

SHELF LIFE OF TABLE GRAPE VARIETIES PERIOD UPOTREBE STONIH SORTI GROŽĐA

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ABSTRACT

Table grape has an important role in the fresh fruit market all over the year. We tested shelf life 17 table grape varieties which are represent of the production and market in Hungary. The samples originated from the Trial Station of Central Agricultural Office Helvécia (Hungarian Great plain, in the middle of Hungary). The harvest was in the stage of fully ripening- that time circulation of sugar from the leaves to the berry is complete. That stage when the berries start became soft and will be deformed when lightly pressed between fingers. The study shelf life quality of the varieties started on the harvest day on room temperature (22-23°C). We measured the weight loss of the bunch, the sugar content of the berries and observed the reasons of the losses. As a result of the experiment we found significant differences in longevity of shelf life among the tested varieties. The losses started after 4-5 days but some varieties were keeping the quality during 9 days. The sugar content increased (0,5-2%) for the end of test even the table grape is non climacteric fruit. The main reason of the losses were: berry softening, weight loss, the bunch peduncle desiccation, rotting- on the surface of berry appear some brown spots, the spots settle down, the skin become very thin and the rotting starts, micro cracking around the berry pedicel, decay starts the berries get to lose, We didn't observe dried, raisins berry among a tested table grape varieties.

Key words: table grape, ripening, shelf life.

REZIME

Stono grožđe ima važnu ulogu u tržištu svežeg voća tokom cele godine. Testirali smo rok trajanja 17 sorti stonog grožđa koje se proizvodi i prodaje u Mađarskoj. Uzorci potiču iz Probne stanice centralne poljoprivredne kancelarije Helvecia (mađarski deo Pannonske nizije, u središnjem delu Mađarske). Berba je obavljena u fazi punog zrenja, kada je kruženje šećera iz lista u bobicu završeno. To je faza kada bobice postaju mekane i bivaju deformisane pri laganom pritisku između prstiju. Proučavanje roka trajanja sorti počelo je na dan berbe pri sobnoj temperaturi (22-23°C). Meren je gubitak mase i sadržaj šećera u bobicama i razmatrani su razlozi gubitaka. Kao rezultat eksperimenta ustanovljena je značajna razlika u roku trajanja ispitivanih sorti. Gubici su počeli da se javljaju nakon 4-5 dana, ali neke sorte su zadržavale kvalitet i tokom 9 dana. Sadržaj šećera je porastao (0,5-2%) na kraju testiranja iako stono grožđe nije klimakterično voće. Glavni razlog gubitaka su: omekšavanje bobica; gubitak težine; sušenje peteljki; truljenje - na površini bobica pojavljuju se braon pege, pege se šire, pokožica postaje tanka i započinje proces truljenja; nastajanje mikropukotina oko peteljki, propadanje počinje i bobice se smanjuju. Nije posmatrano suvo grožđe među testiranim sortama stonog grožđa.

Cljučne reči: stono grožđe, zrenje, vek trajanja.

INTRODUCTION

Table grape has an important role in the fresh fruit market all over the year. Grape is valuable helps in digestion and stimulates the appetite. Its consumption is enjoyable flavour in table grapes is dependent on varietal character and the ratio of sugar to acid, related to degree of ripeness. The constituents of its composition, such as minerals, sugars, enzymes, acids and vitamins serve our health. Fresh table grapes provide the same cardioprotective qualities as wine, and contain effective antioxidants such as polyphenols.

In the statistical data generally published together the all grape but some marketing data confirm increasing the table grape production and consumption in EU which is the second biggest producer after China. In the USA the consumption has likely increased because consumers have been made aware of the increased health benefits of eating more fruits. The consumption of table grapes has almost tripled over the last three decades, 2.9 pound per capita (1970) to 7.5 pound per capita in 2003 in California (BorissH et al.,2006). In Hungary 5-7 kg per capita, similar than EU average.

The ripening stage one of the most important characteristic of the fruit firmness, quality and storability (Dalla Rosa et al.2009, Dobrzanski, B., & Ryczynski, R. 2000). Grape flavour is related to degree of ripeness. Grapes do not continue to ripen after harvest so harvest timing is critical. Flavour in ta-

ble grapes is dependent on varietal character and the ratio of sugar to acid. A ratio of 20 to 22 (with each parameter expressed as percent) is usually considered optimum (Crisosto, et al., 1994.). Berry firmness is also an important factor for consumer acceptance as are lack of defects such as decay, cracked berries, stem browning, shrivelling, sunburned, dried berries, and insect damage. The size and weight of berry and bunch are also important berry weight has increased by literature from 2.5 g to as high as 7.0 g and cluster weight from 250 g to 800 g. The colour of berries is variegated from light green to black (Hajdú E., 2007). The table grape has a very sensitive during storage, similar than the strawberries and other berries (Deák, S., and Füstös, Z. 2009). Ideally, storage rooms should operate at -1 to 0 °C or 0-2 °C with 90 to 95% RH need moderate airflow (Cefola et al.M, 2011).

MATERIAL AND METHOD

The tested 17 table grape varieties which are represent of the production and market in Hungary listed in National Variety Catalogue. The tested varieties originated from different group of ripening time.

Early (July-August): Irsai Olivér, Favorit, Cardinal, Kósa, Lidi, Árkádia, Lubik piros

Medium (September): Pannónia kincse, Melinda, Piros Chasselas, Fehér Chasselas, Fanny, Pölöskei muskotály, Teréz

Late (October): Kismis Moldavszkij, Moldova, Itália

The samples originated from the Trial Station of Central Agricultural Office Helvécia (Hungarian Great Plain).

The harvest was in the stage of fully ripening- that time circulation of sugar from the leaves to the berry is complete. That stage when the berries start became soft and will be deformed when lightly pressed between fingers.

The study shelf life quality of the varieties started on the harvest day on room temperature (20-22°C) which is similar to the market situation. We measured daily the weight loss of the bunch, the sugar content of the berries and observed the reasons of the losses during 9 days.

RESULTS AND DISCUSSION

We measured the weight of bunches of table grape varieties. The demand of the consumers is big bunch with big berries.

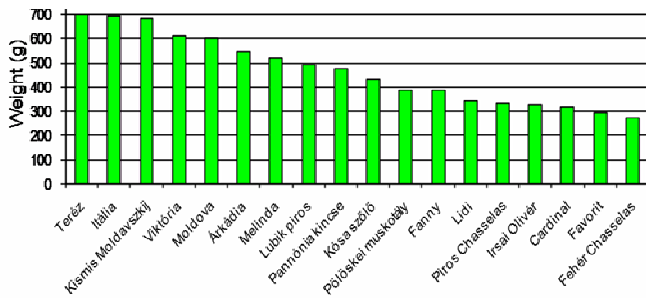


Fig.1. Bunches weight of table grape varieties

The biggest bunch was observed in the varieties Teréz, Itália, Kismis Moldavszkij, Viktória, Moldova. That varieties are convenient for family consumption on the medium or late harvest time. The early varieties have a relatively small bunches like Favorit, Irsai Oliver, Lidi, Chasselas. We found early varieties with big bunches Árkádia and Lubik piros. The earliness nowadays not so high value than before global market but the grower can get some profit from the early production.

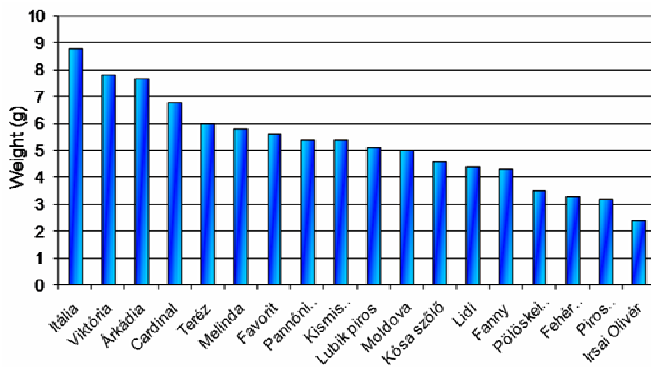


Fig. 2. Berries weight of table grape varieties

Among the berries weight of table grape varieties we found the significant differences. The biggest berry weight of late harvest type variety Itália was for times bigger than the early type Irsai Olivér variety. That is a reason to disappear from the fresh market the popular muscat flavour variety Irsai Olivér. The Consumer demand is minimum 5-6 g berry. The sizes of the berries are far more important than seedless characteristics. Chasselas variety types can market only in a very cheap category.

The weight loss of the tested table grape varieties was not significant. We measured 1.2-3.0% weight loss. The main loss was the berry softening. The earliest symptom is the development of small (1 to 2 mm) dark spots on the cap stems (pedicels) and/or other parts of the bunch framework. These spots become necrotic, slightly sunken, and expand to affect more areas. The

affected berries become watery, soft and start to decay. The bunch peduncle desiccation caused also weight loss.

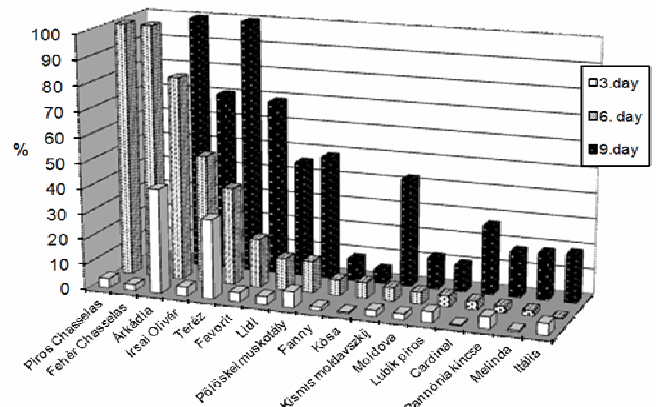


Fig. 3. Shelf life losses of table grapes varieties during 9 days after harvest

Varieties Chasselas, Árkádia, Irsai Oliver have a very short shelf life tolerant time. The risk is very high to keep without cool storage. Varieties Fanny, Kósa, Lubik piros, Moldova can keep on shelf during 9 days without risk.

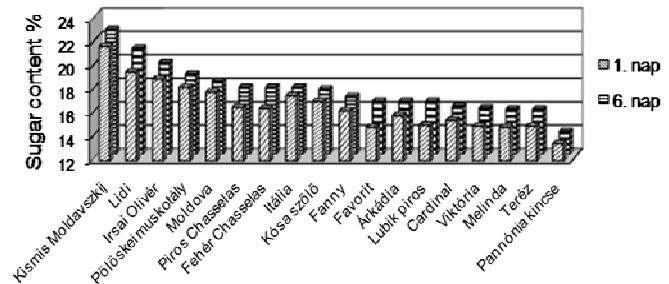


Fig.4. Sugar content of tested table grape varieties on the harvest date and 6. day after harvest.

Grapes do not continue to ripen after harvest, non climacteric fruit. We found the significant differences among the sugar content of the tested varieties but we couldn't find connection of sugar content and shelf life time. The increasing sugar content during storage in room temperature was unacceptable. The tendency was consistent in all tested varieties, higher than the weight loss of berries.

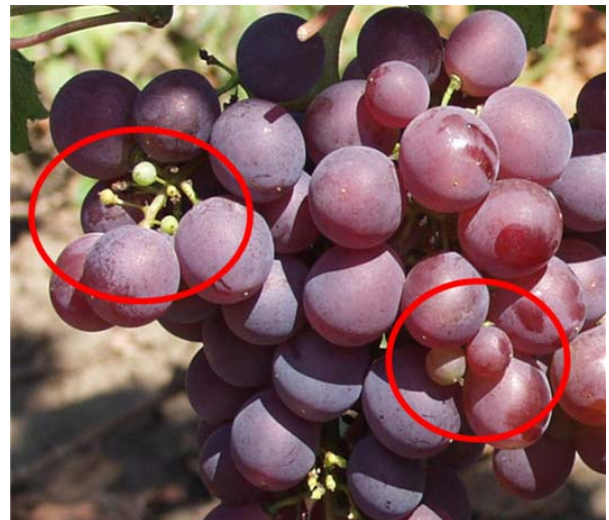


Fig.5. Problem of fertility .Variety Lubik piros

We can presume some over ripening after repeat our experiment. We observed in some varieties (Lubik piros, Moldova, Italia, Melinda, Kósa) problem of fertility. Some berries became small, not ripening and deformed.

Micro cracking is a start of the decay. The sensitive varieties were Kismis Moldavszkij, Pölöskei muskotály and Kósa.

CONCLUSION

The table grape production and consumption are increasing and in EU not seasonal fruit anymore. Berry firmness is an important factor for consumer acceptance as are lack of defects such as decay, cracked berries, stem browning, shrivelling, sunburned, dried berries, and insect damage as well. The consumer demand is a big berries and a big-medium bunches. Our examination was conducted on these characteristics. Our additional aim was to find the varieties, that satisfy the market demand. We observed the shelf life of the varieties. The shelf life and keeping storage are close relations with variety characters. Varieties Chasselas, Árkádia, Irsai Oliver have a very short shelf life tolerant time. The risk is very high to keep without cool storage. Varieties Fanny, Kósa, Lubik piros, Moldova can keep on shelf during 9 days without any risk. Short time shelf life demands the central cool store houses and cooperation of producer organisation.

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