

Incorporating Basamid Fumigant

Dazomet, also known as Basamid Granular[®], is a unique formulation for a soil fumigant. It is applied to the soil as a very fine white granule that converts to a gas when it encounters water. The fumigant activity results from the interaction of a mixture of different gases, the most common being methyl isothiocyanate. With the proposed ban of methyl bromide by the year 2001, many bareroot nurseries are testing alternative fumigants and basamid is a popular choice because it is already labeled for forest nurseries.

The basamid "micro-granules" are normally applied through drop-type spreaders, immediately incorporated into the soil, and physically contained with a roller, or water-sealed with irrigation. The depth of incorporation is critical to get a complete sterilization of the root zone because the fumigant gas only moves up. BASF, the manufacturer of basamid, recommends an incorporation depth of 12 inches to control root disease and states that application rates of 392 kg/ha (350 lbs/acre) are necessary to obtain a 95% kill of *Fusarium oxysporum*, one of the major soil pathogens in forest nurseries in the US.

Kelsas and Campbell (1994) tested four farm implements to determine how well they mixed basamid into the soil: a standard double-gang disc, a harrow roller called Brillion cultipak, a disk and cultipak combination, and a Lely Roterra[®], which is a power harrow. The disc, disk and cultipack, and Roterra treatments gave complete control of *Fusarium* and *Pythium* down to 10 cm (4 in), but only partial control down to 20 cm (8 in).

Another field trial in a Wisconsin state nursery compared three different rotary tillers and one spading machine to a 12 inch depth (Juzwik 1995). In preliminary trials using inert tracers, the average maximum incorporation depth was 7 inches for two tillers, and 9 inches for the third. The spading machine (**Figure 1**) resulted in much more uniform distribution of tracers through the depth profile than the tillers, and also achieved deeper incorporation to 25 cm (10 inches). Dazomet trials were then conducted using two rates, 286 and 571 kg/ha (255 and

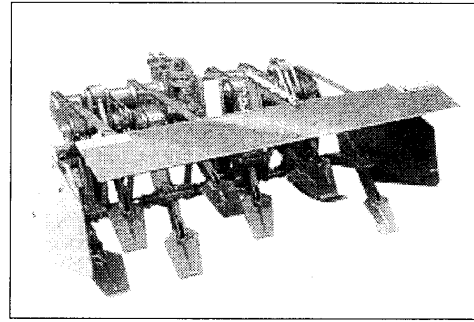


Figure 1: Spading machines have provided the best incorporation of Basamid micro-granules (courtesy of J. Juzwik)

510 lbs/acre), and fumigant activity was evaluated through the soil depth profile to a depth of 30 cm (12 in). Fungal populations of *Fusarium* and *Cylindrocladium* and lettuce seed germination bioassays confirmed the tracer results proving that the spading machine gave biocidal activity to the greatest depth. A second chemical/tracer trial is scheduled for another nursery for August 1995 to confirm these preliminary tests.

Sources:

- Juzwik, J. Personal communication. St. Paul, MN: USDA Forest Service, NCFES.
- Kelsas, B.R.; Campbell, S.J. 1994. Influence of mechanical incorporation method on dazomet distribution in conifer nursery soil. *Tree Planters' Notes* 45(2): 53-57.
- Landis, T.D.; Campbell, S.J. 1989. Soil fumigation in bareroot tree nurseries. IN: Landis, T.D. tech. coord. Proceedings, Intermountain Forest Nursery Association. General Technical Report RM-184. Ft. Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station: 13-28.