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ICM > 2007 > IC-498 (6) -- April 16, 2007

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## Black cutworms and the hard freeze

by Marlin E. Rice, Department of Entomology

Each spring, black cutworm moths migrate into Iowa from southern states, and they lay eggs in soybean stubble (a preferred site) and corn stubble. Also, at the same time, we invariably experience some early spring cold temperatures that drop below freezing. When these two events occur simultaneously, it doesn't take long before people begin asking what the freezing temperatures did to the black cutworms.

It is fairly well known that many insects that migrate into the northern states are fairly adept at finding protected shelter to ride out the cold temperatures. But what about any black cutworm eggs that are laid in a field? Wouldn't they be exposed to the cold and possibly be killed? Well, the answer to the first question is yes, they would be exposed to the cold, but I am not aware of an answer to the second question. Therefore, I set up a quick experiment to determine what effect a natural freeze would have on black cutworm eggs.

On April 4, I obtained laboratory-laid black cutworm eggs from the USDA Corn Insects Lab at Iowa State University. These eggs were two days old and laid on paper toweling. Twenty-four clusters of eggs (60-150 each) were cut from the paper toweling and then glued to manila envelopes. Twelve, or half, of the envelopes were kept indoors at 72 °F while the other 12 were placed outside overnight in a soybean field.



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### *Black cutworm eggs. (Marlin Rice)*

The outside temperatures at 6 p.m. were 33 °F; at 10:30 p.m., it had dropped to 28 °F, and at 6:30 a.m. on April 5 it was 19 °F. The outside egg clusters were then brought indoors and kept with the "check" eggs for another five days, at which time the number of hatched eggs were counted in both groups.

So what did I find? The percent of larvae hatching between the two groups was nearly identical; 61.7 percent of eggs kept inside hatched, while 72.3 percent of those kept outside overnight hatched. The eight hours of freezing temperatures, with a low of 19 °F, appeared to have no effect on the survival of the black cutworm eggs and subsequent larval hatch! So it would appear that the black cutworm is well adapted to surviving brief encounters of very cold temperatures. An obvious next question is to determine the lethal minimum temperature, or how cold does it need to get before black cutworm eggs start freezing? This is an answer I don't know.

*Marlin E. Rice is a professor of entomology with extension and research responsibilities in field and forage crops.*

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