REVIEW OF IR-4 METHYL BROMIDE ALTERNATIVE PROGRAMS FOR MINOR CROPS

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Methyl bromide has been identified as a chemical that depletes the earth's ozone layer, and thus its use is being phased out. The United States is in the process of implementing a methyl bromide use reduction leading to a complete ban for soil fumigation uses by 2005. The USDA's Agricultural Research Service (ARS) has been investigating alternatives for several years. The research has focused primarily on the standard fumigant products (metam sodium, Telone, and chloropicrin) and fumigant alternatives such as biological control, host resistance, natural chemicals, cultural control, soil amendments and systems approaches.

IR-4 began addressing methyl bromide alternatives in 1998. Work began on a project to identify safe product that have potential to fill the void created when methyl bromide is phased out. Several methyl bromide alternatives programs for minor crops are underway and others are planned. These programs include soil fumigation studies with methyl bromide alternatives in production strawberries and fresh market tomatoes. IR-4 is also planning programs for strawberry nurseries and in cut flowers. IR-4's role for these crops is to form alliances with university and USDA scientists, grower organizations, chemical company representatives and producers to conduct research leading to acceptable methyl bromide replacements. IR-4 is assisting these alliances to find the funding needed to conduct the research. IR-4 is also involved in the development of methyl bromide alternatives for controlling pests in stored food products including raisins, other dried fruits, and tree nuts.

IR-4 is also facilitating cooperative efforts between chemical companies and university researchers in Florida to address the critical problems facing minor crop producers as methyl bromide is phased out. Research on metam sodium will be conducted to determine the causes of inconsistent performance under Florida conditions. This research, funded by the Metam Sodium Task Force, will be conducted by scientists at the University of Florida, Gainesville. Another project involves chemical companies with selective herbicides used solely in vegetable crops. Dow AgroSciences will fumigate Florida research plots with Telone C-35. University of Florida weed scientists will superimpose herbicide treatments over the fumigated plots and evaluate the herbicide for control of weeds not controlled by Telone. Chemical companies funding this research have a vested interest in registering their products as methyl bromide alternatives. IR-4

would assist these companies in obtaining fast track registration status for promising products and by running residue studies needed to meet registration requirements.

Strawberries: Status Of Current Programs

The field phases of IR-4's methyl bromide alternative trials in strawberries have ended. Results from two trials in California and two in Florida are being compiled. Preliminary data indicate that iodomethane/chloropicrin and several treatments including Telone combined with either metam sodium or Basamid (dazomet) gave control equal to or better than the methyl bromide/chloropicrin standard. These treatments were especially effective in protecting strawberry plants from heavy sting nematode (*Belonolaimus longicaudatus*) pressure in Florida. In the Florida trials, Telone C-35 was shank-injected into pre-formed beds at 35 gallons per acre and followed with Basamid at 200 lbs. per acre or metam sodium (42% active ingredient) at 37.5 gallons per acre applied to bed surfaces. These treatments were mulched with clear plastic following the Basamid and metam sodium applications. In the California trials, INLINE (Telone C-35 EC) was applied by drip irrigation under plastic mulch and used in combinations with Basamid and metam sodium. Results from these combinations were good. Two formulations of iodomethane/chloropicrin were also evaluated in Florida and California An additional treatment involving iodomethane without chloropicrin was evaluated in California. Both formulations (67/33 MI/PIC and 50/50 MI/PIC) and the iodomethane without chloropicrin treatment in California were shank injected and mulched with plastic. Rates used were 350 pounds per acre for the 67/33 formulation, 250 pounds per acre for the 50/50 formulation and 116 pounds per acre for iodomethane alone, in the California trials. All of the treatments resulted in yields statistically equal to or better than was obtained from the methyl bromide/chloropicrin standard treatment. Other treatments included in the strawberry program were combinations of Enzone plus chloropicrin and metam sodium, and DiTera plus chloropicrin and metam sodium. Metam sodium was also evaluated alone. Results from these trials will be presented by Dr. Michael Nelson, Plant Sciences, Inc., Watsonville, California in another session of the Conference.

Tomatoes: Status Of Current Programs

IR-4's summer 2000 methyl bromide alternatives program in tomatoes involves two trials each in the states of California and Florida. The Florida trails were initiated in March 2000 and have now been completed. The trials in California were established about two months later and are still ongoing. Most of the products evaluated in the IR-4 methyl bromide alternatives program for strawberries were also included in the tomato program and a number of new product entries were included (fosthiazate, Plant Pro 45 and propargyl bromide). The results from these trials will be presented in another session of the Conference by Dr. Bernard Olsen, Plant Sciences, Inc., Watsonville, California.

An overview of all IR-4 methyl bromide programs currently underway and planned for the future will be given in this presentation.