

EVALUATION OF 27 SOUR CHERRY (*PRUNUS CERASUS* L.) CULTIVARS UNDER THE SOIL CLIMATIC CONDITIONS OF NORTHERN GREECE.

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Summary: The aim of this research was to evaluate several sour cherry cultivars under the soil climatic conditions of northern Greece. The studied cultivars showed a wide range of bloom period, onset of maturity for harvest, productivity, mean fruit weight and fruit dimensions such as fruit length, fruit width, fruit thickness, ratio of stone:fruit weight as well as total soluble solids content.

Key words: *Prunus cerasus*, total soluble solids, fruit dimensions.

Introduction

In Europe, the total sour cherry production in 2009 was 841.997 t and acreage was 197.284 ha [1]. In Greece, the last decades sour cherry cultivation was diminished. Production in 2009 was 2.400 t and acreage was 300 ha [1]. Several sour cherry breeding programs were continued for many years in several countries [2, 3, 4, 5]. The aim of this research was to evaluate several sour cherry cultivars under the soil climatic conditions of northern Greece.

Materials and Methods

The experimental trees were grafted on a wild cherry seedling rootstock (mazzard) (*Prunus avium* L.), trained in a typical vase form and planted at a distance of 6x6 m apart. The soil of the experimental orchard (northern Greece, longitude 22° 12' 0" E; latitude 40° 29' 04" N; elevation 225m), at a depth of 0 to 80 cm was characterized as clay loam, slightly alkaline (pH 7.50) with low electrical conductivity (0.65 mS cm⁻¹) and low organic matter (0.78%) and CaCO₃ (1.9%) content. Annual rainfall ranges from 600-800 mm. The mean maximum temperature of the experimental area is 38 °C in July, whereas the minimum temperature is -7 °C in January.

Productivity data of 10 years reported are means of 9 trees (3 replications x 3 trees) per cultivar grafted on mazzard rootstock (means were based on data collected from when the trees were 5 years old to when they were 15 years of age). Furthermore, fruit dimensions such as length, width and thickness were measured as well as fruit weight, stone weight and stone/fruit ratio. Total soluble solids were measured with the Atago PR-1 electronic refractometer (Atago Co. Ltd., Tokyo). All fruit characteristics reported were based on a random sample of 200 fruits selected from the experimental trees in each year.

Results and Discussion

The studied cultivars showed a wide range of the following parameters: beginning of bloom: 2 April till 15 April, onset of maturity for harvest: 18 May till 13 June, productivity: 25.00-70.00 kg per tree, mean fruit weight: 2.60-7.00 g, mean fruit length: 15.30-22.00 mm, mean fruit width: 15.70-24.00 mm, mean fruit thickness: 13.90-21.00 mm, total soluble solids: 11.60-19.70 % Brix, ratio of stone:fruit weight 1/8.5-1/24.8. Under the soil climatic conditions of the experimental orchard, the Greek local cultivar 'Kanaris' and the cultivar 'Dwarf Northstar' showed the highest productivity, followed by 'Erdi Boterno' and 'Cerise Belle Magnifique'. Other cultivars that are widely grown in other countries such as 'Montmorency', 'Oblacinska', 'Pady', 'Keleriis' etc showed low productivity and are not suitable for cultivation under the soil climatic conditions of northern Greece.

Figure 1. The range of bloom period of the studied sour cherry cultivars (means of 10 years).

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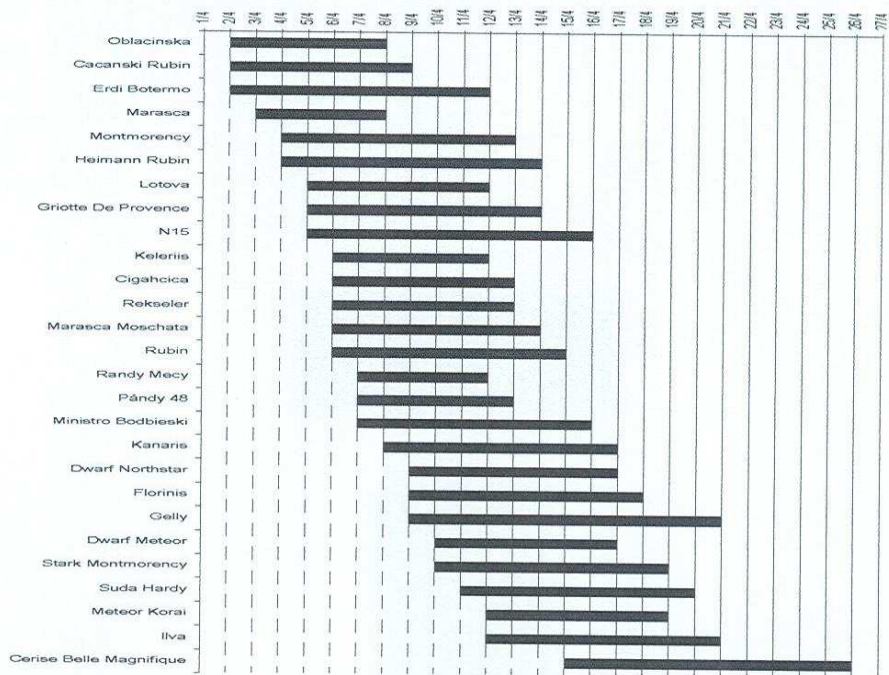


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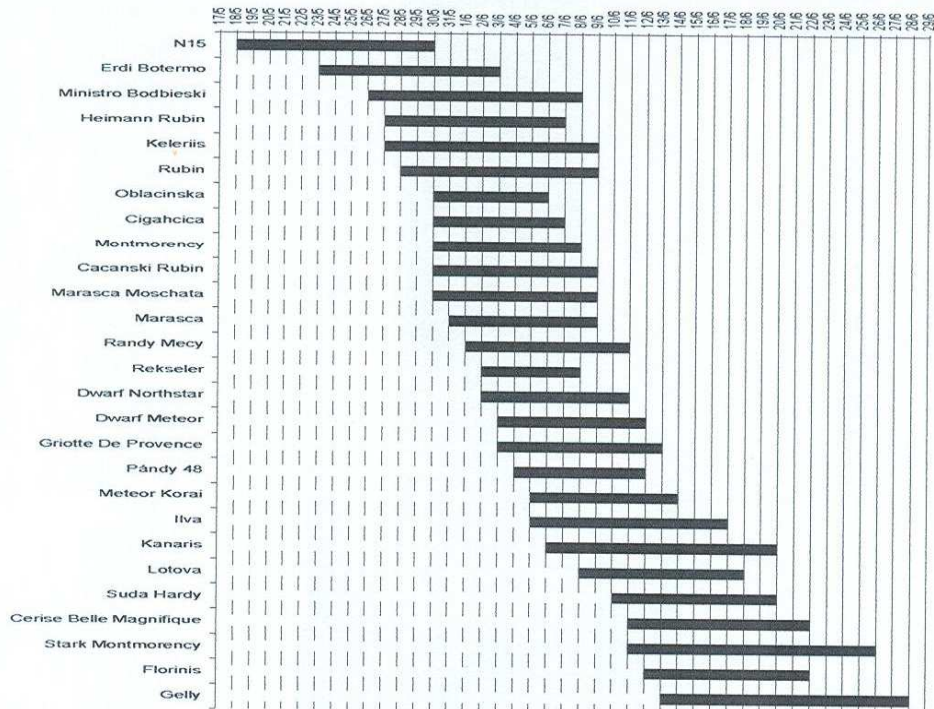


Figure 2. The range of ripening dates of the studied sour cherry cultivars (means of 10 years).

Table 1. Productivity and fruit characteristics of the studied sour cherry cultivars (means of 10 years)

Cultivar	Fruit length (mm)	Fruit width (mm)	Fruit thickness (mm)	Fruit weight (g)	Productivity (kg/tree)	Stone/fruit weight (g)	Total soluble solids (% Brix)
Kanaris	17.00	21.00	19.00	5.50	70.00	1/16.2	16.20
Florinis	18.00	21.00	18.00	5.05	55.00	1/16.0	16.15
Cacanski Rubin	18.90	22.50	20.50	5.70	30.00	1/15.8	11.70

Cerise Belle Magnifique	22.00	24.00	21.00	7.00	65.00	1/13.5	15.50
Cigahcica	15.40	18.80	16.60	3.90	25.00	1/12.2	13.70
Dwarf Meteor	18.50	20.80	18.60	5.30	50.00	1/17.1	13.20
Dwarf Northstar	18.10	21.10	18.80	5.30	70.00	1/18.3	12.10
Erdi Boterno	17.40	19.50	17.60	4.40	65.00	1/11.9	16.10
Gelly	17.00	20.00	18.00	4.65	35.00	1/15.5	18.00
Griotte de Provence	19.50	23.50	21.00	6.70	35.00	1/24.8	19.70
Heimann Rubin	17.50	18.10	16.10	3.90	45.00	1/8.5	14.20
Ilva	16.20	18.90	15.80	3.50	25.00	1/10.9	15.40
Keleriis	18.40	20.20	17.20	4.90	40.00	1/15.8	12.00
Lotova	15.90	17.30	15.50	3.10	45.00	1/10.3	11.60
Marasca	16.00	19.80	17.20	4.50	35.00	1/14.5	15.50
Marasca Moshata	19.00	23.00	21.00	6.20	50.00	1/16.5	13.70
Meteor Korai	18.20	21.10	18.10	5.00	30.00	1/15.2	15.30
Ministro Bodbieski	18.00	24.00	21.00	6.20	30.00	1/14.8	15.60
Montmorency	18.00	21.00	19.00	5.25	20.00	1/21.0	13.95
N15	17.20	22.40	20.40	5.90	60.00	1/12.8	11.90
Oblacinska	16.50	19.80	17.40	4.50	25.00	1/12.3	14.30
Pandy 48	17.70	20.50	18.30	4.80	25.00	1/11.7	13.20
Randy Mecy	18.40	22.40	19.30	5.80	30.00	1/14.2	13.30
Rekseler	19.70	22.60	19.70	5.90	25.00	1/13.1	14.30
Rubin	15.30	15.70	13.90	2.60	55.00	1/9.6	16.10
Stark Montmorency	18.00	20.00	18.00	4.40	60.00	1/16.9	12.60
Suda Hardy	18.00	19.00	17.00	4.80	50.00	1/17.1	13.75

Conclusion

The Greek local cultivar 'Kanaris' and the cultivar 'Dwarf Northstar' showed the highest productivity, followed by 'Erdi Boterno' and 'Cerise Belle Magnifique'. Other cultivars that are widely grown in other countries such as 'Montmorency', 'Oblacinska', 'Pady', 'Keleriis' etc showed low productivity and are not suitable for cultivation under the soil climatic conditions of northern Greece.

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