

# **RADISH - ANNUAL GRASS**

## General Information

### GENERAL INFORMATION

#### FOR USE ON:

- Alfalfa, Asparagus, Bean (dry) and Pea (shelled)<sup>1</sup>, Bean and Pea (succulent shelled)<sup>2</sup>, Broccoli, Cabbage, Canola\*, Carrot, Cauliflower (and other Head and Stem Brassica Vegetables)<sup>3</sup>, Celery, Clover (grown in Idaho, Oregon and Washington only), Conifers, Cotton, Cranberry, Cucumber, , Eggplant (and other Fruiting Vegetables)<sup>4</sup>, Fallow Land (and other non-producing agricultural areas), Flax\*, Garden Beet, Garlic, Herbs<sup>5</sup>, Hops, Horseradish (and other Root Vegetables)<sup>6</sup>, Legume Vegetables (edible podded)<sup>7</sup>, Lettuce, Head and Leaf (and other Leafy Greens)<sup>8</sup>, Melons (including Cantaloupe and Watermelon)<sup>9</sup>, Mint, Mustard Greens (and other Leafy Brassica Greens)<sup>1</sup>, Mustard Seed\*, Non-Bearing Food Crops, Non-Crop or Non-Planted Areas, Onions (dry bulb and green), Ornamentals, Peanut (including perennial), Peppers (bell and non-bell), Potato, Radish, Rhubarb (and other Leaf Petioles)<sup>11</sup>, Safflower, Sesame, Shallot (dry bulb), Squash (including Pumpkin)<sup>9</sup>, Soybean, Strawberry, Sugar Beet, Sunflower, Sweet Potato, Turnip Greens, Tomato and Yam (and other Tuberous and Corm Vegetables)<sup>12</sup>.

- \*Not for use in California

<sup>1</sup>Other Bean (dry) and Pea (shelled) crops approved for use with HM-0714 include: Bean (Lupinus spp.), grain lupin, sweet lupin, white lupin and white sweet lupin; Bean (Phaseolus spp.), field, kidney, lima (dry), navy, pinto and tepary; Bean (Vigna 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 and lentil; Pea (Pisum spp.), field and pigeon. <sup>2</sup>Other Bean & Pea (succulent shelled) crops approve for use with HM-0714 include: Bean (Phaseolus spp.), broad bean (succulent), lima bean (green); Bean (Vigna spp.), black-eyed pea, cowpea, Southern pea; Pea (Pisum spp.), English pea, garden pea, green pea and pigeon pea. <sup>3</sup>Other head and stem brassica vegetables approved for use with HM-0714 include: Chinese broccoli, Brussels sprouts, Chinese (napa) cabbage, Chinese mustard, cavalo broccolo and kohlrabi. <sup>4</sup>Other Fruiting Vegetables (except

tomato) approved for use with HM-0714 include: eggplant, groundcherry, pepino, peppers (all) and tomatillo. 5Other Herb crops approved for use with HM-0714 include: angelica, balm, basil, borage, burnet, camomile, 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 and savory, summer and winter. 6Other root vegetables approved for use with HM-0714 include: burdock, edible; celeriac; chervil; turnip-rooted; chicory; ginseng; parsley, turniprooted; parsnip; radish, oriental; rutabaga; salsify; salsify, black; salsify, Spanish; skirret and turnip. 7Other Edible Podded Legume Vegetable crops approved for use with HM-0714 include: Bean (Phaseolus spp.), runner, snap and wax; Bean (Vigna spp.), asparagus, chinese longbean, moth, yardlong, jackbean; Pea (Pisum spp.), dwarf, edible-pod, snow, sugar snap, pigeon and sword bean. 8Other Leafy Greens crops approved for use with HM-0714 include: amaranth (Chinese spinach, leafy amaranth and tampala), arugula (roquette), chervil, chrysanthemum (edible-leaved and garland), corn salad, cress (garden, 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 and Vine [Indian and Malabar]). 9Other cucurbit crops approved for use with HM-0714 include: Chayote (fruit), Chinese Wax Gourd, Citron Melon, Edible Gourd, Gherkin and Muskmelons (all) including Honeydew Melon. 10Other leafy brassica greens approved for use with HM-0714 include: broccoli raab, Chinese (bok choy) cabbage, collards, kale, mizuna, mustard greens, mustard spinach, rape greens. 11Other leaf petiole crops approved for use with HM-0714 include: cardoon, celtuce, Chinese celery, Florence fennel, and Swiss chard. 12Other tuber and corm vegetables approved for use with HM-0714 include: arracacha, arrowroot, Chinese artichoke, Jerusalem artichoke, edible canna, bitter and sweet cassava, chayote (root), chufa, dasheen (taro), ginger, leren, tanier, turmeric; yam, bean and yam, true. HM-0714 is a selective postemergence herbicide for control of annual and perennial grasses. HM-0714 does not control sedges or broadleaf weeds. 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 generally be observed in 7 to 14 days after application, depending on grass species treated and environmental conditions.

## APPLICATION INFORMATION

### Timing of Applications

Apply HM-0714 postemergence to actively growing grasses according to rate table recommendations. Applications made to grass plants stressed by insufficient moisture, hot or cold temperatures, or to grass plants exceeding recommended growth stages may result in unsatisfactory control. Do not apply under these conditions. In arid regions where irrigation is used to supplement limited rainfall, HM-0714 should be applied, as soon as possible, after irrigation (within 7 days). In arid regions, a second application of HM-0714 will generally 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 HM-0714 may reduce weed control.

### 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. Spray pressures should reflect a minimum of 30 psi and a maximum of 60 psi at the nozzle. Do not use flood nozzles. Applications to garlic, onions (dry bulb and green) or shallots (dry bulb and green) should be made 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 the label. Increase spray volumes up to 10 gals. as grass or crop foliage becomes dense. For garlic, onions (dry bulbs and green) or shallots (dry bulb and green): When applying by air do not exceed 16 fl. oz./A in a single application. In California, air applications to garlic, onion or shallot should be made in a minimum of 20 gals. of spray solution per acre. In states other than California, air application to garlic,

onion or shallot should be made in a minimum of 10 gals. of spray solution.

NOTE: Crop injury may occur when HM-0714 is applied to garlic, onion or shallot with aerial equipment.

### Spot Treatment

When using hand sprayers or high volume sprayers utilizing hand guns, mix 1/3 to 2/3% (0.44 oz. to 0.85 oz. per gal.) HM-0714 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 nonionic surfactant, include non-ionic surfactant at 1/4% (0.33 oz. per gal.) by volume.

NOTE: If HM-0714 is applied as a spot treatment care should be taken to not exceed the maximum rate allowed on a "per acre" basis or crop injury may occur.

## RESTRICTIONS AND LIMITATIONS

### GENERAL

- Do not apply if rain is expected within 1 hour of application, as control may be unsatisfactory.
- Do not plant rotational crops until 30 days after application of HM-0714 unless crop is listed on HM-0714 label.
- Do not apply a postemergence broadleaf herbicide within one day following application of HM-0714 or reduced grass control may result.
- HM-0714 is not recommended for use on vegetable crops being grown for seed production unless specific use directions are provided.
- Do not apply under conditions of stress. Applying HM-0714 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 HM-0714 effectively, and will be less susceptible to herbicide activity.
- Application on Long Island, New York, is restricted to no more than 32 fl. oz. of HM-0714 (0.25 lb a.i.) per acre per season. Optimal perennial grass control can be

obtained if rhizomes or stolons are cut up by preplant tillage practices (disking, 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, no fewer than two HM-0714 applications per season per year are recommended at the appropriate weed-growth stage rate under continuous no-till conditions. Grass crops such as corn, rice, small grains, sorghum or turf, etc. are highly sensitive to HM-0714. While all the vegetable crops on the label have been tested and are tolerant to HM-0714, not all specialty varieties of these crops have been tested. It is advised that, before applying HM-0714 to specialty varieties of vegetable crops on the 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 rotation and other crop restrictions. Tank mixes of HM-0714 and broadleaf herbicides may result in reduced grass control. If grass regrowth occurs, an additional application of HM-0714 may be necessary.

## RESISTANCE MANAGEMENT

HM-0714 is a Group 1 herbicide. Any weed population may contain or develop plants naturally resistant to HM-0714 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 HM-0714 or other Group 1 herbicides. Repeated use of HM-0714 (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:

- Avoiding the consecutive use of HM-0714 or other target site of action Group 1 herbicides that have similar target site of action, on the same weed species.

- 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.
- Basing herbicide use on a comprehensive IPM program.
- Monitoring treated weed populations for loss of field efficacy.
- Contacting your local extension specialist, certified crop advisors, and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes.

#### Limitations, Restrictions, and Exceptions

#### POTATO

##### Application Crops:

- HM-0714 is not recommended for use on vegetable crops being grown for seed production unless specific use directions are provided.

Application Rate: See annual and perennial grass control tables for specific use rate recommendations.

Adjuvant Recommendation: Non-ionic surfactant (NIS) in this case refers to an adjuvant containing at least 80% non-ionic surfactant. Crop oil concentrate in this case refers to both crop oil concentrate and crop oil concentrate blends. Acceptable crop oil concentrates would be those that contain a minimum of 80% oils and 15% emulsifier. Acceptable crop oil concentrate blends would be those that contain a minimum of 60% oils and 25-40% surfactants and emulsifiers. 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. Use a CPDA Certified Adjuvant when possible.

- NIS at 0.25% v/v

- Use a CPDA Certified adjuvant when possible)
- 2.5 to 4 lbs./A

Ammonium Sulfate Recommendation: If Ammonium Sulfate is going to be used it must be spray grade ammonium sulfate. The use of ammonium sulfate or Ammonium Sulfate Replacement products does not take the place of the required adjuvant.

Special Use Instructions and Restrictions:

- For repeat applications, make on a minimum of a 14-day interval.

#### RECOMMENDATIONS FOR ANNUAL GRASSES ALL CROPS

- Apply only to actively growing grasses at recommended weed heights.
- Apply when the first grass weed species in a mixed grass weed population reaches the recommended growth stage for treatment.
- Use the high rate under heavy grass pressure and/or when grasses are at maximum height.
- Do not exceed the maximum per application rate listed in Table 1, CROP SPECIFIC USE DIRECTIONS, RESTRICTIONS AND LIMITATIONS FOR HM-0714.
- Generally occurs between 3-leaf stage and tillering.

WEED HEIGHT (inches): Length of lateral growth.

MAXIMUM RATE: Rates higher than 16 fl. oz./A may 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 16 to 32 fl. oz./A may be applied. Do not apply more than 16 fl. oz./A of HM-0714 per application to the following crops: garden beets, broccoli, cabbage, carrot, cauliflower (and other head and stem brassica vegetables), celery, cranberry, cucurbits, flax, fruiting vegetables (except tomato), green onion, leaf lettuce, radish (and other root vegetables), rhubarb (and other leaf petioles), strawberry and non-bearing food crops. Do not apply more than 12 fl. oz./A of HM-0714 per application to canola or mustard seed.

Wheat, Volunteer Corn: 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 HM-0714 use rate for control is 12 fl. oz./A.

Volunteer Cereals, Volunteer Corn: Includes Roundup Read, Liberty Link and IMI-CORN volunteer corn; however not sethoxydim-resistant volunteer corn.

Method

[Broadcast/Foliar Air](#)

[Broadcast/Foliar Ground](#)

[Spot treatment](#)

Pre-Harvest Interval

15 days

Rates

[field rates 0](#)

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Restricted Entry Interval

24 hours

Timings

[Postemergence \(Weed\)](#)