

ADAPTATION ABILITY OF THE SORTS OF GOOSEBERRY IN REPUBLIC OF MOLDOVA

Parascovia SAVA

Research and Development Institute for Fruit Tree, Chisinau, 14 Costiujeni Street,
Republica Moldova, psava2110@rambler.ru

Abstract: This article presents the results of our investigations during the 1996-2001 to the adaptability on the gooseberry introduced in Republic of Moldova, time of yield formation and productivity, substances accumulation in dependence on climatic conditions.

INTRODUCTION

The sorts of fruit bush, thought are multiplied vegetatively and have the heredity relative stable, manifeste still a certain grade of ecological plasticity, they can adapt to some extent and to some conditions somehow different from those they had in phylogenese. It must been kept in mind that if these terms are moven away from those that the soil needs, the results are less acceptable as possible. So the problem isn't to provide to the plants pedo-climatic conditions at minimum level, but closer from theoptime one. The same sort could offer very good results in some centres, districts or mediocre and bad results in another.

Because of the diversity of the pedoclimatic conditions from a zone to another, there are no universal sorts, wich would act everywhere the same. There are sorts with a high ecological plascity, wich are profitable cultivated on very large teritories on all the continents.

The vast area of extension constitutes not only an index of big ecological plasticity that they possess, but also as proof that they combine a big number of qualities comparative with other sort less extended in culture.

The assortment must be seen in dinamics, but the division into zones and microzones to take part on the mesure of obtaining the new results of the scientific researches and observations from the field concerning the behavior of some sorts in different centres. (N. Cepoiu, A. Chira, L. Chira, 1996 -1).

The temperature influences on the fiziological and biochemical processes: photosynthesis, the breathing, the perspiration, enzymatic activity, the water and mineral salts absorbtion etc.

The high temperatures accelerate the maturity, but diminuate the capacity of keeping of the fruits.

Then, when the drought coincides with the critical periods of growing of the plant, the losses of harvest are very semnificative(A. Ștefârță et al., 2002-3).

The goosbery is exigent at the humidity of the soil and the air, especially, in the blossom and the groing period of the fruits beeing necessary 400-450 mm of precipitations uniform distributed(4 -Gh. Mladin, P. Mladin, 1992).

The presence of the pectic substances in the gooseberry fruit (1,06 – 2,35 %) attributes him antiradiant qualities. Although the accumulation of the pectic substances take place

before the technical maturity, but later depending on the fruit maturity starts the reduction of this process[5-Franciuc E., Strelinicova V.,1983].

The study of the forming of the fruit quality and the accumulation of the organic substances in the growth and maturation process allows the determination of the optimal terms of harvesting and offers the possibility of comparing the sorts after their qualities and their chemical composition[6- Franciuc E.,1975].

MATERIALS AND METHODS

The investigations concerning the adaptation ability, the duration of the harvest forming, the productivity and the quality of the gooseberry fruits depending on the genetic capacities of the soil and the climatic conditions were made on the propriety of the experimental field of the institute of researches in pomiculture over the 2002 – 2005 years, with the soil type chernozem. The first objectives of the investigations were the multiply the productivity and obtaining high qualified gooseberry fruits and the accumulation of the organic substances. There were studied 18 sorts in which entered : Donești pervește, Donești krupnoplodni, the plantation distances : 2,5x0,75m; 2,5x1,00m; 2,5x1,25m.

RESULTS AND DISCUSSIONS

The norm of appreciation of the maturity except the exterior qualities like : size, color, density of the fruits and their taste must constitute the content of the dry soluble substances, which are determined with the refractometer . [2- N. Cepoiu, A. Chira, L. Chira, 1996].

The harvest, the duration of the fruits forming, the date of harvesting in spite of that this is a specific characteristic of the sort, it varies much in dependence of years and also of age, estate of the plants and the climatic factors from vegetation period.

The climatic factors which can diminish the production of the fruits are : hail storm in the maturation period, thermal amplitude higher than 21⁰C when takes place the maturation of the wood (month october – november) and the precipitates less than 300 mm in the period between the end of the blossom and the start of the maturation of the fruits(N.Voiculescu, et al.,1999 -1).

According to the made investigations it was established that the sorts of gooseberry studied in republic of Moldova during 2002 – 2005 year, with the climatic conditions of the year, they reached the maturation period of the fruits between 2-3 -a dec. of june.

As long as the relative humidity of the air is reduced, the deficit of saturation in vapors is bigger, and causes an insufficiency of the sweating process. The temperature influences over the physiological and biochemical processes: photosynthesis, breathing, perspiration, enzymatic activity, the water and mineral salts absorption etc. The high temperatures accelerate the maturity, but diminish the capacity of keeping of the fruits.

It was studied the influence of the climatic conditions of the year, meaning the temperature, the quantity of the precipitations, the humidity in the air over the harvest of gooseberry fruits, the duration of the forming, the date of the harvesting and the accumulation of the nutritive substances.

Table 1

The climatic conditions out of the growth time, the maturation of gooseberry and the harvest, the vegetation period (III-X), year of planting 2000.

Year of planting	Main climatic factors			Duration of the growth and the maturity of the fruits, days	Date of the harvesting of the fruits	Harvest , t/ha
	The average temperature, °C	The precipitations, mm	humidity, %			
a.III- 2002	15,9	505,1	64,3	85	26.06	4,2
a.IV-2003	13,9	249,1	63,8	44	12,06	4,8
a.V- 2004	15,05	374,6	65,0	69	25,06	5,0
a.VI- 2005	16,61	429,3	63,1	63	20,06	7,0
Multianual mean	15,37	389,53	64,5	65		5,5

In table 1 are exposed the annual temperatures from the vegetation period of the years 2002, 2005 more rainy with high temperatures, 2003, 2004 – years with less precipitations and colder.

The lowest average temperature for the vegetation period – 13,9 °C, 2003 y., the highest - 16,61 °C, 2005 y. The biggest quantity of precipitations – 505,1 mm, 2002 y., the lowest – 249,1 mm, 2003 y. The duration of the forming of the fruits varies between 44 – 85 days. The average harvest in the third year after plantation - 4,2 t/ha, the 4-th year – 4,8 t/ha, the 5-th year – 5,0 t/ha, the 6-th year – 7,0 t/ha.

Table 2

Chemical composition of gooseberry fruits, I.C.P.

Year	Dry substances, %	Sugar, %	Acidity, %	Tanning, colouring substances, mg %	Vitamin C, mg %	Coefficient sugar/ acid	Degustation grade
2002	14,99	10,15	2,13	51,54	31,45	4,77	4,67
2003	16,61	10,40	1,79	73,29	30,98	5,81	4,54
2004	15,29	7,18	1,94	77,32	27,84	3,70	4,58
2005	16,30	10,84	1,51	88,58	29,01	7,18	4,76
Multianual mean	15,70	9,65	1,86	72,69	29,82	6,57	4,64

The accumulation of the nutritive substances in fruits depends on the sort and the climatic conditions of the year from forming harvest period. The content of vitamin C, of the acidity and the tanning and coloring substances in the gooseberry fruits is better in a cold and rainy summer than a droughty and with high temperatures.

The highest quantities of dry substances were accumulated in 2003, counting 16, 61%, in 2005 of sugar – 10, 84 %. The 2005-th year with a inregistered quantity of precipitations : 429,3 mm and permeated the accumulation of a bigger quantity of tanning and coloring substances until 88,58 mg%, and in 2002 with a quantity of precipitations - 505 mm and a average temperature (month III-X) vitamin C reached 31,45 mg%, also the acidity reached 2,13%.

Coeficient sugar/ acid and the degustation grade reached the highest values in 2005-th year respectively -7,18 and 4,76.

CONCLUSIONS

The adaptability reflects the quality of the fruits characteristic to the gooseberry sort reflected through the harvest, the duration of her forming, the chemical composition, the coeficient sugar/acid and the degustation grade.

According to the obtained results between the 2002-th year and the 2005-th year, it was established that the forming period of the gooseberry harvest variated between 44 days in the most droughty year and 85 days in the most rainy year, the quantity of the nutritive substances acumulated, the coeficient sugar/acid (3,70 - 7,18), the degustation grade(4,54 - 4,76) depends on the conditions established in the forming period of the fruits, also was varying according to the climatic conditions of the year.

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