

STUDIES REGARDING THE INFLUENCE OF APPLE SORTING UPON THE QUALITY AND EFFICIENCY OF SELLING PROCESS

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Abstract

Very often, the fruit tree growing exploitations sell their gross production directly from the farm immediately after harvesting, without sorting and storing it. The present paper aims at printing out the economic differences in apple within the fruit tree-growing area of Voinesti –Dambovită County, comparing the en-gross selling of the fruits and the selling after sorting by quality category. The higher economic efficiency, calculated for the 'Rubinola' and 'Sirius' varieties in comparison with '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 apple scab disease. The additional profit per hectare might vary between 280 lei ('Golden Delicious') and 2900 lei ('Rubinola'), which means an increase in the profit of 9,5 -43,5 %, compared with the en-gross selling.

Key words: *genetically resistant varieties, quality variation index, average quality coefficient.*

INTRODUCTION

In Romania, agricultural exploitations are 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 role (Pană et al., 1983). Very often, the orchard 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).

Much more, this commercialisation method may derive an important share of the producer profit which is transferred to the commercial link (Chira A et al., 2012).

Fruit quality influences the valorization price directly. The large fruit supply compared with the reduced demand results in unique price selling, neglecting the advantages of previous merchandise classification according to quality.

The present paper aims printing out the economic differences in apple within the fruit tree growing area of Voinești – Dâmbovița county, 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 Voinești – Dâmbovița County. The varieties grown were ‘Jonathan’, ‘Golden Delicious’, ‘Rubinola’ and ‘Sirius’. 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.

RESULTS AND DISCUSSIONS

For this purpose, the production results refer to the average production per hectare in the four varieties, out of which two (‘Rubinola’ and ‘Sirius’) are genetically resistant to scab and medium resistant to powdery mildew, while the others are considered the standard for the winter storage varieties.

The fruit quality classification was based on the standard diameter: 65 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 2014 were different, according to quality class: 2.5 lei/kg – Extra quality; 2.0 lei/kg – first quality; 1.5 lei/kg second quality; 0.6 lei/kg for industrial processing. For the gross selling, the price in the area was 1.5 lei/kg. Table 1 contain 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 1970 lei/ha to 5440 lei/ha, which corresponds to an increase of 12.6 % - 28.5 %, compared with the en-gross 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 fruits.

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

Moreover, when production is targeted for commercialisation according to the 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 280 lei (‘Golden Delicious’) and 2900 lei (‘Rubinola’), which means an increase in the profit of 9.5 -43.5 %, compared with the gross selling;
- The additional profits per hectare were almost from 2 - 4 times higher in the genetically resistant varieties, compared with the standard ones (‘Jonathan’, ‘Golden’ etc).

Table 1. Production and income obtained from engross and quality – Class selling

Variety	Average production t/ha	Production according to quality class		Price Lei/t	Income from selling according to quality class		Income from engross selling Lei/ha	Selling income difference according to quality class	
		tons	%		Lei	%		Lei	%
'Jonathan'	10,4	E 1,20	11,5	2500	3000	17,2	15600	+1970	+12,6
		I 4,15	39,9	2000	8300	47,2			
		II 3,60	34,6	1500	5400	30,7			
		Ind 1,45	14,0	600	870	4,9			
	Total	10,40	100	(1689)	17570	100	13800	+2120	+15,3
'Golden delicious'	9,2	E 1,60	17,4	2500	4000	25,2	19050	+5440	+28,5
		I 3,20	35,2	2000	6400	40,2			
		II 3,20	34,8	1500	4800	30,1			
		Ind 1,2	12,6	600	720	4,5			
	Total	9,2	100	(1624)	15920	100	17700	+5060	+28,6
'Rubinola'	12,7	E 3,30	25,6	2500	8250	31,5	17700	+5060	+28,6
		I 5,90	46,5	2000	11800	49,3			
		II 2,60	20,5	1500	3900	18,1			
		Ind 0,90	7,4	600	540	1,1			
	Total	12,7	100	(1928)	24490	100	22760	8810	13950
'Sirius'	11,8	E 2,80	23,8	2500	7000	29,4	17700	+5060	+28,6
		I 5,60	47,4	2000	11200	51,3			
		II 2,80	23,7	1500	4200	17,6			
		Ind 0,60	5,1	600	360	1,7			
	Total	11,8	100	(1929)	22760	100	22760	8810	13950

Table 2. Profit from engross 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'	15600	11150	4450	E 3000	1521,4	1478,6	890	20,0
				I 8300	5278,8	3021,2		
				II 5400	4577,6	822,4		
				Ind 870	1852,2	-982,2		
				Total	15600	11150		
'Golden Delicious'	13800	10850	2950	E 4000	2208,1	1791,9	280	9,5
				I 6400	4466,9	1933,1		
				II 4800	4416,1	383,9		
				Ind 720	1598,9	-878,9		
				Total	13800	10850		
Rubinola	19050	7250	11800	E 8250	2506,2	5743,8	2900	43,5
				I 11800	4552,3	7247,7		
				II 3900	2007,0	1893,0		
				Ind 540	724,5	-184,5		
				Total	19050	7250		
'Sirius'	17700	6450	11250	E 7000	2096,8	7024,1	2700	42,6
				I 11200	4175,9	7024,1		
				II 4200	2088,0	2112		
				Ind 360	449,3	-89,3		
				Total	17700	6450		

The following emphasizes the influence of fruit quality in the two groups – standard and genetically resistant upon the economic results obtained from commercialisation according to 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 Q_1 = average production of genetically – resistant varieties according to quality class

Q_0 = average production of standard varieties according to quality class.

The values obtained were I_q Extra = 1.25; I_q I-st quality = 1.56; I_q II quality = 0.8; I_q ind = 0.6.

Calculated for variety groups, the same index was $I_q = 1, 25$. 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. The production of genetically resistant varieties was higher than standard varieties because of rainy season on 2014 which determine a strong attack of apple scab. Also the fruits achieve higher quality compared with the standard group, particularly as a result in the increase in the Extra and first quality categories.

CONCLUSIONS

The current practice of production selling through engross 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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