

Section IV
Bee Hazard of Insecticides

EFFECTS OF SEVIN XLR PLUS AND LANNATE ON HONEY BEES
WHEN APPLIED TO POLLEN SHEDDING CORN

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This study was designed to evaluate Sevin XLR Plus 4F (Rhone-Poulenc) and Lannate 90SP (Dupont) for effects on honey bee (Apis mellifera) mortality when applied to pollen shedding corn (Zea mays).

Plots were established in a 125 acre circle of commercial field of 'CNS 710' sweet corn planted 19 June near Mabton, WA. Standard planting, fertility and weed control practices were followed. Plot size was 62 acres. The whole field was treated with Pounce 3.2EC on 2 August. No corn tassels were expanded. On 6 August, the east side of the field was sprayed with Sevin XLR Plus (1.0 lb(AI)/acre) and the west side sprayed with Lannate (0.5 lb(AI)/acre) at 5:45 am. Temperature was 56° F. and no wind. The corn was at 100% tassel and shedding pollen. On 14 August, the west side of the field was sprayed with Sevin XLR Plus (1.5 lb(AI)/acre) and the east side sprayed with Lannate (0.5 lb(AI)/acre). Temperature was 74° F. and no wind. The corn was at about 50% done pollen shedding. Applications were by helicopter using 5 gallons of water per acre.

At 10 pm on 28 July, five 2-story honey bee colonies were placed on the west side of the circle and 5 colonies were placed on the east side. All colonies had Todd dead bee traps attached to their entrance. All colonies were of equal strength with 13 frames of bees in each colony. The number of dead bees in the Todd traps was recorded daily before 8:00 am from 31 July to 17 August.

Results.

Bees were actively foraging for pollen in the corn field and returning to the colonies with corn pollen. The mean number of honey bees per 30 feet of row at 8 am on 6 August on the east side of the field was 4.3. The mean number of honey bees per 30 feet of row at 9 am on 14 August on the west side of the field was 3.5. Forager entrance counts during the test were in the normal range of 100-125 bees per minute. On 18 August the colonies were opened and examined. All contained a queen and appeared normal with 13-14 frames of bees except one colony from the east side which had 11.5 frames of bees.

The mean number of dead bees per day is given in Table 1. The only abnormal bee mortality occurred 3 and 4 August at the colonies on the east side. This was prior to any applications of Sevin XLR Plus. This abnormal mortality occurred soon after Pounce was applied though we suspect those bees were foraging on some other crop because no abnormal mortality occurred on the west side colonies. Dead bees were collected and shipped for analysis but we don't have the results yet. During the time (6 Aug. to 16 Aug.) when Sevin XLR Plus and Lannate were applied no abnormal bee mortality occurred in any of the colonies.

Using Todd dead bee traps normal dieoff within a colony is 0-100 dead bees per day, 200-400 dead bees per day indicates a low kill and 500-900 dead bees per day is a moderate kill from an insecticide.

Conclusion.

Sevin XLR Plus applied to pollen shedding corn at 1.0 to 1.5 lb(AI)/acre does not cause abnormal kill of honey bees.

Table 1. Effect of Sevin XLR Plus applied to pollen shedding sweet corn on adult honey bee (HB) mortality. Mabton WA. 1992.

	Mean No. dead HB/colony/day							
	<u>31 Jul</u>	<u>3 Aug</u>	<u>4 Aug</u>	<u>5 Aug</u>	<u>6 Aug*</u>	<u>7 Aug</u>	<u>8 Aug</u>	<u>9 Aug</u>
West side	60	131	38	7	9	16	9	93
East side	66	636	432	159	23	45	26	29
	<u>10 Aug</u>	<u>11 Aug</u>	<u>12 Aug</u>	<u>13 Aug</u>	<u>14 Aug**</u>	<u>15 Aug</u>	<u>16 Aug</u>	<u>17 Aug</u>
West side	25	32	38	44	40	80	36	19
East side	21	20	24	50	48	104	48	22

* Sevin XLR Plus (1.0 lb (AI)/acre) applied to east side 6 am 6 Aug.
 * Lannate 90SP applied to west side 6 am 6 Aug.
 ** Sevin XLR Plus (1.5 lb (AI)/acre) applied to west side 6 am 14 Aug.
 ** Lannate 90SP applied to east side 6 am 14 Aug.