

METHYL BROMIDE ALTERNATIVES FOR FIELD GROWN FLOWERS

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The cut flower and ornamental bulb industry relies heavily on the use of methyl bromide (MB)/chloropicrin (Pic) as a key pest management tool. Because of the broad-spectrum pest control provided by the fumigant combination (MB/Pic), hundreds of species and thousands of varieties of flowers can be grown on relatively few acres. The primary reasons for MB dominance in the marketplace include its excellent diffusion through the soil; its effective control of pathogens, nematodes and weeds with a single application prior to crop planting; and its cost effectiveness.

Currently, only three MB alternative fumigants are registered and available for cut flower fields, and intensive research is being conducted to optimize application technologies to improve their performance and reduce costs. The registered chemical alternatives are Pic, 1,3-dichloropropene (1,3-D), and methyl isothiocyanate (MITC) generators such as metam sodium and metam potassium (Table 1). Non-registered chemical MB alternatives are iodomethane (Midas, pending registration), propargyl bromide, and sodium azide that are currently being evaluated for their efficacy to control pathogenic fungi, nematodes, and weeds. Although most alternative fumigants can be applied into soil by shank injection, new technologies were developed to apply fumigants through drip irrigation systems. Attached is technical information on drip fumigation with available MB alternative fumigants.

We evaluated several alternative fumigants applied singly or in combination by shank injection and drip fumigation. Although combinations of fumigants (Pic alone or in a mixture with 1,3-D plus metam sodium) controlled fungal pathogens in most studies, weed control has not been as successful. Iodomethane/Pic (Midas 33/67) has given similar control to MB/Pic at standard rates. Drip fumigation with Midas at 200 lbs/ac, chloropicrin at 200 lbs/ac or 1,3-D/chloropicrin (Inline) at 200 lbs/ac gave similar flower yield, and was significantly better than untreated control. Application of metam sodium (40 gal/ac) one week after Pic, InLine, or Midas enhanced weed control, and significantly reduced little mallow and clover numbers. Fusarium and pythiaceae fungi were also reduced by sequential treatments.