

Pós-colheita

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Effect of Air Temperature and Plastic Film Bag Packaging on Couve
(Collard, Brassica oleracea v.acephala) Quality during Storage

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INTRODUCTION

Due to a high temperature condition in Brazilian climate, leafy vegetables such as couve (collard) and lettuce have easily and rapidly lost their freshness after harvest. Couve is one of the popular vegetables in Brazil, which contains a high content in vitamin C. However, a method for postharvest handling of it has not been completely developed. Therefore, this report was undertaken to improve its shelf-life after harvest by cooling and packaging.

MATERIALS AND METHODS

Sample preparation: One box of couve (cv.Manteiga) was purchased from CEASA in Brasilia on 20th of March. Healthy and green leaves were chosen for uniform size (125±22g FW/5leaves) , and each sample had 5 leaves.

Packaging and Storage: Two replicates of samples with and without a plastic film bag (30x40cm, Embalagens Lider S.A.) were stored at 4°C and room temperature for 1, 2, 3 and 7 days for analysis by the following methods.

Determination of water loss: The water loss from leaves was

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weighed and expressed as percentage of the initial fresh weight.

Determination of chlorophyll and vitamin C contents: After the midrib and half of each leaf were removed, another half of them were all together cut into small pieces and well mixed. One gram of the excised leaves was used for chlorophyll determination, and ten gram for vitamin C. Chlorophyll content was measured by the Arnon method (1), using 80% acetone extraction and a spectrophotometer (BECKMAN, DU-7) for sample absorbance determination. Vitamin C (L-ascorbic acid) content was also measured photometrically by a slight modification of the 2,6-dichlorophenol-indolphenol method (2).

Discription of freshness rating scale:

The appearance of ten leaves in each treatment was evaluated periodically by visual symptoms of colour change, wilting and decay according to Table 1.

Table 1. Description of freshness rating scale to evaluate freshness of couve (cv. Manteiga). (For experiment 0-30°C)

Scale	Visual observation	Salability
5	Field fresh	Salable
4	Green colour and slightly wilting	Salable
3	Slightly yellowing	Unsalable
2	Yellowing and wilting spread	Unsalable
1	Decay	Unsalable

RESULTS AND DISCUSSION

Water loss after one week storage, was smallest in the samples packed with a plastic film bag at 4°C, and largest in those at room temp. without it (Fig.1). Water loss was smaller in the samples packed with a plastic film bag at 4°C.

Chlorophyll content was kept almost at initial value during the storage at 4°C, but lost rapidly at room temperature (22~26.5°C). Plastic film bag packaging was not effective for maintenance of chlorophyll (Fig.2).

Fresh couve contained 130 mg of vitamin C per 100g of fresh weight. Vitamin C was maintained at 4°C after one week storage. However, it decreased rapidly at room temperature (Fig.3). This tendency was similar to that results of chlorophyll content, and plastic film packaging hardly affected vitamin C contents.

Fig.4 shows that the appearance of couve during storage was kept best in samples with a plastic film bag at 4°C, and worst in those without it at room temperature. This observation shows that couve can keep the freshness for at least one week at low temperature with use of a plastic film bag. In unwrapped couve at 4°C and 90%RH, the freshness was kept for only 3 days. At room temperature, couve became unsalable in a day of storage even with a plastic film bag.

From above results, it is suggested that in keeping quality of couve, cold temperature and film packaging are essential.

REFERENCES

1. Arnon, D. I. 1949. Plant Physiol., 24:1 .
2. EMBRAPA/CNPH method: ANALISE DE ALIMENTOS; TAL 220 Determinação do Teor de Vitamine C.

緑葉コーベの品質保持に及ぼす貯蔵温度とフィルム包装の影響

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要約

ブラジルの高温下で収穫される葉菜類は黄化や萎凋などで鮮度低下が速い。そこで、緑葉コーベの品質保持を図るため、低温とフィルム包装の影響を調べた結果、低温4℃とフィルム包装を組み合わせて貯蔵すれば収穫後、少なくとも1週間は鮮度維持が可能であった。

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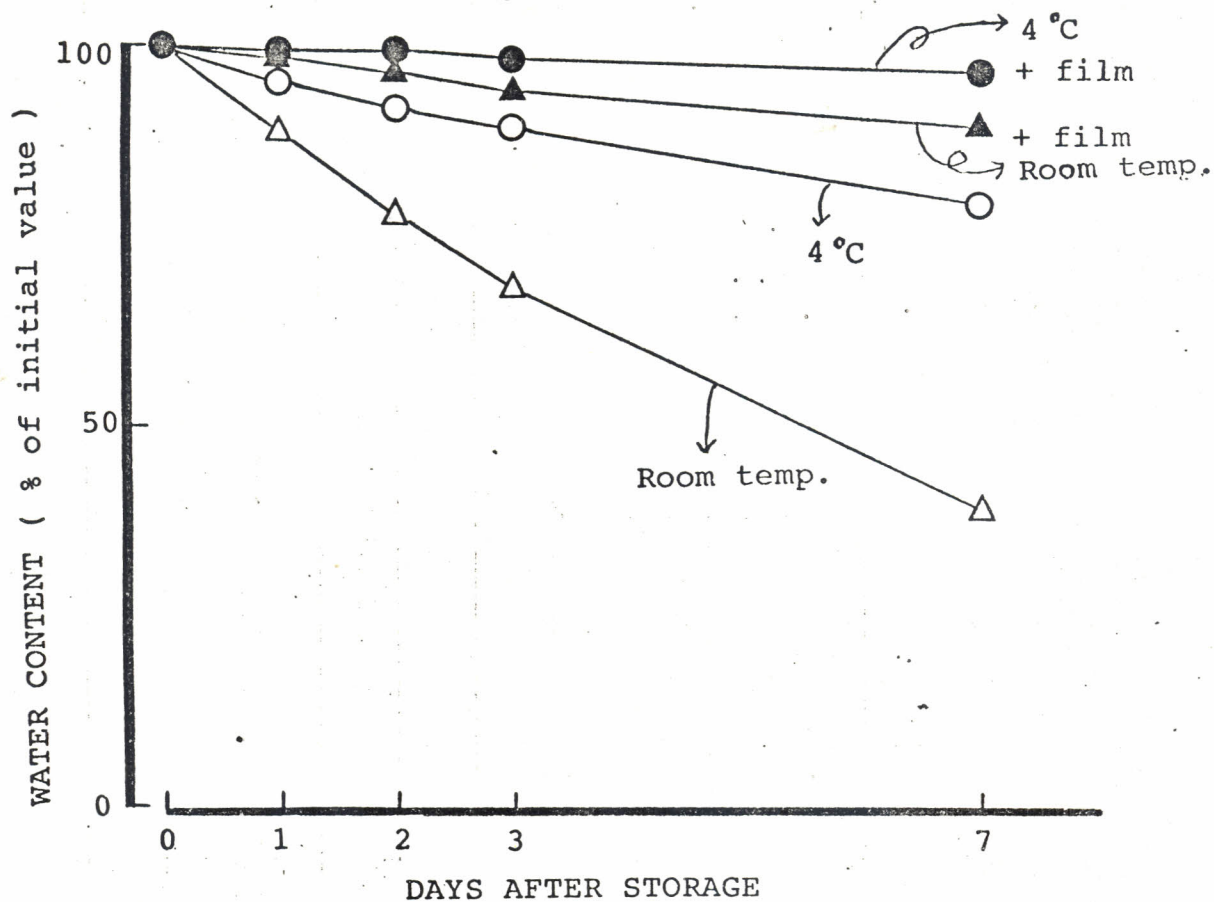


Fig.1. Effect of air temperature and film packaging on water content in couve during storage after harvest.

Each point shows the mean of two samples.

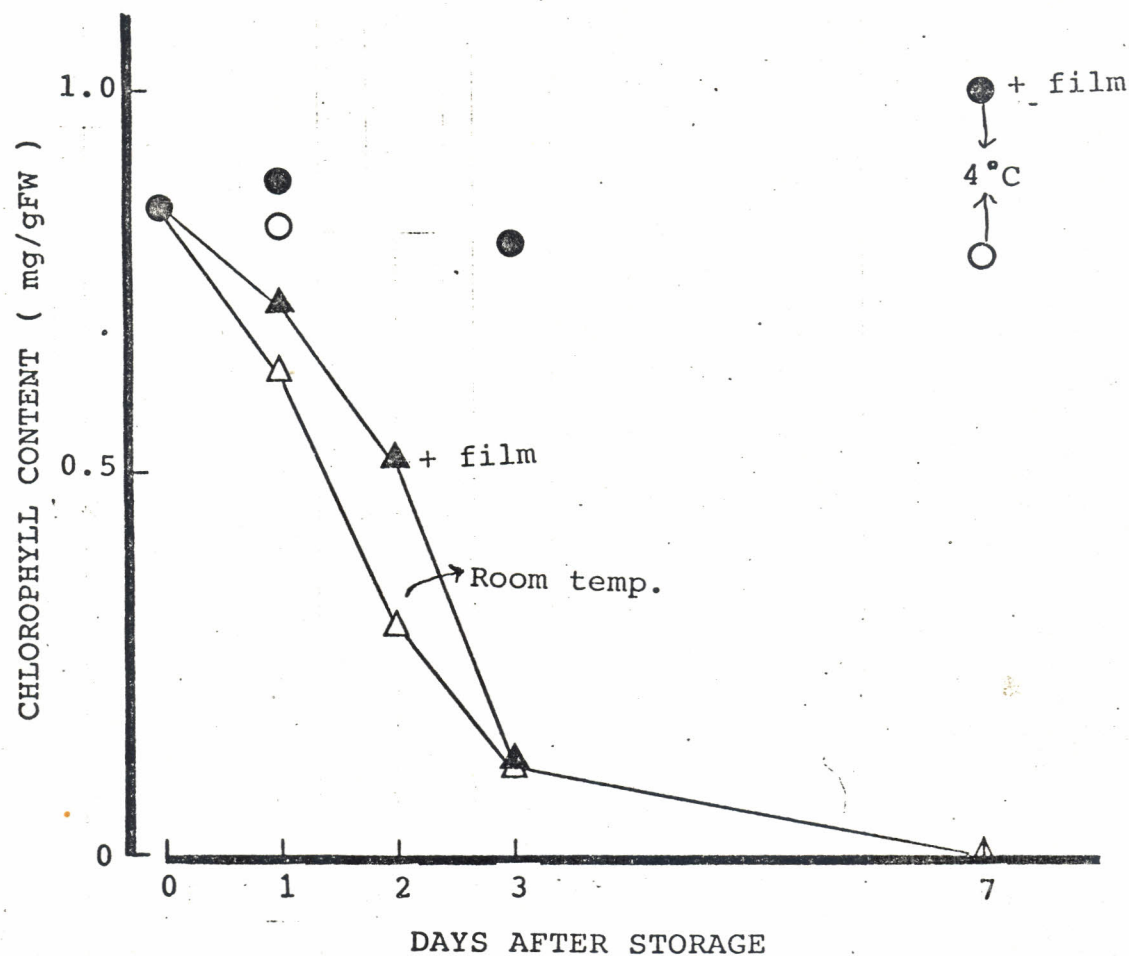


Fig.2. Effect of air temperature and film packaging on chlorophyll content in couve during storage after harvest.

Each point shows the mean of two samples.

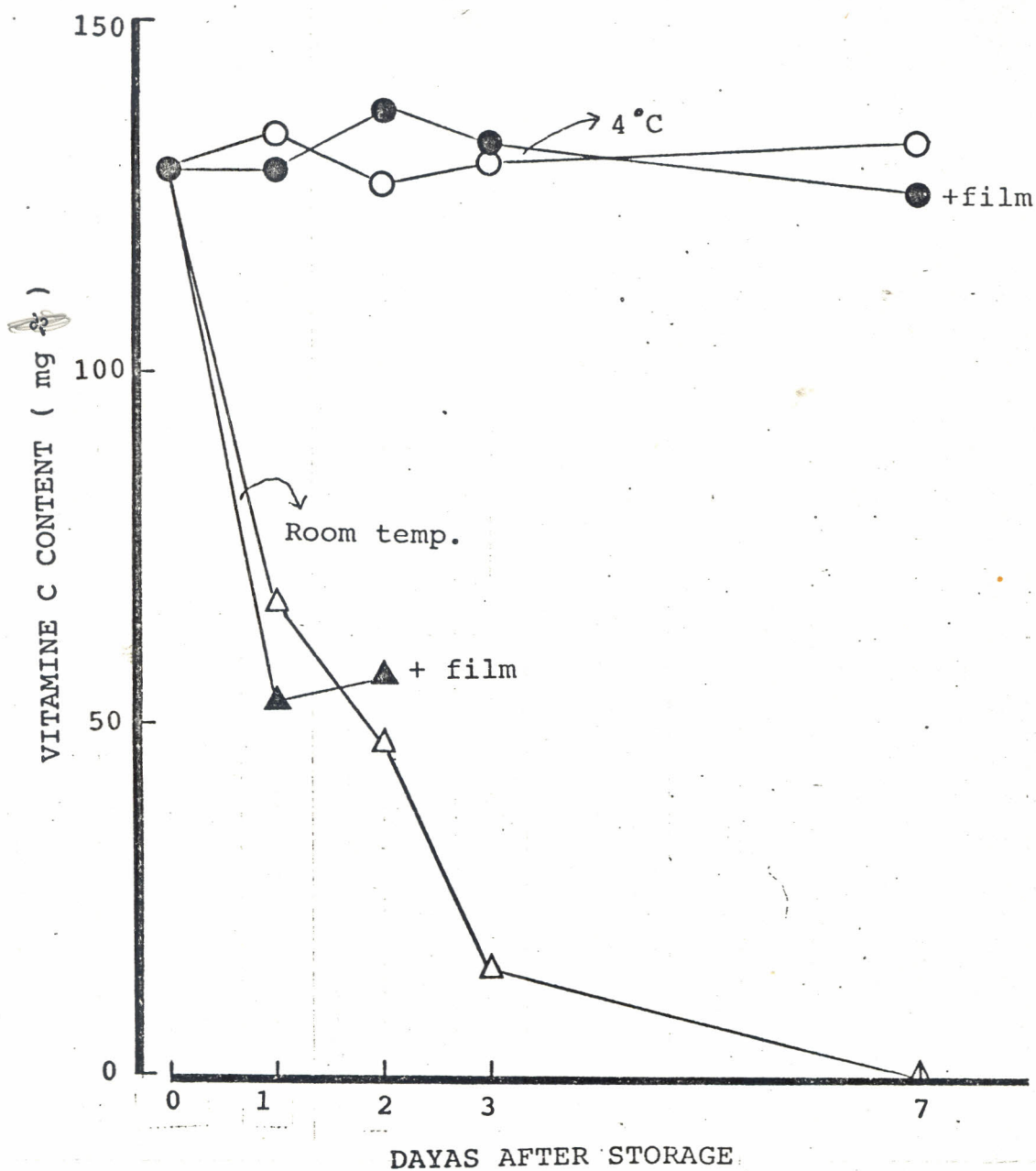


Fig.3. Effect of air temperature and film packaging on vitamin C content in couve during storage after harvest.

Each point shows the mean of two samples.

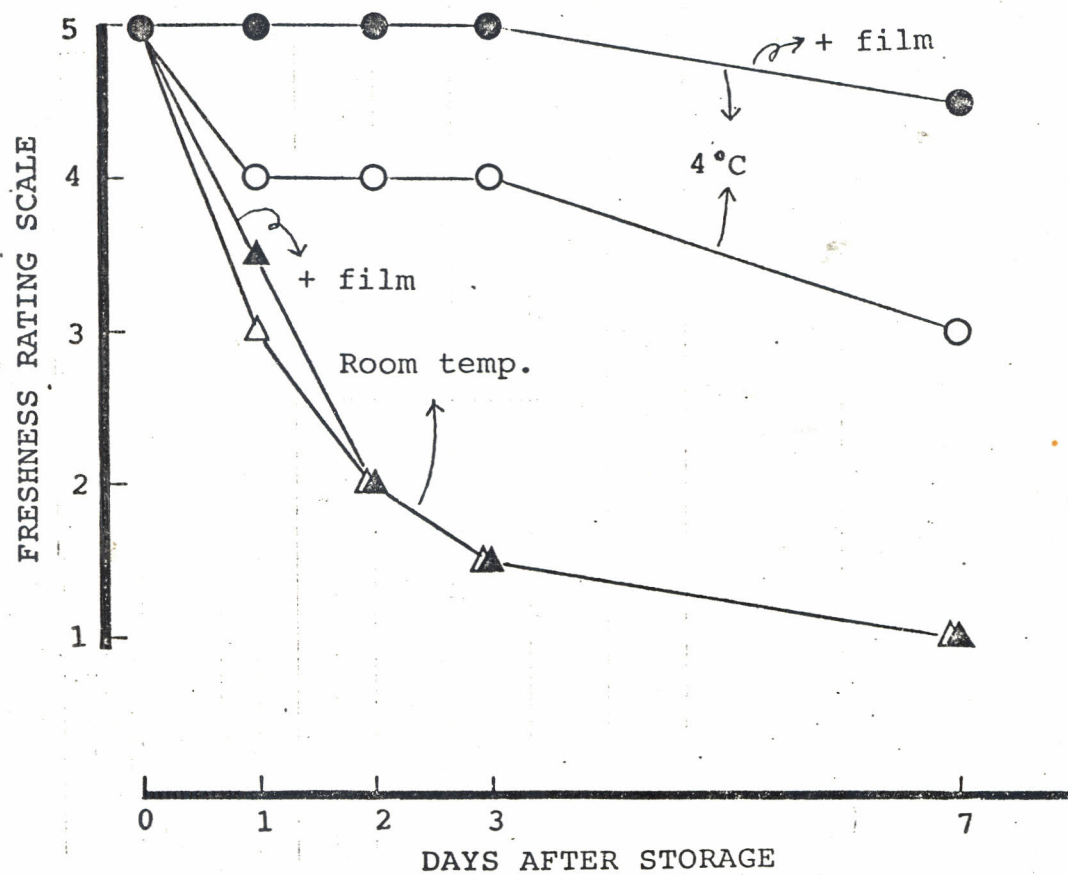


Fig.4. Effect of air temperature and film packaging on keeping quality in couve during storage after harvest.