

ADAPTNES CAPACITY OF RASPBERRY VARIETIES INTRODUCED IN REPUBLIC OF MOLDOVA

CAPACITATEA DE ADAPTARE A SOIURILOR DE ZMEUR INTRODUSE ÎN REPUBLICA MOLDOVA

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Abstract. *In the article were presented the results of our investigations during the 2002-2005 about the adeptness capacity of the 28 raspberry varieties introduced in Republic of Moldova on the new soil and climatic conditions, estimation its time of fruit formation, yield, fruit quality, substances accumulation appreciation. Among the studied raspberry varieties were distinguished: Meteor, Lloyd George, Taylor, Red Wadensvil, Malling Jewel, Malling Promiss, Kobfuller, Rubin bulgarian, Hibrid bulgarian, President, Kirjaci, Barnauliskaia.*

Key words: raspberry, varietie, adeptness, yield, fruit.

Rezumat. *În lucrare sunt prezentate rezultatele cercetarilor efectuate pe parcursul anilor 2002-2005 cu privire la studierea a 28 soiuri de zmeur introduse în Republica Moldova și evidențierea capacității lor de adaptare la condiții noi de sol și climă, aprecierea soiurilor prețioase după parcurgerea fazelor fenologice, formarea recoltei, calitatea fructelor și acumularea substanțelor nutritive. Printre soiurile studiate s-au evidențiat: Meteor, Lloyd George, Taylor, Roșu de Wadensvil, Malling Jewel, Malling Promiss, Kobfuller, Rubin bulgăresc, Hibrid bulgăresc, President, Chirjaci, Barnauliskaia.*

Cuvinte cheie: Zmeur, soiuri, adaptare, recolta, fructe.

INTRODUCTION

The raspberry is one of the most widespread crop of fruit bushes in the world. Raspberry varieties although vegetative propagation and relatively stable heredity, however, show a certain degree of ecological plasticity, that can adapt to some extent and the environmental conditions somewhat different from those they originally had to create [1]. Raspberry productivity depends largely of the cultivation conditions, the agricultural machinery and the resistance to unfavourable factors. But even in the most favourable conditions for development they have a variable productivity, which is due to genetic potential possibilities of raspberry varieties [2]. Raspberry fruit contain many calories, are rich in vitamins and minerals, which have great importance in digestion and recent research has established that a number of elements in their composition fight cancer [5, 4].

High atmospheric humidity during the months of June-July has a positive effect both in quantity production as well as the quality [3]. Lack of rainfall and high temperatures during the period between the end of flowering and early fruit

ripening or falling hail up to harvest climatic factors can reduce fruit production and its quality [6].

MATERIAL AND METHOD

Investigations on the study of 28 varieties of raspberries placed in culture, during the formation yield, productivity and fruit quality of raspberries in function of genetic varieties and climatic conditions, were conducted within the experimental field of Research Institute of Horticulture over the years 2002 - 2005, on a chernozem soil type of meadow alluvial, hard clay-sandy, non-irrigated land. Planting distances were 2.5 x 0, 5m. The main objectives of the investigation were: ability to adapt to new conditions of soil and climate, increased productivity obtaining high quality of raspberry fruit, with a high amount of organic matter accumulated nutrients.

RESULTS AND DISCUSSIONS

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Table 1

Climatic conditions during growth, maturation and harvest raspberry fruit

Year after planting	The main climatic factors, average			growth and fruits maturation (days)	Date of fruit harvest, began	Yield (t /ha)
	Temperature (°C)	Rainfall (mm)	Humidity (%)			
a.II- 2002	15,9	505,1	64,3	41	12,06	0,7
a.III-2003	13,9	249,1	63,8	29	6,06	2,8
a.IV- 2004	15,05	374,6	65,0	33	15,06	1,5
a.V- 2005	16,61	429,3	63,1	26	14,06	1,6
Average	15,37	389,53	64,1	32		1,7

It was studied the adaptability of new varieties of raspberries, the influence of climatic conditions on production, fruit ripening and quality depending on the accumulation of nutrients. The start, the development period and the duration of phenological phases depend on the biological features of the variety and soil conditions and climate of the early vegetation during flowering and fruit maturation. Annual temperatures during the growing season of 2002 and 2005, which was rainy, with high temperatures in 2003 and 2004 with less precipitation and colder influenced differently varieties studied (Tab. 1 and 2.). The largest amount of rainfall of 505.1 mm fell in 2002, and the longest training of raspberry fruit was 41 days. The average duration multi-annual of training raspberry fruits from flowering until maturity was 32 days. Average annual harvest of fruit

varieties studied by raspberry obtained in the second year after planting was 0.7 t / ha, the 3rd year - 2.8 tons / ha, the 4th year - 1.5 t / ha, in the 5th year - 1.6 tons / ha. Multi-annual average harvest of raspberry fruit was 1.7 t / ha.

Table 2

The chemical composition of variety of raspberry fruits, 2002-2005.

Variety	Dry substances, %	Sugars %	Acidity %	Tanning coloring substances mg%	Vitamin C mg%	sugar / acid	Tasting Note
1.Barnaulickaia	14,08	6,93	1,89	83,14	41,13	5,61	4,52
2.Indian Summer	12,83	8,34	1,47	56,11	8,06	5,87	4,58
3.President	15,00	7,32	2,37	66,51	44,00	3,09	4,80
4.Pathfinder	12,28	6,40	1,82	65,48	30,90	3,70	4,50
5.Chirjaci	12,15	7,87	2,09	54,04	41,27	2,94	4,73
6. Stolicinaia	12,67	5,93	1,88	60,97	29,98	3,21	4,67
7. Rubin bulgarian	11,97	5,35	2,19	110,71	17,31	2,40	4,52
8.Hibrid bulgarian	13,50	8,05	1,98	99,77	22,66	2,92	4,59
9.Marfilk	13,00	6,62	2,17	62,37	33,88	3,03	4,88
10.Kobfuller	14,10	6,74	2,55	83,14	39,60	2,55	4,46
11.Malling Promiss	13,50	7,85	2,56	94,59	31,17	3,01	4,59
12.Meteor	17,30	9,30	2,21	91,45	22,88	4,21	4,60
13.Lazarevskaia	12,63	6,39	1,60	30,14	30,47	4,09	4,68
14.Brigantina	13,53	6,64	2,09	84,97	27,61	3,16	4,66
15.Balzam	13,65	7,33	1,90	57,16	25,75	3,01	4,73
16.Solnășco	11,53	6,17	2,14	87,30	25,54	2,93	4,66
17.Lloyd George	15,58	9,75	2,47	69,63	28,45	3,72	4,72
18.Rubin	12,47	5,91	2,20	69,29	35,54	2,50	4,74
19.September	13,73	5,56	2,30	70,67	36,23	3,24	4,64
20. Walfriend	11,73	7,50	1,28	61,32	30,34	5,65	4,69
21.Taylor	15,43	9,87	2,02	87,31	43,27	5,20	4,66
22.The Latham	12,73	8,55	2,21	66,52	26,84	5,38	4,65
23.Malling Jewel	12,20	6,23	3,34	43,65	23,41	2,64	4,66
24.Red Wadensvil	15,67	8,38	2,21	48,50	35,49	3,94	4,55
25.Paul Camerzind	14,63	7,71	1,48	70,67	30,95	5,45	4,64
26.Delbard Magnific	12,45	5,54	1,76	62,36	40,70	3,26	4,55
27.June	14,50	9,11	1,94	20,80	28,16	4,70	4,52
28. Kuthbert	15,00	-	1,58	83,14	26,84	-	4,74
Average	13,57	7,31	2,06	69,35	30,66	3,76	4,64
Limit change	11,53-1730	5,35-9,87	1,28-3,34	43,65-110,71	8,06-44,00	2,40-5,87	4,46-4,88

The accumulation of nutrients in the fruit depends largely on variety and climatic conditions of the year, but especially those in training during the harvest. Vitamin C, acidity, tannins and colouring substances in raspberry fruits

accumulates in larger amounts over a period of training and growing colder, with rain and increased humidity, except under conditions of high temperatures and lower humidity. The research conducted established the amount of nutrients accumulated in the fruits of raspberry and the results are presented in table 2.

Analyzing the chemical composition of raspberry berries averaged over years 2002-2005 (tab.2) found that the amount of solids in fruit varieties reached maximum values Meteor (17.3%), Red Wadensvil (15.67 %), Lloyd George (15.58%), Taylor (15.43%); sugars in varieties Taylor (9.87%), Lloyd George (9.75%), Meteor (9.3%); titrate the amount of acid varieties Malling Jewel (3.34%), Malling Promiss (2.56%), Kobfuller (2.55%), Lloyd George (2.47%), the amount of tanning and coloring substances: Rubin Bulgarian - 110.71 mg%, Hybrid Bulgarian -99.77 mg%, Malling Promiss -94,59 mg %, after vitamin C were found varieties President (44,0 mg %), Taylor (43,27 mg %), Chirjaci (41,27 mg%), Barnauliskaia (41,13 mg%). Coefficient sugar / acid the more high, with both the variety has improved quality. The highest values were recorded at Indian Summer varieties (5.87), Walfried (5.65), Malling Jewel (5.64) and lowest values in variety Rubin Bulgarian (2.40).

CONCLUSIONS

According to research conducted and results achieved during the years 2002 - 2005 found that: during training of raspberry harvest has ranged from 26-41 days, the date when the harvest between 6-15 June, average fruit yield reached 1.7 t / ha and after taste quality and nutrient content were found varieties: Meteor, Lloyd George, Taylor, Red Wadensvil, Malling Jewel, Malling Promiss, Kobfuller, Rubin Bulgarian, Bulgarian Hybrid, President Chirjaci, Barnauliskaia with the coefficient sugar / acid which varied between 2,55-5,87 and tasting note between 4,46-4,88.

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