



## Session Chair Notes CS2 S4

**Stream:** Sunflower and Alternate Crop

**Date:** Tuesday 8th July

**Time:** 1.30 pm – 2.50 pm

**Chair:** Andrew McDonald

**Sponsor:** Agriventis

**Room:** Norfolk Hall

**Title:** *Damage potential of major stored products pests for postharvest sesame and possible management options*

**Presenter:** Manoj Nayak, Science Leader, Qld DPI

### Abstract

Sesame is an emerging crop in Australia, hence, there has been a lack of information on the best management practices for its postharvest storage, particularly in terms of management of pests.

As part of preparing the industry for the future, we evaluated the infestation and damage potential of four major storage pest species (lesser grain borer, *Rhyzopertha dominica*, red flour beetle, *Tribolium castaneum*, rice weevil, *Sitophilus oryzae*, and rusty grain beetle, *Cryptolestes ferrugineus*) for two varieties of sesame (black and white). Compatibility of phosphine fumigation protocol was also assessed, particularly focussing on its sorption-desorption characteristics compared to other commodities including wheat, canola, safflower, and sunflower.

We are establishing optimal temperatures for long-term storage of sesame to ensure the preservation of important quality parameters. Results on total weight loss over a six-month evaluation period established *T. castaneum* as the pest species with maximum damage potential. Phosphine fumigations were

undertaken at an application rate of 1.5 mg/L<sup>1</sup>, resulted in a very high level of sorption of phosphine in fumigated sesame compared to other grain types. The black sesame showed the highest initial loss of 40.7% after the first 24 hours, the highest average daily loss of 17%, and the highest total loss of 93% by the end of the 7-d fumigation. This result raises a serious concern for the effectiveness of current phosphine protocol to disinfect sesame, which needs adjustments to incorporate the gas loss due to sorption.

For both black and white varieties, there were significant differences observed in levels of protein and oil content, free fatty acids, and peroxide values across both storage temperatures of 15 and 30°C for up to 3 months, but they were stabilized by the 6-months storage. These results will help in developing best management practices for the safe storage of postharvest sesame.

