

High temperatures effects on *Cryptolestes ferrugineus* (Stephens) movement and survival

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Abstract

Cryptolestes ferrugineus (Stephens) (rusty grain beetle) is a pest of stored grain around the world and one of the most common insects infesting stored grain in Canada. High temperature has been used to control stored product insects in grain, but the temperatures needed to control insects are only slightly lower than the temperature that causes quality loss. Hence, sophisticated and expensive systems are needed for heat disinfestation of grain. We examined the possibility of heating grain (40, 45, 50 and 55°C) enough to force larvae out of the kernel, where they could be removed from the grain by cleaning. Young and old *C. ferrugineus* larvae had similar times for exiting wheat kernels with times ranging from 129 min at 40°C to 5 min at 55°C. We also examined the times required to control the all life stages at various temperatures (40, 45, 50, 55 and 60°C). There were no large differences in survival between the different life stages. For pupae the time to kill 95% of the population was 29 d at 40°C and 50 min at 55°C and 5 min at 60°C. Times needed to control the pupae were much longer than those that would be required to force the larvae out of the kernels. Full details of this study have already been published (Arlene-Christina et al. 2014).

Keywords: wheat, rusty grain beetle, heat, movement, mortality

References

Arlene-Christina, G.D., Jayas, D.S., Fields, P.G., Jian, F., White, N.D.G., Alagusundaram, K., 2014. Movement of *Cryptolestes ferrugineus* out of wheat kernels and their mortalities under elevated temperatures. *Journal of Stored Products Research* 59, 292-298