

INFLUENCE OF STORAGE CONDITIONS IN SUNFLOWER "SEED" DORMANCY
AND LONGEVITY

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Summary

Sunflower breeders have mainly two problems with sunflower seeds: dormancy, which make their utilization soon after harvest very difficult, and storage longevity. In order to develop some knowledge about those problems, the following experiments were done.

Seeds of a commercial sunflower variety, IAC-Anhandy, were used for both experiments. Seeds harvested in 1983 were utilized for a long-term storage experiment done under different temperatures, with two types of packing material.

Seeds from 1985 were used to test the dormancy behaviour under different temperatures of storage. The germination evaluations started four days after harvest and were done weekly till two months, and after, every month during five years.

The best temperature for sunflower seed storage was 10°C; paper bag showed better seed viability maintenance than hermetic glass. After five years of storage at 10°C, germination level still being higher than 80%. Alternated temperature seems to be worst to seed viability than constant high temperature (30°C).

The temperature of 20°C maintained a high level of dormancy longer than 10°C, 15°C, and 30°C.

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Introduction

Sunflower breeders are often faced with two common problems that are seed dormancy - which sometimes makes their utilization soon after harvest almost impossible - and a long-term storage without seed deterioration.

In a research done by Maeda & Ungaro (1985) the authors observed that the dormancy release increased both with the increase of temperature up to 35°C or the maintenance of 10°C.

It is known that the storage conditions and the type of containers utilized influences germinability of seeds in many plant species. Rame Gouda et al (1985) used three types of containers - cloth bag, metal box, and polythene bag - and stored sunflower seeds under ambient conditions. The germplasm with higher level of initial dormancy showed total dormancy release after three months of storage: the germplasms with lower level of initial dormancy took five months to reach maximum germination level. The best container for the maintenance of germinability was polythene bag.

Material and Methods

Seeds of a commercial sunflower cultivar, IAC-Anhandy, harvested in two different years in the Experimental Station of Tatui, Agronomic Institute of Sao Paulo State, IAC, were used for the study of dormancy and storage.

Soon after harvest the seeds were dried under 36°C - 38°C, during 48 h. Eight replications of 25 seeds each were planted in rolled paper towels, under alternated temperature of 20°C-30°C (16 h at 20°C and 8 h at 30°C) during seven days (Brasil, 1976).

The seeds harvested in 1983 were used in a long-term storage study under different temperatures- 10°C, 20°C, 30°C, and ambient condition- and two different containers -paper bag and hermetic glass. The germinability evaluations were done at approximately two months intervals during the first two years, and after, at four months intervals till five years of storage. Before storage the seeds showed dormancy and germination levels of 17% and 71%, respectively.

FIGURE 2- DORMANCY RELEASE OF SUNFLOWER SEED UNDER DIFFERENT TEMPERATURES OF STORAGE

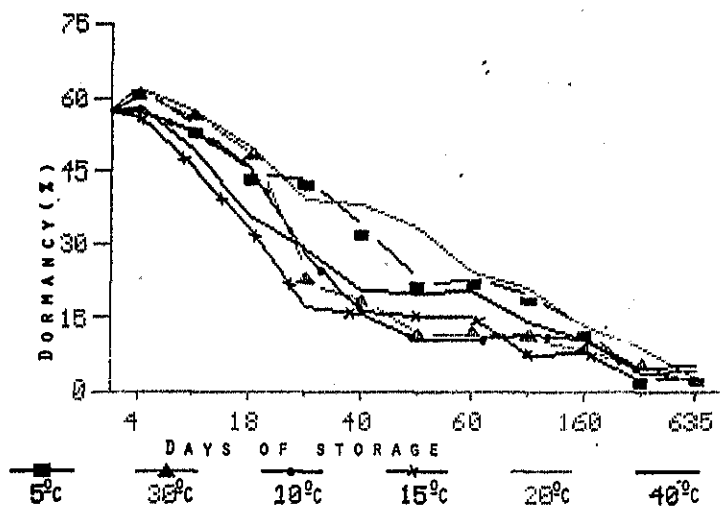
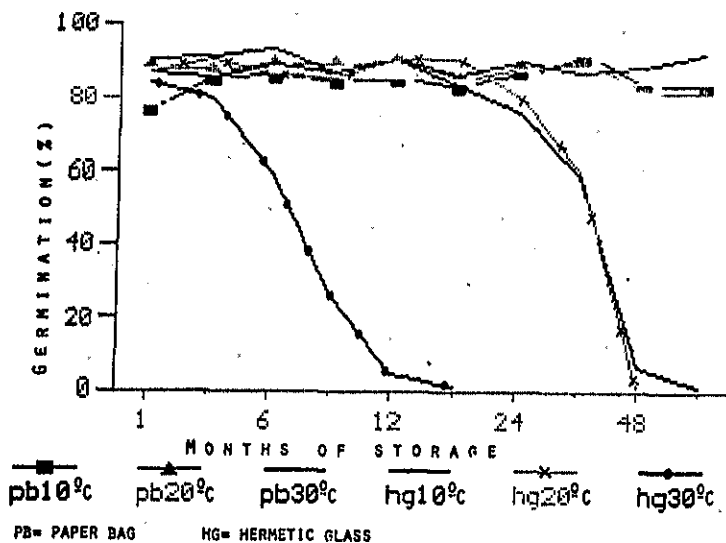


FIGURE 1- SUNFLOWER SEED CONSERVATION UNDER DIFFERENT TEMPERATURES AND CONTAINERS



previous research. Otherwise, when the seeds were stored under 20°C, the dormancy level were higher in practically all the dates of analysis, wich did not occurred in the work of 1985. Perhaps those discrepancies could be explained by different harvest dates, discussed in Ungaro & Maeda (1992). The bad performance of hermetic glass may be explained by possible anaerobic respiration caused by lack of oxygen.

Conclusions

-The dormancy release is faster if sunflower seed is stored under 10°C or 15°C;

-Storage at 20°C keeps dormancy at higher level than 5°C, 10°C, 15°C, 30°C, and 40°C for cv. IAC-Anhandy;

-Except for 15°C, all the results obtained showed a slight increase in dormancy level in the first week after harvest.

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