

7-YEARS RESULTS OF HERMETIC STORAGE OF BARLEY UNDER  
PVC LINER.  
LOSSES AND JUSTIFICATION FOR FURTHER IMPLEMENTATION  
OF THIS METHOD FOR GRAIN STORAGE

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From 1988 up to 1995 barley of 8-11% moisture content and 32-38°C was stored for one up to three years in two concrete platforms of 2500 and 4000 tons each under a UV protected PVC liner 0.8mm thick. In some cases the platform floor were covered with a polyethylene liner 0.2mm thick. During storage, grain moisture, temperature, insect infestation, germination and some other parameters were measured. Oxygen and carbon dioxide concentrations were also recorded. At the end of each storage period mold- and total losses were determined.

The effect of covering the floor with a polyethylene liner on intergranular O<sub>2</sub> and CO<sub>2</sub> concentrations was significant. With the polyethylene underliner, O<sub>2</sub> and CO<sub>2</sub> were 2-6% and 8-12% respectively. Without it, concentrations were 6-10% and 2-4% respectively. But this did not have a significant influence on losses.

In samples of mold-damaged grain Zearalenone (760ppb), Ochratoxin A (1990 ppb) were detected with a total fungal count of  $5.7 \times 10^9$ /g. In sound grain, concentrations of Zearalenone and Ochratoxin A were zero and total fungal count was  $1.6 \times 10^6$ /g,

The longer the storage, the higher the mold- and total losses. After one-year storage they were  $0.16 \pm 0.1\%$  and  $0.32 \pm 0.06\%$  respectively. After two-years storage losses were 0.22% and 0.52% and after three-years storage mold- and total losses reached 0.66% and 0.96% respectively. After one-year storage germination remained above 95%, after three years it was above 88%. Hermetic storage under PVC successfully protected grain against insects, birds, rats and rain.

Total fixed and current assets for building and hermetically storing 4000 tons of barley in a concrete platform (25m wide, 75m long) under the PVC liner were US\$4 /ton/year or US\$2.5/ton/3years.