

Rootworm Beetles in Soybean Fields across Illinois, 1996

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Rootworm beetles are very frequently found in crops such as soybeans and alfalfa during the growing season. That by itself does not necessarily mean that they are laying their eggs in these locations. However, over the years we have seen an increase in the number of western corn rootworm beetles reported in soybean fields. For example, historical data from Urbana shows that between the years 1979 and 1982, western corn rootworm beetle counts in soybean fields in mid-August (generally the peak period for rootworm egg-laying) ranged from 6 per 100 sweeps (with a 15 inch sweep net) in 1980 to 16 per 100 sweeps in 1979 (corn-soybean rotation; Helm, unpublished data). Even as late as 1994, western corn rootworm beetle counts never exceeded 16 beetles per 100 sweeps in Champaign-Urbana soybean fields (n = 5 fields) in mid-August. In contrast, western corn rootworm beetle counts in soybean fields near problem cornfields in east-central Illinois (n = 5 fields) ranged between 23 and 100 beetles per 100 sweeps in mid-August 1994. In 1995, western corn rootworm beetle counts in Urbana soybean fields (n = 3 fields) increased moderately to as many as 32 beetles per 100 sweeps in mid-August. The trend continued in 1996 with as many as 59 beetles per 100 sweeps in Urbana soybean fields (n = 2 fields) in mid-August.

Three collecting trips across the mid-section of Illinois were made in mid-August 1996 to sample population densities of western corn rootworm beetles in soybean fields. All trips originated in east-central Illinois where severe injury to first-year corn following soybeans was reported in 1995 and terminated in west-central Illinois. Sampling at intermediate locations was also made for a total of 12 locations. Periodic stops were made at adjacent corn and soybean fields; soybean fields were sampled only if western corn rootworms were present in the adjacent cornfield. If that was the case, four sets of 100 sweeps each were made in each soybean field using a sweep net. Beetles were also hand collected in the adjacent cornfields. Beetles were frozen, sexed, and saved for future genetic study. Table 1 presents the results of these trips. Locations in the central part of the "1995 problem area" (Urbana, Dewey, and Forrest) had the highest density of western corn rootworm beetles in soybeans (59-102 beetles per 100 sweeps). In these fields, western corn rootworm beetles even outnumbered bean leaf beetles, a soybean pest. Locations in the western part of the state (Laura, Rapatee, and Roseville) had the lowest density of western corn rootworm beetles in soybeans (0-1 beetle per 100 sweeps). The remaining locations in the central part of the state (Bellflower, Graymont, McLean, Congerville, and Roanoke) or the northern fringe of the "1995 problem area" (Dwight) had an intermediate density of western corn rootworm beetles in soybeans (2-16 beetles per 100 sweeps). If western corn rootworm beetles present in soybeans fields are laying eggs in these locations (the vast majority of these beetles are female, see Table 1), the results suggest that egg-laying in soybean fields west of the Illinois river is probably minimal.

Mention must be made that there has been a resurgence of the northern corn rootworm. As discussed earlier, a large percentage of the eggs of this species are capable of a prolonged egg diapause (14-51%) and can therefore damage corn following a rotational crop if egg densities are sufficiently high. Very large densities of this beetle were found in cornfields near Dewey, Forrest, Graymont, McLean, Congerville, Laura, and Roseville. Large densities were also found in soybean fields near Forrest, Graymont, and McLean (Table 1). Whether these beetles are laying eggs in soybean fields is not known. Until this year, northern corn rootworm populations have been fairly low. Laboratory studies have shown that the northern corn rootworm can better tolerate low soil temperature conditions than can the western species and the severe winter of 1995-1996 may have played a part in the northern corn rootworm's comeback. The "reappearance" of the northern corn rootworm certainly complicates the issue of which rootworm species is injuring first-year corn.

Nearest town (county)	Date sampled	Number WCR	Number NCR	% female WCR
Urbana (Champaign)	Aug. 15	59	7	91%
Dewey (Champaign)	Aug. 09	83	4	76%
Forrest (Livingston)	Aug. 22	102	69	71%
Dwight (Livingston)	Aug. 13	12	1	87%
Bellflower (McLean)	Aug. 09	16	9	76%
Graymont (Livingston)	Aug. 13	14	30	82%
McLean (McLean)	Aug. 09	7	103	59%
Congerville (Woodford)	Aug. 22	2	0	78%
Roanoke (Woodford)	Aug. 13	4	16	88%
Laura (Peoria)	Aug. 13	1	8	--
Rapatee (Knox)	Aug. 22	0	3	--
Roseville (Warren)	Aug. 22	0	1	--

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