

# Where are they now?

## Distribution of western bean cutworm larvae on corn



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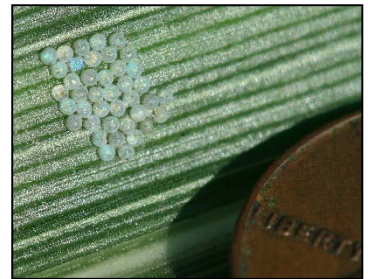
When western bean cutworm eggs hatch on corn, where do the larvae go? How far do they travel? And at what age or stage? A study done in 2009 tracked larvae on corn after eggs hatched. Individual pre-tassel corn plants were infested with single WBC egg masses collected from a commercial field. Each day, the egg masses were checked until they hatched. Egg masses were recovered & examined under a microscope to count the number of eggs and determine % hatch

After egg-hatch, sets of infested plants were sacrificed at 1, 5, 10, 14, 21 and 28 Days After Hatch (DAH). Plants were carefully dissected to recover larvae and record their location. All larvae were preserved to measure their head capsule width, a way to determine instar, or stage. The type and number of natural enemies were also recorded from each plant. Plants down & across row from the infested plant were dissected to see how far larvae moved from the central infested plant.

### EGG MASS SIZE & SUCCESS

Averages:  
57 eggs/mass  
98% hatch

*The egg mass  
to the right has  
100% hatch.*



### NATURAL ENEMIES

Minute pirate bugs made up over 90% of the natural enemies collected on the central infested plants. There were multiple pirate bugs found per plant, and they were observed feeding on tiny WBC larvae.



### Average # Natural Enemies per Plant

	<u>Minute Pirate Bug</u>		<u>Coccinellidae</u>	
	<u>adults</u>	<u>nymphs</u>	<u>adults</u>	<u>larvae</u>
<b>1 DAH</b>	11	3	0.2	0.5
<b>5 DAH</b>	12	3	0.1	1
<b>10 DAH</b>	3	2	0	0.4

## LARVAL RECOVERY & DISTRIBUTION

After hatch, most larvae moved upward into the fresh tassel, the uppermost leaf around the tassel, or into upper leaf axils. All of these locations had nutritious pollen for the larvae to eat. Some larvae moved down into the silks, which were just emerging. At 5 DAH, movement down the plant towards the ear increased, with a high proportion of larvae in the leaf axils. Minute pirate bug predation was noted at the time. By 10 DAH, the majority of larvae were now in the ear zone. Larger larvae fed in the ear tip or chewed through the husks into the side of the ear.

<u>Location</u>	<b>1 DAH</b>	<b>5 DAH</b>	<b>10 DAH</b>	<b>14 DAH</b>	<b>21 DAH</b>	<b>28 DAH</b>
<b>tassel</b>	<b>38%</b>	<b>38%</b>	<b>1%</b>	-	-	-
<b>tassel leaf</b>	<b>19%</b>	<b>9%</b>	-	-	-	-
<b>leaf axils</b>	<b>26%</b>	<b>41%</b>	<b>19%</b>	-	-	-
<b>silks</b>	<b>17%</b>	<b>12%</b>	<b>73%</b>	<b>34%</b>	-	-
<b>between ear/stalk</b>	-	-	<b>7%</b>	<b>33%</b>	<b>33%</b>	-
<b>ear~tip</b>	-	-	-	<b>33%</b>	<b>67%</b>	<b>54%</b>
<b>ear~side</b>	-	-	-	-	-	<b>46%</b>
<b>% recovery of larvae</b>	<b>35%</b>	<b>5%</b>	<b>10%</b>	<b>2%</b>	<b>11%</b>	<b>4.5%</b>

**Larval Dispersal:** After only 1 DAH, larvae dispersed up to 2 plants away from the infested plant. By 10 DAH, they moved across rows.

## LIFE STAGE/DEGREE DAYS

Larvae moving down plants to the ear zone were mostly 2<sup>nd</sup> instar. At 14 DAH, larval stage was highly variable; similar variability is often reported by crop consultants and growers in the field. By 28 DAH, 36% of larvae reached the 6<sup>th</sup> (final) instar after ~500 degree days of development, but 2/3rds were still a stage behind.

<u>Instar</u>	<b>1 DAH</b>	<b>5 DAH</b>	<b>10 DAH</b>	<b>14 DAH</b>	<b>21 DAH</b>	<b>28 DAH</b>
<b>1<sup>st</sup></b>	<b>100%</b>	<b>33%</b>	-	-	-	-
<b>2<sup>nd</sup></b>	-	<b>67%</b>	<b>89%</b>	<b>14%</b>	-	-
<b>3<sup>rd</sup></b>	-	-	<b>11%</b>	<b>29%</b>	<b>3%</b>	-
<b>4<sup>th</sup></b>	-	-	-	<b>57%</b>	<b>39%</b>	-
<b>5<sup>th</sup></b>	-	-	-	-	<b>58%</b>	<b>64%</b>
<b>6<sup>th</sup></b>	-	-	-	-	-	<b>36%</b>
<b>DDs</b>	<b>17</b>	<b>76</b>	<b>179</b>	<b>264</b>	<b>420</b>	<b>514</b>

(base 50)