

Basamid Use and Results in the Hayward State Nursery

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Abstract—Basamid soil fumigation was compared to three different soil fumigants and two formulations of essentially the same product as Basamid under operational conditions. Basamid in this study was equal to or superior to any of the fumigants tested, provided certain specific application techniques were followed. The results presented here are from red pine seedbeds; however, in other tests not reported here on other species and transplants, the results are comparable.

Keywords: Basamid, application techniques, seedbeds.

INTRODUCTION

In 1962 we began testing and comparing various soil fumigants at the Hayward Nursery. We were looking for a soil fumigant that was relatively easy and safe to apply that would give consistent control of soil-borne pathogens and also give reasonable weed control.

The fumigants that were tested were Vapam, Methyl Bromide (MC-2), Trizone, Mylone 85W, Mylone 50D, and Basamid. In the initial trials Mylone 50D and 85W were used. These two fumigants have been taken off the market and Basamid has taken their place. Basamid (Dazomet) breaks down into methylisothiocyanate just as Mylone did. There are two main differences when comparing

Mylone and Basamid, those being Basamid is 99% active ingredient and is granular like salt or sugar while the Mylone is more of a powder formulation.

In our tests we found Basamid to be comparable to Mylone 50D. Both of these products were very easy to apply, relatively safe for the applicator, and gave the desired control of the pests we were targeting. Trizone, MC-2, and Vapam controlled targeted pests but were more time-consuming and costly, harder to handle, and somewhat more dangerous to apply. When using any of the products tested, we found that method and care in application were very important if satisfactory results were to be obtained.

TRIAL AREA AND DESIGN

The trial areas used for this study were operational seedbeds at the Hayward State Nursery. The soil at the nursery is a sandy loam with an average pH of 5.8, silt clay 14%, organic matter 2.4%, and exchange capacity of 5.4 me/100g. The fumigants used were ones that we had been using at the nursery that had shown promise. All fumigants were applied in an operational manner. The trials were not set up to be completely statistically sound but rather to give us an idea of how these particular fumigants would perform under true operational conditions. The seedling densities were arrived at from the regular tree inventory procedures at the nursery.

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SOIL CONDITIONS

A cover crop of buckwheat had been growing on all trial areas. The cover crop was plowed under and disked early in July. The area was left fallow until fumigation the first week in August. By this time the cover crop is quite well deteriorated as is called for by the fumigant labels. We have to fumigate at the Hayward Nursery during the first week in August in order to ensure that we have soil temperatures of 50-60 degrees F as is required for good fumigation results. In all trials nothing was done to the soil prior to application with the exception being that Mylone 85W was applied and just water-sealed in which case we disked the soil before application.

METHODS AND RATES OF APPLICATION

Mylone and Basamid were applied at 250 pounds of active ingredient per acre based on past results. Rototilling was used over other forms of incorporation for the same reason. The fumigated areas were left undisturbed until seeding in early October. At that time a light shallow mechanical raking was done to prepare the seedbeds.

Mylone 85W

In the first method of application, the soil was worked up by disking immediately before application. 250 pounds of active ingredient per acre was applied with a Gandy fertilizer spreader and the

fumigated area was immediately water-sealed with two hours of irrigation to incorporate the fumigant and form a seal.

In the second method of application, the soil was not worked up prior to spreading 250 pounds of active ingredient per acre with a Gandy fertilizer spreader. Immediately after application, the Mylone was roto-vated to a depth of 5-6 inches, rolled and water-sealed for two hours.

Mylone 50D

The first method used no soil preparation immediately prior to application. 250 pounds of active ingredient per acre was applied with a Gandy spreader. The fumigant was immediately roto-vated to a depth of 5-6 inches and water-sealed for two hours.

The second method was the same as for the first except that the area was rolled immediately after roto-vating before the two hour water seal.

Vapam

50 gallons of product was mixed with 50 gallons of water and applied with a blade-type injector to a depth of 8-10 inches at 50 gallons per acre of active ingredient. The area was then immediately covered with a polyethylene tarp for 48 hours. Two weeks after application the area was worked with a spring-tooth harrow to vacate the fumigant.

Trizone

This is a gas and was applied under a polyethylene tarp to an area that had been worked up immediately before application of the Trizone at a rate of 200 pounds per acre of product. The soil was not disturbed until the time of seeding.

Methyl Bromide (MC-2)

The MC-2 was applied under a polyethylene tarp to soil in good tilth at the rate of 435 pounds of product per acre. The soil was not disturbed until the time of seeding.

Basamid

Basamid was applied with a Gandy spreader at the rate of 250 pounds of active ingredient per acre. The fumigated area was roto-vated, rolled, and water-sealed for two hours. The soil was not disturbed until the time of seeding.

Soil samples were taken from all fumigated areas before seeding and tested for presence of the fumigant. All samples indicated that sufficient evacuation of the fumigant had occurred and the areas could be seeded to trees. Before seeding in early October, all areas were worked up to a depth of 1-2 inches to provide a satisfactory bed for seeding. After seeding, an application of the pre-emergent herbicide, Dacthal 75W, was applied at 8 pounds of active ingredient per acre.

RESULTS AND DISCUSSION

All of the fumigants used except the Mylone 85W produced pro-

jected shipping densities of 30-35 trees per square foot (Table 1). The Dazomet (Mylone, Basamid) fumigants produced better results as the method of application increased in intensity. Mylone 50D and Basamid were equal in their effects and produced 36 trees per square foot at shipping time which was 1 tree more than the target high of 35 per square foot. Our results indicate that to gain the most from Basamid or Mylone 50D, they require roto-vating, rolling, and a two-hour water seal. For some unknown reason, Mylone 85W did not perform well for us. We did not pursue this any further because of the availability of Mylone 50D. In later years we used Basamid due to the fact that Mylone 50D was not available. We have found that this product works as well as the Mylone 50D did under the conditions at Hayward.

We believe if we could get the

Basamid in to a depth of 8-10 inches, we would obtain better control of certain soil-borne pathogens that do give some problem at times in certain other species. We will be running tests this summer on various types of equipment to see if we can increase the depth of application in the Basamid.

fumigate in August to have optimum soil temperatures at Hayward. With this early fumigation, some weed seeds are blown and washed into the fumigated area and cause weed problems in the fall or spring if a pre-emergent herbicide is not applied.

CONCLUSION

Basamid soil fumigant does a very good job of fumigating the soil at the Hayward Nursery. It was at least equal to all other fumigants tested. The Dazomet fumigants must be thoroughly incorporated into the soil, rolled, and water sealed for two hours to get optimum results. To ensure good weed control, we used an application of Dacthal 75W at 8 pounds of active ingredient per acre over the newly seeded beds. The main reason for doing this is due to the need to

Table 1. Wisconsin Hayward State Nursery.

Summary of Fumigation Results 1962 to Present in 1-0 Red Pine (Desired seedlings per square foot = 30-35 at shipping)				
<u>Fumigant</u>	<u>Active Ingredient per acre</u>	<u>Method of Application</u>	<u>Trees/Square Foot End of First Year</u>	
Control	None	None	22	(18)
Mylone 85W	250 lbs.	Spread with Gandy and water sealed	29	(24)
Mylone 85W	250 lbs.	Spread with Gandy, rototilled and water sealed	35	(28)
Vapam	45-50 gals	Injected under poly tarp and covered 48 hours	40	(32)
Trizone	200 lbs.	Injected under poly tarp and covered 72 hours	42	(34)
MC-2	435 lbs.	Injected under poly tarp and covered 48 hours	43	(35)
Mylone 50D	250 lbs.	Spread with Gandy, rototilled and water sealed	43	(35)
Mylone 50D	250 lbs.	Spread with Gandy, rototilled, rolled & water sealed	44	(36)
Basimid	250 lbs.	Spread with Gandy, rototilled, rolled & water sealed	44	(36)

() Projected shipping density @ 2-0