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

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

IR-4 began addressing methyl bromide alternatives for minor crops in 1998 through cooperative efforts with sponsoring chemical companies, contract research organizations in California and Florida, and scientists working on this problem within the university systems of California and Florida and the USDA/ARS. Company sponsored programs include large plot commercial evaluations in strawberries and tomatoes in California and Florida. A total of 12 trials have been completed or are underway in strawberries and eight large plot company sponsored trials have been completed or are underway in fresh market tomatoes. Results to date indicate that there are several products and product combinations that could replace methyl bromide in strawberries and tomatoes based on efficacy against plant parasitic nematodes, fungal pathogens and weeds. Other products, while highly effective, have caused excessive phytotoxicity in the manners tested but have performed without causing excessive crop injury when other application methods were employed.

Results from several products evaluated in IR-4's company sponsored programs are as follows: Iodomethane: Good crop safety in tomatoes and strawberries and good control of fungal pathogens, nematodes, and weeds have been obtained from iodomethane alone and in formulations with chloropicrin in 60:40 and 50:50 ratios. Propylene Oxide (PPO): Good control of heavy sting nematode populations has been obtained in Florida strawberries. PPO performs best shank-applied. Additional work is underway to define optimal use rates. PPO is registered for control of stored pests and label expansion projects are underway by IR-4. Plantpro 45 and Plantpro 20EC: Excellent control of soilborne diseases and nematodes has been obtained with these products. Both products need a weed control partner. They are safe when applied pre-transplant, but have been phytotoxic when used post-transplant. IR-4 is currently evaluating rates believed to be safe and effective when applied post-transplant in tomatoes and strawberries. These products are good MBA candidates. Enzone: This product has been evaluated in IR-4 strawberry and tomato programs in combination treatments with herbicide partners. Results pre-transplant have been excellent. Post-transplant applications are too phytotoxic and more research is needed if this use pattern is to be developed. Fosthiazate: This product is an official MBA candidate for nematode control and it has given excellent results in combination treatment with soil applied fungicide fumigants and weed control partners. Basamid (dazomet): Results from Basamid (dazomet) have been consistently excellent in IR-4 trials in combination treatments with several different partners. It has official MBA regulatory status. DiTera ES: This is a biopesticide that has given excellent results in combination treatments in strawberries in California and Florida. Messenger, Rootshield and Help (ReZist + stabilizer): These products

are Systemic Acquired Resistance (SAR) compounds which have had limited evaluations in strawberries but with encouraging results. These products must be used in combination with herbicides. MULTIGUARD ™ Products: Good to excellent control of fungal pathogens and nematodes has been obtained in laboratory/greenhouse studies. They are good potential MBA candidates. Metam Sodium: The standard weed control product when "partnered" with most other IR-4 MBA candidates. Results have been consistently excellent in combinations with chloropicrin and Telone/Inline when used for weed control. Results from metam sodium alone have been inconsistent and this is being addressed in highly organized and concentrated research by the Metam Sodium Task Force. Chloropicrin EC: This product has had limited testing in IR-4 trials. Results have been excellent when used with metam sodium in drip applications. Telone/InLine: Consistently excellent results. Lack of acceptable weed control is a weakness for Telone/InLine.

IR-4 has participated in seeking funds for methyl bromide alternative research by other scientists. One of the roles played by IR-4 was the formation of alliances for cut flowers and other commodities. Alliance members provided support by pledging matching fund contributions making it possible to obtain financial support from USDA CSREES. IR-4's role as a facilitator in the seeking of USDA and EPA methyl bromide alternative grants will be discussed.

Results from IR-4's 2001/2002 methyl bromide alternative program in strawberries and the 2001 program in tomatoes will be discussed in detail by personnel from Plant Sciences, Inc., Watsonville, California. An overview of all IR-4 methyl bromide alternative programs currently underway and planned for the future will be given in this presentation.