

SPECIFIC CHARACTERISTICS OF GOOSEBERRY VARIETIES IN NEW CULTIVATION CONDITIONS

PARTICULARITĂȚI ALE SOIURILOR DE AGRIȘ ÎN CONDIȚII NOI DE CULTURĂ

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Abstract. *The paper presents results of research conducted in the centre of Moldova during 2002-2006. Were studied the characteristic indices, gooseberry bush varieties enter the new conditions of growing and established the fruit production up to 5.5 t/ha achieved Șcedrîi, Ruski, Smena. Average crop of studied gooseberry varieties ranged from 1.2 to 14.6 t/ha and maximum yield from 3.4 to 20.8 t/ha. Highly productive varieties over 6 t/ha are Severnii captain, Donetski krupnoplodnâi, Donetski perveneț, Pușkinskii, Colobok, Rresistant.de Cluj. Mean weight of the varieties ranged from 1.4 to 4.2g values and maximum mass between 2.3 to 5.7g. The large fruited are Donetski krupnoplodnâi (4.2 g), Donetski pervenets (3.7g), Zenit, Rresistent de Cluj (3.6g). Varieties with few thorns Colobok, are resistant to powdery american mildew disease, Severnii captain and variety without thorns Orlionok high resistance. Varieties Donetski krupnoplodnâi, Donetski perveneț are resistant to american powdery mildew disease, large numbers of thorns. Very spiny-Ciorni negus varieties, Scedrîi have an average resistance to powdery american mildew disease.*

Key words: gooseberry, variety, yield, cultivate conditions, mildew disease, thorns.

Rezumat. *În lucrare sunt prezentate rezultatele cercetărilor efectuate în Zona de Centru a Republicii Moldova pe parcursul anilor 2002-2006. S-au studiat indicii caracteristici soiurilor introduce de agriș în condiții noi de cultivare și s-a stabilit ca, producție de fructe pînă la 5,5 t/ha au atins Șcedrîi, Ruski, Smena. Recolta medie a soiurilor de agriș studiate a variat între 1,2-14,6 t/ha, iar recolta maximă între 3,4-20,8 t/ha. Soiurile foarte productive peste 6 t/ha sunt: Severnii capitan, Doneșki krupnoplodnâi, Doneșki perveneț, Pușkinskii, Colobok, Rezistent de Cluj. Masa medie a fructelor de agriș pe soiuri a variat între valorile de 1,4-4,2g, iar masa maximă între 2,3 - 5,7g. Soiurile cu fructe mari sunt: Donetski krupnoplodnâi (4,2g), Donetski pervenets (3,7g), Zenit, Rezistent de Cluj (3,6g). Soiurile cu puțini ghimpi Colobok, Captivator, Severnii capitan sunt rezistente la fâinare, iar soiul fără spini Orlionoc cu rezistență înaltă. Soiurile Doneșki krupnoplodnâi, Doneșki perveneț nu sunt rezistente la fâinarea americană, au un număr mare de ghimpi. Soiurile foarte ghimpoase-Ciorni negus, Scedrâi au o rezistență mijlocie la fâinarea americană.*

Cuvinte cheie: agriș, soiuri, producție, condiții de cultivare, fâinare, ghimpozitate.

INTRODUCTION

Gooseberry is an early fall bearing species and among the most productive fruit bushes. Production by gooseberry variety can be up to 10-20 t/ha for agro-compliance with maintenance plant-(Mladin Gh., Mladin Paulina, 1992).

Fruit size of gooseberry bush, although it is a varietal characteristic feature, varies widely depending on the year, age, condition and climatic factors established during the growing season (Franciuc E., 1975).

Degree of thorns allows appreciating the quality of gooseberry variety. Study of thorny degree allowed determining that it is the smallest variety Kolobok - 0.19 and the largest variety Şcedrîi - 0.53. Doneţki krupnoplodni and Şcedri varieties have thorns bifurcated and trifurcated, cutting operation in the collection is particularly difficult because injuries causing workers (Sava Parascovia, 2003).

According to the degree of thorns of the plants, gooseberry varieties were divided into six groups, starting varieties without thorns and finishing varieties with many thorns, classification was made by E. Kirtbaia (Kirtbaia E., 1985).

One of the most dangerous disease is powdery american mildew disease of gooseberry (*Sphaeroteca juice-uvae*). It can jeopardize more than one third of the crop susceptible varieties, if not made on time required for chemical treatment of this disease (Sergheeva K., 1989).

Location in a variety of different conditions can cause a responsive, gooseberry bush deviation degree of plant damage. If the favorable conditions of location, there the gooseberry varieties may be resistant or with very little affection by this disease, while varieties of European origin are strongly affecting. The resistant varieties to powdery american mildew disease often have a number of shortcomings such as: small fruits, the presence of barbs, lower taste qualities, while the sensitive varieties are with large fruit, increased productivity, many thorns, good taste and high quality (Pîşina Z., 1985).

The gooseberry varieties approved in the Republic are: Donetski krupnoplodni and Donetski pervenets (Sava Parascovia, 2004).

MATERIALS AND METHODS

The investigations concerning the productivity and the quality of the gooseberry fruits cultivate on the new climaterical conditions were made on the propriety of the experimental field of the Institute of Researches in Horticulture over the 2002 – 2006 years. The first objectives of the investigations were the wage of fruits, the productivity, *the resistance to powdery american mildew disease and thorny degree of gooseberry varieties*. There were studied 19 gooseberry varieties Donetski krupnoplodni, Donetski pervenets, Ruski, Grushenka, Zenit, Ciorni negus, Kolobok, Smena, Rezistent de Cluj, Captivator, Somesh, Orliionok, Sadko, Scedri, Lascovi, Pushkinski, Severni capitan, Finik, Ledenets, the plantation distances - 2,5 x 1,00m.

RESULTS AND DISCUSSIONS

We don't have varieties created for our country condition. Introduced varieties, new cultivation conditions studied, other than those for which they were

created, they can adapt differently, may have a higher harvest or not, fruit quality can be better or vice versa. This is to determine the outcome of scientific research.

Gooseberry is demanding on soil moisture and air, especially, during the flowering and fruit growth is required 400-450 mm rainfall uniformly distributed (Mladin Gh., Mladin Paulina, 1992).

Climatic conditions set by the amount of rainfall and temperatures that were exposed gooseberry varieties studied are presented in tables 1.

Table 1

Climatic conditions in Republic of Moldova

Month	Rainfall quantity (mm) Sum			Temperature (°C) Mean		
	1891-1980	1995-2001	2002-2006	1891-1980	1995-2001	2002-2006
I	33	33	47,4	-3,5	2,7	-2,8
II	33	32	50,4	-2,2	0,1	-1,3
III	31	32	41,2	2,6	3,7	3,7
IV	39	43,1	35,9	9,7	10,6	10,2
V	52	37,8	55,8	15,9	15,9	15,3
VI	72	52,6	55,8	19,4	20,2	19,8
VII	64	61,9	64,5	21,4	22,9	23,1
VIII	49	54,0	70,4	20,7	21,8	21,8
IX	38	81,1	46,4	16,0	16,3	16,7
X	34	53,8	40,7	10,1	11,2	12,0
XI	42	60,0	43,2	4,1	4,8	5,6
XII	36	42,4	22,2	-0,8	-0,8	0,4
Sum (mean) /an	523	551	573	9,5	10,3	10,4
Sum (mean) III-X	379	416	410	14,5	15,4	15,4
Sum (mean) IV-VI	163	134	148	15,0	15,6	15,1

Climatic conditions for agriculture in Moldova are difficult and risky. Last ten years were drought and high temperatures. Drought has affected plants during different periods of development (table 1). Action drought was manifested by the size and influence on fruit quality, production quantity, etc.

Multiyearly average rainfall for the years 1891-1980 (523 mm) was smaller than the years 1995-2001 (551 mm). Multiyearly average rainfall during the years 2002-2006 in the center of our country has reached 573 mm (table 1). Rainfall during the growing season ranges from 379-416 mm, and rainfall at flowering and fruit growth until maturity is less than 134-163 mm, which were not sufficiently to obtain high quality fruit and production. Moisture deficit in critical periods of development of fruit, gooseberry bush and high temperatures in these periods decreases the production of fruit and its quality affects the differentiation of fruit buds to harvest next year. According to data presented in table 1 highest average temperatures ranged from 9.5 to 10.4° C, average annual temperatures returned

full moon in July, which reached levels of 21.4 to 23.1° C, the lowest average annual temperatures during the growth and fruit formation were 14.5 to 15.6°C.

Table 2

Characteristics of some gooseberry varieties, 2002-2006

Varieties	Fruit wage, g		Production, t/ha		Resistance to powdery mildew disease	Thorny degree
	Mean	Maximum	Mean	Maximum		
1.Donetski krupnoplodnâi	4,2	5,7	7,7	11,6	very poor	spiny
2.Donetski pervenets	3,7	4,6	6,6	8,1	very poor	spiny
3.Ruski	2,9	4,2	5,0	6,4	high	middle
4.Grushenka	2,5	2,7	1,2	3,4	high	poor
5.Zenit	3,6	4,4	3,5	7,2	high	middle
6.Ciorni negus	1,4	2,3	2,4	3,8	middle	very spiny
7.Colobok	2,4	3,2	6,7	9,6	high	poor
8.Smena	3,1	4,1	5,2	6,5	high	poor
9.Rezistent de Cluj	3,6	4,9	6,3	8,8	high	spiny
10.Captivator	2,4	4,0	4,7	8,8	high	poor
11.Somesh	2,7	3,9	3,3	4,0	high	middle
12.Orlionok	3,4	4,1	2,8	4,3	very high	no thorns
13.Sadko	3,3	4,4	4,2	7,2	high	poor
14.Scedrâi	2,7	3,1	5,5	8,4	middle	very spiny
15.Lascovâi	2,6	3,8	2,1	3,6	high	poor
16.Pushkinskii	3,4	4,4	6,8	9,6	middle	middle
17. Severnii capitan	2,2	2,5	14,6	20,8	high	poor
18. Finik	3,2	4,0	2,8	4,6	poor	middle
19. Ledenets	3,2	4,2	2,6	4,8	middle	spiny
<i>The limite of variation</i>	1,4-4,2	2,3-5,7	1,2-14,6	3,4-20,8		

Productivity of gooseberry bush is 1.5-2 kg in the 4-5 year after planting 3-6 kg/ bush-in the coming years to obtain 5-8 t/ha fruit, sometimes depending on variety 12 -15 t/ha (Mihăiescu G., 1977).

Gooseberry is a profitable crop for the harvest of fruit than 2.0 t/ha. Gooseberry varieties are classified into three groups: production - with a harvest from 4.0 to 6.0 t/ha, average productivity - with 2.0 to 4.0 t/ha, poor production-under 2.0 t/ha (Zaletilo A., 1975).

After fruit wage, gooseberry varieties are classified into three groups: large fruit-over 4g, medium -2.5 to 4.0 g, small-up to 2.5g (Andruşchevici T., Dmitrieva A., 2009).

Research on fruit weight, productivity, thorn presence and its quantity, resistance to powdery american mildew disease, of gooseberry bush varieties during the years 2002-2006 allowed the results displayed in table 2. According to data presented in table varieties studied were assessed by fruit mass. The average weight per fruit, gooseberry bush varieties ranged from 1.4 to 4.2 g values and maximum fruit weight ranged from 2.3 g up to 5.7 g large fruited are Donetski krupnoplodni (4.2 g), Donetski pervenets (3.7 g), Zenit, Resistent de Cluj (3.6 g). Small fruited are Ciornii negus (1.4 g), Severnii captain (2.2 g).

Thereafter production is growing most varieties except for varieties that have been negatively affected by the new growing conditions. In 2005 we obtained a maximum yield for most varieties this year but still fell the largest amount of atmospheric precipitation (annual amount of 660 mm and 230 in time training and increasing fruit, gooseberry bush), but those were higher temperature, which influenced the harvest next year with a slight decrease in susceptible varieties under new cultivation conditions.

Conditions created or shown to be favourable for the variety Severni capitan, which allowed to obtain a maximum harvest of 20.8 t/ha. According to the results of studied varieties can be classified into four categories of productivity: low, medium, high, very high. At first category refers Gruşenca variety which bears moisture deficit, poorly supplied with water falling fruit, is harvested-1.2 t/ha. Varieties from which to obtain a mid production to 3,5t/ha are: Zenit, Somesh, Orlionok, Finik.

Productive varieties produced fruit up to 5.5 t/ha Şcedrîi, Ruski, Smena. Average gooseberry crop varieties studied ranged from 1.2 to 14.6 t/ha and maximum yield from 3.4 to 20.8 t/ha. Highly productive varieties with an output over 6 t/ha are Severnii captain, Donetski krupnoplodni, Donetski pervenets, Puşkinski, Kolobok, Resistant de Cluj. Varieties Donetski krupnoplodni, Donetski pervenets are more resistant to drought, have large fruit and high production, but have some drawbacks - are susceptible to powdery american mildew disease, in which case requires 2-3 treatments with fungal preparations and have a large number of thorns which do difficult fruits harvesting.

Ciorni negus is very thorny varieties, Scedri have middle resistance to powdery american mildew disease. The variety Kolobok, Captivator and Severni captain with few thorns are resistant to powdery american mildew disease, the variety without thorns – Orlionok which has a high resistance.

CONCLUSIONS

1. The productive varieties, with fruit production until 5,5 t/ha are: Scedri, Ruski, Smena. Average yield of studied gooseberry varieties ranget from 1,2-14,6 t/ha, and maximum yield between 3,4-20,8 t/ha. The very productive varieties with production over 6 t/ha are: Severni capitan, Donetki krupnoplodni, Donetki pervenets, Puskinski, Kolobok, Rezistent de Cluj.

2. Fruit weight average of the gooseberry variety values ranged from 1,4-4,2 g, and maximum fruit weight varied from 2,3 g until 5,7 g. The large fruited varieties are: Donetski krupnoplodni(4,2g), Donetski pervenets (3.7 g), Zenit, Resistent de Cluj (3,6g). Varieties with small fruit are: Ciorni negus (1.4 g), Severni capitan (2,2g).

3. The varieties with few thorns Kolobok, Captivator, Severni capitan are rezistente to powdery american mildew disease, but thorn free Orlionoc has high resistance. Donețki krupnoplodni, Donețki pervenets varieties are not rezistente to powdery american mildew disease have large number of thorns, large fruited, high production, are more resistant to drought. Very thorny varieties Ciorni negus, Scedri have medium resistance to powdery mildew americane disease.

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