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RESEARCHES REGARDING THE DETERMINATION OF OPTIMAL TIME FOR APRICOT HARVESTING BY USING THE COLOUR CODE

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Abstract

The physical and biochemical fruit properties such as the colour code, the texture, the soluble dry matter and acidity represent very significant quality indicators, which one can make use of in order to establish the optimal harvesting time. The aim of this study was to mark the interrelation between the colour code of the Dacia, Olimp and Augustin varieties and other quality features with the aid of the colour code. In addition, the farmer must also choose the harvesting time according to the moment of the sale, because after harvesting, the increase of the sugar content is very slim. Research has shown that if one wants to store the fruit for a short period of time and later have it sent out, a harvesting within the regular parameters is recommended, which would correspond to the following values of the colour code: 6,7 for the Augustin variety, 5 for Dacia and 6 for Olimp. On the other hand, if the fruit is intended to be consumed right away or involved in an industrialized process a tardily harvesting is advisable, hence the following values of the colour code: 8 for the Augustin variety, 6 for Dacia and 7 for Olimp.

Key words**:** apricot, harvesting, colour code, variety, quality

INTRODUCTION

Many studies tried to establish a correlation between the basic colour at the time of harvesting and the fruit quality, the stages of maturation being empirically classified as green-yellowish, yellow-greenish, yellow-orange and orange [1].

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The aim of this study was to mark the interrelation between the colour code of the Dacia, Olimp and Augustin varieties and other quality features with the aid of the colour code.

In addition, the farmer must also choose the harvesting time according to the moment of the sale, because after harvesting, the increase of the sugar content is very slim [2].

For some cultivars there were attempts to define the correlation between the colour and the essential quality compounds: firmness, sugar and acidity, thus establishing a ten shade colour - codex to be easily used by fruit tree growers in order to help in assessing the quality of fruit lots at the moment of harvesting [5].

MATERIAL AND METHOD

The fruits were harvested from the experimental field of the Horticulture Faculty in Bucharest. The orchard was three years old.

In the present, the existing correlation between the basic fruit colour in the Romanian cultivars Dacia, Olimp and Augustin and the other qualitative characteristics has been established by using the colour codex.

For this aim, the fruits have been harvested at three stages of the basic colour, assessed "by eyesight" meant to stimulate the precocious, commercially normal and tardy harvesting. For each stage, three apparently homogenous lots of 25 fruits have been individually chosen and analysed in the matter of the main qualitative characteristics.

The results have been voluntarily expressed in classes from 1 to 4 stars. In the first table, the correspondence between these and the physico-chemical analysis is presented [6].

Table 1. The correspondence between the X notations and the defined values of the physico-chemical properties

Notations	XXXX	XXX	XX	X
Firmness (kgf/cm2)	Very firm >3,0	Firm 2-3,0	Medium 1,5-2,0	Unsufficient <1,5
Soluble dry Matter %	Very sweet >13,5	Swet 12 – 13,5	Medium 10,5 - 12	Unsufficient <10,5
Titrable acidity (% acid malic)	Very swet 1,15 – 1,45	Swet 1,45 – 1,65	Acidified 1,65 – 1,85	Acid >1,85

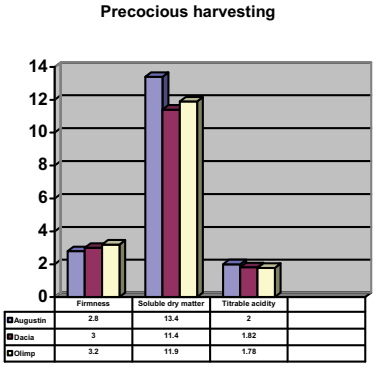
RESULTS AND DISCUSSIONS

The synthesis of these evaluations demonstrated the differences among cultivars, as revealed by using the colour-codex (Table 2).

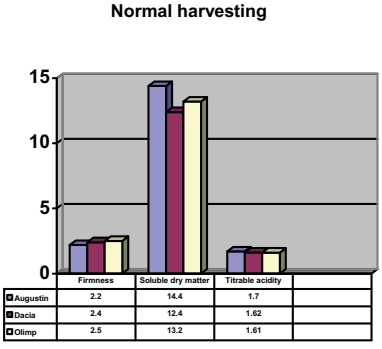
Table 2. The apricot quality of harvesting according to the basic colour evaluated by using the colour codex

Cultivar	Precocious harvesting			
	Color -Shade-	Firmness -kgf/cm2	Soluble dry matter -%-	Titrable acidity (acid malic)
Augustin	5	2,8 XXX	13,4 XXX	2,0 X
Dacia	4	3,0 XXX	11,4 XX	1,82 XX
Olimp	5	3,2 XXXX	11,9 XX	1,78 XX
	Normal harvesting			
Augustin	6-7	2,2 XXX	14,4 XXXX	1,70 XX
Dacia	5	2,4 XXX	12,4 XXX	1,62 XXX
Olimp	6	2,5 XXX	13,2 XXX	1,61 XXX
	Tardy harvesting			
Augustin	8	1,7 XX	14,9 XXXX	1,62 XXX
Dacia	6	1,9 XX	13,2 XXX	1,54 XXX
Olimp	7	2,2 XXX	13,7 XXXX	1,47 XXXX

As regards the firmness, the Augustin and Dacia cultivars must be harvested at the point when the fruit's colour is still basic green, in order for it to have sufficient firmness, but sometimes in the detriment of the gustative quality (cv. Dacia). Instead it is not recommended to harvest cv. Olimp at a too green stage, because this one may gain in quality by keeping a higher firmness.

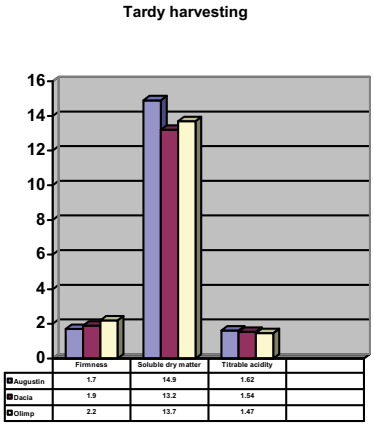


The main element in assessing the gustative quality is represented by sugars, their variation being often in an inverse ratio in comparison with the firmness [3]. From the data presented in table 2 there are relevant differences between cultivars at the same stage of maturation. Thus at the stage of precocious maturation, the soluble dry matter has values of 11,9% for Olimp cv. and respectively 13,4% for Augustin cv. as in the case of a tardy harvesting in all cultivars the values of the soluble dry matter are over 13%.



Therefore, the fruit-tree grower must choose the moment of harvesting according to this goals and the respective market, because after harvesting the gain in sugars is lower [7]. In the present situation, if for example the fruits are planned for being stored for a certain time as for being sent to long distances, it is recommended a normal

harvesting (6,7 the basic colour for Augustin cv., 5 -basic colour for Dacia cv. and 6-basic colour for Olimp cv.) while for immediate consuming or for industrial processing a tardy harvesting, that corresponds to the following shades of the basic colour: 8 for Augustin cv., 6- for Dacia cv. and 7-for Olimp cv, is recommended.



The fruit quality related to the aspect is not neglectable in the consumer's decision for buying, but the performed investigations revealed that the red colour shade does not mean a superior gustative quality, but rather a cultivar characteristic [4].

The performed experiment confirmed the correlation between the basic colour at the harvesting and the lot quality, having specificity for every cultivar, because all apricots turn from green to orange without having the same gustative quality.

The quality "presumption" at harvesting according to the basic colour must be admitted, but without neglecting the consequences of the natural and pedo-climatic factors.

CONCLUSIONS

1. Combining the phenological and physico-chemical criteria (especially by using the colour-codex) may be of help for planning the harvesting time and for establishing the optimal moment, according to the destination of the yield.

2. It is primarily important that the harvesting take place at the right time, because the quality of the apricot lots is closely correlated to the stage of harvesting.

3. Thus if harvested too early, the fruits will have firmness but also low quality, and if harvested to late, they will not be of appropriate quality due to the subsequent manipulations and during a too long time until they reach the market, the basic colour being in this way a good non-destructive indicator of the maturation stage.

4. For the fruits which are meant to be stored or to be sent on long distances, a normal harvesting is recommended (6,7 the basic colour for Augustin cv., 5 basic colour for Dacia cv. and 6 basic colour for Olimp cv.).

5. For the fruits intended for immediate consumption or for industrial processing a tardy harvesting, that corresponds to the following shades of the basic colour is recommended: 8 for Augustin cv., 6 for Dacia cv. and 7 for Olimp cv.

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