

METHYL BROMIDE ALTERNATIVES (MBA) PROGRAM

IR-4 2001-2002 Field Evaluations of Alternatives to Methyl Bromide for Pre-Plant Soil Fumigation in California Strawberries

Final results have been obtained from the two IR-4 methyl bromide alternatives trials run in California during the 2001/2002 season. These trials were conducted by Plant Sciences, Incorporated, Watsonville, CA and they were located near Oxnard (Ventura County) and Salinas (Monterey County), California. Strawberry varieties utilized in the trials were 'Camerosa' at the Oxnard site, and 'Diamonte' at the site near Salinas.

Treatments: General treatment descriptions for the two test sites, beginning with the Oxnard site, were Iodomethane/Chloropicrin(50:50) drip-applied at 400 lbs per acre in 2 acre inches of water; three component mixtures utilizing Enzone+Chloropicrin EC+ Metam Sodium in two separate treatments(different Enzone formulations). In these treatments Metam Sodium was used at 37.5 gallons per acre and applied in 1000 gallons of water per acre as a bed top spray for weed control. The Enzone formulations were co-injected in 2 acre inches of water following the metam sodium bed top treatment; Chloropicrin EC drip-applied at 300 lbs per acre in 2 acre inches of water; Telone C-35 (mistakenly used instead of InLine) drip-applied at 32 gallons product per acre in 2 acre inches of water; Metam Sodium drip-applied at 75 gallons product per acre in 2 acre inches of water; a split application of Metam Sodium both drip-applied. The first application was at 45 gallons per acre in 1.5 acre inches of water. The second application was made 6 days later at 30 gallons per acre in 1 acre inch of water; PlantPro45+Metam Sodium with the PlantPro45 product applied by drip at 150 gallons per acre in 1.5 acre inches of water and followed with an additional 0.5 acre inches of water as a "flush". The PlantPro45 treatment followed a bed top application of Metam Sodium applied at 37.5 gallons of product per acre in 1000 gallons of water per acre for weed control; PlantPro 20EC was applied at X and 2X rates of 18 and 36 gallons product per acre in the same manner as described for PlantPro45. These treatments also followed the Metam Sodium treatment as described above for the PlantPro45 treatment; three component mixtures utilizing fosthiazate 500EC, Chloropicrin EC and Metam Sodium were also evaluated. The Metam Sodium was used at 37.5 gallons per acre for weed control as described above for the other treatments. The fosthiazate 500EC was drip applied at 4.5 lbs ai per acre with Chloropicrin EC at two different rates of 200 and 240 lbs per acre in 2 acre inches of water; a three component mixture utilizing DiTera

DF with Chloropicrin EC and Metam Sodium was also evaluated. The Metam Sodium and the Chloropicrin EC were applied as described above in the other treatments. Chloropicrin EC was used at 240 lbs per acre in this particular combination; Basamid was evaluated in a three way combination treatment with Telone C-35 (mistakenly used instead of InLine) and Chloropicrin EC. The Basamid was used as a bed top treatment at 200 lbs product per acre incorporated with 1000 gallons of water per acre. Telone C-35 applied at 10 gallons per acre was co-injected with Chloropicrin EC at 200 lbs per acre in 2 acre inches of water. The above treatments were evaluated against standard shank-applied bed fume and flat fume applications of Methyl Bromide/ Chloropicrin (67:33) at 350 lbs per acre and an untreated check.

Treatments at the Salinas test site were identical to those used at the Oxnard site except additional treatments were included. These treatments were Propozone applied at 30 gallons per acre shanked into the beds, MULTIGUARD™FFA drip-applied at 400 and 600 lbs per acre in 2 acre inches of water and MULTIGUARD™FFA PLUS drip- applied at 400 lbs in 2 acre inches of water.

Soils utilized in the trials were sandy loam and clay loams at the Oxnard and Salinas sites, respectively. Bed configurations were 40 inch bed tops with 4 rows of strawberries planted across the rows in Oxnard, and 23 inch bed tops and two rows of strawberries at the Salinas site. Two drip tapes per bed were utilized at the Oxnard site while a single tape was used in Salinas.

Additional treatment detail can be seen in the IR-4 2001/2002 Strawberry Protocol. This protocol can be viewed by going to IR-4's website (<http://www.cook.rutgers.edu/~ir4>).

Data Collection:

Data were collected on strawberry plant growth/vigor (vigor ratings/diameter measurements), control of weeds (using seeded and indigenous populations), and strawberry marketable and cull fruit yields for the full harvesting season. The final report when issued will contain all data collected from these trials but for the purpose of this article only marketable yields and weed control at the two trial sites are reviewed.

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Results: Marketable Fruit Yields

—Treatments which produced a yield statistically comparable to that of both the Methyl Bromide/Chloropicrin standards (bed-shank and flat fume), at both test sites were Iodomethane/Chloropicrin (50:50), Chloropicrin EC alone, and Telone C-35/InLine.

Note: Applying the Telone C-35 through drip tapes at the Oxnard site did not result in reduced yields even though this product was mistakenly applied instead of the emulsified InLine product.

—Treatments which produced a yield comparable to both Methyl Bromide/Chloropicrin standards at the individual trial sites were DiTera+Chloropicrin+Metam Sodium at the Oxnard site, and Fosthiazate 500EC+Chloropicrin EC+Metam Sodium and Basamid+InLine(with additional Chloropicrin EC) at the Salinas trial site.

—Treatments which produced a yield comparable to the Methyl Bromide/ Chloropicrin bed-shank standard at the Oxnard site were Basamid+InLine (with additional Chloropicrin EC), Metam Sodium drip-applications single and split applications, Fosthiazate+ChloropicrinEC+Metam Sodium, and Basamid+Telone C-35 (with additional Chloropicrin EC).

Results: Weed Control

At the Oxnard trial site all treatments provided significant control of Poa annua (relative to the untreated check) and control of this weed were comparable to the control given by the Methyl Bromide/Chloropicrin standard. At this test site,

only the Telone C-35 treatment significantly reduced the incidence of Malva parviflora relative to the untreated check. However, all of the Methyl Bromide alternative treatments significantly reduced the incidence of this weed species relative to the Methyl Bromide/Chloropicrin standard which generally does not provide commercially acceptable control of this weed in strawberries.

At the Salinas trial site, all treatments except the lower rates of MULTIGUARD™ provided significant control of Poa annua. The higher MULTIGUARD™FFA rate did give significant Poa annua control. These products have given significant control of small seeded annual weeds, including Poa annua in other IR-4 Methyl Bromide Alternatives trials and, consequently, optimum use patterns for maximum weed control effectiveness is still under investigation.

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Article by Jack Norton