Section III. Bee Poisoning

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Tests were conducted with insecticides applied with a R&D CO_2 pressurized sprayer at a rate of 26 gallons per acre using a hand-held boom with 4 (LF3) nozzles applied to 0.01 acre plots of first or second growth alfalfa. Field-weathered residual test exposures were replicated 4 times with 4 foliage samples per treatment and time interval. Samples consisting of about 500 cm of foliage taken from the upper 15 cm portions of plants and clipped to I-inch lengths were placed into each plastic petri dish whose tops and bottoms were separated by a wire screen.

Worker honey bees (*Apis mellifera*) (HB) were obtained from the top frames of colonies and anesthetized with CO₂ to facilitate handling. Alfalfa leafcutting bees (*Megachile rotundata*) (LB) were emerged in an incubation chamber at 85° F., allowed to fly in the lab, and collected off the windows. Alkali bees (*Nomia melanderi*) (AB) were collected from nesting sites and chilled at 35° F. to facilitate handling. Residual test exposures were replicated 4 times by caging 30 to 40 worker HB, 20 to 25 LB or 20 to 25 AB with each of four foliage samples per treatment and time intervals. Bees in cages were fed syrup in a wad of cotton and the bees held at 75 degrees F. for 24 hour mortality counts.

Abbott's formula was used to correct for the natural mortality. Our work over the past 35 years has shown that materials or rates of materials that cause less than 25% mortality with 2 hour residues can probably be applied during early morning with little or no hazard to bees and those that cause less than 25% mortality with 8 hour residues can probably be applied during late evening with little or no hazard to bees.

Results and Conclusions:

Azatin is non-hazardous to honey bees, alkali bees or alfalfa leafcutter bees if applied in the late evening or early morning when bees are not actively foraging. Dibrom + Canola oil is non-hazardous to alkali bees or alfalfa leafcutter bees if applied in the late evening when bees are not actively foraging. Lannate + Canola oil is non-hazardous to alkali bees or alfalfa leafcutter bees if applied in the late evening or early morning when bees are not actively foraging. Lannate + Canola oil is non-hazardous to alkali bees or alfalfa leafcutter bees if applied in the late evening or early morning when bees are not actively foraging.

Regent 80WG at 0.025 lb (AI)/acre or less is relatively non-hazardous to honey bees if applied in late evening or early morning. Regent 80WG at 0.2 lb (AI)/acre or less is relatively non-hazardous to alkali bees if applied in late evening or early morning.

Regent 80WG at 0.005 lb (AI)/acre or more is hazardous to alfalfa leafcutter bees if applied in early morning. Regent 80WG at 0.025 lb (AI)/acre or less is relatively non-hazardous to alfalfa leafcutter bees if applied in late evening.

Spinosad is non-hazardous to honey bees if applied in the evening or early morning when bees are not actively foraging. There were no differences between the formulations in honey bee hazard. Spinosad 1.6% WP at all rates was non-hazardous to alkali bees if applied in the evening or early morning when bees are not actively foraging. Spinosad 1.6%WP at the two lower rates was non-hazardous to alfalfa leafcutter bees if applied in the evening or early morning when bees are not actively foraging. Spinosad 1.6%WP (200 ppm (AI)/acre) might be somewhat hazardous to alfalfa leafcutter bees if applied during the evening or early morning.

Diatect is non-hazardous to honey bees if applied when bees are not actively foraging. Adios is non-hazardous to honey bees if applied when bees are not actively foraging. Legion is non-hazardous to honey bees if applied in late evening when bees are not actively foraging.

EXP 61057A 43% lot 33DLM76A, EXP 61057A 43% lot 33DLM76B, EXP 61057A 43% lot 33DLM76C, and Sevin XLR Plus are probably non-hazardous to honey bees at 0.5 lb (AI)/acre or lower rates if applied in the early morning when bees are not foraging. EXP 61057A 43% lot 33DLM76A, EXP 61057A 43% lot 33DLM76B, EXP 61057A 43% lot 33DLM76C, and Sevin XLR Plus are probably non-hazardous to honey bees at 1.5 lb (AI)/acre or lower rates if applied in the evening when bees are not foraging. It would appear that EXP 61057A 43% lot 33DLM76A is somewhat less hazardous to bees then the other formulations.

TD-2351-01 and TD-2351-01 + canola oil were highly hazardous to honey bees. TD-2351-02 and TD-2351-02 + canola oil were highly hazardous to honey bees. TD-2351-03 and TD-2351-03 + canola oil were highly hazardous to honey bees. Penncap MS and Penncap MS + canola oil were highly hazardous to honey bees. Penncap MS + Pounce (low rate) was highly hazardous to honey bees. Penncap MS + Pounce (high rate) was highly hazardous to honey bees. Asana + Lannate was non-hazardous to honey bees if applied late evening when bees are not foraging. TD-2344-1 was hazardous to honey bees.