Basamid® G For Weed Control in Forest Tree Nurseries

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Background

In 2003, Kanesho Soil Treatment (a joint venture between Agro-Kanesho Co., Ltd. and Mitsui & Co., Ltd.) acquired several soil disinfestation products from BASF Corp., including Basamid® G, granular soil fumigant which contains the active ingredient dazomet. Certis USA, a wholly-owned subsidiary of Mitsui & Co., has assumed marketing and development responsibility for Basamid G in the USA and Mexico.

Unlike most other fumigants, Basamid G (dazomet) is inactive until it comes into contact with soil moisture and decomposes to release methylisothio-cyanate (MITC) gas. MITC gas diffuses through the air spaces between soil particles killing soil-dwelling organisms such as weeds, nematodes, insects, and fungi. Basamid G can be user-applied without the extensive equipment, containment, and safety requirements of other soil fumigants. Plastic tarping is not required, although it may improve fumigation performance in some cases.

Basamid G has been in use outside the USA for over 20 years, most extensively in Japan and Europe. It is registered in the USA for control of weeds, nematodes, and diseases. Basamid G has been used in forest tree nurseries for the production of pine and broadleaf seedlings since the early 1990's. Basamid G is easily applied by nursery staff on their own schedule, with no need to cover the field with plastic. A clean start can be achieved for a new seedling crop without the logistical challenges of custom application or disposal of used plastic tarps.

Basamid G Application in Forest Tree Nurseries

A power tiller is the preferred method for applying Basamid G. A well prepared seedbed is necessary before the power tiller is used. The power tiller incorporates Basamid G to an 8-10" depth as it is metered onto the soil surface from a modified Gandy® spreader. A roller towed behind the tiller compacts the soil to seal in MITC gas. Overhead irrigation should be applied immediately after incorporation and for seven days to further seal the MITC gas in the soil. 1" of irrigation water is applied the first day to wet the soil to a depth of 6-8" which seals and releases the MITC gas. On day two apply ¾" of water and on subsequent days apply ¼-1/2" to maintain the soil seal and contain the gas. Allow the soil to dry out after 7 days to release the MITC gas. To test for the presence of MITC gas take a sample of the soil from the surface to 6" deep and place it in a sealed Mason jar with moistened lettuce seed. If the seeds germinate the gas has

dissipated. A light soil aeration will speed the release of gas if planting is to be made within 4 weeks of Basamid G application.

Field Trials in Forest Tree Nurseries Using Basamid G

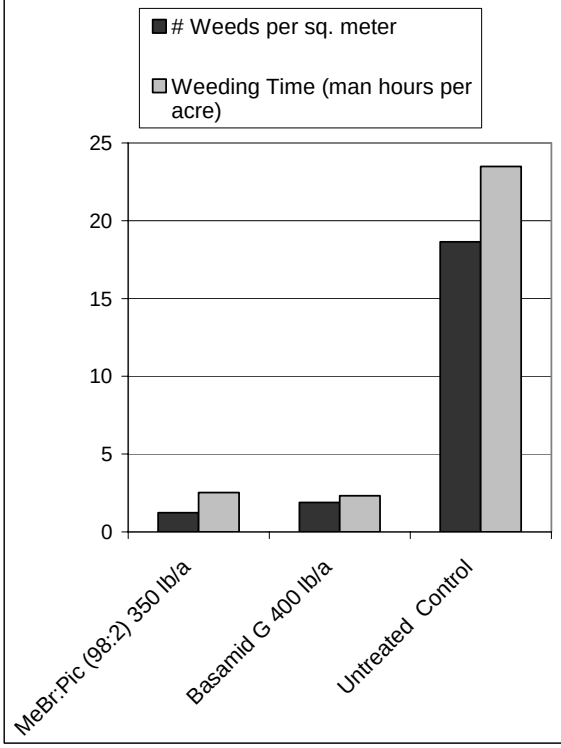
The following trials took place in 2004-2005 on tree nurseries in South Carolina and Georgia. The trial in South Carolina (Figure 1) was a large plot non-replicated trial. Basamid G (400 lb/a) was an effective weed control and equivalent to methyl bromide (350 lb/a) in numbers of weeds per square meter and weeding times per acre. Both treatments were much more effective than the untreated control.

Rayonier, Inc. in Georgia put out a replicated field trial (Figure 2) comparing methyl bromide (350 lb/a) and Basamid G (490 lb/a). Weeding time in man hours per acre was slightly higher in the Basamid G plots but overall weed control was similar.

Conclusions

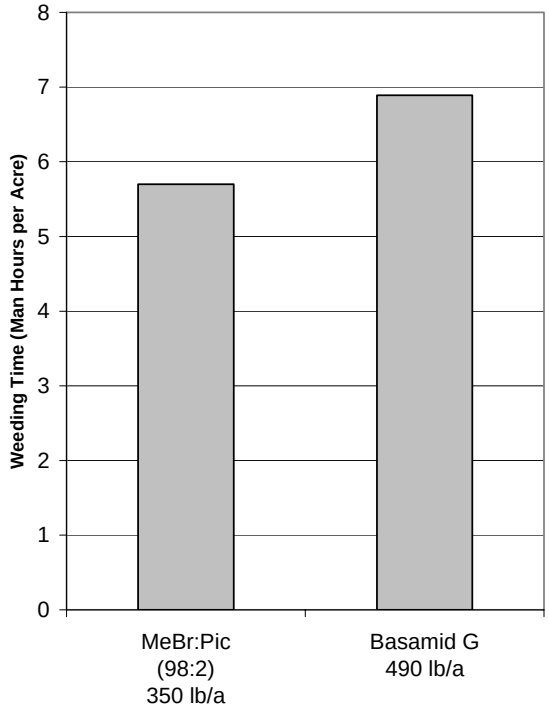
- Basamid G has been successfully used in forest tree nurseries for the production of pine and broadleaf seedlings since the early 1990's and has efficacy equal to methyl bromide.
- Basamid G is easily applied by nursery staff on their own schedule with no need to cover the field with plastic.
- A clean start can be achieved for a new seedling crop without the logistical challenges of custom application or disposal of used plastic tarps.
- Maintaining a water seal for seven days is critical for successful weed control.
- To further assure effective weed control, soil moisture should be maintained at optimum levels for 2-3 weeks prior to Basamid G application to allow for seed and nutsedge germination.
- If application is necessary within 4 weeks of planting be sure that all MITC gas is out of the soil before planting by using the lettuce seed germination test. Light aeration of the soil will help remove residual MITC gas.
- Do not apply Basamid G to dry or improperly tilled soil.
- Do not apply within 3-4 feet of growing plants or within the dripline of trees.
- Do not use Basamid G when soil temperatures are below 43ºF.
- Do not apply Basamid G if ambient air temperature is 103ºF or above.

Figure 1. Weed Control in a Loblolly Pine Planting, 2004-2005.
Mead-WestVaco Nursery, Ravenel, SC



- Non-replicated field trial.
- Individual plots 1/4 to 1/3 acre.
- Sandy soil not fumigated for two years
- Basamid G applied 10-12-04; methyl bromide applied 10-04.
- Water seal maintained for 7 days by overhead irrigation.
- Plots weeded June 2005.
- Major weeds: carpetweed, pusley and hardwoods.
- Goal herbicide applied as needed during the year.

Figure 2. Weed Control in a Slash and Loblloly Pine Nursery, 2004-2005
Rayonier, Inc., Glennville, GA



- Randomized complete block, 3 replications
- Sandy loam soil, not fumigated for 2 years
- 1.4 acres Basamid G treated, 0.95 Methyl bromide treated
- Basamid G applied 11-19-04, methyl bromide applied spring 2005
- Water seal maintained for 7 days by overhead irrigation
- Plots weeded summer 2005
- Major weeds: Morning glory and coffee bean
- Glyphosate, Prowl and Goal applied as needed during year