

# THE SUITABILITY OF CERTAIN MELON VARIETIES FOR CANNING\*

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## INTRODUCTION

The cultivation of melons has expanded rapidly, increasing from less than 3000 dunams\*\*\* in 1952 to over 5000 dunams in 1954, and export markets for this crop are now being investigated. Melons lend themselves not only to fresh consumption, but are also very well suited for preservation by canning. Canned melons are important not only to the local canning industry, but also to the farmer, since a more varied use will assure a safer economic basis for this crop.

Abroad, melons are frequently preserved either by pickling or candying but not by canning. The first commercial batches of canned melons were prepared about 4 years ago at the Yad Mordekhai Canning factory. They were well received because of the mild, pleasant flavor and attractive appearance of the product. But subsequently, when produced by several factories, the quality of the products did not always remain uniformly high, assumably due to the fact that melons of different varieties were used. While some varieties yielded products of excellent appearance, color and flavor, others were at times deficient in either one or all of these properties.

No information is as yet available concerning the relative suitability of different melon varieties; the merits of some of the more important local varieties for canning were, therefore, studied and quality of the products compared. Local food standards are generally guided and assisted by standards developed abroad; but since canned melons are as yet unknown abroad, collection of local information became essential.

## METHODS AND RESULTS

Representative samples of some of the most widely grown melon varieties were collected. The description and analyses of the varieties obtained between mid-July and early August 1956 are recorded in Table 1.

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\*\* Josef Cutin died December 21, 1956.

\*\*\* 1 dunam = approx. 1/4 acre.

TABLE 1

DESCRIPTION OF MELON SAMPLES USED IN EXPERIMENT.

Date	V a r i e t y			Approx. fruit weight (g)	Composition of fruit		
	Name	Form of fruit	Locality		soluble solids %	acid malic %	Vitamin C mg / 100g
16/7	Jokneam Ananas	Oblong	Rehovot	1300	11.—	—	—
22/7	"	"	"	1500	9.8	0.10	21.0
2/8	"	"	Hazera	1300	11.6	0.06	29.0
16/7	Baladi	"	Rehovot	1500	12.2	—	—
2/8	"	"	Hazera	1000	10.3	0.06	26.2
22/7	Tal Hagilboa	Round	Rehovot	900	9.6	0.12	—
2/8	Dvash Haogen	"	Hazera	900	14.2	0.06	22.6
26/7	Hale's Best	"	Rehovot	700	9.4	0.15	18.7
26/7	Honey Dew (yellow)	Oblong	Hulda	1400	7.3	0.15	16.0
26/7	Honey Dew (green)	"	"	2300	9.9	0.16	21.0

As evident from Table 1, the native Baladi variety, and the three selections from this local variety, i.e. Jokneam Ananas and Dvash Haogen as well as the variety Tal Hagilboa, a cross between Hale's Best and a Turkestanian variety, were generally sweeter and had less acid than the Honey Dew and Hale's Best, both introductions from abroad (4). The local varieties also tended to have a comparatively higher vitamin C content.

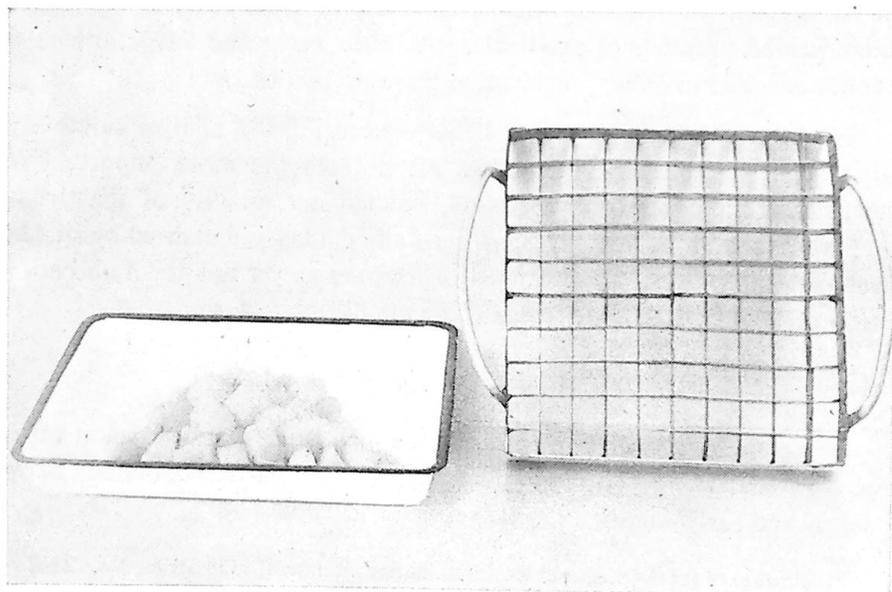


Plate 1. Right: Melon cutting knife; left: melon cubes.

The ten samples described above were prepared for canning under uniform conditions, so as to enable a convenient comparison of the resulting products.

The fruit, ripe but firm, was peeled, the seeds removed and the fruit flesh cut into uniform cubes of 2 cm by means of a specially built, stainless steel knife (Plate 1). The cubes were blanched for 1 minute, poured immediately into cans and syruped.

Acidified syrup was used so as to improve the taste and to achieve a more rapid sterilization of the product. In a preliminary test canned melons were prepared from the Jokneam Ananas variety with syrup to which between 0.25% and 1.0% citric acid had been added. All products to which more than 0.5% citric acid had been added, however, tasted somewhat too sour and their delicate fruit flavor was masked. A syrup made of 40% sugar and 0.4% citric acid was, therefore, used for all further trials. After syruping the cans were exhausted, sealed, processed at 100° C and immediately cooled.

After a storage period of 3 months the contents were analysed and their quality judged by a tasting board. The board consisted of 13 tasters selected from the staff of our institute, visiting food technologists and members of the committee of the Standard Institute. The tasters recorded the relative score for each product on the prepared questionnaires. Analyses and scores of the products are summarized in Tables 2 and 3.

TABLE 2  
ANALYSIS OF CANNED MELONS.

Date	V a r i e t y		Analysis of canned product			
	Name	Locality	pH	citric acid %	TSS %	Vitamin C mg/100 g
16/7	Jokneam Ananas	Rehovot	4.8	0.15	19.3	16
22/7	"	"	4.7	0.14	16.6	20
2/8	"	Hazera	4.6	0.14	19.0	21
16/7	Baladi	Rehovot	4.9	0.10	21.8	17
2/8	"	Hazera	4.4	0.11	18.3	17
22/7	Tal Hagilboa	Rehovot	4.7	0.15	17.6	20
2/8	Dvash Haogen	Hazera	4.6	0.11	18.4	21
26/7	Hale's Best	Rehovot	4.8	0.17	16.9	18
26/7	Honey Dew (yellow)	Hulda	4.5	0.16	16.7	12
26/7	Honey Dew (green)	Hulda	4.5	0.17	17.7	19

Analysis shows that the local canned varieties were, on the average, somewhat sweeter and contained less acid.

TABLE 3  
SCORING OF PRODUCTS AS DETERMINED BY TASTING BOARD

Date	Variety		Classification by 13 tasters					Average Score
	Name	Locality	Excellent (1)	Good (2)	Medium (3)	Poor (4)	Very poor (5)	
16/7	Jokneam Ananas	Rehovot	3	8	1	1	0	2.0
22/7	"	"						
2/8	"	Hazera						
16/7	Baladi	Rehovot						
2/8	"	Hazera	4	5	3	1	0	2.1
22/7	Tal. Hagilboa	Rehovot	0	2	5	5	1	3.2
2/8	Dvash Haogen	Hazera	0	1	6	4	2	3.3
26/7	Hale's Best	Rehovot	0	0	1	6	6	4.3
26/7	Honey Dew (yellow)	Hulda	0	3	4	5	1	3.4
26/7	Honey Dew (green)	Hulda	0	2	4	7	9	3.5

The differences in acceptability of the product to the tasters were very conspicuous. From Table 3 it becomes clearly evident that the two local varieties, Jokneam Ananas and Baladi with their pleasant aroma, were preferred above all others. The canned product made from the export variety "Hale's Best", was nearly unanimously rejected. The remaining four varieties were generally judged as fairly acceptable or somewhat below average.

The agriculturist is, however, greatly interested in the industrial utilization of the varieties Hale's Best and Honey Dew, which are grown particularly for export. As only first grade fruit of uniform shape and free from outer blemishes can be shipped, a high percentage of unexportable fruit will remain in the hands of the grower. These varieties are, however, sold with great difficulty on the local market, since they lack the pleasant, pineapple-like flavor of the Baladi type variety to which the consumers are accustomed.

Canned melons prepared from the variety Hale's Best, were rejected by our tasters because of their specific unpleasant flavor. Products made from the two Honey Dew types were also considered less desirable because they lack aroma and are rather tasteless.

The addition of artificial flavoring, possibly pineapple, may help to overcome this difficulty. While canned Hale's Best melons were invariably inferior due to their very strong flavor, still such a product if mixed with citrus acquired a most pleasant aroma. Thus it may well be that the specific flavor of this variety is felt as unpleasant only at higher concentrations but quite tasty if properly diluted.

## SUMMARY

1. The suitability of *six* of the major melon varieties for canning purposes was investigated.
2. Sugar, acid and Vitamin C content of the fruit, as well as of the canned products, were determined.
3. A board of tasters was asked to compare the acceptability of these products.
4. The Baladi and Jokneam Ananas varieties were found to produce a canned product of very high quality; four varieties fair to low quality, while those prepared from Hale's Best were considered to be quite inferior.

## ACKNOWLEDGMENTS

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