STUDY OF SOME TOMATO VARIETIES ORIGINATING IN ENGLAND IN THE PEDOCLIMATIC CONDITION OF SOUTH-EASTERN ROMANIA - BRAILA COUNTY

STUDIUL ADAPTABILITĂTII UNOR SOIURI DE TOMATE DIN ANGLIA ÎN CONDITIILE PEDOCLIMATICE DIN SUD-ESTUL ROMÂNIEI - JUDETUL BRĂILA

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Abstract. *The study has as the main target the testing of some Tomato varieties originating in England in the pedoclimatic condition South-Eastern Romania from Braila region. For this first stage of the project htey are not of special interest the technical economical parameters (costs, productivity, profit etc.), theese following to be the object of a different study. They have been studied six ,,cherry" tomatos varieties. (Solanum lycopersicum var. cerasiforme): Cherry White (C.W.), Cherry Black (C.Bk.), Cherry Brown Berry (C.Br.), Cherry Gold Nugget (C.Gn.), Cherry Cerise (C.Cr.), Cherry Riesentraube (C.Rs.) The biotechnical parameters of the cultivated varieties were monitorized along the whole vegetative period, ierespectively May 29th 2011, the planting date in open field, and until October 22nd, the date of the experimental plot land clearing.*
Key words: ,,cherry" tomatos, *Solanum lycopersicum* var. *cerasiforme*.

Rezumat. *Studiul are ca scop principal testarea adaptabilitătii unor soiuri de tomate din Anglia la conditiile pedo-climatice din regiunea Brăilei. Pentru acest prim stadiu al proiectului nu au prezentat interes deosebit parametrii tehnico-economici (costuri, productivitate, profit etc.), acestia urmând să facă obiectul unui studiu separat. Au fost luate în studiu sase soiuri de tomate tip ,,cherry" (Solanum lycopersicum var. cerasiforme): Cherry White (C.W.), Cherry Black (C.Bk.), Cherry Brown Berry (C.Br.), Cherry Gold Nugget (C.Gn.), Cherry Cerise (C.Cr.) si Cherry Riesentraube (C.Rs.) Parametrii biotehnologici ai soiurilor cultivate au fost monitorizati pe întreaga perioadă de vegetatie respectiv 29 mai 2011, data plantării în câmp deschis, si până la 22 octombrie 2011, data defrisării lotului experimental.*
Cuvinte cheie: tomate tip ,,cherry", *Solanum lycopersicum* var. *cerasiforme*

INTRODUCTION

Description of varieties tested. The varieties tested are described by the supplier as follows (http://www.premierseeds.co.za/vegetable-seeds/tomato.html and http://stores.ebay.co.uk/Premier-Seeds-Direct/Tomatoes/_i.html?_fsub=9717831):

1. - Cherry Snow White (C.W.)

[1] Bioterra University of Bucharest, Romania

Very pretty cherry tomato that matures to a cream color. Plants are highly productive and the fruits are sweet. The ivory-cream color persists throughout the fruit when cut. Indeterminate. Maturity: 65-75 Days. Origin: Exact origin unknown, but originally from the United States.

2. - Cherry Black (C.Bk.)

Round, true cherry tomato, one of the only having black skin. Color is a deep red, with blackish hues. Flavor is sweet, much like other cherry tomatoes, and very full-flavored. This variety is fairly rare. Indeterminate. Maturity: 65 Days. Origin: Unknown.

3. - Cherry Brown Berry (C.Br.)

A very unique cherry-like tomato bearing large „cherry" fruits. This strange variety ripens to a dark red-brown color unlike any other cherry tomato you'll see. Fruits have a rich, deep fruity flavor. Plant produce heavily. Indeterminate. Maturity: 75 days.

4. - Cherry Gold Nugget (C.Gn.)

A delightful cherry-like tomato with large (for a cherry tomato) fruits that ripen to a golden yellow. The fruits have a very mild and sweet flavor with minimal acid. Some fruits, particularly the early ripening ones are seedless. The plants are quite heavy bearing for their compact size, which grow to 2-3ft at the most. Determinate, Resistant to Fusarium and Verticillium Wilt. Maturity: 55-60 Days. Origin: Unknown.

5. - Cherry Cerise (C.Cr.)

An heirloom tomato from Norbert Parreira, Helliner, France in 1992. Our Tomatofest organic tomato seeds produce indeterminate, big, sprawling, regular leaf tomato plants that yield huge amounts of tiny, 1/2-inch, red-orange cherry tomatoes with a subtle striping borne in large clusters. A tomato with big, wonderful, well-balanced, sweet taste, bursting with a fruity sweetness similar to the very popular Sungold cherry tomato, but lower in acid. Indeterminate.

6. - Cherry Riesentraube (C.Rs.)

An extremely prolific grape tomato bearing bite sized fruits to 1" around, in large clusters of up to 20-40 each. The name translates to "bunches of grapes" and along with its prolific fruiting habit, the fruits have a very good, sweet flavor that is excellent for fresh eating. Plants are very heavy bearers. The fruits have a distinctive but small point at their blossom ends. The germination time of the seeds tends to be a bit longer than that of other varieties. Indeterminate. Maturity: 70-80 days. Origin: A European (German) heirloom dating back to at least the 1800's and possibly earlier. It was known in the United States as early as 1856, grown by the Pennsylvania Dutch.

MATERIAL AND METHOD

The experimantal plot has been established in Chiscani, a locality placed 2 km from Danube and 11 km South of Braila City, all varieties enjoying the same pedoclimatic conditions.

Braila County is between the following geographical coordinates: 44º 44' and 45º 30' N, 27º 04' and 28º 10' S. It is located in southeast side of Romania, occupying the

north-eastern Romanian Plain and the Big Island of Braila, the largest embanked site of the Danube River. The relief is generally flat, the only „land accident" being the rivers, and lake depressions. Among the relief units, in the North side the county includes a part of Lower Siret River Meadow, towards the West it includes small parts of Salcioara Plain and Buzaului Plain, and towards the East the Lower Danube River Meadow.

The relief of Braila County is of cumulative, sedimentary origin, the loess deposits having a thickness ranging from 10 to 20 m. About 75% of county's surface is covered of chernozem. Theese soils formed in the continental semiarid climate conditions and of loess deposits, on silt and sand, on the ground of a steppe vegetation and surface groundwater sources.

The most spread chernozem soils are:

- Brown chernozem;
- Chocolate chernozem;
- Carbonate chernozem;
- Leachade chernozem.

Braila County climate is temperate continental with shades of aridity. Solar radiation has a relatively uniform distribution, totaling between 122,5 and 125 kcal/cm² and about 2,200 hours of real sunburn, out of which 72% is in the period April-September.

The high temperatures during the summer frequently exceed 30-35ºC, being tipical for the temperate continental climate. During the cold season, along about 110 days, it occurs the ground frost, out of which 80 days occurs only at night.

Concerning the precipitation, the annual average is 465 l/m², most precipitation being recorded during May-August, and the least in autumn and winter.

Researches are part of a larger project that runs over two years.

In the first year (2011), it is intended to test the degree of adaptability biological varieties pedo-climatic conditions in our country, and during the second year (2012) will be quantified technical and economic performance (cost, productivity, profit etc.).

The first stage of the research was conducted during May-October 2011, in an experimental group organized Chiscani locality (Latitude: 45°11' North, Longitude: 27°56' East), located 2 km from the Danube and 11 km south of the city of Braila, all varieties benefit from the same climatic conditions. As biological material has been used six cultivation (varieties) of tomato (*Solanum lycopersicum* var. *cerasiforme*) imported from England. Seed supplier was PREMIER SEEDS, a British company and importer and manufacturer seedlings was firm Lancer Studio Ltd based in Bucharest, sector 6.

Concerning the used culture materials and methods, they have been covered the following steps/technological links:

» In order to shorten the acclimatization period and to reduce the losses from transplanting, the six varieties have been imported from England as seeds, the seedlings being produced in Romania. The seeds supplier was PREMIER SEEDS, a British company.

Date of planting in pots was May 1st 2011, and the date of planting in the opened field was May 29th 2011, the efficiency being of 96 %.

» The field where it has been established the experimental plot, have been prepared in advance by making a spring plowing at 30 cm, and use of the combinator for raising and leveling (Popescu and Popescu, 2003; Indrea et al., 2007). The land modeling have been manually performed by open 70 cm wide furrows.

» Before planting in the field (Ciofu et al., 2004 ; Dumitrescu et al., 1998) it was given Metiocarb (2% a.i.) as granules in order to control the fen cricket *(Gryllotalpa gryllotalpa)* and other harmfull insects.

» Planting distances were the same for all varieties, 70 cm between rows and 30 cm between plants on row, resulting a density of 47,619.0 plants/hectar.

» The tomatoes grown in opened field, in intensive system, having a steam suporting system and flooding irrigation furrows (Atanasiu, 2007).

» The plants were periodically removed of side-shoots but not pinched out. Five out of the six analyzed varieties shown an excelent force of growth along the summer, reaching about 1.60 m 60 days after the planting (fig. 1). The sixth variety, Cherry Gold Nugget (C.Gn.) shown a determined growth.

Fig. 1 – Plant height 60 days after planting

» Weeds control have been performed manually by hoeing between rows and by pulling weeds between plants on row. They were not used herbicides. They have been performed four hoeings every 15-20 days.

» Concerning the irigations, thanks to the frequent rains registered in the period May 30th – Julyth 2011, the water consumption was reduced, the irigations being intensified in August at a 3-4 days interval.

RESULTS AND DISCUSSIONS

The biotechnologic parameters of the cultivated varieties where monitored along the whole vegetative period (Oprea and Galan, 2009; Drăghici, 2002), respectively May 29th 2011, date of planting in the opened field, and until October 22nd 2011, clearing date of the experimental plot.

The performed observations can be synthetized as it follows:

» The varieties C.Br., C.Cr., and C.W. shown a special vigour of the shoots resulted from side-shoots.

» Despite the large inflorescences, the variety C.Bk. shown a high sensitivity to pollination, the yield obtained being low (fig. 2).

» Although they have been periodically performed criptogamic treatments, the variety C.Br. shown an high sensitivity to black spot - *Alternaria spp*.

Fig. 2 – Inflorescences of the Cherry Black variety (C.Bk.)

» On reaching the physiological maturity, the berries of the variety C.Rs. shown uneven ripening and thus a commercial derogatory aspect too (fig. 3).

Fig. 3 – Berries of the Cherry Riesentraube variety (C.Rs.)

» The only variety with a detemined growth (C.Gn.), registered an average yield of 0.480 kg/plant, plant height being of only 60-70 cm. It results an average yield per hectar of 22,857.12 kg, level reached 70-75 days after planting (fig. 4).

Fig. 4 – Cherry Gold Nugget Variety (C.Gn.) when it reached the maximum yield

» Although the berries of the C.W. variety shown uniformity and a special commercial aspect, it showed sensitivity to cracking, phenomenon amplified during the transport.

» The C.Cr. variety adapted excelent showing a high growth force, a long growing season, and a special quality of berries (fig. 5).

Fig. 5 – Cherry Cerise Variety (C.Cr.)

CONCLUSIONS

1. All the analized varieties adapted well in the pedoclimatic condition of SE Romania;

2. The choosen culture system didn't cause special problem concerning the adaptability and productivity;

3. Five out the six varieties shown a special growth vigour during the summer and a long vegetative period;

4. Concerning the yield quality, the obtained results with the varieties C.Bk. and C.Br. were unsatisfactory;

5. At the C.Rs. variety the berries' ripening uniformity was poor;

6. The best results concerning the relation productivity / quality were registered by the varieties C.Cr., C.Gn., and C.W.

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