brassica vegetables, herbs, hops, leaf petioles, leafy brassica greens, leafy greens, non-bearing food crops, root vegetables, safflower, sesame and strawberry. Do not apply more than 6 fl oz per acre of ArrowMANA Arrow 2EC Herbicide per application to canola or mustard seed.

GRASS SPECIES	SCIENTIFIC NAME	WEED HEIGHT* INCHES	RATE FL OZ/ACRE	HIGH RATE ( <sup>1</sup> )
Barnyardgrass	<i>Echinochloa crus-galli</i>	2 to 8	6	8
Broadleaf Signalgrass	<i>Bracharia platyphylla</i>	2 to 6	6	8
Brome				
California	<i>Bromus carinatus</i>	2 to 6	6	8
Cheat	<i>Bromus secalinus</i>	2 to 6	6	8
Downy	<i>Bromus tectorum</i>	2 to 6	6	8
Ripgut	<i>Bromus diandrus</i>	2 to 6	6	8
Canarygrass	<i>Phalaris canariensis</i>	1 to 4	6	8
Crabgrass				
Hairy	<i>Digitaria adscendens</i>	2 to 6**	6	8
Large	<i>Digitaria sanguinalis</i>	2 to 6**	6	8
Smooth	<i>Digitaria ischaemum</i>	2 to 6**	6	8
Southern	<i>Digitaria ciliaris</i>	2 to 6**	6	8
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	2 to 6**	6	8
Fall Panicum	<i>Panicum dichotomiflorum</i>	2 to 8	6	8
Field Sandbur	<i>Cenchrus incertus</i>	2 to 6	6	8

Foxtail				
Giant	<i>Setaria faberi</i>	2 to 12	6	8
Green	<i>Setaria viridis</i>	2 to 8	6	8
Yellow	<i>Setaria glauca</i>	2 to 8	6	8
Goosegrass	<i>Eleusine indica</i>	2 to 6**	6	8
Itchgrass	<i>Rottboellia cochinchinensis</i>	2 to 6	6	8
Junglerice	<i>Echinochloa colona</i>	2 to 6	6	8
Lovegrass (Stinkgrass)	<i>Eragrostis ciliaris</i>	2 to 6	6	8
Rabbitsfootgrass	<i>Polypogon monspeliensis</i>	1 to 4	6	8
Red Rice	<i>Oryza sativa</i>	1 to 3	6	8
Ryegrass				
Hardy	<i>Lolium remotum</i>	2 to 6	6	8
Italian	<i>Lolium multiflorum</i>	2 to 6	6	8
Seedling Johnsongrass	<i>Sorghum halepense</i>	4 to 10	6	8
Shattercane	<i>Sorghum bicolor</i>	6 to 18	6	8
Southwestern Cupgrass	<i>Eriochloa gracilis</i>	2 to 6	6	8
Sprangletop				
Amazon	<i>Leptochloa panicoides</i>	2 to 6	6	8
Bearded	<i>Leptochloa fascicularis</i>	2 to 6	6	8
Mexican	<i>Leptochloa uninervia</i>	2 to 6	6	8
Red	<i>Leptochloa filiformis</i>	2 to 6	6	8
Texas Panicum	<i>Panicum texanum</i>	2 to 6	6	8
Volunteer Cereals <sup>(2)</sup>				
Barley	<i>Hordeum vulgare</i>	2 to 6	6	8
Oats	<i>Avena sativa</i>	2 to 6	6	8
Rye	<i>Secale cereale</i>	2 to 6	6	8
Wheat	<i>Triticum aestivum</i>	2 to 6	6	8
Volunteer Corn <sup>(3)</sup>	<i>Zea mays</i>	4 to 12	4	6
Volunteer Corn <sup>(3)</sup>	<i>Zea mays</i>	12 to 24	6	8
Volunteer Corn S.R. <sup>(4)</sup>	<i>Zea mays</i>	4 to 12	8 suppression only	
Volunteer Grain Sorghum	<i>Sorghum bicolor</i>	8 to 12	6	8
Wild Oats	<i>Avena fatua</i>	2 to 6	6	8
Wild Proso Millet	<i>Panicum miliaceum</i>	2 to 10	6	8
Witchgrass	<i>Panicum capillare</i>	2 to 8	6	8
Woolly Cupgrass	<i>Eriochloa villosa</i>	2 to 8	6	8

\*Occurs between 3-leaf stage and tillering

\*\*Length of lateral growth

<sup>(1)</sup> Rates higher than 8 fl oz/A can be applied in certain geographic areas, cropping situations, or environmental conditions where experience has shown that higher rates are needed for satisfactory control of annual grasses. In these situations, rates from 8 to 16 fl oz/A can be applied. Do not apply more than 8 fl oz/A of ArrowMANA Arrow 2EC Herbicide per application to the following crops: asparagus, carrot, cranberry, cucurbits, flax, fruiting vegetables (except tomato), garden beet, green onion, head and stem brassica vegetables, herbs, hops, leaf petioles, leafy brassica greens, leafy greens, non-bearing food crops, root vegetables, safflower, sesame and strawberry. Do not apply more than 6 fl oz per acre of ArrowMANA Arrow 2EC Herbicide to canola or mustard seed.

<sup>(2)</sup> When a cereal grain crop (such as wheat) is interseeded for crop establishment or is planted as wind breaks to aid crop establishment, the minimum ArrowMANA Arrow 2EC Herbicide use rate for control is 8 fl oz/A.

<sup>(3)</sup> Includes Roundup Ready®, Liberty Link®, and IMI-CORN® VOLUNTEER CORN.

<sup>(4)</sup> Sethoxydim-resistant volunteer corn.

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**DIRECTIONS FOR ANNUAL & PERENNIAL GRASS CONTROL  
IN ESTABLISHED ALFALFA AND MINT WITH ARROWMANA ARROW 2EC HERBICIDE**

GRASS SPECIES	WEED STAGE	RATE FL OZ ACRE	HIGH RATE
Annual & Perennial Grasses Listed in Grass Table	See Table	10	16

**Mowing:** The best control of annual grasses can be achieved by applying ArrowMANA Arrow 2EC Herbicide before grass weeds are mowed. Once a grass is mowed it becomes tougher to control as much of the available leaf surface has been removed. In areas without a killing frost, some annuals can over-winter after having been mowed multiple times. These grasses form large crowns and may contain many viable buds. These grasses, even though they may be an annual grass, may require repeated applications of ArrowMANA Arrow 2EC Herbicide for partial or complete control.

**Irrigated Alfalfa and Mint:** Irrigation practices can be very critical to the successful use of ArrowMANA Arrow 2EC Herbicide in established alfalfa and mint and may be necessary to initiate active growth of the weeds prior to application. Applications 2 to 4 days after an irrigation are most effective. Irrigation made shortly after application (2 days) can be effective, but more consistent grass control occurs when the irrigation is made before the application.

**Aerial Application:** Apply ArrowMANA Arrow 2EC Herbicide in a minimum of 10 GPA in established alfalfa and mint when applying by air.

**Annual Grass Control:** Apply ArrowMANA Arrow 2EC Herbicide at the grass sizes indicated in the **DIRECTIONS FOR ANNUAL GRASS TABLE** and rates indicated. If a grass has been cut, apply ArrowMANA Arrow 2EC Herbicide after active growth has resumed and regrowth has reached the minimum height and before it reaches the maximum height indicated. Apply before the alfalfa/mint canopy covers the grasses and interferes with the spray coverage. Some annual grasses are spring- and summer-germinating plants, while others are fall-germinating plants, and the time they are actively growing and most susceptible to ArrowMANA Arrow 2EC Herbicide may vary from region to region.

Also some annuals germinate over an extended period of time, and because control of small grasses is desired, applications after each weed flush may be required. As a rule, spray spring- and summer-germinating grasses as early in the season as possible, after initial green-up. Spray fall-germinating weeds in the fall soon after they begin growing but before any damage is done due to frost. Late fall applications can be less effective due to environmental conditions such as frost, slower plant growth, or the onset of flowering.

**Perennial Grass Control:** ArrowMANA Arrow 2EC Herbicide effectively controls perennial grasses such as bermudagrass, johnsongrass, quackgrass, wirestem muhly, tall fescue, foxtail barley, and orchardgrass. Due in part to lack of tillage, perennial grasses are more difficult to control in a perennial crop such as established alfalfa or mint. A program of repeated applications is usually necessary for best results. The best way to control perennial grasses is to do so in the year of stand establishment before rhizomes and stolons become large and difficult to kill.

Use the high rate under heavy grass pressure and/or when grasses are at or near maximum height.  
Always add a crop oil concentrate at 1 qt/A by ground or 1% v/v (but not less than 1 pt/A) to the finished spray volume by air.

**DIRECTIONS FOR ANNUAL BLUEGRASS CONTROL WITH ARROWMANA ARROW 2EC HERBICIDE**

GRASS SPECIES	WEED STAGE	RATE FL OZ ACRE	HIGH RATE
Annual Bluegrass ( <i>Poa annua</i> )	to 4-leaf	6*	16

Apply under favorable soil moisture and humidity which exists within a few days after rainfall or within 7 days after irrigation. Grass needs to be actively growing at time of application(s).

Apply at weed stage indicated on the label, as reduced control can be expected with more mature annual bluegrass.

Use the high rate under heavy grass pressure and/or when annual bluegrass is more mature.  
Always add a crop oil concentrate at 1 qt/A by ground to the finished spray volume.

\* Use a minimum of 10 fl oz per acre to control annual bluegrass in seedling and established alfalfa and mint.

**DIRECTIONS FOR REDUCED RATE TO CONTROL SMALL ANNUAL GRASSES IN CANOLA, DRY  
SHELLED BEAN AND PEA (INCLUDING SOYBEAN), EDIBLE PODDED LEGUME VEGETABLES, FLAX,  
MUSTARD SEED, SUCCULENT BEAN AND PEA AND SUGARBEET  
(REDUCED RATE SPECIFICATIONS NOT FOR USE IN CALIFORNIA)**

- Apply only to actively growing grasses at specified weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the specified growth stage for treatment.
- Regrowth by tillering can occur if application is made when plants are stressed by lack of moisture, excessive moisture, low or high temperatures, and/or under very low humidity.

GRASS SPECIES	SCIENTIFIC NAME	WEED HEIGHT (INCHES)	RATE FL OZ/ACRE <sup>(1)</sup>
Barnyardgrass	<i>Echinochloa crus-galli</i>	1 to 4	4
Broadleaf Signalgrass	<i>Bracharia platyphylla</i>	1 to 4	5
Crabgrass			
Large	<i>Digitaria sanguinalis</i>	1 to 3*	4
Large	<i>Digitaria sanguinalis</i>	1 to 4*	5
Smooth	<i>Digitaria ischaemum</i>	1 to 3*	4
Smooth	<i>Digitaria ischaemum</i>	1 to 4*	5
Southern	<i>Digitaria ciliaris</i>	1 to 4*	5
Fall Panicum	<i>Panicum dichotomiflorum</i>	1 to 4	4
Foxtail			
Giant	<i>Setaria faberi</i>	1 to 4	4
Green	<i>Setaria viridis</i>	1 to 4	4
Millet	<i>Setaria italica</i>	1 to 4	5
Yellow	<i>Setaria glauca</i>	1 to 4	4
Seedling Johnsongrass	<i>Sorghum halepense</i>	1 to 6	5
Shattercane	<i>Sorghum bicolor</i>	4 to 10	4
Texas Panicum	<i>Panicum texanum</i>	1 to 4	5
Volunteer Cereals			
Barley	<i>Hordeum vulgare</i>	1 to 4	5
Oats	<i>Avena sativa</i>	1 to 4	5
Wheat	<i>Triticum aestivum</i>	1 to 4	5
Volunteer Corn**	<i>Zea mays</i>	4 to 12	4
Wild Proso Millet	<i>Panicum miliaceum</i>	1 to 6	4
Wild Oats	<i>Avena fatua</i>	1 to 4	5

\*Length of lateral growth

\*\*Not S. R. Corn

<sup>(1)</sup> Always add a crop oil concentrate at 1 qt/A by ground application to the finished spray volume.

#### DIRECTIONS FOR PERENNIAL GRASSES

- Apply only to actively growing grasses at specified weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the specified growth stage for treatment.
- Use the high rate under heavy grass pressure and/or when grasses are at a maximum height.
- Do not apply more than 8 fl oz/A of ~~Arrow~~ MANA Arrow 2EC Herbicide per application to the following crops: asparagus, carrot, cranberry, cucurbits, flax, fruiting vegetables (except tomato), garden beet, green onion, head & stem brassica vegetables, herbs, hops, leaf petioles, leafy brassica greens, leafy greens, nonbearing food crops, root vegetables, safflower, sesame and strawberry. Do not apply more than 6 fl oz per acre of MANA Arrow 2EC Herbicide per application to canola, flax, or mustard seed.

GRASS SPECIES	WEED HEIGHT (INCHES)	RATE FL OZ/ACRE	HIGH RATE
<b>Bermudagrass (<i>Cynodon dactylon</i>)</b>			
First Application	3 (or up to 6" runners)	8	16
Repeat Application(s) (if regrowth occurs)	3 (or up to 6" runners)	8	16
<b>Fescue, tall (<i>Festuca arundinacea</i>)</b>			
First Application	4 to 8	8	16
Repeat Application(s) (if regrowth occurs)	4 to 8	8	16
<b>Foxtail Barley (<i>Hordeum jubatum</i>)</b>			
First Application	2 to 6	8	16
Repeat Application(s) (if regrowth occurs)	2 to 6	8	16
<b>Orchardgrass (<i>Dactylis glomerata</i>)</b>			
First Application	4 to 8	8	16
Repeat Application(s) (if regrowth occurs)	4 to 8	8	16
<b>Quackgrass* (<i>Elytrigia repens</i>)</b>			
First Application	4 to 12	8	16

Repeat Application(s) (if regrowth occurs)	4 to 12	8	16
<b>Rhizome Johnsongrass (<i>Sorghum halepense</i>)</b>			
First Application	12 to 24	8	16
Repeat Application(s) (if regrowth occurs)	6 to 18	6	8
<b>Wirestem Muhly (<i>Muhlenbergia frondosa</i>)</b>			
First Application	4 to 8	8	16
Repeat Application(s) (if regrowth occurs)	4 to 8	8	16
<b>Perennial Bluegrass* ([<i>Roughstalk (Poa trivialis)</i>])([<i>Kentucky (Poa prantensis)</i>])</b>			
First Application	2 to 4	8	16
Repeat Application(s) (if regrowth occurs)	2 to 4	8	16
<b>Bentgrass* (<i>Agrostis</i> spp.)</b>			
First Application	2 to 4	-	16
Repeat Application(s) (if regrowth occurs)	2 to 4	-	16

\*Control of quackgrass and perennial bluegrass and bentgrass with ArrowMANA Arrow 2EC Herbicide can be enhanced by adding AMS at 2.5 to 4.0 lbs/A.

#### DIRECTIONS FOR USE IN ROUNDUP READY FIELD CORN (BURNDOWN)

GRASS SPECIES	WEED STAGE	RATE FL OZ ACRE*
Field corn ( <i>Zea mays</i> )	Up to 12 inches	3

\*Rate when applied alone or with glyphosate.  
 For control of existing stand of Roundup Ready field corn or volunteer Roundup Ready field corn prior to replanting field corn.  
 Care must be taken to avoid in-field boom (spray) overlaps or excessive crop injury may occur.  
 Replant no sooner than 6-days after application.  
 Adjuvants: NIS at 0.25% v/v plus AMS at 2.5 to 4 lbs/A (do not use a COC or MSO with ArrowMANA Arrow 2EC Herbicide in this use pattern).

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#### TANK MIXES PRODUCT INFORMATION

The labels for each of the herbicides specified for tank mixing with ArrowMANA Arrow 2EC Herbicide are unique to the characteristics of those products and contain restrictions and limitations that can be more restrictive than the ArrowMANA Arrow 2EC Herbicide label in certain considerations. Those concerns can include, but are not limited to:

1. Geographic restrictions-all products are not registered for use in all areas and rates may vary from one region of labeled use to another;
2. Crop rotation restrictions;
3. Applicator certification requirements;
4. Worker safety rules (e.g. protective clothing, reentry time, posting);
5. Soil type or soil characteristics (e.g. pH, OM);
6. Maximum dosage or number of applications per season;
7. Rain free period required; or
8. Application timing (e.g. pre-harvest interval);
9. Do not exceed the total season rates.

THE MOST RESTRICTIVE LABELING OF ANY PRODUCT USED IN A TANK MIX MUST BE FOLLOWED.

#### TANK MIX APPLICATION OF ARROWMANA ARROW 2EC HERBICIDE AND BROADLEAF HERBICIDES FOR CONTROL OF GRASSES AND BROADLEAF WEEDS

- Apply only to actively growing grass and broadleaf weeds at specified height or growth stage listed on each label.
- Apply when the first grass or broadleaf weed species in a mixed population reaches the specified height or growth stage for treatment.
- Apply under favorable soil moisture and humidity that exist a few days after rainfall or within seven days after irrigation.
- Always add the appropriate adjuvant to the spray mix at the rate specified for each specific tank mix combination.
- Tank mix applications can sometimes result in reduced grass control and possible increases in crop injury as compared to either product used alone. If regrowth occurs, or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide, as specified in the respective size and rate tables.

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- Do not tank mix ArrowMANA Arrow 2EC Herbicide when broadleaf weeds are tall and/or dense enough to prevent proper grass coverage.

#### MIXING INSTRUCTIONS

- Fill clean spray tank 1/2 to 2/3 of desired level with clean water.
- While agitating, add the correct amount of ArrowMANA Arrow 2EC Herbicide. During agitation create a rippling or rolling action of the water surface.
- If tank mixing, ArrowMANA Arrow 2EC Herbicide with other labeled herbicides, add water soluble bags first, followed by dry formulations, flowables, emulsifiable concentrates, and then solutions. Prepare no more spray mixture than is required for the immediate spray operations.
- Add any required adjuvants (crop oil concentrates, non-ionic surfactant and/or nitrogen solution).
- Fill spray tank to desired level with water. Continue agitation until all spray solution has been applied.

Failure to agitate the spray solution can result in improper mixing of the herbicides and unsatisfactory weed control. Verify mixing and compatibility qualities by a jar test.

#### INFORMATION ON ANTAGONISM

Tank mixes of ArrowMANA Arrow 2EC Herbicide with postemergence broadleaf herbicides have shown some reduction or failure to control certain grass species, which would have otherwise been controlled when ArrowMANA Arrow 2EC Herbicide is applied alone. Activity of the postemergence broadleaf herbicide in the tank mix is not affected.

#### ALFALFA

**TABLE 1. ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR ALFALFA**

(Refer to the specific tables above for specific grasses and growth stages.)

PRODUCT <sup>(1)</sup>	APPLICATION RATES/ ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(3)</sup> (V/V)	
	ANNUAL GRASSES	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + 2,4-DB <sup>(4)</sup>	10 to 16 fl oz + Refer to 2,4-DB label	10 to 16 fl oz + Refer to 2,4-DB label	1%	1%
ArrowMANA Arrow 2EC + Pursuit DG <sup>(5)</sup> or Pursuit <sup>(5)</sup>	10 to 16 fl oz + 1.08 to 2.16 oz or 3 to 6 fl oz	—	1%	1%
ArrowMANA Arrow 2EC + Buctril® 2L <sup>(6)(7)</sup> Or Buctril Gel <sup>(6)(7)</sup>	10 to 16 fl oz + 1.0 to 1.5 pts or 0.5 to 0.75 pts	—	0.5%	0.5%
ArrowMANA Arrow 2EC + Raptor	10 to 16 fl oz + 4 to 6 fl oz	—	1%	1%

<sup>(1)</sup>If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide), according to the appropriate size and rate specifications.

<sup>(2)</sup>Broadleaf weed control can be reduced when grass populations are tall or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

<sup>(3)</sup>Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

<sup>(4)</sup>ArrowMANA Arrow 2EC Herbicide plus 2,4-DB can increase the severity of crop injury when tank mixed. Alfalfa plants will outgrow this temporary crop injury within a few weeks.

<sup>(5)</sup>Before using this tank mix, read and understand the Pursuit or Pursuit DG labels for geographical restrictions and restrictions regarding alfalfa growth stage and type. Failure to do so can result in crop injury to alfalfa. Do not feed, graze, or harvest alfalfa for 30 days following an application of Pursuit to alfalfa.

<sup>(6)</sup>In the states of Washington, Oregon, Idaho, Montana, Wyoming, Colorado, Utah, Nevada and the western halves of North Dakota, South Dakota, Nebraska, and Kansas: The ArrowMANA Arrow 2EC Herbicide plus Buctril tank mix must be applied in the fall or spring to seedling alfalfa when the majority of the field has a minimum of 2 trifoliates. Unacceptable crop injury can occur to alfalfa seedlings less than the 2 trifoliolate leaf stage. ArrowMANA Arrow 2EC Herbicide plus Buctril applications made when temperatures are expected to exceed 80° F at (and 3 days following) application can result in unacceptable crop injury. In the states not listed above, apply in the fall or spring to seedling alfalfa when the majority of the field has a minimum of 4 trifoliolate

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leaves. When alfalfa stand is uneven and conditions favor leaf burn, unacceptable crop injury can occur to alfalfa in the 2 trifoliate or smaller stage of growth. ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide plus Buctril applications made when temperatures are expected to exceed 70°F at (and 3 days following) application can result in unacceptable crop injury. Crop leaf burn can occur following ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide plus Buctril application. Warm, humid conditions can enhance leaf burn. New crop growth will not be affected.

<sup>(7)</sup>Do not apply when alfalfa is under moisture, temperature, insect or disease stress or has been stressed by other pesticide carryover or application.

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**USE DIRECTIONS FOR BUSHBERRY, CANEBERRY AND PEACH**

Apply ArrowMANA Arrow 2EC Herbicide postemergence to actively growing grasses according to rate table. Crop injury to bushberry, caneberry and peach can occur if ArrowMANA Arrow 2EC Herbicide is improperly applied. ArrowMANA Arrow 2EC Herbicide must not be applied directly over the top of these plant types. Instead, direct spray at the base of the plant where grassy weeds are growing near the ground.

Do not apply ArrowMANA Arrow 2EC Herbicide to bushberry, caneberry or peach grown for root stock.

**CANOLA**

**TABLE 2. REDUCED RATE ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR CANOLA (Refer to the specific tables above for specific grasses and growth stages).**

PRODUCT	APPLICATION RATES/ ACRE		CROP OIL CONC. <sup>(4)</sup> V/V GROUND	AMMONIUM SULFATE	
	ANNUAL GRASSES <sup>(1)</sup>	PERENNIAL GRASSES		GROUND	AIR
<u>ArrowMANA Arrow 2EC</u> <sup>(2)</sup> + <u>Liberty</u> <sup>(3)</sup>	4 to 5 fl oz + 34 fl oz	---	---	3.0 lbs	3.0 lbs
<u>ArrowMANA Arrow 2EC</u> <sup>(2)</sup> + <u>Stinger</u>	4 to 5 fl oz + 0.33 pts	---	1%	---	---

<sup>(1)</sup> Annual grasses and sizes controlled with these tank mixtures are those that are identified in the **DIRECTIONS FOR REDUCED RATE TO CONTROL SMALL ANNUAL GRASSES**.

<sup>(2)</sup> Do not apply ArrowMANA Arrow 2EC Herbicide tank mix during or after bolting or flowering or crop injury can occur.

<sup>(3)</sup> For use only on LibertLink® canola.

<sup>(4)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

**COTTON**

**TABLE 3. ARROWMANA ARROW 2EC HERBICIDE TANK MIXED WITH COBRA® HERBICIDE AND MSMA APPLIED POST DIRECTED TO COTTON**

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONC. <sup>(3)</sup> V/V GROUND	COMMENTS
	ANNUAL GRASSES	PERENNIAL GRASSES		
<u>ArrowMANA Arrow 2EC</u> <sup>(4)</sup> + <u>Cobra Herbicide</u> + <u>MSMA</u> (4.0 lbs/gal) OR <u>MSMA</u> (6.6 lbs/gal)	6 to 8 fl oz	8 to 16 fl oz	1%	Reduce broadcast rate in proportion to the band area actually treated.
	See <u>Cobra</u> label for rates to control broadleaf weeds and height limitations for cotton. Refer to the <u>ArrowMANA Arrow 2EC</u> Herbicide label for weed height and species controlled.			
	See <u>MSMA</u> label for rates to control broadleaf weeds and height limitations for cotton. Refer to the <u>ArrowMANA Arrow 2EC</u> Herbicide label for weed height and species controlled.			

<sup>(1)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide), according to the appropriate size and rate specifications.

<sup>(2)</sup> Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

<sup>(3)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

<sup>(4)</sup> If, at the time of application, grass height is so tall that post-directed applications cannot get good coverage over the top of the grassy weeds, then poor control can result and a second (non-post directed) application of ArrowMANA Arrow 2EC Herbicide may be necessary.



**TABLE 4. ARROWMANA ARROW 2EC HERBICIDE TANK MIXED WITH BUCTRIL® 4EC HERBICIDE TO CONTROL EMERGED WEEDS IN BXN COTTON AS A BROADCAST APPLICATION**

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONC. PER ACRE <sup>(3)</sup>	COMMENTS <sup>(7)</sup>
	ANNUAL GRASSES	PERENNIAL GRASSES		
ArrowMANA Arrow 2EC + Buctril 4 EC <sup>(4,5,6)</sup>	8 to 16 fl oz See Buctril 4 EC label for rates to control broadleaf weeds and height limitations for cotton.		1 qt/A	See charts for grasses controlled.

<sup>(1)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide at the specified rate with the appropriate amount of crop oil concentrate in a non-Buctril tank mix.

<sup>(2)</sup> Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage.

<sup>(3)</sup> Always add a crop oil concentrate at 1 qt/A by ground in the finished spray solution.

<sup>(4)</sup> Applications of Buctril 4 EC can be made only to cotton that has been genetically modified for crop tolerance to postemergence over-the-top applications of bromoxynil.

<sup>(5)</sup> Do not apply the ArrowMANA Arrow 2EC Herbicide plus Buctril tank mix within 75 days of harvest.

<sup>(6)</sup> Do not exceed two applications of Buctril before cotton is 12-inches tall and one application after 12-inches tall.

<sup>(7)</sup> Use a minimum of 10 gals of spray solution per acre.

**TABLE 5. ARROWMANA ARROW 2EC HERBICIDE TANK MIXED WITH GLYPHOSATE TO CONTROL EMERGED GRASSES IN COTTON AS A BROADCAST APPLICATION.**

PRODUCT	APPLICATION RATE/ACRE <sup>(1)</sup>		ADJUVANT		COMMENTS
	ANNUAL GRASSES	PERENNIAL GRASSES	Glyphosate formulation with built in adjuvant	Glyphosate formulation without built in adjuvant	
ArrowMANA Arrow 2EC + Glyphosate	6 to 8 fl oz See glyphosate label for rates to control broadleaf weeds and height limitations for cotton	8 to 16 fl oz See glyphosate label for rates to control broadleaf weeds and height limitations for cotton	Non-ionic surfactant @ 0.125 to 0.25% v/v plus ammonium sulfate @ 8.5 to 17 lbs per 100 gals of carrier	Crop oil concentrate @ 1 pt /A plus ammonium sulfate @ 8.5 to 17 lbs per 100 gals of carrier	See charts for grasses controlled. Use a minimum of 10 gals of spray solution per acre.

<sup>(1)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide at the specified rate with the appropriate amount of crop oil concentrate.

#### DRY SHELLED AND SUCCULENT BEANS

**TABLE 6. ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR DRY SHELLED AND SUCCULENT BEANS (Refer to the specific tables above for specific grasses and growth stages).**

PRODUCT <sup>(2)</sup>	APPLICATION RATES PER/ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(3)</sup> (V/V)	
	ANNUAL GRASSES	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + Basagran®	8 to 10 fl oz + 1.0 to 2.0 pts	10 to 16 fl oz + 1 to 2 pts	1%	1%
ArrowMANA Arrow 2EC + Raptor	8 to 10 fl oz + 4 fl oz	—	1%	1%

<sup>(1)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide), according to the appropriate size and rate specifications.

<sup>(2)</sup> Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

<sup>(3)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

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# FLAX

**TABLE 7. REDUCED RATE ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR FLAX. (Refer to the specific tables above for specific grasses and growth stages).**

PRODUCT	APPLICATION RATES PER/ACRE		CROP OIL CONCENTRATE	
	ANNUAL GRASSES <sup>(1)</sup>	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + Bronate Advanced™ <sup>(2,3)</sup>	4 to 5 fl oz + 11.4 fl oz	---	1 pt	1 pt
ArrowMANA Arrow 2EC + Bronate® <sup>(2,3)</sup>	4 to 5 fl oz + 0.9 pt	---	1 pt	1 pt
ArrowMANA Arrow 2EC + Buctril <sup>(2,3)</sup>	4 to 5 fl oz + 1.0 pt	---	1 pt	1 pt
ArrowMANA Arrow 2EC + Rhonox® <sup>(2,3)</sup>	4 to 5 fl oz + 0.25 to 0.5 pt	---	1 pt	1 pt
ArrowMANA Arrow + MCPA <sup>(2,3)</sup>	4 to 5 fl oz + 0.25 to 0.5 pt	---	1 pt	1 pt
ArrowMANA Arrow + Curtail M <sup>(2,3)</sup>	4 to 5 fl oz + 0.85 pt	---	1 pt	1 pt

<sup>(1)</sup> Annual grasses and sizes controlled with these tank mixtures are those that are identified in the **DIRECTIONS FOR REDUCED RATE TO CONTROL SMALL ANNUAL GRASSES.**

<sup>(2)</sup> Do not apply ArrowMANA Arrow 2EC Herbicide tank mix during or after the bud stage or to ornamental flax or crop injury can occur.

<sup>(3)</sup> Do not apply tank mixes if temperatures are expected to exceed 85°F at (or 3 days following) application or crop injury can occur.

# SOYBEANS

**TABLE 8. ARROWMANA ARROW 2EC HERBICIDE TANK MIXES <sup>(2)</sup> TO CONTROL ANNUAL GRASSES WHEN USED AS A BURNDOWN IN NO-TILL SOYBEANS (NOT FOR USE IN CALIFORNIA)**

PRODUCT	PRODUCT ACRE RATE <sup>(1)</sup>	GRASS HEIGHT	CROP OIL CONC. <sup>(2)</sup>	28%N OR 32%N QTS/A OR 2.5 TO 4.0 LBS AMS
ArrowMANA Arrow 2EC + 2,4-D Ester* <sup>(3)</sup>	3 fl oz	Foxtail 1 to 3" Fall Panicum 1 to 3"	1 qt/A	1 to 2 qts/A or 2.5 to 4.0 lbs AMS
	4 fl oz	Foxtail 1 to 4" Fall Panicum 1 to 4"	1 qt/A	1 to 2 qts/A or 2.5 to 4.0 lbs AMS
	6 to 8 fl oz + 0.5 lb ai	(See Grass Chart for grasses claimed)	1 qt/A	1 to 2 qts/A or 2.5 to 4.0 lbs AMS

\*Do not use 2,4-D Ester where drift-sensitive crops can be grown.

<sup>(1)</sup> If regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide according to the appropriate size and rate specifications.

<sup>(2)</sup> Always use a crop oil concentrate at the listed rate in the finished spray volume.

<sup>(3)</sup> The following products can be tank mixed with ArrowMANA Arrow 2EC Herbicide plus 2,4-D Ester: Valor®, Authority® Broadleaf, Canopy XL®, Dual 8 E®, Dual II®, Dual Magnum®, Prowl®, Sencor®, and Sencor plus the Dual products and Turbo®.

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**TABLE 9. ArrowMANA Arrow 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR SOYBEANS**

(Refer to the specific tables above for specific grasses and growth stages)(NOT FOR USE IN CALIFORNIA)

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>			
	ANNUAL GRASSES	PERENNIAL GRASSES	CROP OIL CONC. <sup>(3)</sup> (V/V)	
			GROUND	AIR
Refer to FirstRate, Flexstar HL, Frontrow, Harmony, Harmony GT, Pursuit DG, Raptor, Synchrony STS and Synchrony XP (mp) for geographic and rotational restrictions.				
Select Page #1				
ArrowMANA Arrow 2EC + Cobra® Herbicide	6 to 10 fl oz + 6 to 12.5 fl oz	8 to 16 fl oz + 6 to 12.5 fl oz	0.5 to 1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Basagran® 4 SL	8 to 10 fl oz + 1 to 2 pts	10 to 16 fl oz + 1 to 2 pts	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Glyphosate (For use on Roundup Ready soybean only)	6 to 8 fl oz + 0.75 to 3.0 lb ae	8 to 16 fl oz + 0.75 to 3.0 lb ae	0.5 to 1% <sup>(4)</sup>	1% (but not less than 1 pt/A) <sup>(4)</sup>
ArrowMANA Arrow 2EC + Blazer® 2SL	6 to 8 fl oz + 1.0 to 1.5 pts	8 to 16 fl oz + 1.0 to 1.5 pts	0.5 to 1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Flexstar® HL	6 to 10 fl oz + Refer to the Flexstar HL label for specific application rates	8 to 16 fl oz + Refer to the Flexstar HL label for specific application rates	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Classic® 25 DG	8 - 10 fl oz + 0.5 to 0.75 oz	10 to 16 fl oz + 0.5 to 0.75 oz	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Pursuit® 70 DG	6 to 10 fl oz + 1.44 fl oz	8 to 16 fl oz + 1.44 fl oz	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Cobra Herbicide + Classic 25 DG	8 - 10 fl oz + 6 to 8 fl oz + 0.5 to 0.75 oz	-	0.5%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Cobra Herbicide + Basagran 4 SL	8 to 10 fl oz + 6 to 10 fl oz + 1 to 1.5 pts	-	0.5%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup>	8 to 10 fl oz +	-	0.5%	1% (but not less than 1 pt/A)

+ Cobra Herbicide + Pursuit 70 DG	6 to 10 fl oz + 1.44 fl oz			pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Storm	8 to 10 fl oz + 1.5 pts	-	0.5%	1% (but not less than 1 pt/A)
Select Page #2				
ArrowMANA Arrow 2EC + Resource + Pursuit 70 DG	8 to 10 fl oz + 4 fl oz + 1.44 oz	-	1%	-
ArrowMANA Arrow 2EC + Resource + Basagran	8 to 10 fl oz + 4 fl oz + 1 pt	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Resource + Classic 25 DG	8 to 10 fl oz + 4 fl oz + 0.5 oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Cobra Herbicide + Resource Herbicide	6 to 10 fl oz + 6 to 12.5 fl oz + 4 to 6 fl oz	-	0.5 – 1%	-
ArrowMANA Arrow 2EC <sup>(5)</sup> + FirstRate®	6 to 10 fl oz + 0.3 oz	8 to 16 fl oz + 0.3 oz	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Cobra Herbicide + FirstRate	6 to 10 fl oz + 6 to 12.5 fl oz + 0.3 oz	8 to 16 fl oz + 6 to 12.5 fl oz + 0.3 oz	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Raptor® (1 AS)	6 to 10 fl oz + 4 to 5 fl oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Cobra Herbicide + Raptor (1 AS)	6 to 10 fl oz + 6 to 12.5 fl oz + 4 to 5 fl oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Synchrony® STS™ or Synchrony XP(mp)	6 to 10 fl oz + 0.25 oz/A or 0.375 oz		0.5 - 1 qt/A	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> +	6 to 10 fl oz + 0.5 oz/A	-	0.5 - 1 qt/A	1% (but not less than 1 pt/A)

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Synchrony <sup>®</sup> STS or Synchrony XP (STS Soybeans only)	or 0.75 oz			
ArrowMANA Arrow 2EC <sup>(5)</sup> + Cobra + Synchrony <sup>®</sup> STS™	6 to 8 fl oz + 4 to 8 fl oz + 0.5 oz/A	-	1 pt/A	-

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ArrowMANA Arrow 2EC <sup>(5)</sup> + Resource Herbicide	6 to 10 fl oz + 4 to 12 fl oz	-	1 qt/A	-
Select Page #3				
ArrowMANA Arrow 2EC <sup>(5)</sup> + Frontrow™	8 to 10 fl oz + Refer to Frontrow label for use rates	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC <sup>(5)</sup> + Firstrate + Flexstar HL	6 to 10 fl oz + 0.3 oz + Refer to the Flexstar HL label for specific application rates.	8 to 16 fl oz + 0.3 oz + Refer to the Flexstar HL label for specific application rates	1%	1% (but not less than 1 pt/A)
Additional Mixes				
ArrowMANA Arrow 2EC + Harmony GT XP	6 to 10 fl oz + 0.042 to 0.083 oz	-	0.25% NIS	-
ArrowMANA Arrow 2EC + Phoenix	6 to 10 fl oz + 6 to 12.5 fl oz	-	1 %	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Phoenix + FirstRate	6 to 10 fl oz + 6 to 12.5 fl oz + 0.3 oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Phoenix + Pursuit 70 DG	8 to 10 fl oz + 6 to 12.5 fl oz + 1.44 fl oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Phoenix + Raptor (1 AS)	6 to 10 fl oz + 6 to 12.5 fl oz + 4 to 5 fl oz	-	1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Cobra Herbicide + Harmony GT XP	6 to 8 fl oz + 6 to 8 fl oz + 0.042 oz	-	NIS at 0.125 to 0.25% v/v plus COC at 0.125%	-
ArrowMANA Arrow 2EC + Phoenix + Resource	6 to 10 fl oz + 6 to 12.5 fl oz + 4 to 6 fl oz	-	1%	-
ArrowMANA Arrow 2EC + Cobra + Resource + Firstrate	6 to 8 fl oz + 6 to 12.5 fl oz + 4 to 6 fl oz + 0.3 oz	-	0.5 – 1%	-

ArrowMANA Arrow 2EC + Phoenix + Resource + Firstate	6 to 10 fl oz + 6 to 12.5 fl oz + 4 to 6 fl oz + 0.3 oz	-	0.5%	-
ArrowMANA Arrow 2EC + Cobra + Synchrony® STS or Synchrony XP (mp)	6 to 10 fl oz + 6 to 12 fl oz + 0.25 oz/A or 0.375 oz	-	0.5 – 1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Cobra + Synchrony® STS or Synchrony XP (mp) (STS SOYBEANS ONLY)	6 to 10 fl oz + 6 to 12 fl oz + 0.5 oz/A or 0.75 oz	-	0.5 – 1%	1% (but not less than 1 pt/A)
ArrowMANA Arrow 2EC + Phoenix + Synchrony® STS or Synchrony XP	6 to 10 fl oz + 6 to 12 fl oz + 0.25 oz/A or 0.375 oz	-	0.5 - 1%	-
ArrowMANA Arrow 2EC + Phoenix + Synchrony® STS or Synchrony XP (STS SOYBEANS ONLY)	6 to 10 fl oz + 6 to 12 fl oz + 0.5 oz/A or 0.75 oz	-	0.5 - 1%	1% (but not less than 1 pt/A)
SMax + Phoenix + Synchrony® STS or Synchrony XP (STS SOYBEANS ONLY)	6 to 10 fl oz + 6 to 12 fl oz + 0.5 oz/A or 0.75 oz	-	0.5 – 1%	1% (but not less than 1 pt/A)

- (1) If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide) according to the appropriate size and rate specifications.
- (2) Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.
- (3) Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.
- (4) The addition of 2.5 lb of ammonium sulfate is required when product is tank mixed with glyphosate. If the glyphosate formulation has a stand-alone built in adjuvant, add 0.125% V/V non-ionic surfactant in place of crop oil concentrate. If the glyphosate formulation does not have a built adjuvant system, add 0.5 to 1.0 % crop oil concentrate for ground application and 1.0% V/V for aerial application.

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- (5) Add 1 to 2 qts per acre of liquid fertilizer (10-34-0, 28%N, or 32%N) when ArrowMANA Arrow 2EC Herbicide is tank mixed with Pursuit, Resource, Storm, Firstrate, Synchrony, Raptor, Frontrow, Cobra plus Classic, Cobra plus Basagran, Cobra plus Pursuit, Cobra plus Firstrate, Cobra plus Synchrony, and Cobra plus Raptor. An equivalent amount (2.5 to 4.0 lbs/acre) of spray grade ammonium sulfate (AMS) can be added in place of liquid fertilizer. Fertilizer adjuvants are to be added in addition to the crop oil concentrate.

**TABLE 10. REDUCED RATE ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR SOYBEAN (Refer to table for reduced rate use in canola, dry shelled bean & pea, edible podded legume vegetables, flax, mustard seed, soybean, succulent bean & pea and sugarbeet specifications for small annual grasses for specific grasses and growth stages)(NOT FOR USE IN CALIFORNIA)**

PRODUCT	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(3,4)</sup> (V/V)	
	ANNUAL GRASSES <sup>(2)</sup>	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + Firstrate	4 to 8 fl oz + 0.3 oz	---	1%	1%
ArrowMANA Arrow 2EC + Pursuit 70 DG	4 to 6 fl oz + 1.44 oz	---	1%	1%

(1) If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide), according to the appropriate size and rate specifications.

(2) Annual grasses and sizes controlled with these tank mixtures are those that are identified in the **DIRECTIONS FOR REDUCED RATE TO CONTROL SMALL ANNUAL GRASSES**.

(3) Always use a crop oil concentrate at the listed rate (but not less than 1 pt per acre) in the finished spray volume.

(4) The addition of 1 to 2 qts per acre of liquid fertilizer (10-34-0, 28% N, or 32%N) is required when ArrowMANA Arrow 2EC Herbicide is tank mixed at reduced rates. An equivalent amount (2.5 to 4.0 lbs/A) of spray grade ammonium sulfate (AMS) can be added in place of liquid fertilizer. Fertilizer adjuvants are to be added in addition to the crop oil concentrate.

**PEANUT (INCLUDING PERENNIAL)**

**TABLE 11. ARROWMANA ARROW 2EC HERBICIDE TANK MIXES WITH BROADLEAF HERBICIDES FOR PEANUT**

(Refer to the specific tables above for specific grasses and growth stages.)

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(3)</sup> (V/V)	
	ANNUAL GRASSES	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + Basagran	8 to 10 fl oz + 1.0 to 2.0 pts	---	1%	1%
ArrowMANA Arrow 2EC + Blazer	8 to 10 fl oz + 0.5 to 1.5 pts	---	1%	1%
ArrowMANA Arrow 2EC + Storm	8 to 10 fl oz + 1.5 pts	---	1%	1%

(1) If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide), according to the appropriate size and rate specifications.

(2) Broadleaf weed control can be reduced when grass populations are tall or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

(3) Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

**INSTRUCTIONS FOR GRASS SUPPRESSION FOR HARVEST EFFICIENCY IN PEANUT (INCLUDING PERENNIAL) WITH ARROWMANA ARROW 2EC HERBICIDE**

GRASS SPECIES	WEED STAGE	RATE	HIGH
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		FL OZ / ACRE	RATE
Annual and perennial grasses that exceed height claimed for control on height charts "DIRECTIONS FOR ANNUAL GRASSES" and "DIRECTIONS FOR PERENNIAL GRASSES"	Up to and including grasses in the seed head stage.	16	32
Do not apply as part of a tank mix when applying ArrowMANA Arrow 2EC Herbicide for grass suppression. Add a crop oil concentrate at 1 qt/A by ground to the finished spray volume.			

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**SUGARBEETS**

**TABLE 12. ARROWMANA ARROW 2EC HERBICIDE TANK MIXED WITH STINGER® HERBICIDE APPLIED TO SUGARBEETS (Refer to the specific tables above for specific grasses and growth stages)**

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONC. <sup>(4)</sup>	
	ANNUAL GRASSES	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + Stinger Herbicide	6 to 8 fl oz See Stinger Herbicide label for rates.	8 to 16 fl oz	1% v/v	

<sup>(1)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix herbicide) according to the appropriate size and rate specifications.

<sup>(2)</sup> Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

<sup>(3)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

**TABLE 13. ARROWMANA ARROW 2EC HERBICIDE TANK MIXED WITH BETAMIX® OR BETANEX® APPLIED TO SUGARBEETS**

PRODUCT <sup>(2)</sup>	WEEDS CONTROLLED		WEED HEIGHT	APPLICATION RATE/ACRE <sup>(1)</sup>
	Common Name	Scientific Name		
ArrowMANA Arrow 2EC <sup>(3)</sup> + Betamix or Betanex or Progress	Barnyardgrass	<i>Echinochloa crus-galli</i>	1 to 3"	8 fl oz
	Foxtail	<i>Setaria</i> spp.	1 to 3"	
	Foxtail Millet	<i>Setaria italica</i>	1 to 3"	
	Wild Oat	<i>Avena fatua</i>	1 to 3"	
	Wild Proso Millet	<i>Panicum miliaceum</i>	1 to 3"	
			See Betamix label for rates to control broadleaf weeds. Do not put additives in the tank mix.	
			See Betanex label for rates to control broadleaf weeds. Do not put additives in the tank mix.	
			See Progress label for rates to control broadleaf weeds. Do not put additives in the tank mix.	

<sup>(1)</sup> Do not use crop oil concentrate. Do not put additives in the tank mix if Betamix, Betanex, or Progress is in the tank.

<sup>(2)</sup> Broadleaf weed control can be reduced when grass populations are tall enough or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.

<sup>(3)</sup> If grass regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide at full label rate with appropriate rate of crop oil concentrate.

**TABLE 14. ARROWMANA ARROW 2EC HERBICIDE PLUS BETANEX OR BETAMIX TANK MIX FOR THREE SEQUENTIAL APPLICATIONS FOR ANNUAL GRASS CONTROL (MICRO-RATE APPLICATION).**

PRODUCT	APPLICATION RATES/ACRE <sup>(1)</sup>		METHYLATED SEED OIL <sup>(2)</sup> (V/V)	
	ANNUAL GRASSES	GRASSES CONTROLLED (inches)	GROUND	AIR
ArrowMANA Arrow 2EC + Betanex or Betamix or Progress or Stinger or Upbeet	2 to 3 fl oz + 8 to 12 fl oz <sup>(3)</sup> or 8 to 12 fl oz <sup>(3)</sup> or Refer to label or Refer to label or Refer to label	Green Foxtail (1-2) Yellow Foxtail (1-2) Barnyardgrass (1-2) Wild Oat (1-2) Volunteer Cereals (1-2)	1.5%	1.5%

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- (1) Broadleaf weed control can be reduced when grass populations are tall or dense enough to intercept the spray pattern and prevent them from receiving complete coverage. Do not tank mix in these situations.
- (2) Always use a methylated seed oil at the listed rate (but not less than 1 pt/A) in the finished spray volume.
- (3) Use 8 fl oz/A rate when sugarbeets are in the cotyledon to 4 leaf stage. Rate can be increased up to 12 fl oz/A when the smallest sugarbeet plants in the field are in the 4 true leaf stage.

#### Directions for Use for Micro-Rate Applications to Sugarbeet

##### Product Information

Multiple micro-rate applications of ArrowMANA Arrow 2EC Herbicide in tank mixtures with reduced rates of Betanex or Betamix and methylated seed oils can be applied by air or ground equipment to sugarbeet to control early germinating annual grasses listed above. The rate of Betanex or Betamix must not exceed 0.12 lb ai/A (broadcast application) when in combination with these spray adjuvants. Note that maximum rate allowed varies depending on crop growth stage. The use of wetting agents or spray adjuvants with conventional rates (0.73 to 1.22 lb ai/A) or multiple low rate (0.24 to 0.73 lb ai /A) applications of Betanex or Betamix is prohibited on the Betanex and Betamix master label. Favorable climatic conditions (good conditions for plant growth and development) are essential for adequate weed control. All use precautions and restrictions on the Betanex and Betamix master labels must be followed.

##### Directions for Using Micro-Rate Multiple Applications of ArrowMANA Arrow 2EC Herbicide Tank Mixes

Apply ArrowMANA Arrow 2EC Herbicide in broadcast applications only at a rate of 2 to 3 fl oz/A in tank mixture with either Betanex or Betamix following the directions for use on the tank mix partner label. Use a minimum of three sequential applications of 2 fl oz/A or a minimum of 2 sequential applications of 3 fl oz/A for ArrowMANA Arrow 2EC Herbicide tank mixtures. Use a minimum of 3 sequential applications of Betamix or Betanex. Accurate timing is essential; make initial application immediately after weeds emerge, and make repeat applications on 5 to 7 days intervals. If weed control is not adequate due to climatic conditions, spray coverage or other factors, return to conventional application rates of ArrowMANA Arrow 2EC Herbicide (6 to 8 fl oz/A) and add rates of Betanex or Betamix as directed on their label. When using conventional rates of Betanex or Betamix in tank mixtures with ArrowMANA Arrow 2EC Herbicide, do not use a spray adjuvant.

##### Use Precautions for Micro-Rate Applications: (See ArrowMANA Arrow 2EC Herbicide, Betanex, and Betamix master label for further use precautions.)

Not all weeds will be adequately controlled, even with favorable climatic conditions. Conventional rates of ArrowMANA Arrow 2EC Herbicide, Betanex, or Betamix and/or hand labor may be required if multiple micro-rate applications do not adequately control weeds. Plugging of spray nozzles can be encountered due to the potential for formation of a precipitate in the spray solution that is often associated with micro-rate applications. Maktheshim Agan of North America, Inc. will not be responsible for any nozzle plugging that can occur with the use of multiple micro-rate applications. Methylated seed oils must not be added if the Betanex or Betamix rate exceeds 0.12 lb ai/A broadcast, as the addition of methylated seed oils could increase the possibility of crop injury at dosage rates greater than 0.12 lb ai/A.

#### GROUND APPLICATION

Use of sufficient spray volumes and pressure is essential to ensure complete coverage. Use a minimum of 10 gals and a maximum of 20 gals of spray solution per acre. Set spray pressures at a minimum of 30 psi and a maximum of 60 psi at the nozzle. Do not use flood nozzles.

#### AERIAL APPLICATION

Use of sufficient spray volumes is essential to ensure complete coverage. Use a minimum of 5 gals and a maximum of 15 gals of spray solution per acre.

**TABLE 15. TANK MIX APPLICATION OF ARROWMANA ARROW 2EC HERBICIDE AND FUNGICIDES FOR CONTROL OF GRASS WEEDS AND DISEASES IN SUGARBEET.**

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(3)</sup> (V/V)
	Annual Grasses	Perennial Grasses	
<u>ArrowMANA Arrow</u> 2EC + Eminent®	6 to 8 fl oz + 13 fl oz	8 to 16 fl oz + 13 fl oz	1%
<u>ArrowMANA Arrow</u> 2EC + Headline	6 to 8 fl oz + Refer to label	8 to 16 fl oz + Refer to label	1%
<u>ArrowMANA Arrow</u> 2EC + Gem	6 to 8 fl oz + Refer to label	8 to 16 fl oz + Refer to label	1%

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<sup>(1)</sup> If grass regrowth occurs, or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix fungicide) according to the appropriate size and rate specifications.

<sup>(2)</sup> Refer to ArrowMANA Arrow 2EC Herbicide and fungicide label for rates and weeds and diseases controlled.

<sup>(3)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

**ALFALFA, COTTON, MINT, PEANUT (INCLUDING PERENNIAL), SOYBEANS\*, AND SUNFLOWER**  
**TABLE 16. TANK MIX APPLICATION OF ARROWMANA ARROW 2EC HERBICIDE AND INSECTICIDES**  
**FOR CONTROL OF GRASS WEEDS AND INSECTS IN ALFALFA, COTTON, MINT, PEANUT (INCLUDING**  
**PERENNIAL), SOYBEANS, AND SUNFLOWER**  
**(NOT FOR USE IN CALIFORNIA)**

PRODUCT <sup>(2)</sup>	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONC. <sup>(3)</sup> V/V	CROP					
	ANNUAL GRASSES	PERENNIAL GRASSES		Alfalfa <sup>(4)</sup>	Cotton	Mint <sup>(4,5)</sup>	Peanut	Soybean	Sunflower
<u>ArrowMANA Arrow 2EC</u> + Orthene® 75 S Or Orthene 97	6 to 8 fl oz + 0.33 to 1.33 lbs or 0.25 to 1.0 lb	8 to 16 fl oz + 0.33 to 1.33 lbs or 0.25 to 1.0 lb	1%		X	X	X	X	
<u>ArrowMANA Arrow 2EC</u> + Orthene 90 S <sup>(6)</sup>	6 to 8 fl oz + 0.25 to 1.0 lb	8 to 16 fl oz + 0.25 to 1.0 lb	1%		X	X	X	X	
<u>ArrowMANA Arrow 2EC</u> + Danitol® 2.4 EC	6 to 8 fl oz + 10 ¾ to 16 fl oz	8 to 16 fl oz + 10 ¾ to 16 fl oz	1%		X		X		
<u>ArrowMANA Arrow 2EC</u> + Asana XL®	6 to 8 fl oz + Refer to Asana XL label	8 to 16 fl oz + Refer to Asana XL label	1%					X	X
<u>ArrowMANA Arrow 2EC</u> + Warrior®	6 to 8 fl oz + Refer to Warrior label	8 to 16 fl oz + Refer to Warrior label	1%					X	X
<u>ArrowMANA Arrow 2EC</u> + Warrior	10 to 16 fl oz <sup>(7)</sup> + Refer to Warrior label	10 to 16 fl oz + Refer to Warrior label	1%	X					
<u>ArrowMANA Arrow 2EC</u> + Baythroid®	10 to 16 fl oz <sup>(7)</sup> + Refer to Baythroid label	10 to 16 fl oz + Refer to Baythroid label	1%	X				X	
<u>ArrowMANA Arrow 2EC</u> +	10 to 16 fl oz <sup>(7)</sup> + Refer to	10 to 16 fl oz + Refer to	1%	X				X	

Dimethoate®	Dimetho- ate label	Dimethoate label							
<del>Arrow</del> MANA Arrow 2EC + Lorsban®	10 to 16 fl oz <sup>(7)</sup> + Refer to Lorsban label	10 to 16 fl oz + Refer to Lorsban label	1 to 2 pt <sup>(8)</sup>	X				X	

ArrowMANA Arrow 2EC + Pounce®	10 to 16 fl oz <sup>(7)</sup> + Refer to Pounce label	10 to 16 fl oz + Refer to Pounce label	1%	X					X	
--	---	--	----	---	--	--	--	--	---	--

<sup>(1)</sup> If grass regrowth occurs, or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide alone (without a tank mix insecticide) according to the appropriate size and rate specifications.

<sup>(2)</sup> Refer to the ArrowMANA Arrow 2EC Herbicide and insecticide label for rates, weeds, and insects controlled.

<sup>(3)</sup> Always use a crop oil concentrate at the listed rate (but not less than 1 pt/A) in the finished spray volume.

<sup>(4)</sup> Certain insecticides can cause temporary phytotoxic symptoms on alfalfa and mint foliage. Refer to the insecticide label for further information. It is suggested that prior to using any of these insecticide/herbicide tank mixtures, that a small area of the field be treated first and observations for crop injury be made prior to treating the whole field.

<sup>(5)</sup> Use a rate of 6 to 8 fl oz /A ArrowMANA Arrow 2EC Herbicide for annual grass control in baby mint, minimum of 8 fl oz/A ArrowMANA Arrow 2EC Herbicide for annual grass control in established mint and 8 to 16 fl oz/A ArrowMANA Arrow 2EC Herbicide for perennial grass control. Add Crop oil concentrate at the rate of 1.0 to 2.0 pts/A Arrow 2EC Herbicide

<sup>(6)</sup> Insecticide tank mix use with Orthene 90S in soybeans is permitted only in a state having an approved Section 24(c) registration for Orthene 90S use in soybeans.

<sup>(7)</sup> Use a rate of 6 to 8 fl oz /A ArrowMANA Arrow 2EC Herbicide for annual grass control in seedling alfalfa.

<sup>(8)</sup> For the ArrowMANA Arrow 2EC Herbicide plus Lorsban tank mix, reduce the adjuvant rate down to 1.0 pt /A when the Lorsban rate is 1.0 pt /A or higher.

**TABLE 17. DIRECTIONS FOR ROUNDUP READY® VOLUNTEER CORN CONTROL IN ROUNDUP READY SOYBEANS WITH ARROWMANA ARROW 2EC HERBICIDE TANK MIX (NOT FOR USE IN CALIFORNIA)**

Roundup Ready Volunteer Corn Height (inches)	ARROWMANA ARROW 2EC Rate fl oz / A	Glyphosate <sup>(1)</sup> rate for formulations <u>with</u> built in adjuvant	Adjuvant
< 12	4	1.0 to 2.0 lb ai./A (Approximately equivalent to 22 to 44 fl oz/A of Roundup Weather Max)	Non-ionic surfactant @ 0.125 to 0.25% v/v plus ammonium sulfate @ 8.5 to 17 lbs per 100 gals / of carrier
12 to 18	5		
18 to 24	6		
Roundup Ready Volunteer Corn Height (inches)	ARROWMANA ARROW 2EC Rate fl oz / A	Glyphosate <sup>(1)</sup> rate for formulations <u>without</u> built in adjuvant	Adjuvant
< 12	4	Up to 2.0 lb ai./A (Equivalent to 32 to 64 fl oz/A of Roundup Original)	Crop oil concentrate @ 1 pt/A plus ammonium sulfate @ 8.5 to 17 lbs per 100 gals of carrier
12 to 18	5		
18 to 24	6		

<sup>(1)</sup> Glyphosate formulation must be labeled for use on Roundup Ready soybean.

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**THE MOST RESTRICTIVE LABELING OF ANY PRODUCT USED IN A TANK MIX MUST BE FOLLOWED.**

- Apply only to actively growing grass and broadleaf weeds at specified height or growth stage listed on each label.
- Apply under favorable soil moisture and humidity which exist a few days after rainfall or within seven days after irrigation.
- Tank mix applications can sometimes result in reduced grass control. If regrowth occurs or an additional flush of new grass emerges, make a second application of ArrowMANA Arrow 2EC Herbicide as specified in the respective size and rate tables.
- Do not tank mix ArrowMANA Arrow 2EC Herbicide when broadleaf weeds are tall and/or dense enough to prevent proper grass coverage.
- This tank mix can be applied postemergence to Roundup Ready soybeans up through the full flowering stage. Do not apply less than 60 days before harvest.
- Avoid contact with foliage, green stems, or fruit crops, or any desirable plants and trees, other than soybeans with the Roundup Ready gene as severe injury or destruction will result.
- Do not allow the ArrowMANA Arrow 2EC Herbicide plus Roundup to mist, drip, drift, or splash onto desirable vegetation as minute quantities of the tank mix can cause severe damage or destruction to the crops, plants, or other areas on which treatment was not intended. The likelihood of injury occurring from drift of this product is greatest when winds are gusty or in excess of 5 miles per hour. Even under lesser wind velocities, avoid conditions that allow spray drift to occur such as combinations of spray pressure and nozzle type that will result in fine particles (mist) that are likely to drift.

**FALLOW LAND  
DIRECTIONS FOR USE**

ArrowMANA Arrow 2EC Herbicide can be used to control annual and perennial grasses in land that has been left fallow the previous year and other non-producing agricultural areas. Apply ArrowMANA Arrow 2EC Herbicide at 6 to 8 fl oz/A for annual grasses and 8 to 16 fl oz/A for perennial grasses. When both grass and broadleaf weeds are the target pest, ArrowMANA Arrow 2EC Herbicide can be tank mixed with 2,4-D Ester or Banvel SGF Herbicide for broad spectrum control. When both annual and perennial grasses occur in the same field, use a minimum of 8 fl oz/A ArrowMANA Arrow 2EC Herbicide.

**PRODUCT INFORMATION**

- Use a minimum spray volume of 5 gals/A for aerial applications and 15 gals/A for ground applications.
- Apply only to actively growing grasses when the first grass reaches the specified weed height as specified by the **DIRECTIONS FOR ANNUAL AND PERENNIAL GRASSES** section of this label.
- Annual grasses which emerge after the ArrowMANA Arrow 2EC Herbicide application will not be controlled and a second application may be necessary.
- The control of perennial grasses may require more than one application in non-tilled areas.
- Do not plant any crop for 30 days after application unless ArrowMANA Arrow 2EC Herbicide is registered for use in that crop.
- Do not apply to grasses that have tillered, formed seedheads, or exceeded specified growth stage.
- Do not use flood jet nozzles.
- Do not apply to drought-stressed grasses.
- Do not mow area for two weeks prior to or after the ArrowMANA Arrow 2EC Herbicide application.

**ARROWMANA ARROW 2EC HERBICIDE IN TANK MIXES TO CONTROL  
ANNUAL AND PERENNIAL GRASSES IN FALLOW LAND**

PRODUCT	APPLICATION RATES/ACRE <sup>(1)</sup>		CROP OIL CONCENTRATE <sup>(2)</sup>	
	ANNUAL GRASSES	PERENNIAL GRASSES	GROUND	AIR
ArrowMANA Arrow 2EC + 2,4-D Ester or Banvel SGF	6 to 8 fl oz + 0.5 lb per acre or See Banvel SGF label for rates.	8 to 16 fl oz	1% v/v	

<sup>(1)</sup> Refer to ArrowMANA Arrow 2EC Herbicide label for weed height and species control. Review Banvel SGF Herbicide and 2,4-D labels for crop restrictions, use rates, and weeds controlled.

<sup>(2)</sup> Always use a crop oil concentrate or methylated seed oil containing at least 15% emulsifier at the listed rate (but not less than 1 pt/A) in the finished spray volume.

**DIRECTIONS FOR GRASS SUPPRESSION IN NON-CROP AREAS WITH ARROWMANA ARROW 2EC HERBICIDE**

GRASS SPECIES	WEED STAGE	RATE FL OZ /ACRE	HIGH RATE
Annual and perennial grasses that exceed height claimed for control on height chart above.	Up to and including grasses in the seed head stage.	12	16

Do not apply as part of a tank mix when applying ArrowMANA Arrow 2EC Herbicide for grass suppression.  
Add a crop oil concentrate at 1 qt/A. by ground to the finished spray volume.



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**ARROWMANA ARROW 2EC HERBICIDE FOR THE CONTROL AND/OR SUPPRESSION OF TALL FESCUE IN NATIVE PRAIRIE WARM-SEASON GRASS RESTORATION PROJECTS**

PRODUCT	PRODUCT RATE	GRASS WEEDS CONTROLLED/SUPPRESSED		WEED STAGE
		COMMON NAME	SCIENTIFIC NAME	
ArrowMANA Arrow 2EC	10 to 12 fl oz/A	Tall Fescue	<i>Festuca arundinacea</i>	4 to 6 in. (40 to 60% green-up)

**Adjuvant:** ArrowMANA Arrow 2EC Herbicide must be applied with crop oil concentrate at 1 qt/A, plus a spray grade ammonium sulfate at 2.5 to 4 lbs/A.

**Mixing Order:** Thoroughly mix spray grade ammonium sulfate in water, add ArrowMANA Arrow 2EC Herbicide, then add crop oil concentrate.

**SPECIAL APPLICATION INSTRUCTIONS/PRECAUTIONS**

- Burn or mow fields a minimum of 3 weeks prior to application to remove excess crop residue. Apply in the spring, at 40 to 60% tall fescue green-up, prior to emergence of warm-season grasses. Do not mow area for 2 weeks after the ArrowMANA Arrow 2EC Herbicide application.
- Apply in a minimum of 15 to 20 gals of water per acre at a spray pressure of 40 to 60 psi at the nozzle. Apply using flat fan or hollow cone nozzles. Do not use flood jet nozzles.
- Apply only to fields that have warm-season grasses established for two years. Applications of ArrowMANA Arrow 2EC Herbicide to emerged warm-season grasses can cause injury. Do not apply to warm-season grasses grown for seed.
- Do not graze treated fields or feed treated forage and/or hay to livestock.
- Do not plant any crop for 30 days after application unless ArrowMANA Arrow 2EC Herbicide is registered for use in that crop.

**NOTE:** ArrowMANA Arrow 2EC Herbicide applications are most effective if applied when average nighttime temperatures are consistently greater than or equal to 47 degrees Fahrenheit.

**ARROWMANA ARROW 2EC HERBICIDE FOR THE SUPPRESSION OF TALL FESCUE SEEDHEADS IN NON-PRODUCING AGRICULTURAL AREAS**

PRODUCT	PRODUCT RATE	SUPPRESSION	APPLICATION TIMING
ArrowMANA Arrow 2EC	1½ to 2 fl oz/A	Tall Fescue Seedheads ( <i>Festuca arundinacea</i> )	(50 to 90% Tall Fescue green-up)

**Adjuvant:** ArrowMANA Arrow 2EC Herbicide must be applied with crop oil concentrate at 1 qt/A plus a spray grade ammonium sulfate at 2.5 to 4 lbs/A.

**Mixing Order:** Thoroughly mix spray grade ammonium sulfate in water, add ArrowMANA Arrow 2EC Herbicide, then add crop oil concentrate.

**SPECIAL APPLICATION INSTRUCTIONS/PRECAUTIONS**

Apply at 50 to 90% tall fescue green-up.  
Use the higher ArrowMANA Arrow 2EC Herbicide rate if less tall fescue green matter is present.  
Do not mow area for 2 weeks after the ArrowMANA Arrow 2EC Herbicide application.  
Apply in a minimum of 15 to 20 gals of water per acre at a spray pressure of 40 to 60 psi at the nozzle. Apply using flat fan or hollow cone nozzles. Do not use flood nozzles.  
2,4-D Ester can be added to this tank mix for broadleaf control (see 2,4-D Ester label for weeds controlled).  
Do not graze treated fields or feed treated forage and/or hay to livestock. Do not plant any crop for 30 days after application, unless ArrowMANA Arrow 2EC Herbicide is registered for use in that crop.

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#### DIRECTIONS FOR USE IN ORNAMENTALS

For ornamental plant uses, ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide can be used to control labeled grass weeds in greenhouses, lathhouses, shadehouses, and around outdoor ornamentals, including nurseries, parks, roadside plantings, and structure landscapes.

**IMPORTANT:** ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide controls weeds in newly transplanted and established non-grassy ornamentals. Plant tolerance to ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide at labeled rates has been found to be acceptable for the indicated genera and species listed below. Due to variability within species, crop growth stage, environmental conditions, and application techniques, determine if herbicide can be used safely on a few plants prior to widespread application. Neither the seller nor the manufacturer of ~~Arrow~~MANA ~~Arrow~~ 2EC Herbicide has investigated the safety factor to ornamental plants not listed on the label.

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The following plants have shown a tolerance for ArrowMANA Arrow 2EC Herbicide applications:

#### ORNAMENTAL TREES

COMMON NAME	SCIENTIFIC NAME
Alder, Red	<i>Alnus rubra</i>
Ash	<i>Fraxinus</i> spp.
Basswood	<i>Tilia</i> spp.
Birch, European White	<i>Betula pendula</i>
Birch, River	<i>Betula nigra</i>
Birch, White	<i>Betula papyrifera</i>
Crabapple, Flowering	<i>Malus halliana</i>
Dogwood, Flowering	<i>Cornus florida</i>
Golden Chain Tree	<i>Laburnum anagyroides</i>
Maples	<i>Acer</i> spp.
Mulberry, White	<i>Morus alba</i>
Oaks	<i>Quercus</i> spp.
Olive, Wild	<i>Elaeagnus angustifolia</i>
Redbud, Eastern	<i>Cercis canadensis</i>
Sweet Gum, American	<i>Liquidambar styraciflua</i>

#### GARDEN FLOWERS AND PLANTS

COMMON NAME	SCIENTIFIC NAME
Ageratum	<i>Ageratum</i> spp.
Alyssum*, Sweet	<i>Lobularia maritima</i>
Asparagus Fern	<i>Asparagus setaceus</i>
Bleeding Heart	<i>Dicentra spectabilis</i>
Cast Iron Plant	<i>Aspidistra elatior</i>
Chrysanthemum	<i>Chrysanthemum</i> spp.
Cinquefoil	<i>Potentilla</i> spp.
Coleus	<i>Coleus</i> spp.
Coralbells	<i>Heuchera sanguinea</i>
Cranesbill	<i>Geranium</i> spp.
Dahlia	<i>Dahlia</i> spp.
Daisy, African	<i>Osteospermum fruticosum</i>
Daylily	<i>Hemerocallis</i> spp.
Dusty Miller	<i>Senecio cineraria</i>
Euonymus	<i>Euonymus</i> spp.
Gazania	<i>Gazania</i> spp.
Geranium, House	<i>Pelargonium hortorum</i>
Heather, False	<i>Cuphea hyssopifolia</i>
Hosta	<i>Hosta fortunei</i>
Iris	<i>Iris</i> spp.
Jasmine Tobacco	<i>Nicotiana glauca</i>
Loosestrife	<i>Lythrum salicaria</i>
Marigold	<i>Tagetes</i> spp.
Partridgeberry	<i>Mitchella repens</i>
Petunia*	<i>Petunia hybrida</i>
Phlox	<i>Phlox</i> spp.
Pinks	<i>Dianthus</i> spp.
Portulaca	<i>Portulaca grandiflora</i>
Salvia	<i>Salvia</i> spp.
Saxifrage	<i>Saxifraga</i> spp.
Sedum	<i>Sedum</i> spp.
Selloum	<i>Philodendron selloum</i>
Snapdragon*	<i>Antirrhinum majus</i>
Sweet Flag	<i>Acorus gramineus</i>
Tickseed	<i>Coreopsis grandiflora</i>
Touch-Me-Not	<i>Impatiens</i> spp.

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Verbena	Verbena spp.
Violet	Viola spp.
Yarrow, Common	Achillea millefolium
Zinnia	Zinnia elegans

\*Slight foliage or flower speckling has been observed on these species.

#### GROUND COVERS

COMMON NAME	SCIENTIFIC NAME
Bugleweed, Carpet	Ajuga reptans
Ivy, English	Hedera helix
Japanese Spurge	Pachysandra terminalis
Lilyturf	Liriope muscari
Moneywort	Lysimachia nummularia
Mondo Grass, White	Ophiopogon jaburan
Mondo Grass, Dwarf	Ophiopogon japonicus
Periwinkle, Lesser	Vinca minor

#### SHRUBS

COMMON NAME	SCIENTIFIC NAME
Abelia	Abelia spp.
Anise, Purple	Illicium floridanum
Aucuba	Aucuba spp.
Azalea*	Rhododendron spp.
Bamboo	Bambusa spp.
Barberry, Japanese	Berberis thunbergii
Barberry, Magellan	Berberis buxifolia
Bayberry	Myrica pensylvanica
Bottlebrush	Callistemon citrinus
Boxwood, Common	Buxus sempervirens
Camellia, Common	Camellia japonica
Candytuft	Iberis sempervirens
Cleyera	Cleyera japonica
Coralberry	Ardisia crenata
Crape Myrtle	Lagerstroemia indica
Coyote Brush	Baccharis pilularis
Fig, Creeping	Ficus pumila
Gardenia	Gardenia spp.
Holly	Ilex spp.
Honeysuckle	Lonicera pileata
Indian Hawthorn	Raphiolepis indica
Jasmine	Jasminum spp.
Jasmine, Asiatic	Trachelospermum asiaticum
Jasmine, Star	Trachelospermum jasminoides
Juniper	Juniperus spp.
Lantana	Lantana spp.
Nandina* Bamboo, Heavenly	Nandinia domestica
Oleander, Common	Nerium oleander
Oregon Grape	Mahonia aquifolium
Photinia	Photinia spp.
Pittosporum	Pittosporum spp.
Podocarpus	Podocarpus spp.
Privet	Ligustrum spp.
Pyracantha	Pyracantha spp.
Rhododendron	Rhododendron spp.
Rose	Rosa spp.
Spiraea	Spiraea bumalda
Sweet Olive	Osmanthus fragrans
Tea Olive	Osmanthus fragrans

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Viburnum	<i>Viburnum tinus</i>
Wisteria	<i>Wisteria</i> spp.
Yellow Sage/Shrub Verbena	<i>Lantana camara</i>

\*Slight foliage or flower speckling has been observed on these species.

#### DIRECTIONS FOR ANNUAL GRASSES IN ORNAMENTALS

- Apply only to actively growing grasses at specified weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the specified growth state for treatment. Use the high rate under heavy grass pressure and/or when grasses are at maximum height.

GRASS SPECIES	SCIENTIFIC NAME	WEED* HEIGHT INCHES	RATE FL OZ/ACRE <sup>(1)</sup>	HIGH RATE <sup>(2)</sup>
Barnyardgrass	<i>Echinochloa crus-galli</i>	2 to 8	8	16
Broadleaf Signalgrass	<i>Bracharia platyphylla</i>	2 to 6	8	16
Brome				
California	<i>Bromus carinatus</i>	2 to 6	8	16
Cheatgrass	<i>Bromus secalinus</i>	2 to 6	8	16
Downy	<i>Bromus tectorum</i>	2 to 6	8	16
Ripgut	<i>Bromus diandrus</i>	2 to 6	8	16
Canarygrass	<i>Phalaris canariensis</i>	1 to 4	8	16
Crabgrass				
Hairy	<i>Digitaria adscendens</i>	2 to 6**	8	16
Large	<i>Digitaria sanguinalis</i>	2 to 6**	8	16
Smooth	<i>Digitaria ischaemum</i>	2 to 6**	8	16
Southern	<i>Digitaria ciliaris</i>	2 to 6**	8	16
Crowfootgrass	<i>Dactyloctenium aegyptium</i>	2 to 6**	8	16
Fall Panicum	<i>Panicum dichotomiflorum</i>	2 to 8	8	16
Field Sandbur	<i>Cenchrus incertus</i>	2 to 6	8	16
Foxtail				
Giant	<i>Setaria faberi</i>	2 to 12	8	16
Green	<i>Setaria viridis</i>	2 to 8	8	16
Yellow	<i>Setaria glauca</i>	2 to 8	8	16
Foxtail Barley	<i>Hordeum jubatum</i>	2 to 6	8	16
Goosegrass	<i>Eleusine indica</i>	2 to 6**	8	16
Itchgrass	<i>Rottboellia exaltata</i>	2 to 6	8	16
Junglerice	<i>Echinochloa colona</i>	2 to 6	8	16
Lovegrass (Stinkgrass)	<i>Eragrostis ciliaris</i>	2 to 6	8	16
Rabbitsfootgrass	<i>Polypogon monspeliensis</i>	1 to 4	8	16
Red Rice	<i>Oryza sativa</i>	1 to 3	8	16
Ryegrass				
Hardy	<i>Lolium remotum</i>	2 to 6	8	16
Italian	<i>Lolium multiflorum</i>	2 to 6	8	16
Seedling Johnsongrass	<i>Sorghum halepense</i>	4 to 10	8	16
Shattercane	<i>Sorghum bicolor</i>	6 to 18	8	16
Southwestern Cupgrass	<i>Eriochloa gracilis</i>	2 to 6	8	16
Sprangletop				
Amazon	<i>Leptochloa panicoides</i>	2 to 6	8	16
Bearded	<i>Leptochloa fascicularis</i>	2 to 6	8	16
Mexican	<i>Leptochloa uninervia</i>	2 to 6	8	16
Red	<i>Leptochloa filiformis</i>	2 to 6	8	16
Texas Panicum	<i>Panicum texanum</i>	2 to 6	8	16
Volunteer Cereals				
Barley	<i>Hordeum vulgare</i>	2 to 6	8	16
Oats	<i>Avena sativa</i>	2 to 6	8	16
Rye	<i>Secale cereale</i>	2 to 6	8	16
Wheat	<i>Triticum aestivum</i>	2 to 6	8	16
Volunteer Corn	<i>Zea mays</i>	4 to 12	6	8
Volunteer Corn	<i>Zea mays</i>	12 to 24	8	16

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Volunteer Grain Sorghum	<i>Sorghum bicolor</i>	8 to 12	8	16
Wild Oats	<i>Avena fatua</i>	2 to 6	8	16
Wild Proso Millet	<i>Panicum miliaceum</i>	2 to 10	8	16
Witchgrass	<i>Panicum capillare</i>	2 to 8	8	16
Woolly Cupgrass	<i>Eriochloa villosa</i>	2 to 8	8	16

\*Occurs between 3-leaf stage and tillering.

\*\*Length of lateral growth.

<sup>(1)</sup> 8 fl oz/A=approximately 0.2 fl oz/1000 sq ft

<sup>(2)</sup> 16 fl oz/A=approximately 0.4 fl oz/1000 sq ft

Add a non-ionic surfactant containing at least 80% active ingredient at the rate of 1 pt per 50 gals (0.25% v/v).

#### DIRECTIONS FOR ANNUAL BLUEGRASS CONTROL WITH ARROWMANA ARROW 2EC HERBICIDE IN ORNAMENTALS

GRASS SPECIES	WEED STAGE	RATE FL OZ ACRE	HIGH RATE
ANNUAL BLUEGRASS ( <i>Poa annua</i> )	to 4-leaf	6	16

Apply under favorable soil moisture and humidity which exists within a few days after rainfall or within 7 days after irrigation. Grass needs to be actively growing at time of application(s).  
 Apply at weed stage indicated on the label, as reduced control can be expected with more mature annual bluegrass.  
 Use the high rate under heavy grass pressure and/or when annual bluegrass is more mature.  
 Add a non-ionic surfactant containing at least 80% active ingredient at the rate of 1 pt per 50 gals (0.25% v/v).

#### DIRECTIONS FOR PERENNIAL GRASSES

- Apply only to actively growing grasses at specified weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the specified growth stage for treatment.
- Use the high rate under heavy grass pressure and/or when grasses are at maximum height.

GRASS SPECIES	WEED HEIGHT INCHES	RATE FL OZ/ACRE <sup>(1)</sup>	HIGH RATE <sup>(2)</sup>
<b>Bermudagrass (<i>Cynodon dactylon</i>)</b>			
First Application	3 (or up to 6" runners)	8	16
Repeat Application(s) (if regrowth occurs)	3 (or up to 6" runners)	8	16
<b>Foxtail Barley (<i>Hordeum jubatum</i>)</b>			
First Application	2 to 6	8	16
Repeat Application(s) (if regrowth occurs)	2 to 6	8	16
<b>Quackgrass (<i>Agropyron repens</i>)</b>			
First Application	4 to 8	8	16
Repeat Application(s) (if regrowth occurs)	4 to 8	8	16
<b>Rhizome Johnsongrass (<i>Sorghum halepense</i>)</b>			
First Application	12 to 24	8	16
Repeat Application(s) (if regrowth occurs)	6 to 18	6	8
<b>Wirestem Muhly (<i>Muhlenbergia frondosa</i>)</b>			
First Application	4 to 8	8	16
Repeat Application(s) (if regrowth occurs)	4 to 8	8	16

<sup>(1)</sup> 8 fl oz/A=approximately 0.2 fl oz/1000 sq ft

<sup>(2)</sup> 16 fl oz/A=approximately 0.4 fl oz/1000 sq ft

Add non-ionic surfactant containing at least 80% active ingredient at the rate of 1 pt per 50 gals (0.25% v/v).

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#### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal or cleaning of equipment. Open dumping is prohibited.

**STORAGE:** Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in cool, dry place. Do not store diluted spray.

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

#### CONTAINER HANDLING:

**Nonrefillable Container (five gallons or less):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container  $\frac{1}{4}$  full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

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

**Refillable Container (greater than 55 gallons):** Refillable container. Refill this container with clethodim only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For final disposal, offer for recycling or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

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#### LIMITATION OF WARRANTY AND LIABILITY

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

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

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

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