

PACIFIC NORTHWEST STATES OF IDAHO, NEVADA, OREGON AND WASHINGTON - SOIL INJECTION

General Information

MAXIMUM APPLICATION RATES FOR PRE-PLANT SOIL FUMIGATION

Maximum application rate is 320 lbs ai/A (75 gallons per treated acre).

Only for use on the following:

Cover crops (i.e., crops planted between periods of regular crop production to prevent soil erosion);

GENERAL INSTRUCTIONS

If fumes become detectable during treatment, apply more water to seal the fumes into the soil where they should be confined to achieve maximum fumigation benefit. Use promptly after mixing with water. Do not allow solution to stand.

Mycorrhizae: There are occasions when Metam CLR 42% is known to temporarily reduce mycorrhizae in agricultural soils. For those crops that are mycorrhizae dependent and planted into Metam CLR 42%-treated soils, it is necessary to practice a good fertilizer program until the mycorrhizae repopulate the treated area.

PRODUCT INFORMATION

Metam CLR 42% is a water soluble liquid. When applied to soil, the liquid is converted into a volatile fumigant (Methylisothiocyanate, MITC). After a sufficient interval of time, the fumigant degrades/dissipates leaving the soil ready for planting.

WHEN TO USE MAXIMUM AND MINIMUM RATES

The application rate of Metam CLR 42% is dependent on the soil type to be treated and the position in the soil of the pest to be suppressed or controlled. For maximum control or suppression, an understanding of the pest, its location and its respiring state will ensure maximum performance of Metam CLR 42%. Generally, a light sandy soil requires a lower application rate than a heavier mineral soil. In addition, if the pest is in the upper portion of the soil profile (annual weeds), a lower

application rate is generally required than if the pest is deeper in the soil profile and deeper penetration is desired (perennial weed seeds and nematodes). When a range of application rates is given in the label, consult your local agricultural extension service for more specific information.

Nematodes and Nutsedge: Nematode suppression is achieved when Metam CLR 42% converts to MITC and makes contact with active forms of the nematodes, preferably juveniles. Endo-parasites in plant residue may not be suppressed. Plant residues from previously infected crops should be completely decomposed prior to Metam CLR 42% application to ensure maximum exposure. Eggs are more difficult to suppress than juveniles, but are susceptible. Pre-irrigation has been demonstrated to stimulate egg hatch of some species and may enhance overall Metam CLR 42% performance. Nutsedge may be suppressed with Metam CLR 42% if actively growing and a high use rate is used (75 gal/acre). More often, rhizomes, roots and shoots will be controlled but the tuber will remain viable and at a later time regrow. Treatments made immediately prior to a crop planting (after the necessary waiting period) will give a weed-free period for crop establishment.

USE PRECAUTIONS

Keep children and pets out of treated areas. Metam CLR 42% uses described on the label are intended for preplant soil preparation only. All plant foliage and any established plants growing on the treatment sites will be either severely damaged or destroyed. Keep the product off of any desirable turf or plants. Do not apply within 3 feet of the drip line of desirable plants, shrubs, or trees. Do not use in greenhouses. Keep container tightly closed when not in use. Do not store near feed or food. NOTE: Metam CLR 42% will suppress and/or control only those pests in the fumigation zone at the time of treatment. Reinfestation may occur subsequent to the fumigants degradation/dissipation from the soil.

TREATMENT GUIDELINES

For optimum results, certain procedures should be observed at designated times in the treatment program.

Described below are important guidelines for each of the four stages of the treatment process. Consult your Sales Representative for the appropriate treatment program for your particular needs.

-Pre-Application

-Field Preparation Prior to Application

-Application

-Pre-Planting After Application of Metam CLR 42%

APPLICATION OF METAM CLR 42%

Apply according to the methods and rates outlined below under the section “Uses, Rates and Application Methods.”

Use of Diluted Metam CLR 42%

Do not store the diluted product. Do not allow the diluted solution to stand overnight. Use the diluted solution promptly after mixing with water. Flush all equipment with water after each day’s use; disassemble valves and clean carefully.

PRE-PLANTING AFTER APPLICATION OF METAM CLR 42%

Effects of Rain

If rain occurs within 24 hours after a Metam CLR 42% application, lack of control at and near the soil surface may occur.

Recontamination

Precautions must be taken to prevent recontamination of treated fields with plant pathogenic fungi, plant parasitic nematodes or weed seed. Use clean seeds or plants. Before farm equipment is driven into the treated area, it should be rinsed free of untreated soil and weed seeds from other fields.

Days to Cultivating or Planting After Application

Because Metam CLR 42% is harmful to germinating seeds and living plants, an appropriate interval must be observed between treatments and planting. On well-drained soils which have a light to medium texture and which are not excessively wet or cold following the application, planting can begin 14 to 21 days after treatment. If soils are heavy or especially high in organic matter or if the soil remains wet and/or cold (below 60°F) following the application, a minimum interval

of 21 days or greater should be observed. The interval before planting should be extended until the soil is sufficiently dry to allow for cultivation.

Cultivation of Soil Before Planting

IMPORTANT: Heavier soils including soils high in clay or organic matter should be allowed to aerate and dry thoroughly after treatment with Metam CLR 42%. During cold and/or wet weather, frequent shallow cultivation can aid dissipation of Metam CLR 42% from the treated soil.

On heavy, wet soils, light surface cultivation to break up crusting and promote drying should be done 5 to 7 days after treatment if planting is to occur within 14 to 21 days after treatment. This cultivation may be repeated as necessary.

NOTE OF CAUTION: To avoid contaminating treated soils, care should be taken to assure that untreated soils are not mixed with treated soils.

Testing of Treated Soils Before Planting

Fields are fumigated to control soil-borne fungi, nematodes, insects, and weeds. The length of time required for fumigants to dissipate/escape from the soil before plants can safely be planted varies greatly. Typically 14 to 21 days are needed under typical conditions; however, circumstances which do not favor evaporation of the fumigant can greatly lengthen the waiting period as much as up to 30 days. The release period is short with (1) low rates of fumigants, (2) light soil, (3) high soil temperatures, (4) low soil moisture, (5) shallow application depth, and (6) repeated cultivations after fumigation. Seeded crops are less susceptible to residual soil fumigant injury than transplanted crops. In general, fumigants escape slowly from cold, wet, heavy soils.

If in doubt, perform either the lettuce seed test or the tomato transplant test as described elsewhere in the label. If germination occurs in 1 to 3 days or if tomato plant shows signs of wilting or root burn in 2 days, the product is still available and an extended wait period must be observed.

Crops grown solely for seed;

As well as (in alphabetical order):

PRE-APPLICATION

Metam CLR 42% is applied post-harvest and 14 to 21 days before a new crop is planted (see “Testing of Treated Soil Before Planting” section). In some areas, fall application is preferred as the product will degrade/dissipate over the winter that allows planting to begin as soon as favorable springtime conditions arrive.

Application Rate

Apply 37.5 to 75 gallons of product per treated acre depending on crop, target pest and soil properties (or see crop-specific considerations in the Additional Information section of the label). Some of the soil properties to consider when determining the application rate include soil texture, percent organic matter and depth of soil to be treated.

Target Pest and Depth of Treatment

When application rates for this product are given in ranges, use the higher rate if pests (insects, nematodes, etc.) are present in high numbers or if the area to be treated has a history of pest problems. Consult with your State nematologist, entomologist and plant pathologist to determine if crop rotation is more feasible or desirable than fumigation. NOTE: This product will only suppress or control pests that are in the fumigated zone at time of treatment. For control of weeds and fungi which cause seed or seedling diseases, treatment of only the top 2 to 4 inches of soil may be required (see application specific requirements in the Good Agricultural Practices section of the label). Treatment depths greater than 4 inches may be required for control of nematodes and fungi which occur throughout the rhizosphere. The required application rate should be increased proportionately with the depth of the treatment required. Always choose the appropriate application method to evenly distribute this product throughout the soil to the required treatment depth.

Soil Characteristics

Soil properties to consider when determining the application rate of this product include the depth of soil to be treated, soil texture, and percent organic matter. Due to the absorbing effect of humus, soils with high levels of organic matter under the surface require higher rates. For example, muck soil may require twice the rate that

would be used in mineral soils. Application rates will also vary with soil texture. For example, heavy clay soils require a higher rate than light sandy soils.

Phytotoxicity

Metam CLR 42% is phytotoxic. Protect valuable, non-target plants by stopping soil applications of this product at least three feet short of the drip line of trees, shrubs and other desirable plants. For sprinkler application, crop injury and lack of effectiveness can result from non-uniform distribution of the treated water.

Limitations, Restrictions, and Exceptions

PACIFIC NORTHWEST STATES OF IDAHO, NEVADA, OREGON AND WASHINGTON

NOTE: When applied in the spring, allow a minimum of 14 to 21 days before planting providing no fumes are detectable. When the soil temperature is below 60°F, allow a minimum of 21 days before planting. Check for fumes and aerate as needed. Use a seedling indicator plant with a hot cap to check for activity or fumes (or follow instructions in preceding paragraph). DO NOT plant if fumes are detectable or injury to plant has occurred. Reaerate the soil and check again.

The information below describes two simple tests to assay for harmful residual soil fumigants before planting.

Lettuce Seed Test

1. With a trowel, dig into the treated soil to or just below the depth of application. Remove 2 to 4 small (1 to 2 oz) soil samples, mix lightly, and immediately place a portion in an air-tight jar so that fumes will not escape. Use mason, wheat germ or similar jars with gas-tight lids.
2. Sprinkle lettuce seeds on the moistened surface of the soil and recap immediately. Prepare a similar jar with untreated soil (untreated check) for comparison.
3. Keep the jars at 65°F to 85°F; do not place in direct sunlight. Direct sunlight may kill the seed by overheating. Lettuce seed will not germinate in the dark.
4. Inspect the jars for germination in 1 to 3 days.
5. The soil is safe for planting if seeds in the treated jar germinate the same as

seeds in the untreated jar.

IMPORTANT: Be sure (1) to sample the field properly in several areas, particularly low, wet areas; (2) that the lids are air tight and have no grit under the seal; and (3) that the jars are placed in indirect sunlight.

Tomato Transplant Test Transplant 5 to 10 succulent, fast-growing tomato seedlings into fumigated beds approximately 4 to 6 inches deep. Do the same in a non-fumigated area. If there is variation in the field, plant into the heaviest, wettest soil.

Inspect the seedlings in 2 days for wilting or “root burn”. If plants in the fumigated zone look the same as those in the non-fumigated zone, it is safe to plant.

Which Test is Best?

Both the lettuce seed and tomato transplant tests can serve the purpose. The response of tomato seedlings varies somewhat depending on how succulent they are, the relative humidity, soil moisture and temperature. Relative differences between plants in fumigated and non-fumigated areas are key to detecting low level residues. High concentrations should produce clear-cut symptoms. Lettuce seed tested in jars are not subjected to the variations in the field that can affect the response of tomato transplants. However, the process of collecting a soil sample allows some fumigant to escape prior to sealing the jar. In addition, excess soil moisture can inhibit normal lettuce seed germination reducing the sensitivity of the test.

USES, RATES AND APPLICATION METHODS

FIELD APPLICATION WHERE ENTIRE AREA IS BEING TREATED

SOIL INJECTION: Apply with injectors such as shanks, blades, fertilizer wheels, plows, etc. Apply Metam CLR 42% at the rate of 37.5 to 75 gallons per treated acre (or see crop-specific considerations in the Additional Information section of the label).

Follow immediately with a roller to smooth and compact the soil surface.

Light watering or tarping after rolling helps prevent fumigant escape. It may be necessary to stagger the injector placement on two or more tool bars to prevent soil build up during application.

When setting up your soil injection equipment with either spray blades, injection knives or coulters make sure they are evenly and closely placed to create an even

application width and depth. To accomplish this, it may require multiple tool bars with the injection tools staggered. This will help prevent build up of trash and aid in the soil sealing. For example, apply Metam CLR 42% through injectors placed 4 inches below the soil surface and 5 inches apart.

Method

[Soil Injection](#)

Rates

[field_rates 0](#)

-

Timings

[N. A.](#)