EFFECT OF BAND OR BED TOP APPLIED BASAMID ON STRAWBERRY WEED CONTROL AND YIELD

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Previous work has found that Dazomet (Basamid) applied to the strawberry bed top improved the weed control provided by chloropicrin (Pic) alone. However, to the best of our knowledge banded applications of Basamid have not been evaluated for strawberry pest control. The objective of this work was to compare the weed control efficacy and strawberry yields when Basamid is applied to the entire bed top or banded under the drip tapes.

Methods

Field experiments were conducted at Spence farm near Salinas, CA, and at Monterey Bay Academy near Watsonville, CA. Basamid application was done on Oct. 8 at Watsonvile and Oct. 20 at Salinas. Drip fumigation was preformed two days after the Basamid application, Basamid at 200 lbs/A was broadcast over the bed top and incorporated with a rake (Basamid-R), or was applied as two bands under the drip tapes (Basamid-B). Basamid-R was activated by light sprinkler irrigation and Basamid-B activated by the drip irrigation/fumigation. Materials applied through the drip irrigation system were Pic at 200 lbs/A, and methyl bromide/chloropicrin (MbPic) at 200 lbs/A. Half of the Basamid plots were also treated with 200 lb/A of Pic. An untreated check was also included. Plots were one 54-inch bed wide by 75-feet long at Salinas, and 35-feet long at Watsonville. Treatments were replicated five times at both sites. Clear tarp was installed at the time of fumigation. Strawberry 'Diamante' was transplanted Nov. 13 and 22, 2004, at Watsonville and Salinas, respectively. Yield was estimated by harvesting 24 foot sections at Spence and 35 foot at Watsonville and sorting the fruits to marketable and culls.

At both sites, nylon mesh bags with weed seeds were buried two inches deep at the center and sides of the beds prior to fumigation and retrieved 3.5 weeks after fumigation. Weed seeds included were little mallow, purslane, chickweed and knotweed as well as yellow nutsedge tubers. Seed viability was tested with tetrazolium. At Salinas, weed densities on 25-inch wide bed tops were measured on Dec. 12, 2004, Feb. 1, Mar. 31 and June 28, 2005. At Watsonville, weed densities on the 24-inch wide bed top were measured on Jan. 31 and Mar. 17, 2005.

Results and discussion

Yied: in both sites (Salinas and Watsonville) all fumigants significantly improved the total and marketable yield compared to the non-fumigated check (Table 1). Plots treated with Basamid B + Pic had the highest yield at Salinas, and plots treated with Basamid R + Pic had the highest yield at Watsonville (Table 1).

Weed control: The most common weeds at Salinas were annual bluegrass, common chickweed, pigweed (spp.), common purslane and shepherd's purse (data shown only for bluegrass and chickweed). Effective control of resident weeds was achieved by all fumigants. Weed control with Basamid was better when mixed with Pic. than when applied alone. For control of resident weeds, there was little difference between Basamid-R and Basamid-B. However, seed and tuber viability assays indicate that Basamid-R provided better weed control than Basamid-B (Table 2).

At Watsonville, Basamid-R provided poor control of resident weeds compared to Basamid-B (Table 3). Conversely, Basamid-R controlled nutsedge tubers better than Basamid-B. Performance of Basamid was better when mixed with chloropicrin than when applied alone.

Table 1. Effect of band or bed top applied Basamid with and without Pic. on strawberry yields at Salinas and Watsonville, CA in the 2004-05 season.

Treatment	Rate	Salinas		Watsonville	
		Marketable	Total	Marketable	Total
		----------100's lb /Acre----------			
Basamid-R	200	21.9 ab	32.7 c	16.6 c	31.8 dc
Basamid-R + Pic	200+200	25.0 a	36.8 abc	21.0 a	41.6 a
Basamid-B	200	22.6 ab	34.2 abc	17.8 bc	34.7 bc
Basamid-B + Pic	200+200	25.2 a	38.0 a	19.8 ab	38.8 ab
Pic	200	21.5 b	33.3 c	20.0 ab	37.8 ab
MbPic	200	24.6 ab	37.3 ab	21.5 a	41.9 a
Untreated	0	15.2 c	24.3 d	15.4 c	28.5 d
ANOVA					
P-value		<0.001	<0.001	0.001	<0.001
LSD		3.2	4.1	2.9	4.1

Table 2. Effect of band or bed top applied Basamid applied with and without Pic on resident weed densities and weed seed viability at Salinas, CA in the 2004-05 season.

Treatment	Rate	Resident weed densities			Seed and tuber viability		
	Lbs / Acre	Total	Chickweed	Bluegrass	Chickweed	Knotweed	Nutsedge
		----------1,000 /acre----------			---------- Viability (%) ----------		
Basamid-R	200	14.7 b	1.2 b	0.8 b	1.2 c	10.8 d	24.0 cd
Basamid-R + Pic	200 + 200	6.3 b	0.0 b	0.0 b	4.0 c	11.0 d	20.0 cd
Basamid-B	200	15.3 b	0.4 b	0.1 b	42.3 b	77.3 ab	69.5 a
Basamid-B + Pic	200 + 200	11.7 b	0.6 b	0.5 b	5.7 c	27.5 d	32.0 bcd
Pic	200	20.5 b	2.9 b	0.1 b	14.4 c	71.5 bc	49.0 b
MbPic	200	11.1 b	0.8 b	1.5 b	2.9 c	25.1 d	15.8 d
Untreated	0	88.8 a	13.7 a	21.6 a	87.4 a	92.8 a	81.0 a

Table 3. Effect of band or bed top applied Basamid applied with and without Pic, on resident weed densities and weed seed viability at Watsonville, CA in the 2004-05 season.

Treatment	Rate	Resident weed densities			Seed and tuber viability		
	Lbs / Acre	Total	Knotweed	Bluegrass	Chickweed	Knotweed	Nutsedge
		----------1,000 / acre----------			---------- Viability (%) ----------		
Basamid-R	200	526.4 b	141.1 bcd	100.1 b	22.1 bc	19.0 bc	27.0 de
Basamid-R + Pic	200 + 200	22.5 d	0.0 e	1.6 c	4.7 d	2.4 c	19.5 de
Basamid-B	200	102.1 cd	28.8 de	7.2 c	4.8 d	15.4 bc	44.5 bc
Basamid-B + Pic	200 + 200	21.7 d	0.4 e	0.4 c	4.0 d	1.5 c	15.0 e
Pic	200	250.9 bcd	128.3 cde	37.0 c	0.6 d	19.6 bc	33.7 cd
MbPic	200	44.4 d	9.2 de	2.8 c	7.2 cd	0.9 c	29.8 cde
Untreated	0	959.4 a	351.4 a	107.0 b	68.2 a	72.7 a	59.5 ab