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RESEARCHES REGARDING THE INFLUENCE OF APPLE FRUIT SORTING UPON THE ECONOMIC EFFICIENCY IN THE COMMERCIALISATION PROCESS

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Abstract

Very often, the fruit tree- growing exploitations sell their gross production directly from the unit immediately after harvesting, without storing it. The present paper aims at printing out the economic differences in apple within the fruit tree-growing area of Voinesti –Dambivita country, comparing the gross selling of the quality – classified harvest. The higher economic efficiency, calculated for the Redix and Ariwa varieties in comparison with the Jonathan and Golden Delicious varieties is also due to the fact that for the first two varieties the production costs were lower, thanks to the smaller number of phytosanitary treatments, since these have genetic endurance to the scab disease.

Key words: *average quality coefficient, quality variation index.*

INTRODUCTION

In Romania, agricultural exploitations more and more market-oriented, becoming increasingly commercial. In the traditionally fruit tree-, grapevine – and vegetable – growing areas, the commercial feature is even more obvious, as production always exceeds consumption and the surplus is destined to market. Nevertheless, the economic results of the production activities are influenced by several factors such as: the exploitation size, average productions, product quality, available financial resources, the exploitation manager's experience, pedoclimatic factors, etc. Production commercialisation also plays an important part. Very often, the furuit tree-growing exploitations sell their gross production directly from the unit immediately after harvesting, without storing it. This commercialisation method is determined by various factors, among which: insufficient or improper storage space; the need to obtain immediate financial resources for starting the production cycle again; difficulties in the retail selling system (particularly the reduced time budget of the producer – the only of the producer – the only or the main working force of the exploitation, additional expenses resulting from going to the market, etc).

More, this commercialisation method may derive the producer of an important share of the profit which is transferred to the commercial link. Fruit quality influences the valorization price directly (Stoian et al., 2002). The large fruit supply compared with the reduced demand results is unique – price selling, neglecting the advantages of previous merchandise classification according to quality.

The present paper aims at printing out the economic differences in apple within the fruit tree-growing area of Voinesti, Dâmbovita, comparing the gross selling for a unique price per kilogram with the retail selling of the quality – classified harvest.

MATERIALS AND METHODS

The data resulted from the actual results of apple production in a family exploitation located in the fruit-tree growing area of Voinesti, Dâmbovita. The varieties grown were Jonathan, Golden Delicious, Redix, Ariwa. The data analysis was performed by calculating some technical and economic indicators (income, expenses, profit), while the variety quality assessment was made by determining the quality variation indices and the average quality coefficient of the variety and the group of varieties (Pana et al., 1983).

RESULTS AND DISCUSSIONS

For this purpose, the production results refer to the average production per hectare in the four varieties, out of which two (Redix and Ariwa) are genetically resistant to scab and powdery mildew, while the others are considered the standard for the winter – stored varieties.

The fruit quality classification was based on the standard diameter: 66 mm – Extra quality, 60 mm – first quality, 55 mm – second quality; the fruit has fallen prematurely from the trees improper for consumption were used for distillation. The prices of the area in 2001 were different, according to quality class: 1,8 Lei/kg – Extra quality; 1,5Lei/kg – first quality; 1,1Lei/kg second quality; 0,4 Lei/kg for industrial processing. For the gross selling, the price in the area was 1 Leu/kg. Table 1 presents the production results obtained and the income from the two commercialisation methods.

The average production per hectare and its structure according to quality classes were different from one variety to another, according to the variety potential and the weather conditions of the year.

The production selling according to quality classes may result in an income increase varying according to variety from 2850 Lei/ha to 5066 Lei/ha, which corresponds to an increase of 21,9%-41,3%, compared with the retail commercialisation**.** The share of the various quality classes in the variety structure indicates that the first and second quality class fruit exceed the Extra quality and industrial processing fruit.

The production expenses were higher in the Jonathan and Golden Delicious varieties, compared with the Redix and Ariwa, as the latter recorded less expense for phytosanitary protection due to their genetic resistance to scab and powdery mildew (Table 2).

Moreover, when production is aimed at commercialisation according to quality class, the production unit cost increases by 0,2 lei/kg as a result of fruit classification.

The profit was calculated as difference between the selling income and the total expenses, and varied from one variety to another. The analysis of the profit obtained from the two commercialisation methods pointed out to the following:

-the producer would be more economically advantaged if selling occurred according to quality criteria;

-the additional profit per hectare might vary between 272 lei (Jonathan) and 2766 lei (Redix), which means an increase in the profit of 6,2-43,5%, compared with the gross selling;

-the additional profits per hectare were almost from 4-7 times higher in the genetically – resistant varieties, compared with the standard ones (Jonathan, Golden, etc).

Table 1. Production and income obtained from gross and quality – class apple selling

Variety	Average production t/ha	Production according to quality class		Price Lei/t	Income from valorisation according to quality class		Income from gross valorization Lei/ha	Selling income difference according to quality class	
		tons	%		Lei	%		Lei	%
Jonathan	13,7	E 1,80	13,1	1800	3240	19,4	13700	+3012	+21,9
		I 5,12	37,4	1500	7680	45,9			
		II 4,40	32,1	1100	4840	29,0			
		Ind 2,38	17,4	400	952	5,7			
	Total	13,70	100	(1220)	16712	100			+22,6
Golden delicious	12,6	E 2,20	17,5	1800	3960		12600	+2850	25,6
		I 3,80	30,1	1500	5700				36,9
		II 4,50	35,7	1100	4950				32,0
		Ind 2,1	16,7	400	840				5,5
	Total	12,6	100	(1226)	15450	100			+44,0
Redix	11,5	E 2,90	25,2	1800	5220		11500	+5066	31,5
		I 5,45	47,4	1500	8175				49,3
		II 2,73	23,7	1100	3003				18,1
		Ind 0,42	3,7	400	168				1,1
	Total	11,5	100	(1441)	16566	100	10600	+4382	+41,3

Ariwa	10,6	E 2,45	23,1	1800	4410				29,4
		I 5,12	48,3	1500	7680				51,3
		II 2,40	22,6	1100	2640				17,6
		Ind 0,63	6,0	400	252				1,7
	Total	10,6	100	(1413)	14982	100			

Table 2. Profit from gross and quality – class selling

Variety	Gross selling			Quality – class selling			Profit difference	
	Income lei/ha	Production expenses lei/ha	Profit lei /ha	Income lei/ha	Production expenses lei/ha	Profit lei/ha	lei/ha	%
Jonathan	13700	9316	4384	E 3240	1579,3	1660,7	272	6,2
				I 7680	4508,9	3171,1		
				II 4840	3869,9	970,1		
				Ind 952	2097,9	-1145,9		
Total	13700	9316	4384	16712	12056	4656		
Golden Delicious	12600	9324	3276	E 3960	2072,7	1887,3	330	10,1
				I 5700	3565,0	2135		
				II 4950	4228,3	721,7		
				Ind 840	1978,0	-1138		
Total	12600	9324	3276	15450	11844	3606		
Redix	11500	5140	6360	E 5220	1874,9	3345,1	2766	43,5
				I 8175	3526,5	4648,5		
				II 3003	1763,3	1239,7		
				Ind 168	275,3	-107,3		
Total	11500	5140	6360	16566	7440,0	9126		
Ariwa	10600	5300	5300	E 4410	1714,0	2696	2262	42,6
				I 7680	3583,9	4096,1		
				II 2640	1676,9	963,1		
				Ind 252	445,2	-193,2		
Total	10600	5300	5300	14982	7420	7562		

The following emphases the influence of fruit quality in the two groups – standard and genetically – resistant upon the economic results obtained from commercialisation according the quality class.

The I_q variation index of quality according to variety groups was calculated by the formula:

$$I_q = \frac{Q_1}{Q_0}$$

Where: Q1 = average production of genetically – resistant varieties according to quality classQ0 = average production of standard varieties according to quality classThe values obtained were Iq Extra = 1.34; Iq I-st quality = 1.18; Iq II quality = 0.57; Iq ind = 0.23.Calculated for variety groups, the same index was Iq = 0.84. The values of the variation index show that, in both variety groups, the Extra and first quality fruit number was higher than the second – quality and industrial processing. Nevertheless, per total, the production of genetically – resistant varieties, even if lower, has higher quality compared with the standard group, particularly as a result in the increase in the Extra and first – quality categories. The same is illustrated by the average quality coefficient Kri, calculated for each variety and

each group, according to the formula:

$$K_{ri} = \frac{\sum qi\, xR_i}{\sum qi} \quad \text{sau} \quad K_{ri} = \frac{\sum gixRi}{100}$$

Where: qi = product quality according to quality class; gi = production share according to quality class; Ri = quality group coefficientThe average quality coefficient measures the quality of a product or group of products when production is delivered

according to quality class.The calculated values were: Kri Jonathan = 2.54; Kri Golden = 2.51; Kri Redix = 2.06; Kri Ariwa =2.11. The value of the coefficient is inversely related to the variety quality; therefore, the order of the varieties from the view-point of quality is: Ariwa, Redix, Jonathan, Golden Delicious (also see their correspondence with total and additional profits from quality-class selling).The calculation of Kri for variety groups resulted in the value of 2.08 for the genetically-resistant varieties, and 2.52 for the standard varieties. This shows that the former record productions of superior average quality, compared with the latter, while the deviation of 2.52-2.08=0.44 is the expression of this difference.

CONCLUSIONS

The current practice of production valorization in gross system is economically disadvantageous for the fruit producers.

This results in profit loss which can reach more than 40% of the total.

It is necessary for the producers to become familiar with the advantages and to turn them to better account.

The establishment of some associative forms of commercialisation (cooperatives) would facilitate quality – class selling.

The apple varieties which are genetically resistant to some diseases have superior productions of average quality compared with the standard varieties, and their commercialisation according to quality class can increase profits for the producers.

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