IR-4 METHYL BROMIDE ALTERNATIVE (MBA) PROGRAMS REVIEW

Jack A. Norton, Manager IR-4 MBA Programs, IR-4 Headquarters

IR-4 has been actively involved in field programs designed to discover, develop, and register viable methyl bromide alternatives for specialty crops since 1998. During this time span many large, commercial- scale trials have been run by IR-4 in key methyl bromide use states in strawberries, mulched vegetables, cut flowers, and ornamental bulbs. In 2004 these trials were placed in AL, CA, FL, MI, and NC and they involved evaluations of both EPA-registered products as the outreach/extension component of IR-4's MBA program as well as the continued evaluation of non-registered products with potential for methyl bromide replacement when used alone or in various "cocktail" combinations. Registered product combinations and application methodologies that have shown consistently excellent results, generally as good as methyl bromide/chloropicrin (MB/PIC) will be reviewed with an emphasis on how these combinations can be used to replace methyl bromide in the immediate and short term. Non-registered products that have shown varied degrees of promise in many IR-4 trials and some which are still being evaluated to determine optimum use rates and methods of application will also be reviewed as longer term alternatives to methyl bromide.

EPA-registered products extensively evaluated in the IR-4 MBA Programs include:

Telone/InLine or Chloropicrin + Vapam HL or K-Pam HL: EPA-registered products that can be used as viable replacements for methyl bromide in most areas include either Telone C-35/ InLine (1, 3-dichloropropene + chloropicrin) or chloropicrin alone in the bed followed 5-7 days later with drip applications (2 tapes per bed) of Vapam HL or K-Pam HL (metam sodium or metam potassium) in 0.75-1.0 acre inch of water.

Halosulfuron methyl (Sandea): Now registered for weed control, including *Cyperus* spp., in fruiting vegetables and cucurbits.

Trifloxysulfuron sodium (Envoke): EPA-registered for weed control, including Cyperus spp. in tomatoes.

Fosthiazate: EPA-registered but labeling issues must be resolved before it can be used in methyl bromide replacement programs.

Products pending EPA-acceptance as methyl bromide alternatives at the time of preparing this abstract include:

Basamid (dazomet): Basamid has been used as a bed top treatment with Telone/InLine or chloropicrin in the bed in many trials in IR-4 strawberry and tomato programs and with consistently good results comparable to MB/PIC.

Iodomethane: Iodomethane combinations with chloropicrin (50:50 and 33:67) have been consistently equal in biological performance to MB/PIC when rates are above 300 lbs ai per acre. These products provide broad spectrum control of nematodes, fungal pathogens and weeds

Fosthiazate: This product is now EPA-registered as a product to control nematodes when used in combinations with chloropicrin for the control of fungal pathogens and an acceptable weed control partner. Labeling issues which prevent it from being used are being investigated by the registrant and IR-4.

MULTIGUARD™PROTECT: This furfural based product is pending acceptance for greenhouse use in non-food crops. It provides excellent control of nematodes and fungal pathogens but is weak against weeds as a pre-plant treatment. This product is under extensive evaluation for label expansions in many food and non-food crops.

Products showing promise as MBA's in IR-4 Programs include:

Propylene Oxide: This product is registered for the post harvest protection of stored agricultural commodities (nutmeats, spices, cocoa, in-shell nuts, and cocoa beans) and there are a number of label amendments pending EPA-acceptance which will significantly expand the use of propylene oxide as a replacement not only for methyl bromide but also for ethylene oxide. This product also performs very well against weeds, nematodes and fungal pathogens when used as a soil fumigant at rates of 45 gallons per acre or more.

SEP-100: IR-4 has obtained excellent results with this product during the past two seasons whereas in past years results were erratic. This has come about through a better understanding of how best to apply it.

New Experimental Product Entries in IR-4 MBA Programs:

Products entering the IR-4 MBA programs for the first time in 2004 include:

STAN Seed Treatments- the STAN seed treatments include a nematicide plus protective fungicides and may be useful in protection of plants from early pest damage to the extent that the crops can compete favorably over later pest invasions. Results are not available at the time of preparing this abstract.

Sulfentrazon- Sulfentrazone is under evaluation for selective weed control in IR-4's 2004 tomato, pepper and cucurbit programs.

F3825 200CS—A specific nematicide under evaluation in IR-4's MBA programs for the first time in 2004.