

Title Multiplication of stored-product mites on Canadian wheat and oilseed cultivars.
Authors White, N. D. G., Demianyk, C. J. and Jayas, D. S.
Citation Advances in stored product protection. Proceedings of the 8th International Working Conference on
Stored Product Protection, York, UK, 22-26 July 2002 (2003); 402-405

Abstract

Two experiments were conducted to determine the infestation potential of wheat and oilseeds to stored-product mites. In the first experiment, 10 adults of either *Acarus siro* or *Acarus farris* were placed into ventilated glass vials containing whole or crushed seed of 1-3 cultivars of each of wheat, sunflower, flax, soyabean, rape, and mustard. After 15 weeks incubation at 20 deg C and 75% RH, populations were assessed. All wheat cultivars, both whole and crushed, were highly susceptible to *Acarus siro* and barely susceptible to *Acarus farris*, indicating a strong difference in the reproductive requirements of the two closely related species. On wheat, mean multiplication rates for *Acarus siro* ranged from 11x to 296x on whole cultivars of Neepawa and Glenlea, respectively, and from 617x to 862x on crushed cultivars of Glenlea and Columbus, respectively. This indicates that the seed coat of whole seed provides marginal protection to feeding larvae. *Acarus farris* multiplied only 6x on whole Glenlea wheat, with all other treatments failing to sustain the original population. *Acarus farris* did poorly on all the cultivars of both whole and crushed oilseeds; the only population to increase above the original numbers was on whole Sundak sunflower, which had a mean increase of 2.5x. Similarly, *Acarus siro* did not reproduce on crushed oilseeds but showed an increase of 646x on whole Sundak sunflower, 114x on whole Domo mustard and 83x on whole Linott flax. A second experiment of similar design was conducted to determine the infestation rate on Columbus and Neepawa hard red spring wheat by the two *Acarus* species and three additional species of stored-product mites, *Aeroglyphus robustus*, *Lepidoglyphus destructor*, and *Tyrophagus putrescentiae*. Crushed seed of both cultivars sustained high populations of *Acarus siro* and *T. putrescentiae*, which increased 1059-1202x and 974-1963x, respectively. *Lepidoglyphus destructor* increased 147x on crushed Columbus but for the most part *L. destructor*, *Aeroglyphus robustus* and *Acarus farris* populations remained at low levels, increasing not more than 2-27x on whole and crushed seed of both cultivars. It appears that the stored-product mites tested here can all survive on whole stored cereals and oilseeds to varying degrees, but special consideration should be given to stocks that become infested with *Acarus siro* and *T. putrescentiae*. These two species take best advantage of damaged cereals, where nutrients are readily available, resulting in large population increases. Conversely, the crushing of oilseeds appears to inhibit mite propagation, probably because of excessive oil content (45%, dry weight) within the meal.