

Section VI. Bee Hazard

EFFECTS OF DIFFERENT CHEMICALS ON HONEY BEE FORAGING OF WHITE DUTCH CLOVER

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This study was designed to evaluate the effects of applying X-0 Deodorizer, 2,2,4 trimethyl pentane + diethylphthalate, Uran, Get Off My Garden, Rescue Dog & Cat Repellent, Alaska Fish Fertilizer, curcumin, mugwort, peppermint, myrrh, 2-ethylhexylamine + 2,2,4-trimethylpentane and Garlic Barrier on honey bees (*Apis mellifera*) when applied to White Dutch Clover bloom.

Plots were established in a commercial field of White Dutch Clover at Touchet, WA. Plot size 0.01 acre arranged in a randomized complete block design with 4 replications. Applications were done with a R&D CO₂ pressurized sprayer at a rate of 26 gallons of water per acre, using a hand-held boom with 4 (LF3) nozzles. Applications were done between 8 and 11:00 am. Two different tests were done and the materials used and rates are given in the tables.

Evaluations were made by slowly walking through the plots and recording the number of honey bees (20 seconds/20 feet/6 foot swath) at 1 and 3 hours after application.

Results:

In the first test there were no significant differences between any of the treatments as compared to the untreated check at 1 or 4 hours after application (Table 1). The 2,2,4 trimethyl pentane + diethyl phthalate mix caused significant petal burn.

In the second test there were no significant differences between any of the treatments as compared to the untreated check at 1 hour after application (Table 2). However, bloom in the plots was very poor and the test was discontinued.

Conclusion:

Most of the chemicals tested did reduce the number of bees foraging clover for a short period of time. However, these differences were not significant. Also, any repellent would have to repel bees for at least one day to reduce bee poisoning. Out of the group of chemicals tested this year, none show great promise as a honey bee repellent.

Table 1. Effect of materials applied to blooming White Dutch Clover on honey bee (HB) foraging and percent reduction from check. Touchet, WA. 1993.

Treatment	ml/L	Mean No. HB/plot/20 seconds			
		post-application			
		1 hr	% red	4 hr	% red
X-0 Deodorizer	300	5.3a	12	5.0a	21
2,2,4 trimethylpentane	50	2.3a	62	4.0a	37
+ diethyl phthalate	50				
Uran	150	2.0a	67	3.8a	40
Get Off My Garden	50	5.0a	17	4.8a	24
Rescue	100	3.8a	37	4.3a	32
Alaska Fish Fertilizer	225	3.8a	37	3.8a	40
Garlic Barrier	100	4.5a	25	6.5a	0
Untreated check	--	6.0a	--	6.3a	--

Means within a column followed by the same letter are not significantly different at the $P = 0.05$ level, Newman-Keuls studentized range test.

Table 2. Effect of materials applied to blooming White Dutch Clover on honey bee (HB) foraging and percent reduction from check. Touchet, WA. 1993.

Treatment	ml/L	Mean No. HB/plot/20 seconds	
		post-application	
		1 hr	% red
Garlic Barrier	250	2.3a	30
Curcumin	1.25 gm	1.0a	70
Mugwort	3.75	3.0a	9
Peppermint	3.75	3.3a	0
Myrrh	2.5	3.0a	9
2-ethylhexylamine +	19	2.0a	39
2,2,4-trimethyl pentane	25		
Untreated check	--	3.3a	--

Means within a column followed by the same letter are not significantly different at the $P = 0.05$ level, Newman-Keuls studentized range test.