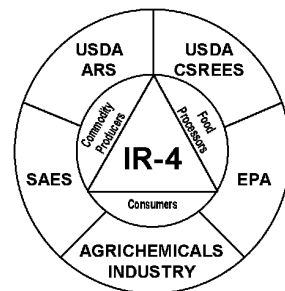


IR-4 REPORT CARD



A National Agricultural Program to Clear Safe and Effective Pest Control Agents for Minor Uses

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IR-4 Methyl Bromide Alternatives Program

Results from IR-4 Methyl Bromide Alternatives Trials in Florida, Fall 1999 Program

Introduction

IR-4 established four methyl bromide alternative (MBA) trials in strawberries during the fall 1999 planting seasons in California and Florida. Two large scale trials were established in each state. Reported in this Report Card is marketable berry yield and the marketable berry value of the strawberries harvested full season from the two trials in Florida. Similar data are being collected from the two test sites in California but are not reported here because the harvest season in California is still underway. Results from the California trials will be reported in the winter edition of the Newsletter.

Data reported in this article show only the effects of the treatments on marketable berry yield and the value of the berries harvested from plots treated with the various methyl bromide alternative treatments. Additional data were collected from these trials including treatment effects on weed control, fungal pathogens, nematodes, and plant growth and vigor. These data are too extensive to be included in this article but will be reported in full in the final study report scheduled for completion in November/December, 2000. These data will be provided on request to anyone interested in receiving it after the report is completed.

The two Florida test sites were located in the primary strawberry production area centered in the Dover/Plant City area of the state. The farms on which the trials were run were located on Favorite Farms and on Chancey Farm, owned and operated by Marvin Brown and Rick Chancey, respectively. The two trials are referred to either as the Brown Farm or the Chancey Farm throughout this article.

Several companies with potential methyl bromide alternative products supported this research by providing financial aid and through direct participation during the period that applications were being made. The companies involved in the program are named in the Acknowledgements Section of the article. Plant Sciences, Inc., Watsonville, California, and Ag Consulting, Inc., Zellwood, Florida were contracted by IR-4 to conduct the research. All data referred to in this report were collected by Ag Consulting, Inc. because the trial locations are in Florida. Plant Sciences, Inc. analyzed the data and provided the graphs of the data as reported in this article.

Materials and Methods

The products evaluated in the Florida trials included iodomethane plus chloropicrin (MI/PIC) at two rates; Enzone at two rates in combination with chloropicrin and metam sodium; Basamid (dazomet) plus Telone C-35; metam sodium alone at two rates (lower rate included only for weed control and used as “check” for evaluations against nematodes and fungal pathogens); and Telone C-35 plus metam sodium. These treatments were compared to a methyl bromide/chloropicrin (MB/PIC) standard, the aforementioned metam sodium “check”, and an untreated control. Rates and application sequences are provided in the protocol which can be reviewed by referring to the IR-4 website (<http://www.cook.rutgers.edu/~ir4>) and they will also be provided in the final report when completed. They are not included in this article due to space limitations. The rates used and the application methods were what each company believed appropriate for its products to provide control equivalent to MB/PIC and not be harmful to the crop.

Details on ground preparation, previous cropping histories, plot descriptions, experimental design, climatological information, soil characterization data, and efficacy evaluations will be provided in the final report to be released in November/December 2000 but are much too extensive to include in this article. For this article, however, it is appropriate to state that the trials were conducted on soils characteristic to strawberry production in Florida. Also, common cultural practices including bedding practices, mulching, irrigation and fertilizer practices were followed. Plot sizes were single beds 75 feet long. All treatments were made simulating commercial application. All treatments were replicated four times in a randomized complete block design. Strawberry varieties were different between sites. The cultivar, Sweet Charlie, was used at the Brown Farms location. The Camarosa cultivar was used at the Chancey Farm test site. Another difference was that plug plants were used on the Brown Farms site and bare rooted plants were used on the Chancey Farm.

Results and Discussion

Refer to the graphs that are attached to this report. These graphs include marketable berry yields and the value of the strawberries harvested from the two Florida test sites. Each treatment is discussed separately by product or product mix and compared directly to the MB/PIC standard and untreated check.

Iodomethane: Iodomethane/chloropicrin was among the leading treatments with results equal to the MB/PIC standard in three of the four treatments tested, both in yields of marketable berries and value of the berries harvested. In the Brown Farm trial, the lower rate of iodomethane/chloropicrin was not statistically equal to MB/PIC in berry yield and value, but this treatment was equal to the higher rate of iodomethane/chloropicrin in effect making all MB/PIC treatments equal in the two trial program.

Enzone + Chloropicrin + Metam Sodium: Combinations of Enzone + chloropicrin + metam sodium were biologically active against the pest spectrum encountered in these trials as is evident in the statistically significant yield and berry value increases compared to the untreated combo and metam sodium check treatments. However, the Enzone treatments failed to provide berry yields and berry values statistically equal to MB/PIC except in the lower rate treatment at the Chancey Farm where results were equal to the MB/PIC standard. We believe that early stunting caused the generally lower yields and berry values in these combination treatments. As the season progressed, earlier stunting began to disappear and in the case where the lower rate yielded statistically the same as the MB/PIC standard, the plants overcame the transient phytotoxic effect. Combinations involving Enzone, chloropicrin, and metam sodium will be evaluated again in the fall 2000 program but rates and application sequences will be changed to potentially obviate the transient phytotoxicity observed in the fall 1999 program.

Basamid + Telone C-35: This combination was an excellent treatment in both trials and it actually provided significantly higher yield and berry value than the MB/PIC standard in the trial run on the Brown Farms site. The difference in yield and value per acre for this treatment versus the MB/PIC standard was 331 flats of strawberries per acre and nearly \$4300 per acre higher value.

Metam Sodium: The metam sodium “stand alone” treatment failed to provide berry yield and values equal to the MB/PIC standard in both trials. However it is interesting to note that in the trial run on the Brown Farms site that plots treated with metam sodium alone produced berry yields and berry values statistically equal to the lower rate of iodomethane/chloropicrin, one of the leading treatments in this trials. In the trial on the Chancey Farm, metam sodium alone was one of the weaker treatments in terms of marketable yields and berry value. The low rate of metam sodium alone (metam sodium check) provided good control of annual weeds but had little or no effect on sting nematodes and/or fungal pathogens which was reflected in poor yields and low value of the harvested berries in this particular treatment. Some of the leading treatments in both trials included the metam sodium low rate that was used for weed control (Enzone + chloropicrin + metam sodium and Telone C-35 + metam sodium). We urge the reader to understand that the low rate of metam sodium (37.5 gal/Acre) was used only for weed control and it performed well for that purpose. This rate did not protect the plants from sting nematode, however, and that was the reason for the relatively low yield from this treatment.

Telone C-35 + Metam Sodium: This combination was excellent and statistically equal to the MB/PIC standard in both trials as reflected in harvested berries and berry value. The only treatment that performed better was the Telone C-35 + Basamid treatment in the trial run on the Brown Farms site.

Conclusions

There are several treatments in IR-4’s Florida MBA trials that appear to be viable replacements for MB/PIC and yet other treatments that will require additional testing to optimize performance and/or avoid unacceptable crop phytotoxicity. Treatments showing the most promise from these trials were the iodomethane/chloropicrin treatments and Telone C-35 in combination with either Basamid or metam sodium. Treatments needing modification and reevaluation include the Enzone/chloropicrin/metam sodium combinations and the metam sodium “stand alone” application.

Acknowledgements

Special recognition is given by IR-4 to several persons instrumental in the success of these trials. These include Mr. Bob Johnson, Ag Consulting, Inc., who was responsible for coordinating all aspects of the field programs in Florida and to Dr. Michael Nelson, Plant Sciences, Inc. for protocol preparation and the analyses and reporting of the data compiled from these trials. These trials would not have been possible without the excellent cooperation of the very progressive growers who allowed us to conduct these trials on their farms, Mr. Marvin Brown, Favorite Farms and Mr. Rick Chancey, Chancey Farms, both from Dover, Florida. Also special recognition is given to Dr. Joseph Noling, Nematologist, University of Florida, Lake Alfred and to Dr. James Strandberg, Plant Pathologist, University of Florida, Apopka for their valuable assistance with these studies. Special thanks is also given to the IR-4 MBA Advisory Board for input into development of the test protocol and for critiquing the program on an ongoing basis. Also special thanks is given to the several companies who supported this research, including Tomen Agro, Dow AgroSciences, BASF, Entek Corporation, Niklor Corporation, and the Metam Sodium Task Force.