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### PRODUCTION AND QUALITY INDICES OBTAINED AT SOME CHERRY VARIETIES GROWN IN THE NORTH-WESTERN PART OF THE COUNTRY

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#### Abstract

This research resembles the results of some reproof made during two years (2007 and 2008) on nine cherry varieties at S.C.D.P. Bihor. The reproof was concerning the fruit fructification level, the fruit production, fruit biometrical elements, physical and chemical composition. The obtained results play a significant role in choosing the best cherry varieties for founding plantations, varieties which find appropriate conditions in the North-Western part of the country. The results help also in establishing the best culture technologies (planting distances, cuttings, controlling of the best culture diseases and pests) aspects that compete at a high production and improving the fruit quality.

Keywords: fructification, physical and mechanical analysis, interfertility, biometrical elements, index size.

### **INTRODUCTION**

Cherry is a very important variety from the economical point of view of their nutritive, technological, commercial fruit characteristics and biological trees features. For a high fruit production in the next years, from the qualitative and quantitative point of view, there must be taken into consideration a suitable place for both types of cherry trees, the foreign types and the Romanian ones. Researches regarding the cherry trees were carried out by Parnia Corneliu and co-workers in 1979, by Cociu V. in 1982. At S.C.D.P. Bihor there were carried out researches in 2007, regarding the behavior of some cherry varieties in the western part of the country.

# MATERIALS AND METHODS

The experience is organized at S.C.D.P. Bihor in the period 2007-2008 on an experimental lot formed in 2000 on a brown, argiloiluvial soil, characterized by the  $A_o$ -B<sub>t</sub>-C type. The planting distances are  $\frac{3}{4}$  m. The variants are linearly situated, on three rows and contain a different number of trees. The experience variants are represented by following variety: Timpurii de Cluj, Pándy, Érdi bötermö, Oblacinska, Cigánymeggy, Schatenmorelle, Ilva, Northstar, Pitic de Iaşi. The establishing of the cherry varieties that are recommended, for the North-Western part of the country was made by performing some reproof on many years, on many cherry trees varieties. The reproof that were carried out were concerning the fruit fructification level, production, biometrical elements, physical and mechanical composition.

#### The fructification level:

The fructification level depends on the reserve substances accumulated in the previous summer, on the climate events and the weather conditions during the blossoming, that conditions the pollination.

Table 1

Nr. crt.	Variety	2007 %	2008 %	Medium of 2007-2008
1.	Timpurii de Cluj	41,2	42,5	41,85
2.	Pándy	33,5	34,3	33,9
3.	Érdi bötermö	34,8	35,1	34,95
4.	Oblacinska	46,3	47,1	46,7
5.	Cigánymeggy	48,2	49,0	48,6
6.	Ilva	7,5	10,4	8,95
7.	Schatenmorelle	16,9	16,7	16,8
8.	Northstar	30,9	31,2	31,05
9.	Pitic de Iași	37,0	38,5	37,75
	Variety medium	32,9	33,86	33,38

The fructification level (2007-2008)

The fructification level on the same species differs from one variety to another, being directly influenced by the climate conditions (temperature and downfall from the blossoming moment). At some researched cherry varieties there might be observed that some varieties make fruit based on the interfertility and other based on the autofertility (Oblacinska, Ilva).

There is a big difference between the varieties from this point of view. There are varieties that have a low percentage fructification (Ilva, Schatenmorelle) and varieties that have a high percentage (Cigánymeggy, Oblacinska, Timpurii de Cluj, Pitic de Iași, Érdi bötermö, Northstar).

#### The fruit production

Knowing that the main cherry deficiency is the low fruit production, this research objective was the main point of this experience. In table 2 there is shown the fruit production of 2007-2008

Nr.		2007 2008		)08	Medium of	Rel. prod	
crt.	Variety	kg/tree	kg/ha	kg/tree	kg/ha	2007-2008	over
		_	_	-	_		x(%)
1.	Timpurii de Cluj	18,8	13163,4	19,8	13164,4	13163,9	132,7
2.	Pándy	16,6	11331,8	17,0	11332,8	11332,3	114,2
3.	Érdi bötermö	17,9	12414,7	19,0	12416,7	12415,7	125,2
4.	Oblacinska	18,4	12831,2	18,0	12830,8	12831	129,3
5.	Cigánymeggy	22,4	16163,2	23,6	16164,4	16163,8	163,0
6.	Ilva	5,1	2585,5	5,8	2586,0	2585,6	26,0
7.	Schatenmorelle	11,7	7250,1	12,9	7252,7	7251,4	73,1
8.	Northstar	11,3	6916,9	12,8	6919,2	6918	69,7
9.	Pitic de Iași	10,9	6583,7	11,2	6593,1	6588,4	66,4
	Variety medium	14,78	9915,6	15,56	9917,8	9916,6	100

The fruit production (2007-2008)

Table 2

As shown in table nr.2, the production/tree medium depends on the variety, so that in 2007 the highest production is registered at the varieties Cigánymeggy (22,4 kg/tree) and the lowest production is registered at the variety Ilva (5,1 kg/tree). In 2008, the highest production/tree is registered at the Cigánymeggy (23,6 kg/tree). The varieties medium of the two years is situated between 14,78 kg/tree (2007) and 15,56 kg/tree (2008). The best productions were registered at the varieties Cigánymeggy, Timpurii de Cluj, Oblacinska,

Érdi bötermö, Pándy. The lowest production is registered at the variety Ilva because of the low fructification level.

#### **Biometrical fruit elements**

These elements depend on the fruit diameter and index size. They play an important role in establishing their commercial features, and industry processing. In order to characterize the varieties regarding these aspects there were carried out some biometrical measurements and there were determined the high and low diameter, index size and peduncle length.

Table.3

Nr. crt.	Variety	High diameter (mm)	Low diameter (mm)	Fruit height (mm)	Height (mm)	Length (mm)	
1.	Timpurii de Cluj	19,5	18,2	17,8	18,5	48,6	
2.	Pándy	22,1	19,8	18,6	20,2	49,4	
3.	Érdi bötermö	17,6	16,1	17,5	17,1	45,4	
4.	Oblacinska	19,8	16,7	16,3	17,6	32,3	
5.	Cigánymeggy	16,5	16,3	16,1	16,3	40,3	
6.	Ilva	18,8	17,6	16,6	17,7	37,6	
7.	Schatenmorelle	16,3	15,2	15,1	15,5	46,4	
8.	Northstar	16,4	15,8	15,2	15,8	38,4	
9.	Pitic de Iași	17,1	16,2	17,4	16,9	55,4	
	Variety medium	18,3	16,9	16,7	17,3	43,7	

The biometrical elements (2007-2008)

From the information shown in table nr.3 results that the researched cherry varieties have a high diameter situated between 22,1 mm (at Pándy) and 16,3 mm (at Schatenmorelle), and the low diameter has values situated between 19,8 mm (at Pándy) and 15,2 mm (at Schatenmorelle). The height index ( $I_m$ ) is situated between 20,2 mm (at Pándy) and 15,5 (at Schatenmorelle).

$$I_m = \frac{D + d + H}{3}$$

The peduncle length is situated between 55,4 mm (at Pitic de Iași) and 32,3 mm (at Oblacinska).

## The fruit physical and mechanical composition

The most important elements for establishing the fruit physical and mechanical composition are: the fruit medium amount, pulp, seeds and peduncle proportion. In table nr.4 there are shown the information regarding the physical and mechanical composition (2007-2008).

Table.4

Nr. crt.	Variety	Year	Fruit amount (g)		Pulp (%)		Seed (%)		Peduncle (%)	
			Years medium	Medium 2007- 2008	Years medium	Medium 2007- 2008	Years medium	Medium 2007- 2008	Years medium	Medium 2007- 2008
1.	Timpurii de Cluj	2007	4,12		91,56		5,25		1,50	
		2008	4,40	4,26	92,24	91,90	6,96	6,10	2,23	1,71
2.	Pándy	2007	4,05		87,76		8,23		1,60	
		2008	5,27	4,66	90,17	88,96	9,83	9,03	2,41	2,00
3.	Érdi bötermö	2007	3,00		87,15		8,33		1,11	
		2008	3,75	3,37	90,56	88,85	10,00	9,16	2,85	1,98
4.	Oblacinska	2007	3,56		88,51		7,35		1,50	
		2008	3,88	3,72	91,15	89,83	9,42	8,38	1,77	1,63
5.	Cigánymeggy	2007	3,24		87,36		10,50		1,20	
		2008	3,53	3,37	88,30	87,83	11,32	10,91	1,32	1,26
6.	Ilva	2007	3,33		87,30		10,20		1,70	
		2008	3,70	3,51	88,01	87,65	10,35	10,27	2,50	2,10
7.	Schatenmorelle	2007	2,80		88,94		8,60		1,14	
		2008	3,53	3,16	90,26	89,60	8,80	8,70	2,26	1,70
8.	Northstar	2007	3,05		93,00		5,00		1,31	
		2008	3,77	3,42	93, 38	93,19	5,31	5,15	2,00	1,65
9.	Pitic de Iași	2007	3,40		84,67		11,80		1,19	
		2008	4,20	3,80	87,01	85,84	13,10	12,45	2,23	1,71
	Variety medium			3,69					8,90	1,75

The fruit physical - mechanical composition (2007-2008)

From the information given in table nr.4, results that in average for two growing years (2007-2008), the fruit weight is situated between 4,66 g at Pándy variety and 3,16 g at Schatenmorelle variety. The medium is 3,69 g. According to the information above, there can be seen that the researched varieties have low and middle forms. The pulp medium is situated between 93,19% at Northstar and 85,94% at Pitic de Iaşi. A high pulp medium percentage is also registered at the following varieties: Timpurii de Cluj, Oblacinska and Schatenmorelle. The seeds medium percentage registers a value situated between 12,45% at Pitic de Iaşi and 5,15% at Northstar. The peduncle percentage represents in average 1,75%. In table nr.5 there are shown information regarding the fruit chemical composition.

Table 5

Nr.	Variety	Year	Dry substance (mg%)		Entire carbohydrates (%)		Acidity (%)		Carbohydrates/ Acidity (%)
crt.			Year medium	Medium 2007- 2008	Year medium	Medium 2007- 2008	Year medium	Medium 2007- 2008	Medium 2007-2008
1.	Timpurii de Cluj	2007	11,78	10.46	10,01	11.00	1,05	1.1.6	10.00
		2008	15,14	13,46	13,19	11,60	1,28	1,16	10,00
2.	Pándy	2007	15,42		14,20	4.4.60	1,34		10.11
	<i>-</i>	2008	16,63	16,02	15,16	14,68	1,48	1,41	10,41
3.	Erdi bötermö	2007	13,38		11,71		1,34		
		2008	13,56	13,47	12,20	11,95	1,47	1,40	8,53
4.	Oblacinska	2007	16,62		15,60		1,53		
		2008	18,31	17,46	16,95	16,27	1,94	1,74	9,35
5.	Cigánymeggy	2007	11,40		9,90		1,54		
		2008	12,79	12,09	11,08	10,49	1,59	1,57	6,68
6.	Ilva	2007	16,09		15,00		0,94		
		2008	19,57	17,83	18,29	16,65	1,59	1,26	13,2
7.	Schatenmorelle	2007	13,66		12,01		1,48		
		2008	15,68	14,67	14,50	13,26	1,87	1,67	7,94
8.	Northstar	2007	14,25		12,64		1,21		
		2008	16,67	15,46	15,60	14,12	1,40	1,31	10,74
9.	Pitic de Iași	2007	13,01		11,60		1,65		
	-	2008	15,19	14,10	13,63	12,61	1,94	1,80	7,01
	Variety medium	2007	13,96		12,52		1,34		
	-	2008	15,94	14,95	14,51	13,51	1,62	1,48	9,12

The fruit chemical composition (2007-2008)

From the information given in table nr.5, results that the dry soluble substance is situated between 12,09 mg% at Cigánymeggy and 17,46 mg% at Oblacinska, the varieties medium is 14,95 mg%.

The carbohydrates content is situated between 10,49% at Cigánymeggy and 16,6% at Ilva. High dry soluble substance and carbohydrates amounts were settled at Pándy, Oblacinska, Ilva, Northstar.

The acidity percentage is situated between 0,94% at Ilva and 1,94% at Pitic de Iași, the studied varieties medium is 1,48%.

The rate carbohydrates/acidity is situated between 7,01% at Pitic de Iași and 13,2% at Ilva. The varieties that register a result lower than 10 resemble the fact that fruit have a high acidity, which means that are not recommended for fresh consumption.

#### CONCLUSIONS

As a result of this research, cherry trees find favorable conditions in the North-Western part of the country.

The fructification differs from one variety to another. A high fructification level (over 30%) is registered at Cigánymeggy, Oblacinska, Timpurii de Cluj, Pitic de Iași, Érdi bötermö, Pándy. A lower fructification level is registered at Ilva, Schatenmorelle.

A big difference between the varieties is made by the fruit production. High productions are registered at Cigánymeggy, Timpurii de Cluj, Oblacinska, Érdi bötermö, Pándy. Low productions are registered at Northstar, Ilva and Pitic de Iași. The highest fruit size are registered at Pándy and Timpurii de Cluj.

The physical and mechanical fruit analysis resembled some varieties with high pulp percentage, like: Timpurii de Cluj, Oblacinska, Northstar.

The chemical composition is characterized by a high carbohydrates content, like: Timpurii de Cluj, Oblacinska, Schatenmorelle.

As a conclusion, cherry varieties have many advantages which should be a stimulus for the landowners to establish plantations.

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