

Black cutworm migration

Modified from an article by Ken Ostlie 2002.

The migration habits of the black cutworm have been documented on several continents. North American black cutworm moths use prevailing winds help them move north in the spring and south in the fall. In central United States, black cutworm moths migrate northward from overwintering areas in Texas and Mexico when appropriate weather systems occur. In spring, these moths can make it from South Texas to Minnesota within 2 days. How do they do it? They hitch a ride on nocturnal low-level jet streams.

Each winter, black cutworms are presumed able to overwinter only as far north as topsoil remains unfrozen. Emigrating moths fly upward from the overwintering areas at dusk. If weather systems cooperate, they are whisked off by surface winds and rising air in advance of thunderstorms into the lower-level jet stream. These winds are strongest at night, moving at 30 to 80 miles per hour, and can occur from about 330 – 3000 feet in altitude. The flight is mostly passive with moths carried along until they decided to “drop out”, encounter cold air, or rain out in thunderstorms. These migrating moths arrive in excellent shape. The ideal weather pattern for spring migration into Minnesota involves a HIGH pressure center to our east with a strong LOW pressure center approaching from the west. This pattern produces strong, persistent southerly winds that can bring black cutworm moths northward.

Two ingredients are necessary for black cutworm moths to arrive in Minnesota. First, the air parcels reaching Minnesota must have passed through these overwintering areas when migrating adults are present. Second, the track of the LOW pressure center is critical, if the LOW tracks too far south, migration is cut off south of Minnesota. If the LOW tracks through Minnesota or northern Iowa we have the potential for moths to drop out or precipitate out in Minnesota. These weather systems may stall with the frontal boundary cutting across Minnesota. In that case, if you're south and east of the front, watch out! Several LOWS may ripple across the moist air pumping northward and compound the moth deposition in Minnesota. Radar studies in the 1980s showed that most evening migrating insects move at an altitude of 1700 feet or so. Wind trajectories can be used to estimate where a significant immigration event (8 moths / night) might have originated from. Moths often drop out on the edges of heavy rainfall.

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