

Pomological Traits of some Once-Bearing Figs in the Area of Trebinje

Kulina, M., Djurdjic, Z., Vico, G.

Faculty of Agriculture, S. Sarajevo, R. Srpska

Abstract: The paper presents the results of studying bearing state in the four once-bearing fig cultivars: Tenice, Termenjača, Zimnica and Šaragulja in the region of Herzegovina (Trebinje) in the period from 2001-2002.

Study results indicated that the cultivars varied in fruit mass, dry matter content, yield and ripening time. The fruit mass was the lowest in Zimnica (27,81 g), and the highest in Termenjača (53,33 g). The total dry matter was the lowest in Zimnica (19,00%), and the highest in Tenice (23,11%). The cultivars were found to considerably vary in cropping per tree, i.e. per unit area, with the lowest yield detected in the cultivar Zimnica (51,10 kg/tree), and the highest one in Termenjača (63,20 kg/tree). The differences in yield can be explained as an interaction between the cultivar genotype and agro-pomotechnical measures applied.

The earliest fruit ripening related to Tenice (05.08.), and the latest to Zimnica (15.08.).

Key words: fig, cultivar, fruit mass, dry matter, yield.

Introduction

Fig (*Ficus carica* L.) is a deciduous sub-tropical fruit species also grown in the sub-mediterranean areas of Herzegovina with success. Fig is the second oldest to olive, brought to these areas some 1000 years ago (Bakarić et al., 1989).

The areal of fig growing in Herzegovina has largely shrunk, since it is effectively grown only in the valley of the river Neretva, on the area of Popovo polje, the surroundings of Trebinje, Ljubusko, Čiluk and on the area of Dubravska plateau from Stoc to Čapljina. The mean annual air temperature of 14°C pertains to these areas, with low winter temperatures rarely dropping below -15°C. Fig shows high

adaptability to edaphic conditions of the south Herzegovina and thus can be successfully grown without using the up-to-date agrotechnical measures.

The areal of the efficient fig growing lies at the altitude of 350 m, on a range of soil types (skeletaloid with the varying ratio of the single fractions up to alluvial – deluvial drifts), pH value ranging from 7 to 8. Fig also succeeds in the sunny slopes facing south and south-east.

Fig expansion was favoured by an easy propagation with cuttings and shoots, resulting in visible variations in the fruit pomological characteristics, organoleptic features and in the crown growing mode, too.

Fresh fruits have a well-balanced ratio of the chemical components: water, carbohydrates, mineral matters (Ca, K, P and Fe) and vitamins A, B, C. Dried fruits of fig are rich in vitamins A, B, C and particularly K containing up to 80% sugars.

Fig fruits are used fresh or processed for dried fig, as a strategically outstandingly important product. In processing industry, fig is used for producing jams, syrups, brandies and other products used all year round.

Fig fruits are not treated with pesticides and, therefore, belong to the group of 'ecological fruits' being highly appreciated on the market. On the area of Herzegovina, a great range of fig cultivars various in fruit forms (rounded, flattened, ovate) either once or twice bearing, are encountered. However, economic significance is attributed only to some ten fig cultivars. The cropping of the fig cultivars varies to a great extent, mainly depending on its genetic traits and ecological growing conditions. Being familiar with the cultivar cropping is of great use, particularly when choosing cultivars for growing in plantation orchards.

Broader studies of fig were performed by: Bakarić et al., (1989), Grossi (1982), Popović (1987, 1997, 2003), Omčikus (1956), Redžić (1954), Cizmović et al., (2002) and others.

Miranović et al., (1993) suggested the list of the new fig assortment in Yugoslavia. By their importance, the cultivars of fig are classified into three groups, with Tenica (Sušilica) and Zimnica as the leading ones.

Omčikus (1956) made pomological classification of the fig cultivars on the area of Herzegovina, based on the number of fruit bearings and skin colour.

Popović et al., (2002) studied pomological characters of some once-bearing figs in the region of Bar in Monte Negro and found the differences in terms of the cultivar average fruit mass and bearing, with Rezavica showing the best pomological results.

The goal of the study was to investigate some of the pomological characters in once-bearing figs (Tenice, Termenjača, Zimnica and Šargulja) in order to properly choose the cultivars for further breeding and selection.

Materials and Method

Fruit bearing in fig cultivars proceeded over the period 2001-2002 in the fig orchard in Trebinje. Fig orchard was established in 1984 with plantings produced by restoring ripe cuttings at the distance of 7 x 6 m. Growing form was of pyramidal shape with rows facing north – south. The study comprised once-bearing over vegetation cultivars : Tenica, Termenjača, Zimnica and Šargulja. The cropping (yield) in the three fig cultivars was analysed based on the total

fruit mass, measured with the technical scales 'Tehnica' with the precision of 1/10 kg and value expressed in kg. The fruit mass was determined by measuring 25 randomly chosen fruits of each cultivar taken from designated trees and various points of the crown. Fruits were measured using the scales 'Tehnica' with the precision of 1/10 g of values expressed in grammes. Water content was determined by drying the fruits at 105°C with the value expressed in percentages, while the total content of dry matter was determined by its burning at the temperature of 105°C and weighing by means of the analytical scales 'Tehnica' of the values expressed in percentages.

Over the study period (2001-2002), uniform agrotechnical measures were applied to all the fig cultivars (soil tillage, fertilization, pruning, irrigation and pest and disease control) so that the existing differences among the cultivars didn't result from the treatments but from their genetic traits.

Environmental conditions

Environmental conditions have had a crucial effect on the fig growth and cropping. The region of Trebinje is under an immediate effect of the Adriatic Sea with the characteristics of the sub-mediterranean climate.

Meteorological data for the area of Trebinje (1964-1983) are as follows: the mean annual air temperature is 14°C, the absolute minimal – 10,5°C, the absolute maximal – 39,5°C, the average and unevenly distributed precipitations of 1.761 mm/m², with 620 mm/m² accounting for the vegetation period.

The orchard was established on the mildly carbonated deluvium of a light mechanical composition, good air porosity and medium water capacity, with neutral pH reaction (pH 7,4). The soil was moderately humus, readily available P₂O₅ and K₂O of medium level.

Results and Discussion

The results of the average fruit mass, the content of total dry matter, the yield and ripening time of the fruits in one-bearing fig cultivars, are presented in the Tables 1-4.

The table 1 presents the average mass of fruits in studied cultivars.

Tab.1. – The average fruit mass of the fig cultivars

No.	Cultivar	Fruit mass (g)
1.	Tenica	34, 00
2.	Temernjača	53. 33
3.	Zimnica	27, 80
4.	Šaragulja	41, 00
Average		39, 03

Fruit mass – The differences in the average fruit mass can be seen in the tab.1. Termenjača (53,33 g) had the highest, Šaragulja (41,00 g) lower, Tenice (34,00 g) even more lower and Zimnica (27,80 g) the lowest average fruit mass.

Fruit mass of all the cultivars averaged 39,03 g.

The total dry matter content – Fig fruits have a well-balanced ratio of the chemical components: water, dry, mineral matters, vitamins, and others.

Tab.2 presents the results of dry matter and water in the fruits of one-bearing fig cultivars.

Tab2. The average content of total dry matter and water in the fig cultivars (%)

No	Cultivar	Dry matter	Water
1.	Tenica	23, 11	76, 89
2.	Termenjača	21, 00	79, 00
3.	Zimnica	19, 00	81, 00
4.	Šaragulja	20, 88	79, 12
Average		20, 99	79, 01

As can be seen from the tab.2, the content of dry matter varied among the cultivars. The lowest content of the total dry matter was recorded in the fruits of the cultivar Zimnica (19,00%), and the highest one in those of Termenjača (23,11%).

Water contained in the fruits was in correlation with their dry matter. The obtained results were likely to be the consequence of genetic traits rather than that of applied agrotechnical measures and ecological growing conditions.

Fruit ripening. – Ready to eat ripe fruits are easily recognised by size, skin colour, fruit firmness, by how open their mouth is and by how they hang. The best sign is the taste of fruit, as the result of sugar and acid content in fruits and their inter-relationship.

Tab.3 – Ripening time of the cultivars' fruits studied

No	Cultivar	Ripening time
1.	Tenica	05. 08. – 27. 09
2.	Termenjača	12. 08. - 25. 09.
3.	Zimnica	15. 08. - 10. 10.
4.	Šaragulja	12. 08. - 25. 09.
Average		11. 08. - 29. 09.

The earliest picking took place in the fruits of Tenice (05.08.) and the latest one in those of Zimnica (15.08.) Picking usually lasted 49 days (11.08.-29.09) –tab.3.

Fruit cropping – Biologically, fig is of highly cropping if preconditioned by genetic and ecological factors.

The knowledge of the cultivar cropping is of great importance, especially when choosing the cultivars for intensive growing.

The results of studying fig cropping are presented in tab.4 relating to yield per tree.

Obviously, the yield varied among the cultivars, averaging from 40,000 kg/tree (Tenica) to 63,20 kg/tree (Termenjača) and differences in yield considered to be the result of uneven genetic base in the cultivars in question.

Tab.4. The average yield of the fig cultivars

No	Cultivar	kg/ tree
1.	Tenica	40, 00
2.	Termenjača	63, 20
3.	Zimnica	51, 10
4.	Šaragulja	56, 23
Prosjek (x)		52, 63

Conclusion

The results of studying once-bearing fig cultivars suggest the following:

- The ecological conditions of Trebinje entirely favoured fig growing because the average annual air temperature is 14°C and early autumnal and late spring frosts were rare.
- The differences in fruit mass, entire acids, yield and ripening time were recorded.
- The cultivar Zimnica had the lowest (27,81 g) and Šaragulja the highest average fruit mass (53,33 g).
- The cultivar Zimnica had the lowest (19,00%) and Tenice the highest average content of total dry matter (23,11%)
- The differences in ripening time of the fig fruits were also established, with Tenice fruits having ripened earliest (05.08.) and those of Zimnice last (15.08.)
- Ripening time was the longest with picking lasting for 56 days in Zimnica cultivar. Pickings done a couple of times proceeded efficiently.
- Termenjaca was found to have the highest (63,20 kg/tree) and Tenica the lowest (40,00 kg/tree) average yield.
- All the cultivars (Tenica, Termenjača, Zimnica and Šaragulja) having manifold usability, may be recommended for plantation growing. Their fruits are used fresh or as various products (jam, syrup, alcohol) and Tenica is the best for drying.

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POMOLOŠKE OSOBINE NEKIH SORTI SMOKAVA JEDNOROTKI NA PODRUČJU TREBINJA

- originalni naučni rad -

Kulina, M., Đurđić, Z., Vico, G.

Poljoprivredni fakultet - Srpsko Sarajevo

Rezime

U radu su prikazani rezultati ispitivanja rodosti četiri sorte smokve. jednorotke: Tenice, Termenjače, Zimnice i Šaragulje na području Hercegovine (Trebinja) u periodu od 2001-2002 godine.

Rezultati su pokazali da se ispitivane sorte razlikuju po masi ploda, sadržaju suve materije, prinosu i vremenu sazrijevanja.

Najmanja masa ploda je registrovana u sorte Ziminice (27,81 g), a najveća u sorte Termenjače (53,33 g).

Najmanji sadržaj ukupnih suvih materija bio je u sorte Zimnice (19,00%), a najveći u sorte Tenice (23,11%).

Sorte se značajno razlikuju u prinosu po stablu, odnosno po jedinici površine, gdje je najmanji prinos registrovan u sorte Zimnice (51,10 kg/stab.), a najveći u sorte Termenjače (63,20 kg/stablu). Razlike u prinosu se mogu tumačiti kao interakcija genotipa sorte i primjenjene agropomotehnike.

Najranije sazrijevaju plodovi u sorte Tenice (05. 08.), a najkasnije u sorte Zimnice (15. 08.).