

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1838

FRESH PINEAPPLES

GUIDE TO STORAGE AND TRANSPORT

1st EDITION

August 1970

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Printed in Switzerland

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

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BRIEF HISTORY

The ISO Recommendation R 1838, *Fresh pineapples - Guide to storage and transport*, 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 led to the adoption of Draft ISO Recommendation No. 1838, which was circulated to all the ISO Member Bodies for enquiry in April 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	Portugal
Brazil	Iran	Romania
Chile	Israel	South Africa, Rep. of
Czechoslovakia	Netherlands	Turkey
France	New Zealand	U.A.R.
Greece	Peru	United Kingdom
Hungary	Poland	U.S.S.R.

No Member Body opposed the approval of the Draft.

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

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FRESH PINEAPPLES

GUIDE TO STORAGE AND TRANSPORT

INTRODUCTION

Fresh pineapples produced in regions far from places of consumption should be kept in the cold.

The degree of ripeness at harvest time, which determines the duration of storage, should be chosen according to the duration of transport and marketing operations. This duration varies considerably; hence the clause dealing with the ripeness of the pineapples cannot have a general application.

The external coloration of the pineapples is not a safe criterion for ripeness and it is necessary to give a criterion for actual ripeness.

The condition of the pineapples on arrival at the warehouse (physiological condition, soundness, injuries) has a direct bearing upon the behaviour during storage, which justifies the detailed recommendations made on this subject.

1. SCOPE

This ISO Recommendation describes the conditions for the successful keeping, with or without the aid of artificial cooling, of fresh pineapples, *Ananas comosus* (Linnæus) Merrill, during storage between the place of production and the place of consumption and during maritime transport.

2. CONDITIONS FOR HARVESTING AND PUTTING INTO STORAGE**2.1 Varieties**

The products with which this ISO Recommendation is concerned are fresh fruits, intended for storage, belonging to the following cultivars :

- Cayenne lisse (type and Hilo)
- Baronne de Rothschild
- Queen (Natal Queen, Ripley Queen, MacGregor, Comte de Paris, Alexandra)
- Abacaxi (Sugarloaf, Eleuthera, Pernambuco)
- Red Spanish (Singapore, Spanish, Cabezona)

This list is not restrictive.

2.2 Harvesting

The degree of ripeness of fresh pineapples should be determined in terms of their physiological condition* and the number of days which will elapse between harvesting and sale to the retailer.

* The physiological condition of the fruit is defined by its suitability, at the time of harvest for reaching the required state of ripeness for consumption, at the point of retail sale, after normal storage or transport.

Three degrees of *apparent* ripeness can be distinguished, according to the outside coloration of the fruit, namely :

Degree of ripeness 1 -- with the beginning of the orange-yellow coloration at the base of the fruit, which is called *fruit on the turn*;

Degree of ripeness 2 -- the orange-yellow coloration having developed from the lower quarter to halfway up the fruit, which is called *half-ripe fruit*;

Degree of ripeness 3 -- the orange-yellow coloration having extended from halfway to the whole of the fruit, which is called *ripe fruit*.

The coloration is not a safe criterion for the actual ripeness of pineapples.

The actual ripeness of pineapples is determined by examining the state of the flesh in a cross-section of the fruit at its largest diameter perpendicular to the vertical axis.

The earliest stage for storage corresponds to the degree of apparent ripeness 1.

Fruit of the Cayenne lisse variety which has gone beyond the optimum stage of ripeness, has a cross-section with translucent areas covering more than half the surface of the section (excluding the surface of the core). The optimum stage for storage is defined by the degree of apparent ripeness 2 or 3 according to the keeping time, the colour of the flesh and the extent of the translucent zone in the cross-section of the fruit.

2.3 Qualitative characteristics for storage

The pineapples should be whole, clean and firm, with a crown and a portion of the stem without bracts, well set, with well developed eyes.

They should not show signs of over-exposure to the sun, or deep cracks, even if healed, or unhealed shallow cracks.

They should be free from apparent physiological disorders or apparent cryptogamic disorders, and from visible insects (ants, etc.). However, scale insects (*Dysmicoccus brevipes*) which are not damaging to crops from temperate countries are tolerated in small numbers.

They should not have unhealed injuries or recent bruises, as pineapples are very sensitive to bruises, which systematically bring about decay in storage.

The flesh should not have numerous large brown patches appearing around the ovarian cavities on a cross-section of the fruit.

The fruit should not have a "hedgehog" shape, i.e. protuberant eyes, for cultivars other than the "Queen" group.

The part of the stem remaining attached to the fruit should have a length of between 10 and 30 mm and its cross-section should show a clean cut which should be disinfected by an agreed fungicide (for example powder based on benzoic acid). Shallow lateral injuries of the stem should also be disinfected.

Pineapples can be stored without their crown or with reduced crowns, provided that the base of the crown on the fruit is well healed and that it does not show bruises or decay.

2.4 Putting into storage

The fruit should be put into storage as quickly as possible after harvesting.

The interval between cutting the fruit and putting it into a refrigerated or ventilated enclosure (pre-cooling room, ship's hold, freight container, etc.) should be, if possible, less than 24 hours and should not in any case exceed 48 hours.

After harvesting and packing, if the pineapples are waiting for a means of land transport to take them to the port of embarkation, they should be placed in the shade and in a well ventilated area.

At the port of embarkation, the time during which the vans or trucks loaded with pineapples stand waiting before the fruit is put into the ship's hold should be reduced to a minimum, the vehicles standing in the shade.