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Range Expansion of Western Bean Cutworm, *Striacosta albicosta* (Noctuidae), into Michigan and Ohio

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The western bean cutworm, *Striacosta albicosta* (Smith) (Lepidoptera: Noctuidae), is native to the western United States, where it was first described as a pest of dry beans (*Phaseolus vulgaris* L.) and corn (*Zea mays* L.) (3). On corn, fourth and fifth instar larvae feed in the ear, reducing yield and grain quality. Since 2000, the western bean cutworm has spread eastward through Iowa, Minnesota, Illinois, and Missouri (1,2,4), into Indiana in 2005, and Wisconsin in 2006 (6). Before 2006, there were no records of western bean cutworm in the Michigan State University A. J. Cook Arthropod Collection or in collections at The Ohio State University, nor reports of larval injury to corn in Michigan or Ohio.

In the summer of 2006, five and ten pheromone traps were set up in Michigan and Ohio, respectively (Fig. 1). Each trap was constructed from a one-gallon plastic milk jug cut to leave open side panels (5), and baited with a Scentry western bean cutworm pheromone lure (Great Lakes IPM, Vestaburg, MI) hung under the cap (Fig. 2). Traps were filled with a 50:50 mixture of water and commercial antifreeze and hung 1.5 m above the ground near corn. Traps were checked once per week from 1 July through late August; lures were changed once in late July. In Ohio, a total of three adults were captured, one in each of three counties during the first week of July (Fig. 1A). In Michigan, adults were captured later in the season, one each during the weeks of 8 to 14 and 15 to 21 July in Van Buren Co. and on the night of 24 July in Kalamazoo Co. (Fig. 1A). These were the first western bean cutworm adults recorded from either state.

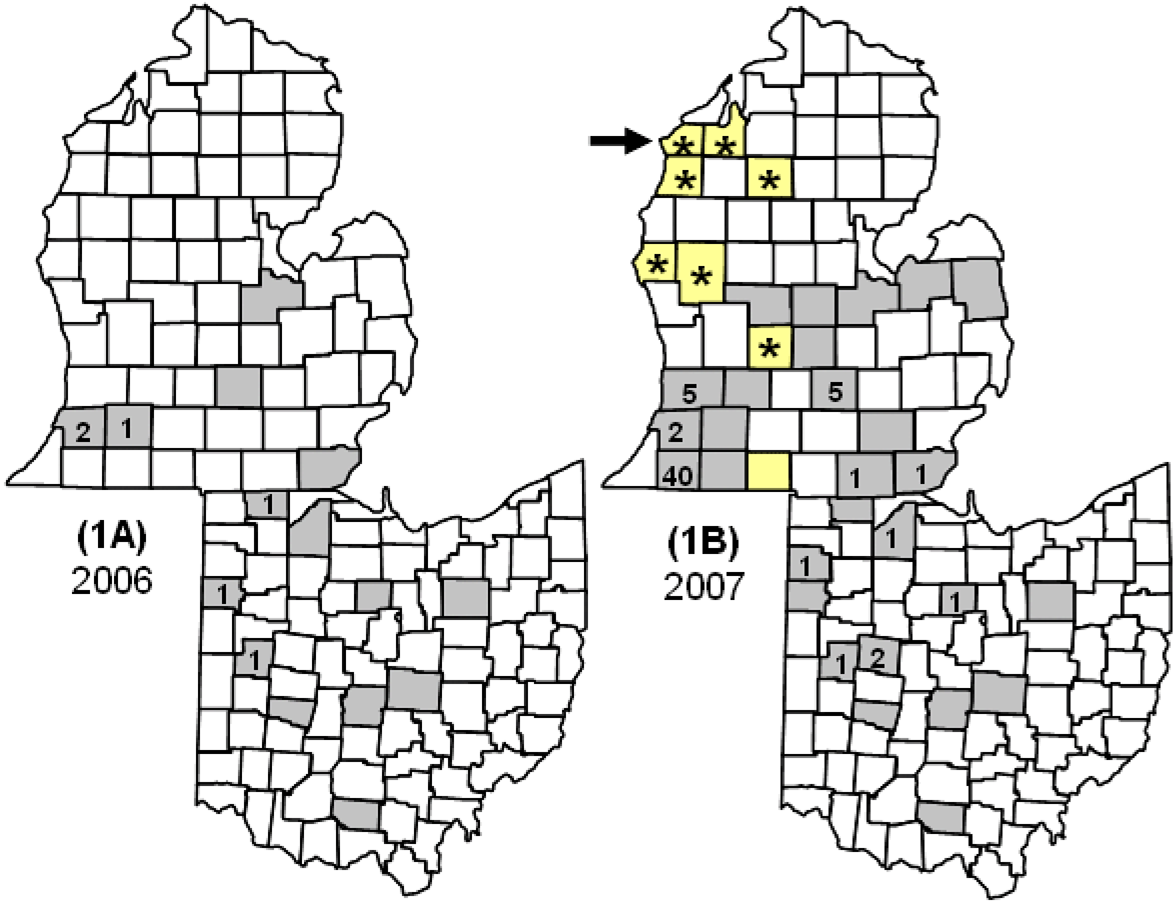

Fig. 1. Western bean cutworm observations from Michigan and Ohio in 2006 (A) and 2007 (B). Pheromone traps were maintained in gray-shaded counties; if adults were captured, the total number is indicated within the county. Damage to corn ears was confirmed in yellow-shaded counties, and larvae were confirmed to species in asterisked (*) counties. An arrow indicates Benzie Co., the location of a Michigan Automated Weather Network station.

Fig. 2. Milk jug pheromone trap for western bean cutworm.

In 2007, pheromone traps were set up at 12 locations in 12 counties in Ohio and at 23 locations in 16 counties in Michigan. Traps were checked from late June through late August. A total of six adults were captured in five counties in Ohio between 1 and 26 July (Fig. 1B). An adult from Crawford Co. represented the easternmost detection of western bean cutworm to date. In Michigan, a total of 54 adults were captured in seven southern counties (Fig. 1B). As in 2006, the first adults were trapped during the week of 7 to 13 July and the last were captured by 17 August. The majority (94%) was captured between 7 July and 3 August. The range of western bean cutworm thus expanded further north in Michigan and further east in both states.

Fig. 3. Severe western bean cutworm damage to a corn ear from northwest Michigan, August 2007.

No larval injury was observed in Ohio in either 2006 or 2007. In contrast, severe western bean cutworm damage was reported to corn in northwest Michigan in August 2007, especially in counties along Lake Michigan. The first author confirmed ear feeding and identified western bean cutworm larvae in samples from the counties marked on Figure 1B. Agribusiness contacts estimated that 30 to 100% of the ears were infested (often with multiple larvae) in many commercial fields (Fig. 3). There were no pheromone traps in northwest Michigan to record western bean cutworm flights, but a weather station in Benzie Co. (Fig. 1B) recorded sustained winds at 191 to 281° (south-south-west to west) between 23 July and 3 August. We hypothesize that these winds carried and deposited large numbers of western bean cutworm adults in counties near the lake. The infestation in the northwest Michigan was the first documented economic damage caused by western bean cutworm in the state.

Adult captures in Michigan and Ohio further extend the eastern range of western bean cutworm. In addition to the risk of economic damage to corn in both states, there is now potential for severe damage to edible beans, as Michigan ranks second in United States dry bean production with approximately 200,000 acres planted annually (7).

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