



Biological observation

EVALUATION OF AUTOCHTHONOUS CHERRY CULTIVARS “ZHITOME” AND “RED BELICE”

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SYNOPSIS

Key words:

cherry, cultivars, Zhitome, Red Belice, autochthonous fruit tree, agriculture region, auto fertility.

Cherry's cultivars, “Zhitome” and “Red Belice”, are important assets of Albanian autochthonous fruit trees. The cultivar “Zhitome” grows on the hilly regions of Berat and Skrapar, while, on the other hand, “Red Belice” cultivar is more suitable to fresh climate conditions, therefore its ideal areas of growth are the areas situated in eastern Albania (mainly Erseka, Korça, or other areas situated at 850–1000 meters altitude above the sea level). These cultivars are preferred for product values, production stability, early maturing. These cultivars are, as well, used for fresh consumption in the regional market.

INTRODUCTION

As a matter of fact, cherry plants have been used in Albania, as well as in European countries, since ancient times. This statement has been confirmed also by archeological research data, collected in Maliq (Korça region) and in Apollonia (Fieri region).

These results were supported by scientific studies conducted in countries confining with Albania, which confirmed that, especially after medieval period, cherry plants rapidly extended in the area. Ulterior proof that this plant was well known in the Mediterranean countries and the distinction between bitter and sweet cherry plants was well-defined, is given by literary creations and art of pictorial hints. In 1554, Mattioli affirmed that “I believe that does not exist in Italy a fruit tree as well-known as the Ciliiegia” (Sansavini et al., 1997).

From 1950 to 1990, the cherry plant cultivation multiplied, achieving a 6% growth in plants number, reaching about 4% growth of total production of fruit trees.

After new cultivars from Italy (Burlat, Burlat C1 and C2, Napoleon, Ferrovia, Adriana, Vittoria, Katalin, Korinna, Lambert, Del Monte, etc) were introduced, in 1975, the official plant structure was enriched consistently (Shqau et al., 1990).

It is useful to mention since the beginning, that, Zhitome, Belice and Dollmas, are the most competitive autochthonous cultivars in the Albanian market. Scientific state programs, carried out by the Agricultural University of Tirana, in many cases assisted also by foreign expertise, from more than 5 years, observe and evaluate the vegetal material of these specific cultivars (AGB Annual Report, 2008).

Other important improvements in the cherry-plants structure were made after year 2000, where North-American cultivars were introduced. These new cultivars are deemed more fertile, more resistant from splitting and more productive on annual basis (Ferraj et al., 2005).

GENERAL EVALUATIONS

Planted plots extend in hilly and partly hilly terrain, systemized and kept in good conditions. The soil in these areas has average mechanical composition, with an average content of mineral elements and organic matters, penetrable by water; with median contents of active Ca. Rootstock used was that of *Prunus avium* and *Prunus mahaleb*, while saplings were produced by classical method. Planting distances were 5 x 5 and 6 x 5 m with approximately 400 and 300 plants/ha.

The temperatures in the period of January–February reach -18°C (Leskovik), while the temperatures in August, 8-10 days of duration, reach up to $+38^{\circ}\text{C}$ (Kucova – Berat). The annual amounts of rainfall reach over 1700 – 1900 mm; 80% of them fall down in the period of autumn-winter-spring. This characteristic fulfills the needs for water, especially for early cultivars, avoiding the use of artificial irrigation (Hodaj et al., 2008).

MATERIAL AND METHOD

A three-year study on evaluation of cherry cultivars “Zhitome” and “Red Belice” was carried out by the Albanian Genetic Bank, which according to the Albanian legislation, is the body responsible for the classification, collection, renovation, storage and study of autochthonous plants materials. 100 plants for each cultivar, aged respectively 23-25 years for “Zhitome” cultivar and 40 years for “Red Belice” cultivar, were selected and labeled. On these selected plants studies were performed on their characters described by UPOV and IPGRI files.

The study indicators were:

- The growth of the tree-trunk diameter was measured every year, showing a growth of 20 cm above the union point per year; The calculation of the average trunk

section growth, in three years, showed that the “Red Belice” cultivar was superior to “Zhitome” (Ferraj et al., 2008).

- The blooming phase was monitored, from the beginning to the end of the flowering phase (5% & 80% of the flowers), fruitage, growth, maturity and the production of kg/fruit x tree.

- To evaluate the leaf form, measuring was carried out with regard to length, width, petiole length, strength of the link with the branch where it is located, color and nature of the side part; to do so samples of average leafs from middle part of the branches were taken, the first 10 days of June, in the four points of the horizon (Cakalli & Thomai, 2007).

- The proportion pulp/seed (cherrystone), shape of cherrystone, size, link with fruit, color, surface nature.

- On a 100 fruit/plant sample measuring was carried out regarding the average fruit weight, for each plant and for each cultivar; on the other hand, on another average sample represented by 50 fruits/unit, measuring was performed to determine the depth of petiole hole, proportion pulp/seed (cherrystone), their weight, pulp resistance (measuring was done using a potentiometer Effigy with bit \varnothing 2.5 mm), the color of skin was estimated using tint-meter Minolta Cromameter II.

- The content of sugar in the fruit was measured using refract-meter, the acidity expressed in % of malice acid was measured in 20 cc of juice of the whole sample of the plot, derived from extraction of the average sample of 100 fruits.

At the end of the research, a statistical test of the experimental data was enabled, by taking into consideration the number of the flowers in trial; for the test the method of statistical comparison D.M.S. was used. At the same time, the type of the crown, placement of the major branches, spreading of wearing branches, shape and size of leaf, length of petiole, the problem of discrepancy, resistance to gomoza and resistance to pedoclimatic factors were evaluated.

CULTIVAR “ZHITOME”

The origin - by seed; it is estimated as an autochthonous cultivar;

Synonyms do not exist; Variety identity - known;

Plant - normal type; Crown - median, till 3.7-4 m high; Major branches - standing open 1/2; Suitable rootstock - wild cherry and *Prunus mahaleb*;

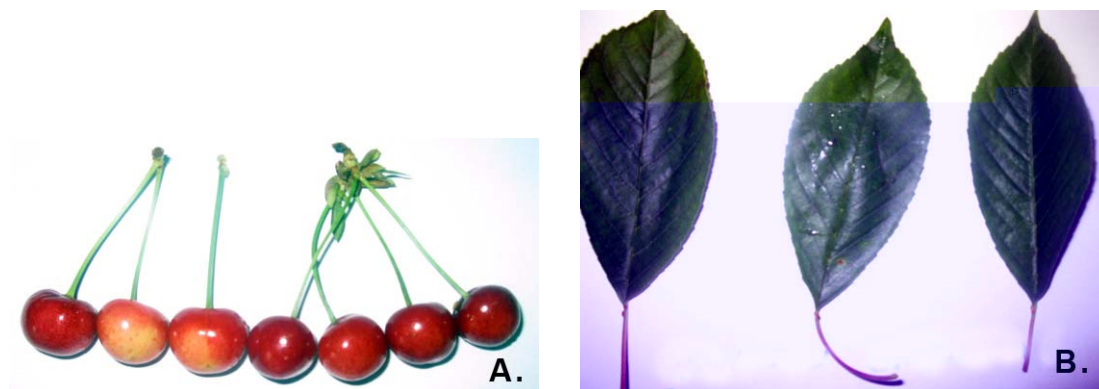
Leaf - elliptic long rugged; Length 10.57 cm, width 4.93 cm, leaf surface 54.77 cm², length of petiole 3.84 cm; Blooming - early, auto-fertile; Fruit – average; weight 4.13 gr; Fruit shape – heart shape; Base skin color - yellow in red till 25%; Pulp - white; Strength - cracky; Juice - no color; Percentage of sugar - 15.9 - 16.1 %; Resistance - average;

Cherrystone - on the average small, white color, easy separated from pulp, weight 0.28 gr;

Maturity - 7-10 days after Burlat cultivar;

Observations – Early maturity period and good production. Fruits are susceptible to splitting in case of rain falls but otherwise resistant to transport manipulation;

Evaluations – This cultivar is considered suitable for regional markets.



Picture 1: A) Fruits and B) leaves of “Zhitome ” cultivar.

CULTIVAR “RED BELICE”

The origin - by seed, it is considered as an autochthonous cultivar;

Synonyms - do not exist; Variety identity - known;

Plant - eruptive type; Crown - high, height over 7.5 – 8 m; Major branches - opened placement, defoliate in their base; Suitable rootstock - wild cherry and *Prunus mahaleb*;

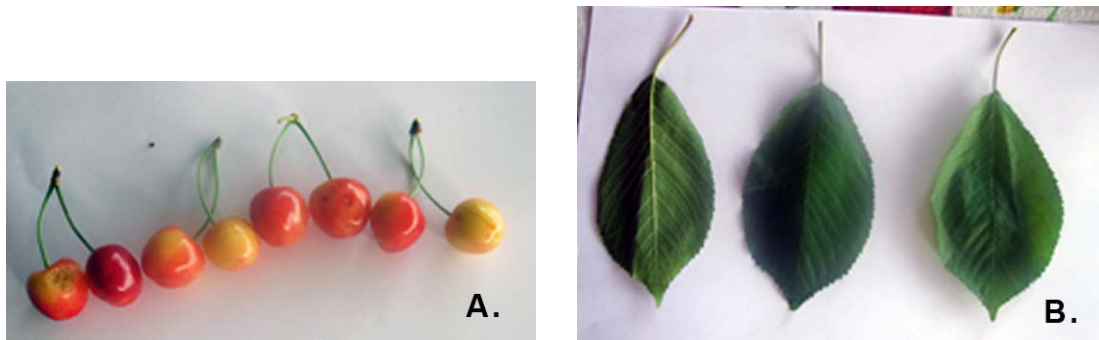
Leaf - elliptic shape, length 13.16 cm, width 6.76 cm, leaf surface 89.35 cm², length of petiole 3.89 cm; Blooming (flowering) – early average, auto-fertile; Fruit - average, weight 4.23 gr; Fruit shape - adrenal shape; Base color skin - red (over 60%) to yellow; Pulp - white; Strength – cracky; Juice - no color; Percentage of sugar - 15.7%; Fruit resistance – average;

Cherrystone - smooth, long shape, weight 0.31 gr, white color, easy separable from the pulp;

Maturity - matures 14-16 days after Burlat cultivar (Hodaj et al., 2008);

Observations - Interesting for the maturity period and good production. Fruits are resistant to splitting and manipulations;

Evaluations - It is considered a suitable cultivar for regional markets. It is resistant in moisture conditions and “rain” irrigation in the period of maturity.



Picture 2: A) Fruits and B) leaves of "Red Belice " cultivar.

CONCLUSIONS

Cherry cultivars "Zhitome" and "Red Belice" are autochthonous cultivars concentrated in specific agricultural regions with a continental Mediterranean climate. The appropriate regions for this cultivars are Berat, Skrapar, Kolonja and Korca.

Referring to cultivar "Burlat", "Zhitome" is estimated as an early maturity cultivar, while "Red Belice" is estimated as an average maturity cultivar.

Their fruits are intended for fresh consume markets, averagely the fruit is big, resistant to manipulation and transport, with a high percentage of sugar and good taste quality.

RECOMMENDATIONS

Based on the study we recommend as follows:

-The cultivar "Zhitome" may be extended also in other hilly areas, with similar climate and pedological conditions as the region of Berat.

-The cultivar "Red Belice" is well suitable in cold areas; it tolerates temperatures till 18 - 20 under 0°C, so their cultivation in the South-East regions of Albania is advised, as far as these areas have fresh climate and low temperatures.

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