

# Horseradish

## All Weeds

Herbicides are not widely labeled across the many root crops. Instead, herbicides are labeled based on the root crop plant families. For example, beets have several herbicides that can be applied over the top of the crop that would damage any other root crop.

Prepare a stale seedbed several weeks in advance of planting, allow weeds to emerge, and kill weeds without bringing new weed seeds to the surface with a burndown herbicide, flame weeder, or very shallow cultivation. In fields with lower weed pressure, it may be possible to plant into some emerged weeds, and then use an approved burndown herbicide prior to crop emergence to control emerged weeds. For crops like carrots and parsnips that take a long time to emerge, a burndown application made just prior to crop emergence is especially useful, but it can also pay off for faster-emerging species like radishes or beets.

For specific weeds controlled by each herbicide, check the Relative Effectiveness of Herbicides for Vegetable Crops table.

Rates provided in the recommendations below are given for overall coverage. For a banded treatment, reduce amounts according to the portion of acre treated.

## Non-Pesticide

### Non-Pesticide Options

Weed control in root crops often relies heavily on cultivation and hand-weeding for full season weed control. These operations are most efficient when planting arrangement is designed with weed control in mind and is designed to work with available weed control equipment. Specialized weeding equipment for root crops includes basket weeders, narrow-bladed hoes, finger weeders, and others. Prepare a stale seedbed with flaming or very shallow cultivation, instead of herbicides.

## Pesticide

**Aim EC | carfentrazone** |   0.5-2.0 fl. oz. per acre.

Apply with hooded sprayers as a directed application between crop rows. Use COC (1% v/v) or NIS (0.25% v/v). Weeds must be actively growing and less than 4 inches tall. Do not allow spray to contact crop. Do not exceed 6.1 fl. oz. per acre per season.

REI: 12-hour. HRAC 14 .

**clethodim products | clethodim** |  

Use 2EC formulations at 6-8 fl. oz. per acre with COC (1% v/v).

Use Select Max at 9-16 fl. oz. per acre with COC (1% v/v) or NIS (0.25% v/v).

Spray on actively growing grass. Use lower rates for annual grasses, the higher rates for perennial grasses. Spray on actively growing grass. Wait at least 14 days between applications. Do not exceed 32 fl. oz. of 2EC formulations or 64 fl. oz. of Select Max per acre per season.

REI: 24-hour. PHI: 15-day for radish, 30-day for beet, carrot, celeriac, horseradish, parsnip, rutabaga, and turnip. HRAC 01 .




**Dual Magnum | s-metolachlor** |   

For **carrot with special 24c label**: apply 0.5-1.33 pt. per acre after planting but before carrots emerge, or 0.67-1.33 pts. per acre after carrots have 3-5 true leaves. Increase rates to 1.33-2.0 pts. per acre on muck soils. Do not apply both pre- and postemergence. Only the postemergence application is allowed in Ohio.

For **beet, parsnip, radish, rutabaga, and turnip with special 24c label**: 0.67-1.0 pt. per acre before planting with or without incorporation, or apply after seeding before crop emerges. Risk of crop injury is generally greater with preplant incorporated applications and on coarse-textured soils with less than 1.5% organic matter. Increase rate to 1.33 pts. per acre on muck soils. Do not exceed 1.3 pts. per acre per crop or 1 application per crop.

For **horseradish in all states**: 1-1.33 pt. per acre after planting but before weeds emerge. Do not exceed 1 application per crop.

REI: 24-hour. PHI: 64-day for carrot. HRAC 15 .

**glyphosate products | glyphosate** |    0.375-3.75 lbs. acid equivalent (ae) per acre.

Divide lb. acid equivalent (ae) per acre target rate by lb. ae per gal and then multiply by 4. For example, for RoundUp ULTRA at the high rate, (3.75 lb ae per acre / 3 lb ae per gal) \* 4 = 5 qt. per acre of actual product. Broadcast before seeding, or apply between crop rows with wipers or hooded or shielded sprayers. Use lower rate for annuals and higher rates for perennials. For carrot and rutabaga only wipers may be used over top of crop, see label. See label for suggested application volume and adjuvants.

REI: 4-hour to 12-hour. PHI: 14-day for foliar applications directed between rows, 7-day for wiper applications on carrot only. HRAC 9 .

**GoalTender | oxyfluorfen** |   

1 pt. per acre for GoalTender 4SC, or 2 pts. per acre for Goal 2XL.

Apply after planting but prior to crop emergence.

REI: 24 to 48-hour. HRAC 14 .

**Lorox DF | linuron** |    

Use low rate on coarse soils and higher rate on heavy soils and muck. Do not use on sand, loamy sand, or soils with less than 1% organic matter.

For **carrot**: *In Minnesota only*, apply 1-2 lbs. per acre after planting but before carrots emerge. *In Michigan and Ohio only*, apply 1-3 lbs. per acre per acre after planting but before carrots emerge. Do not exceed 4 lbs. per acre per season. *In all states*, an additional application of 1.5-3 lbs. per acre can be made after carrots seedlings they are 3 inches tall.

For **celeriac**: Make a single application of up to 3 lbs. per acre as a broadcast spray after celeriac has been transplanted and established, but before celeriac is 8 inches tall. Do not add surfactants, nitrogen (or other fertilizers), or other pesticides to the spray mix.

For **horseradish**: Make a single application of up to 3 lbs. per acre as a broadcast spray after planting or during dormancy, but before leaves emerge in spring. After planting, allow rainfall or irrigation of at least 0.5 inch prior to application.

For **parsnip**: Make a single application of 1.5-3 lbs. per acre as a broadcast spray after planting but prior to crop emergence. Plant at least 0.5 inch deep.

REI: 24-hour to 8-day. PHI: 14-day for carrot, 60-day for celeriac. HRAC 05 .

**Optogen | bicyclopyrone** |    

For **horseradish**: 2.6-3.5 fl. oz. per acre after transplanting but at least 3 days prior to crop emergence or 3.5 fl. oz. per acre after transplanting as a row middle or post-directed application, avoiding contact with crop foliage.

If weeds are present, add COC (1% v/v) or NIS (0.25% v/v). Spray grade ammonium sulfate (AMS) may also be added to improve weed control consistency. Apply to weeds less than 2 inches.

Do not apply prior to transplanting. Do not exceed 1 application per year. Do not exceed 3.5 fl. oz. per acre per year.

REI: 24-hour. PHI: 30-day. HRAC 27 .

**Outlook | dimethenamid-p** |    12-21 fl. oz. per acre.

Apply from 2-leaf stage to 8-leaf stage of horseradish. Cold, wet conditions at application may stunt horseradish. Will not control emerged weeds.

REI: 12-hour. PHI: 40-day. HRAC 15 .

**Poast | sethoxydim** |   1.0-1.5 pts. per acre.

Use COC (1% v/v). Spray on actively growing grass. Do not exceed 2.5 pts. per acre per season for parsnip, radish, rutabaga, and turnip or 5 pts. per acre per season for beet, carrot, and horseradish.

REI: 12-hour. PHI: 14-day for parsnip, radish, rutabaga, and turnip, 30-day for carrot, and 60-day for beet and horseradish. HRAC 01 .

**Spartan Charge | carfentrazone , sulfentrazone** |    2.9-10.2 fl. oz. per acre

Broadcast in the spring before planting or after planting but at least 5 days before crop emergence; or band into row middles after crop emergence. Applications made in the spring shortly before planting may be incorporated, but do not incorporate at other times. Rainfall or irrigation is required to move herbicide into the soil when not incorporated. Do not broadcast if sprouts are close to soil surface, or over top of emerged crop. Do not use on sandy soils with less than 1% organic matter. Do not exceed 10.2 fl. oz. of Spartan Charge per 12-month period.

REI: 12-hour. HRAC 14 . HRAC 14 .

**Sulfen 4SC | sulfentrazone** |

PRE



For **horseradish**: Apply 2.25-8 fl. oz. per acre in the spring before planting or after planting but at least 5 days before crop emergence; or band into row middles after crop emergence. Applications made in the spring shortly before planting may be incorporated, but do not incorporate at other times. Rainfall or irrigation is required to move herbicide into the soil when not incorporated. Do not broadcast if sprouts are close to soil surface, or over top of emerged crop.

For **turnips**: Apply 8 fl. oz. per acre after emergence 40-60 days before harvest.

Do not apply more than 8 fl. oz. per acre or per 12-month period. Do not use on sand or soils with less than 1% organic matter.

REI: 12-hour. HRAC 14 .

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