

Oxygen scavenger: promising tool for the management of *Tribolium castaneum* (Herbst) in small millet rice

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Abstract

The mortality of *Tribolium Castaneum* (Herbst) can be increased by lower the oxygen level. With the above concept the effect of oxygen scavengers on the survival of *Tribolium castaneum* was assessed in the post-harvest engineering laboratory, UAS, GKVK, Bengaluru during 2017–18. The trial was conducted with four different packaging Pouches (Low-density polyethylene, High-density polyethylene and multi-layered pouches supplied by Swiss Pac and Ecotact) and Band sealers. Each pouch (25 × 18 cm) having a capacity of 1000 cc was filled with 850 g of foxtail millet. A single sachet of oxygen absorber (200 cc) and 20 pairs of one day old *T. castaneum* adults were released into each pouch. These pouches were placed in an incubator at a temperature of 30 ± 02 °C and $70 \pm 5\%$ relative humidity. Results revealed that in the Swiss Pac (0%) and Ecotact multi-layered (0%) pouches, which contained oxygen scavenger, the oxygen level was zero throughout the experimental period. The grain pouches containing oxygen scavenger had 100 per cent mortality of the beetle. Multi-layered pouches (Swiss Pac and Ecotact) proved to be the best packaging material for use of oxygen scavengers in the safe storage of foxtail millet grains. As the oxygen scavengers absorb oxygen completely within the pouches and maintains an oxygen-free atmosphere, thereby achieving the complete kill of the beetle.