METAM AND CHLOROPICRIN COMBINATIONS AS METHYL BROMIDE/CHLOROPICRIN ALTERNATIVES

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Introduction: Metam sodium (VAPAM®) and metam potassium (K-PAM®) programs with other fumigants, particularly chloropicrin, have shown promising results in Florida and the southeastern United States when used as methyl bromide/chloropicrin alternatives. Control of nutsedge, annual weeds, nematodes and soil-borne diseases has been generally good in IR-4 and university trials.

Metam has excellent application flexibility and is effectively applied worldwide by many methods such as chemigation, drip irrigation, incorporation with a rototiller and injection into the soil with various shank spacing/depth arrangements to control a broad spectrum of pests. However, limited movement in the soil relative to methyl bromide requires that metam be precisely applied in the soil zone where the target pests reside. In the sandy soils and multiple pest pressures that exist in Florida it is difficult to select a single application method that will consistently deliver metam to cover the entire bed profile/pest spectrum. For this reason, researchers have taken the approach of using metam in a combination program with other fumigants, each being applied differently.

Methods: One of the most consistent programs is a combination of chloropicrin and metam applied as follows:

- Chloropicrin is shank injected into the bed at a rate of 125 to 150 lbs/acre and is immediately covered with plastic mulch.
- Drip lines are laid prior to the plastic mulch being applied. Two drip lines are used on bed widths of 32 to 36 inches.
- Five to seven days after the chloropicrin application, metam is applied through the drip system at high-end use rates.
- A minimum of 1 acre-inch of water is used for the application and the drip system is designed to deliver this amount of water in a period from 4 to 8 hours duration.

Advantages of this application program are:

- More consistent overall performance due to more complete bed coverage and the combined effect of both products on key pests.
- Chloropicrin makes nutsedge more susceptible to the following sequential metam application by scarifying the nutlets and allowing entry of MITC for more complete control.

- Workers are generally not needed in the field during or after application to adjust plastic mulch or perform other tasks, so issues with Personal Protective Equipment (PPE) are minimized.
- Application of metam through drip irrigation effectively minimizes any odor or off-gassing problems.

Results: Data is still being collected at the time of this abstract. Effectiveness of the chloropicrin followed by metam program will be compared to methyl bromide/chloropicrin for control of nutsedge, nematode species and soil borne diseases. Yield data will also be presented and economic considerations will be discussed.

Preliminary information indicates that this combination program offers considerable promise as a viable alternative to methyl bromide/chloropicrin in Florida and the southeast. This program will require more planning and attention to application detail in order to be successfully implemented than the current use of methyl bromide/chloropicrin.

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