

**CHANGES IN RHEOLOGICAL AND FOOD-CHEMICAL  
PARAMETERS IN SWEET MELON  
VARIETIES DURING THE POST-HARVEST TREATMENTS.**

<sup>1</sup>Füstös Zsuzsanna, <sup>2</sup>Gilingerné Pankotai Mária, <sup>3</sup>Felföldi József,  
<sup>4</sup>El-Beik A.K.

(1) Central Agricultural Office, 1024 Budapest Keleti K. u.24.,  
fustoszs@ommi.hu

(2) Semmelweis University, F. Health Sci., Dept. Dietetics and Nutritional Sci.,  
Budapest

(3) Corvinus University, Fac. Food Sciences, Dept. Physics and Control,  
Budapest

(4) Suez Canal Univ., Fac. Environ, Agr. Sci., Dept. Plan Production, Egypt, El-  
Arish

#### ABSTRACT

The aim of our research was to study the effect of the different storage system different post-harvest handling for the 4 type of sweet melon varieties in different maturity stage on different storage temperature (4 and 8 °C) for the storability measured on different way and test the change sugar content storage. The storage results of different variety shown clearly the long-shelf life varieties were Main results of our research work was the evaluation of the storage results of the melon fruits which were harvested in different maturity stage. Results of dropping-treatment, model of ill-treatment shown dramatically deterioration loss.

#### INTRODUCTION

In Hungary the sweet melon consumption is relatively low comparing to another European countries. Hungarian traditional melon growing based on early, normal maturity, quick over-ripening varieties, in that case the harvest time and the time of the fresh consumption from local production are short. Chance to increase the Hungarian consumption of melon are the introduction and entering on the market the new, long-shelf life (LSL) varieties( Füstös ,2005,2007.). The adopted method of the short storage and post-harvest handling is not in Hungarian trade practice. We had experiments to study the effect of the different storage temperature, different post-harvest handling for the 4 type of sweet melon varieties in different maturity stages

## MATERIAL AND METHODS

We tested registered melon varieties in EU Common Catalogues. The fruits were grown in the Variety Trial Station of Central Agricultural Office in Kecskemét, Hungary.

\*Cantalup type melon varieties

Fiata :short shelf life, early maturity, orange flesh, quick over-maturity

Proteo: long shelf life, early variety, orange flesh, slow over-maturity

\*Galia type melon varieties

Candy: short shelf life, early maturity, white-green flesh, quick over-maturity

Solarking, long shelf life, middle or late maturity, green flesh, slow over-maturity

Melon fruits of the varieties were harvested at two maturity stages: 50 % and 75%.

We stored the fruits in experimental storage chamber without any packing on 4 °C and 8 °C, at 90-95 % relative humidity, during 28 days. We sampled the stored fruits 4 times weekly. To simulate poor handling technique some fruits were dropped from height of 50 cm 2 or 4 times for studying the effect of bruising on fruit firmness and weight loss. The treated fruits were stored and measured same than other ones.

Measurement methods were used for studying the changes in rheological parameters of fruits: weight of fruits - weight loss, skin and flesh firmness ( Pankotai et al,2004, 2007) by manual penetrometer – FT 327, 0,8 mm diameter cylindrical probe, Firmness kg /mm , stiffness by acoustic method. We measured by PC with sound Card: Sound Blaster PCI512

Acoustic sensor: condenser microphone, preamplifier

Sample holder above the microphone

Software: Stiff, Measured: resonant frequency (f), Hz mass of the sample (m),g

Stiffness =  $f^2 * m / 1\ 000\ 000$  N/mm

Food-chemical parameters were detected from samples of three maturity stage: 50 % and 75%.100% : refraction (TSS) % by refractometer, sugars – glucose, fructose, sucrose by enzymatic method . The sweetness index was calculated.

## RESULTS AND DISCUSSION

All varieties were less weight loss, better storage results in the lower, 4°C temperature, In the chamber where the temperature was 8°C after 4 weeks were no edible fruits.

The melons were harvested in earlier maturity stage got a better storage results of two Cantalup type varieties. The melons were harvested in 75% maturity stage after 4 weeks were no edible fruits.

The correlation of destructive and non-destructive measurement methods was very close.

We will present in the following the data of stiffness loss, characterized the quality of melons during storage

The melons were harvested in earlier maturity stage generally got a better storage quality instead of Solarking variety.

The sugar content of Fiata variety decreased after 3 weeks. The sugar content of Proteo variety were less changeable.

Summary the results of poor handling experiments shown the big differences among the quality of intact and bruised melons. After dropping immediately 27-48 % firmness loss were detected in fruits, the ratio increased during storage time.

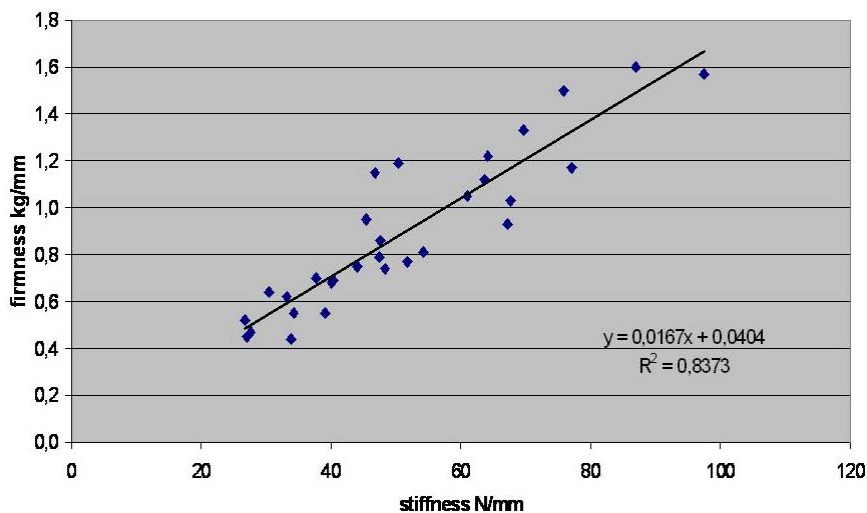


Figure 1  
The correlation between the destructive measurement by penetrometer (firmness) and nondestructive measurement by acoustic method (stiffness)

### Conclusions

The storage results of different varieties shown clearly the long-shelf life varieties and earlier maturity stage gave better storage quality.

In lower temperature (4 °C) we measured better storage results.

Results of dropping-treatment, model poor handling shown dramatically deterioration loss.

The non-destructive acoustic measurement method is suitable for control of the melon fruit quality during storage time

The sugar contents decrease in normal maturity type and stable in LSL type during storage

Our research results add some detailed information for the better storage results of the different melon variety types. We hope help to supply for longer season of our market with better quality melon product, which will increase Hungarian melon consumption

#### REFERENCES

- Füstös Zs. et al 2005. A zöldségfélék és tárolása és pulton tartása (Storage and Shelf life of Vegetable) 16/11. pp 49-52. Agrofórum
- Füstös Zs. et al., 2007. Post-harvest properties of cucumber varieties , PTEP 11 , 2007, Szerbia
- Pankotai M.G.- Füstös Zs- Felföldi J.,2004 Changes in Quality parameters of sweet melon during storage. CEFOOD . Second Central European Congress on Food, Budapest ,p.266
- Pankotai M.G.- Komsa I.-. Füstös Zs., 2007, Quality changes of paprika types during the storage in Hungary - Acta Horticulturae 747, ISHS .pp 179-184.

#### **LEARNING OF PHYSICOCHEMICAL PARAMETERS OF THE SAUSAGE GOODS**

Hilmanovich D.I., Genselevich A.R. - students of II course of  
Engineering Technological Faculty

Scientific advisers: Kudyрко T.G., Tsvetnitskaja E.V., Maljevskaja E.B -  
assistants of Chemistry Department.

Grodno State Agrarian University,  
Tereshkovoi -28, Department of Chemistry, Grodno 230008 Belarus.  
e-mail: lena7843041mal@rambler.ru

#### ABSTRACT

Meat products are one of the major foods, containing majority of nutrients necessary for a man. Therefore monitoring of meat's quality and meat's products