USE OF DAZOMET (BASAMID®) FOR ORNAMENTAL PRODUCTION

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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. Certis USA, a wholly-owned subsidiary of Mitsui & Co., has assumed marketing and development responsibility for Basamid in the USA and Mexico.

Unlike most other fumigants, Basamid is inactive until it comes into contact with soil moisture and decomposes to release MITC gas, killing soil-dwelling organisms such as weeds, nematodes, insects, and fungi. Basamid can be user-applied without the extensive equipment, containment, and safety requirements of other soil fumigants. Plastic tarps are not required, although they may improve fumigation performance in some cases.

Basamid 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 in the production of cut flowers, conifer seedlings, potting media, turf, and nursery crops (including landscape ornamentals, nonbearing fruit trees and strawberry plants).

Properties of Basamid® G Soil Fumigant:

Active ingredient:

Common name:	dazomet
Chemical name:	tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione
Empirical formula:	C5H10N2S2
Molecular weight:	162.3
Melting point:	104-105°C
Vapor pressure:	6 × 10-6 mbar at 20°C
Solubility:	Insoluble. in water, sol. in organic solvents

Formulated product:

Formulation:	Microgranules
Percent active ingredient:	99%
Specific gravity:	0.6 – 0.8 Kg/L
Appearance:	Grayish-white
Odor:	Slightly pungent
Packaging:	50-lb (22 Kg) bag
Shelf life:	2 years in unopened bag
Label hazard:	Warning, keep out of reach of children

Toxicology:

Oral LD50:	519 mg/Kg (rat), 120 mg/Kg (rabbit)
Dermal:	>2000 mg/Kg (rat), 7000 mg/Kg (rabbit)
Inhalation:	8.4 mg/L (rat)
Environmental toxicology:	Toxic to fish and algae

Non-irritating in rabbit eye and skin tests

Mode of action:

Upon contact with moist soil, dazomet is transformed into methylisothiocyanate (MITC) gas. MITC diffuses through the air spaces between soil particles and is toxic to soil-dwelling organisms such as weeds, nematodes, insects, and fungi.

Registration of Basamid G for food crop use

US EPA considers Basamid G a feasible alternative to methyl bromide fumigation as a result of IR-4 sponsored field trials in 1999-2002. EPA is currently reviewing Basamid G for registration in strawberries and tomatoes. Based on lack of residues in food crops, no expected risk based on dietary concerns, and pre-plant application to the soil, EPA's Hazard Evaluation Division has decided to evaluate Basamid as a non-food use pesticide. California's Air Resources Board is actively evaluating Basamid in trials to determine safety of this granular soil fumigant via bystander exposure.

Floriculture and Ornamental Plants

Growers of cut flowers, potted shrubs, and other ornamental plants must control soilborne pathogens and weeds in production units that may be small, dispersed, and more intimately associated within population centers and other sensitive areas compared to others who rely on soil fumigation for crop production. Basamid G provides this market with an effective alternative to methyl bromide and other custom-applied fumigants, with fewer use restrictions, permits, and worker safety training requirements. Basamid can be applied by the end user in small operations without specialized heavy equipment or incorporated into custom-built systems for soil disinfestation at a larger scale. In California, Basamid is applied primarily for weed and disease control in buffer zones and covered areas (such as hoop houses) where use of other fumigants is restricted or prohibited.

Forest Tree Nurseries

Basamid G has been used in forest tree nurseries for the production of pine and broadleaf seedlings since the early 1990's. Basamid 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.

Investigating Other Uses of Basamid® G

Seeding of roadsides, median strips, and other open areas with wildflowers has become a widely adopted method to reduce the cost of maintenance and enhance the scenic value of highways and other public lands. Existing grass and/or weeds must often be removed prior to reseeding to establish wildflowers, similar to renovation of a golf course fairway with new turfgrass. Basamid G can be applied by highway department personnel without the added expense of special equipment, custom applicators, or extra safety precautions, providing weed control equal to or better than methyl bromide fumigation (Skroch et al. 1992, Gallitano, 1993). The University of Georgia is currently evaluating Basamid for this use in cooperation with the Georgia Dept. of Transportation.

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