

Effect of modified atmospheric conditions of hermetically sealed large capacity cocoons for storage of maize seeds (*Zea mays*)

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Studies conducted in Sri Lanka have shown that nearly 13 to 18% of maize is lost during postproduction operations due to improper post harvest techniques. These studies also found, major component of these losses occurred during storage practices. Hermetically sealed cocoon storage is one of the advanced grain storage method for commercial level storage. And also many advantages reported in hermetically sealed storage method. Hence, this research is focus to study, the effect of modified atmospheric conditions of commercial cocoons for altering of physical properties and quality conditions of locally grown maize seed under local climatic conditions. Initial values of thousand kernel weight, bulk density, hardness, colour, immature seed%, damaged seed % and impurities %, of maize seed were compared with those values obtain after 8 months storage in two methods i.e. large quantity (more than 1MT) hermetic storage and conventional warehouse. Oxygen level, temperature inside the hermetically sealed cocoon and warehouse were measured. Hermetically sealed cocoon took 2 weeks to reduce oxygen level 20.5 to 0.4%. Temperature fluctuation inside the hermetic cocoon was very low in comparison to warehouse temperature fluctuation. Moisture content of initial maize seed sample, warehouse sample and cocoon sample were not significantly change. Hermetically sealed cocoon maize seed sample reported similar values as its initial values in terms impurities %, immature seed% and damaged seed % after 8 months storages, however they were significantly change in warehouse sample. Change of thousand kernel weight maize seed during storage period was significantly low in cocoon sample. Bulk density and paddy kernel hardness values were significantly reduced in both storage methods from its initial values. Maize kernel colour was preserved by sealed cocoon samples in comparison to conventional warehouse storage. Finally, it can be concluded that hermetically sealed cocoon storage has more advantages to preserve seed

quality characteristics in comparison to conventional warehouse storage for large quantity commercial storage. However, hermetically sealed condition must be maintained throughout storage period to gain those advantages.