Section III
Field Crop Pests

MONITORING CORN EARWORM IN EASTERN OREGON

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Abbreviations: Corn Earworm (CEW); Pacific Northwest (PNW)

Corn earworm, *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae), is commonly found wherever corn is grown. Corn earworm is found throughout North America except for northern Canada and Alaska. In the northern US, CEW does not normally overwinter successfully; however, it is highly dispersive, and spreads from southern states into northern states. In the relatively mild PNW, CEW can overwinter at least as far north as southern Washington. Large populations of CEW are estimated to be able to infest at economically damaging levels of up to 35 million acres of corn. Losses in corn can be as high as 50% in sweet corn. CEW feeds on a wide range of cultivated and non-cultivated crops. Because of its wide host range, it is known by several common names, including *cotton bollworm and tomato fruitworm*, among others.

The life cycle of CEW can be completed in about 30 days and includes egg, larva, pupa and adult. First generation larvae may feed as "budworms," damaging leaf whorls and newly forming ears (in Columbia Basin area). In fresh market corn, there is very little acceptance of earworms. Sweet corn for processing rarely is sprayed unless outbreaks are early and intense (20 to 30 moths per trap per day) at first silk. Once larvae enter the corn ears, control with insecticides is very difficult. Thus, effective control depends on proper timing and thorough coverage. Under this context, is monitoring an option to determine CEW numbers in the Columbia Basin? Most of the information regarding thresholds and degree days come from empirical data from other regions. Our objective is to establish regional data that can be used under our growing conditions.

Materials and methods

Trap design: 3 traps; delta trap, cone trap and light trap

Trap placement: To evaluate the influence of wind direction on trap efficacy

Treatment threshold: To correlate amount of damage in unsprayed field to trap captures in those fields

Results

Corn earworm populations (total number of CEW per trap per week) were recorded in 2007, 2008, and 2009. Delta traps were baited with a Trece red rubber septa pheromone lure (Fig. 1), and cone traps (Fig. 2) and light traps (Fig. 3) were un-baited. Traps were placed at least 150-200 feet apart and they were checked weekly. Lures on delta traps were changed monthly as recommended. No data was obtained in 2007 since overall CEW moth numbers were low. In 2008, CEW population was also low (Fig. 4). In 2009, cone traps yielded the highest number of CEW per week (Table 1).

Conclusions

Begin sampling at first visible silk. The presence of large numbers of eggs on fresh corn silks indicates the potential for damaging populations. Begin treatments during silking stage, at the start of egg hatch. We recommend direct insecticidal control towards young larvae that are feeding on the exposed ear tips. Cone traps may be the most effective monitoring trap.

Fig. 1 Delta traps

Fig. 2 Cone traps with pheromone lures

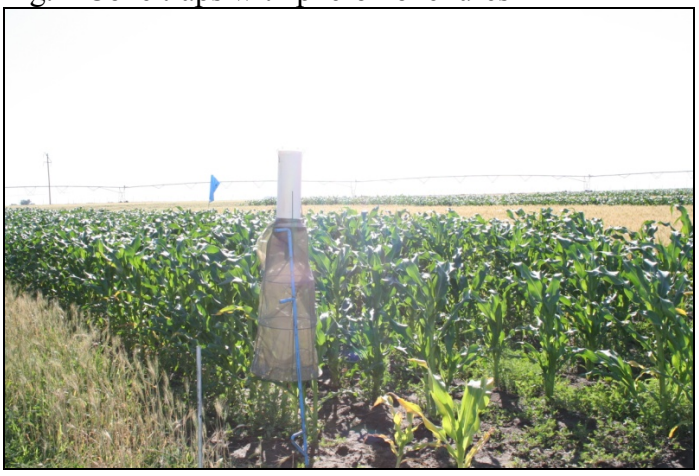

Fig. 3 Black Light traps

Fig. 4 Population dynamics of the corn earworm, Hermiston, OR 2008-09

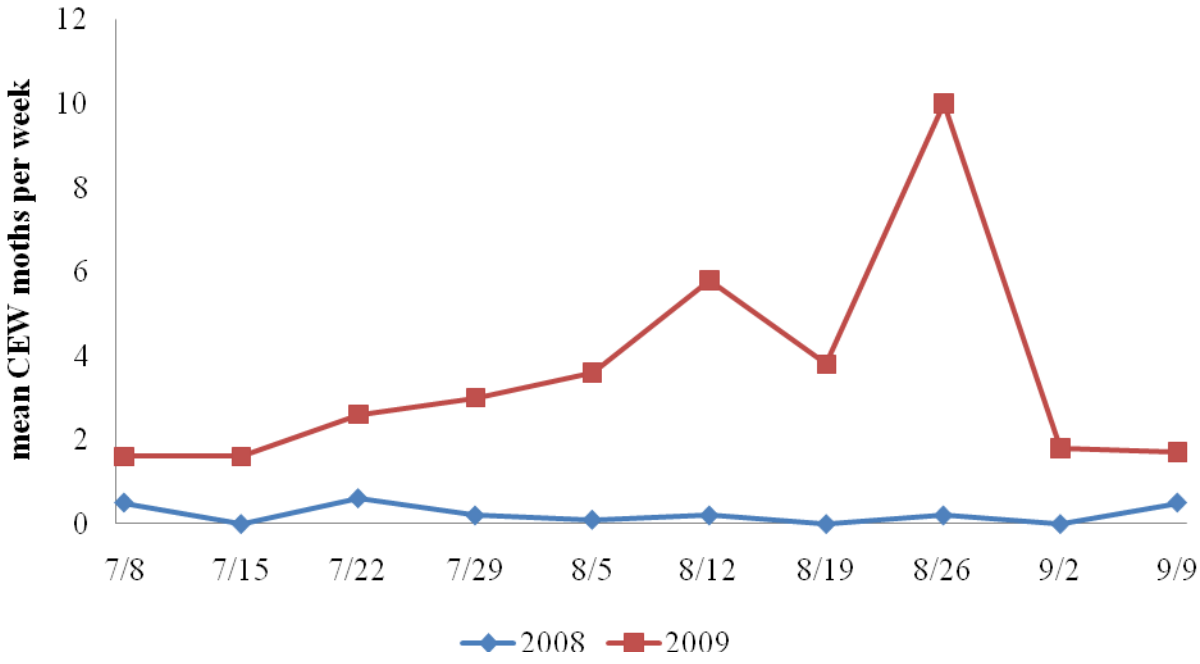

Table 1. Corn earworm (*Helicoverpa zea* Boddie*)* moths weekly comparative trap catches, Hermiston, OR, 2009.

Traps	7/9	7/16	7/23	7/30	8/6	8/13	8/20	8/27
Cone	1	2.25	4.25	7.25	7.5	10.75	6.5	16
Delta	0.5	1.25	0.25	0.25	1.25	1.75	1	0.25
Black Light	5.5	1	4	0	0.5	4	4	17.5
Average	2.33	1.50	2.83	2.50	3.08	5.50	3.83	11.25

*Total number of CEW per week (ANOVA F=2.292464, $P = 0.08834$)