

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 873

PEACHES

GUIDE TO COLD STORAGE

1st EDITION

November 1968

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Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 873, *Peaches – Guide to cold storage*, was drawn up by Technical Committee ISO/TC 34, *Agricultural food products*, the Secretariat of which is held by the Magyar Szabványügyi Hivatal (MSZH).

Work on this question by the Technical Committee led to the adoption of a Draft ISO Recommendation.

In September 1966, this Draft ISO Recommendation (No. 1029) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Hungary	South Africa, Rep. of
Brazil	India	Turkey
Bulgaria	Iran	U.A.R.
Chile	Israel	United Kingdom
Colombia	Italy	U.S.S.R.
Czechoslovakia	New Zealand	Yugoslavia
France	Poland	
Germany	Romania	

One Member Body opposed the approval of the Draft :

Netherlands

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1968, to accept it as an ISO RECOMMENDATION.

PEACHES

GUIDE TO COLD STORAGE

INTRODUCTION

This ISO Recommendation provides guidance of a very general nature only. Because of the variability of the fruit according to the time and place of cultivation, local circumstances may make it necessary to specify other conditions of harvesting or other physical conditions in the store.

This ISO Recommendation does not apply unreservedly, therefore, to all varieties in all climates, and each specialist will himself decide on any modifications to be made.

Moreover, this ISO Recommendation does not take into account the role played by horticultural factors, and wastage during storage is not dealt with. The importance of these two subjects has not been forgotten, but the influential factors, i.e. ecological or agrotechnical factors, are not very well known. Moreover, the origin of many of the most frequent physiological disorders of peaches is still uncertain, as are often the appropriate means of combating them. It has therefore seemed difficult to prepare international recommendations on these two points.

Nevertheless, it has seemed useful to give in an Appendix and for purposes of record, a few recommendations which appear sufficiently well founded in the present state of knowledge.

Subject to all possible restrictions arising from the fact that fruits are living material and may vary considerably, the rigorous application of the recommendations contained in this ISO Recommendation and its Appendix should enable much wastage in cold storage to be avoided and in most cases long-term storage to be achieved.

1. SCOPE

This ISO Recommendation describes methods for obtaining conditions for the successful cold storage of peaches.

2. CONDITIONS OF HARVESTING AND PUTTING INTO STORAGE

2.1 Harvesting

It is difficult to characterize the correct maturity for harvesting.

The most frequently used practical criteria for determining the best time for harvesting are

- the basic ground colour* of the outer skin;
- the hardness of the flesh, estimated by means of a spring penetrometer;
- the age of the fruit from all flowering.

* The basic ground colour should be distinguished from the anthocyanin red pigmentation, the intensity and extent of which vary according to the variety and to a certain extent with the exposure to sunlight.

These criteria are not universally valid – for a given variety they vary from one region to another and it is for the grower to decide on his own criteria for picking, on the basis of experience.

The basic ground colour and the recommended hardness vary according to the variety. In general it is advisable to pick the fruit at the time when their colour varies between green and yellow.

At the time of picking the flesh should be firm, somewhat juicy, with a slight aroma and slightly acid.

2.2 Quality characteristics for storage

Fruit put into cold storage should be sound, free from bruises or physiological disorders and free from any visible sign of fungal or bacterial attack. It should be clean.

2.3 Various treatments

For most varieties the fruit should be rapidly cooled after harvesting. Certain varieties, for example Elberta and Red Haven, are sensitive to this treatment, however, and show a tendency to cotton-wool texture. Treatment with iced water, to which sodium hypochlorite has been added, has sometimes been recommended, as also has treatment with wax.

2.4 Putting into storage

The fruit should be put into the cold store as soon as possible after harvesting.

2.5 Method of storage

The fruit should be handled with care. The package should contain only a single layer of fruit. Storage densities of the order of 200 to 220 kg per cubic metre of usable space are recommended for a stack of pallets.

3. OPTIMAL CONDITIONS OF STORAGE

3.1 Temperature

Temperatures of -1 to 2°C , subject to exception, have been recommended. A period of 2 to 5 days at a higher temperature, before the fruit is put into the cold, may avoid the development of a cotton-wool texture in certain varieties which are susceptible to this disorder, for example 2 to 3 days at 24°C for Elberta and Red Haven varieties.

The Table given in the Annex gives the recommended temperatures for a number of varieties.

3.2 Relative humidity

The optimal relative humidity for the storage of peaches is 90 %.

3.3 Storage life

According to the variety, keeping for 2 to 6 weeks at 0°C may be expected.

Storage should not be prolonged beyond limits compatible with the maintenance of good quality.

Samples of fruit should be drawn in such a way as to detect the appearance of any wastage.

The Table given in the Annex shows the expected storage life for a number of varieties.

3.4 Operations at the end of cold storage

In certain cases complementary ripening may be needed at the end of the period in the cold store. Good results have been obtained with ripening temperatures of 18 to 20 °C. If the storage in the cold has been too prolonged, the fruit is often no longer capable of ripening normally.

4. OTHER KEEPING PROCESSES

Controlled-atmosphere storage

Good results have been obtained for certain varieties at 0 °C with atmospheres containing 8 to 10 % of carbon dioxide and 13 to 11 % of oxygen. Certain varieties, however, keep badly if the content of carbon dioxide reaches 10 %. Mixtures containing 2 % of oxygen and 0 to 5 % of carbon dioxide have also been recommended. In this field every variety has its special requirements. Thus for the Elberta variety the following gas mixtures have been used :

2 % of carbon dioxide, 2 % of oxygen;

2 % of carbon dioxide, 5 % of oxygen;

5 % of carbon dioxide, 2 % of oxygen.

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ANNEX

TABLE – Storage in air

Variety	Recommended temperature °C	Expected storage life (in weeks)	General remarks
Madeleine Pouget	2 to 4	2 to 3	
Mayflower	0 to 2	2 to 3	
Adenot	0 to 2	2 to 3	
Amsden	0 to 2	2 to 3	
Incomparable Guillou	0 to 2	2 to 3	
Ribet	0 to 2	2 to 3	
Précoce de Halle	0	2 to 4	
Dixired	0 to 4		After 4 weeks, tendency to cotton-wool texture
Fair Haven	0 to 2	2 to 4	
Red Haven	0 to 2	2 to 4	
Southland	0 to 2	2 to 4	
Elberta	-1 to 0	2 to 4	Require 3 days of complementary ripening. Tendency to cotton-wool texture. 24 hours in 1 % of acetylene at 24 °C, then 12 hours in air at 24 °C, counters cotton-wool texture. A period of 2 to 5 days at 24 °C before putting into cold storage enables the storage life to be extended by 1 week.
J.H. Hale	-1 to 0	4 to 6	