

## TEXTURE PROPERTIES OF HORTICULTURAL PRODUCTS

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### 1. INTRODUCTION

The quality of horticultural produces can be determined either by laboratory measurements, or by sensory qualification. Relationship was found between the two methods. Cucumbers and disease resistant apples varieties were tested. The experiments were sponsored by OTKA (TO30241).

First of all the consumers determined sensory points or sensory rank scores. During organoleptical analysis we measured the rheological properties. The sensory evaluation was done by Z. Kókai.

### 2. MATERIALS AND METHODS

Texture point of preserved cucumber varieties and rank scores of apple varieties were determined. Force and time of biting and chewing are characterized by the organoleptical texture properties. We used penetrometrical texture analysis for laboratory qualification.

In our earlier experimental results the ratio (called limit force-number) of the bioyield and rupture stress of the texture curve is a characteristic of the biting forces as well.

The creep property of chewing is specifically important if the average and standard deviation of the limit force-number will be a probability variable that can be seen in the equation. The 95 percent probability level of this variable is used in agrophysical models.

$$\mathbf{X} = \bar{\xi}_{\frac{F_r}{F_y}} + 2s_{\frac{F_r}{F_y}}^*$$

The relationship of these interval length and organoleptical properties was defined by creep function with regression analysis.

$$\mathbf{K} = \frac{\mathbf{X}}{\mathbf{cX} + \mathbf{d}}$$

**K: texture point**

In this function the texture point was used directly by the results of consumers' sensory evaluation. With rank scores before the test of creep-function the quality property (texture point) was defined by PQS method.

### 3. RESULTS AND DISCUSSION

The limit force-number of cucumber varieties is smaller in case of bigger organoleptical points as it can be seen in Table 1.

Table 1. Connection between stress ratio and the sensory points.

Variety	Ratio of limit stresses (limit force-number) $\frac{\sigma_r}{\sigma_f} = \mu$	Rate of measuring results in interval		Average of organoleptical point
		Row (%)	Preserved (%)	
Levina	$1,2 < \mu < 3,5$	52		7,4
	$2 < \mu < 6$		56	
Minerva	$1,2 < \mu < 3,5$	97		6
	$2 < \mu < 6$		89	

The rank scores of apple varieties are shown in Table 2. In the first quarter of the rectangular coordinate system we show the vectors with

frequency (number of consumers) of rank scores (can be seen in Figure 1).

Table2. Sensory rank scores of the consumers varieties by varieties.

Variety		Number of consumers						Total
		according to rank scores						
		1.	2.	3.	4.	5.	6.	
		Rank score						
1	Releika	11	11	10	12	11		55
2	Relinda	17	11	1	11	6	46	92
3	Remo	9	15	10	19	25	14	92
4	Renora	11	10	22	28	15	6	92
5	Resi	13	8	12	15	7		55

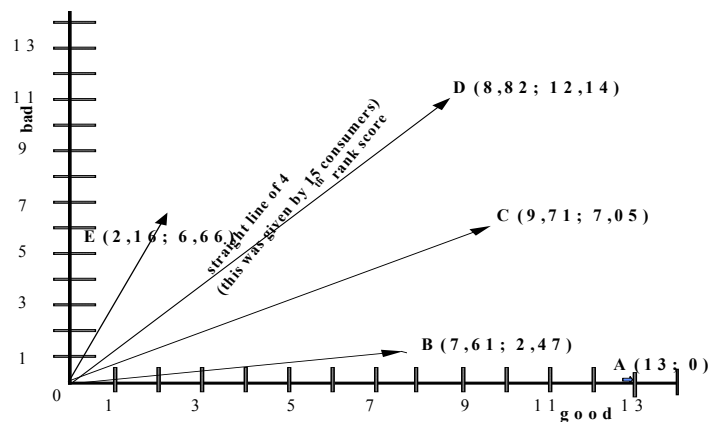


Figure 1.

Representation of sensory rank scores with vectors

We presented PQS method for RESI apple variety in Figure 2. The organoleptical property (organoleptical point) is tangent of the directional angle of center of gravity. These properties were used in creep-function (can be seen in Figure 3.), which divides into two quality groups the apple varieties (can be seen in Figure 4. too).

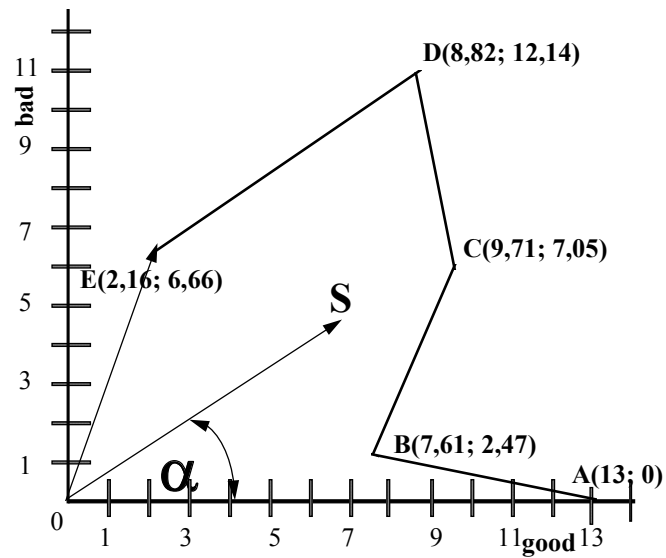


Figure 2.  
Determination of centre of gravity

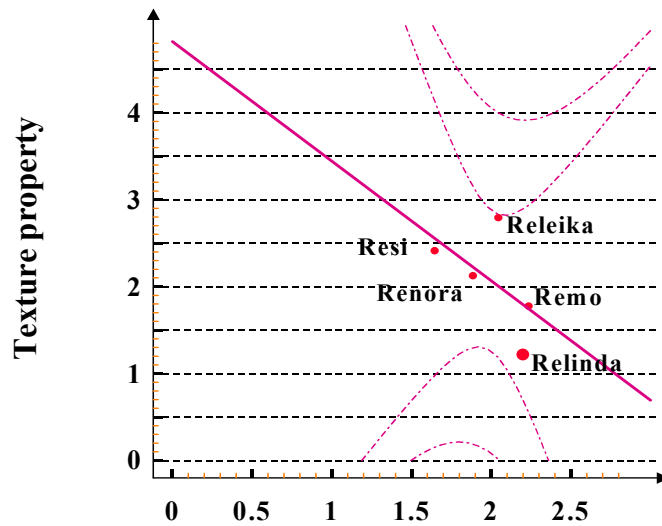


Figure 3.  
Correlation of the rheological properties and sensory rank scores  
( $Y = -1,0723X + 4,1637$ ,  $r = 0,9988$ )

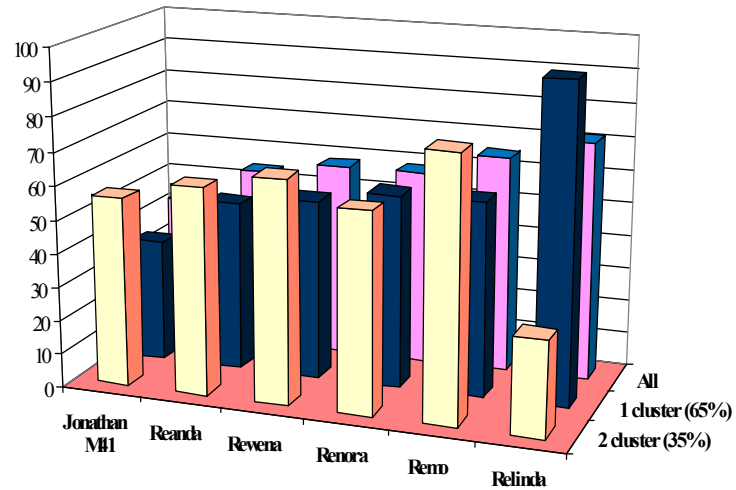


Figure 4.  
Preference rank of apple varieties

#### 4. REFERENCES

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2. ISO 8587. (1988) Sensory analysis, Methodology, Ranking