COMPARISON OF METHYL IODIDE, METHYL BROMIDE, AND BASAMID FOR THE CONTROL OF *FUSARIUM OXYSPORUM* F.SP. *DIANTHI* IN CARNATIONS

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During 1995 we compared methyl iodide (MI), methyl bromide (MB), and basamid (B) for efficacy in controlling wilt disease in carnations caused by *Fusarium oxysporum* f. sp. *dianthi*. MI and MB were applied as a hot gas under a 4 mil polyethylene tarp. Fumigation and aeration times were consistent with normal MB use. Basamid was applied on the soil surface and then incorporated. There were 4 replications of each treatment. One hundred cuttings were planted in each 5 X 10 foot plot. Treated plots were compared to non-treated controls.

Data collected were *Fusarium* propagule counts, weed species and numbers, number of carnation plants dying over time, and numbers of flowers produced according to grade. From these data a projected monetary return was calculated.

Results and discussion:
In reducing the numbers of propagules per gram of soil of the fungus *Fusarium oxysporum* f. sp. *dianthi* at 12 inches methyl iodide was more effective than methyl bromide or basamid. Methyl iodide reduced the propagule numbers at 12 inches to less than 0.0002% of the numbers of propagules in the control, 0.9% of those in the methyl bromide plots, and 0.07% of the propagules in the basamid plots. At 24 inches methyl iodide reduced the numbers to 19% of the control and 47% of the methyl bromide treated plots. At 36 inches the propagules in the methyl iodide treatment were 26% of those in the control and 54% of those in the methyl bromide plots. Propagules were not counted at 24 or 36 inches in the basamid treated plots. These data demonstrate that methyl iodide is more effective in reducing the numbers of propagules of *Fusarium oxysporum* f. sp. *dianthi* in soil at tested depths.

In weed control Basamid performed best with a weed reduction of 66% when compared to the control plots followed by methyl iodide which reduced weeds 47% and methyl bromide which reduced weeds only 15%.

The disease was slower to develop in plots treated with methyl iodide than in those treated with methyl bromide or basamid. In the first three months of the counting period plots

treated with methyl iodide had fewer diseased plants removed than those treated with either methyl bromide or basamid. Both methyl bromide and methyl iodide had lost about 33% of the plants by the fourth month while basamid had lost 86%. Early in the trial 100% of the control plants had been killed.

Plots treated with methyl iodide and methyl bromide produced approximately the same numbers of short and standard flowers but methyl iodide treated plots had 100 more fancy grade flowers than those plots treated with methyl bromide and 295 more than the basamid treatments. These differences in production resulted in a projected income of $245.35 from the methyl iodide treated plots compared to $213.77 earned from the methyl bromide treated plots and $84.61 from the basamid treated plots.

Discussion:
In these trials methyl iodide, performed better than methyl bromide or basamid in all categories except weed control where basamid was the best performer. These differences resulted in $31.58 more projected income from the methyl iodide treatment compared to the methyl bromide treatment and $160.74 compared to the basamid treatment. This difference in effectiveness was likely due to the propagule reduction by methyl iodide delaying the onset of disease in those plots. This delay gave the flowers a longer time to grow before infection and resulted in more fancy flowers with a resultant projected higher income.