

Title Movement of *Rhyzopertha dominica* in response to temperature gradients in stored wheat
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Abstract

The movement and temperature preference of *Rhyzopertha dominica* was determined in a 56 cm diameter cylinder with 9 cm high sides containing 19.9 kg of hard red winter wheat. Two temperature gradients were tested over a 24 h period: 42 to 20 °C and 24 to 20 °C with the cooler temperature being on the periphery of the cylinder. No preference existed when there was no temperature gradient. Beetles preferred the moderate temperature region of the cylinder in the 42 to 20 °C gradient, but avoided the highest temperature region. In the 24 to 20 °C gradient, insects did not move very much during the 24 h period. When a longer duration was used (96 h) for the 24 to 20 °C gradient, there were significantly more insects in the warmest center region of the gradient compared to the middle or outer regions. Compared to other stored grain Coleoptera, such as *Cryptolestes ferrugineus*, *R. dominica* appears to move more slowly through the grain into preferred temperature regions.