

## **Abstract**

Hermetic grain storage is a system where dry grain is stored under conditions of oxygen deficit. Any insects in the stored grain then suffocate themselves to death through depletion of any remaining oxygen and release of CO<sub>2</sub> through respiratory metabolism. In this study, performance of hermetic storage was evaluated using maize grain. The grains were stored in plastic bags in quantities weighing 250 g each which were deliberately infested with weevils. Air was sucked from the plastic bags with a vacuum pump and the bags sealed air tight. In the 'enhanced' hermetic storage, smoke from insect repelling herbs (*Lantana trifolia*, *Tagetes minuta* and *Ocimum suave*) was introduced into the bags and then sealed. In other samples, dry leaves from the herbs were mixed with the grains before sealing. Each treatment was replicated six times. The extent of grain damage in terms of weight loss was monitored at intervals of two weeks. The grains stored in the enhanced hermetic conditions where smoke from the herbs had been introduced showed the least weight loss. The highest weight loss of the grain was observed in the conventional hermetic storage where only air was evacuated from the storage bags. Samples with smoke from *Tagetes minuta* were the best preserved amongst the smoke treatments. The results indicated the potential for the enhanced hermetic storage of grain utilizing locally available herbs with known insect repellent properties. The system if adopted can prevent excessive grain loss from insect infestation and minimize the use of environmentally harmful chemicals.