

## **Session 4: Preservation of quality in CA/fumigation storage**

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### **Rapporteur's Report**

Dr. Noel White of Agriculture Canada reviewed literature from 1980 to present, and presented an overview of the importance of oxygen (O<sub>2</sub>) deficient and carbon dioxide (CO<sub>2</sub>) enriched atmospheres for preservation of barley and rice. In general, insects are readily controlled, fungi are inhibited in growth, yeasts and bacteria are more tolerant of the atmospheres, increased atmospheric pressure decreases seed germination, and lipid hydrolysis of commodities is slowed, thus retaining nutrients.

The Peoples Republic of China has made great strides in improving grain storage as reported by Lianghua Guan. Storage structures have been successfully sealed and brick storages were sealed adequately over the past years. New storages at the port of Tianjin provide improved long-term storages for CA stored rice.

In Cyprus hermetic storage is used in large-scale bunker storage as reported by Dr. Navarro. Plastic is an economical material used for sealing in developing countries. The use of hermetic storage was shown to be effective in the preservation of the quality of barley or wheat.

Zhu Peng Qing discussed ten years of testing with aluminium phosphide for insect control in rice stored in China. Grain respiration was reduced by 55-64%, aiding in preservation. Again, plastic films are considered economical for sealing stored rice for fumigation.

Proposed future directions for quality preservation are:

1. Increase the effort to reduce air pollution and improve worker safety.
2. Study the effects of treatments for fungi and mycotoxin control.
3. Increase studies using combinations of treatments for improved economics and for reduction of, or elimination of, insect reproduction.