

## PRODUCTIVITY OF GOOSEBERRY VARIETIES IN THE REPUBLIC OF MOLDOVA CONDITIONS

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### Abstract

*In the paper are reflected the results of the scientific researches carried out in Republic of Moldova regarding the determination of the phonological phases of the cultivation of gooseberry, the productivity and the exploitation period of the intensive plantation established in 2004 with the 'Colobok', 'Captivator', 'Grushenka', 'Sadko', 'Smena', 'Severnii capitan' varieties during the years 2015-2017 on irrigated land. Among the studied gooseberry varieties with few thorns, resistant to mildew, low temperatures and drought, showed great fruits are: 'Smena' (3.5 g), Colobok (3.4 g) and with small fruits: 'Severnii capitan' (1.7 g) and 'Grushenka' (1.9 g). The average weight of the gooseberry fruits through the studied varieties ranged between 1.4 g and 3.3 g. The average harvest of the varieties studied grew between 6.2-18.1 t/ha.*

**Key words:** gooseberry, fruits weight, phenophases, variety, yield.

### INTRODUCTION

Variety occupies a central place in increasing productivity, being an independent and absolutely determined factor. On the basis of a more productive variety, without additional costs, it is possible to increase the crop yield 1.5 times and more. An intensive variety of gooseberry must combine a whole range of qualities such as: the adaptation reaction to the conditions of the growing medium, in case it does not adapt well, the accumulated energy is spent on adaptation and not on the formation of the crop, the poor resistance to diseases and pests can destroy more than 1/3 of the crop, early entry bearing, self-fertility, which guarantees harvest in unfavorable conditions for flowering, fruit quality, cold resistance, drought and the final result - the crop (Sergeeva, 1985).

In order to optimize the fuller realization of the productive potential, it is necessary to know the tolerance potential of the variety for cultivation in different ecological areas, the conditions of which correspond better to the requirements of the plantation. Although the level of resistance, which is specific to each species, variety, or even plant, is a hereditary, genetically controlled character, under optimal conditions it is latent, unrealized, and only occurs under extreme stress conditions (Ştefăreţ, Alunici et al., 2001).

Gooseberry productivity vary strongly depending on climatic conditions specific to the year, characteristic features of varieties and may decrease from 12 t/ha to over 1 t/ha (Olhina, Riabuschina, 1987).

Gooseberry harvest depends on the genetic potential of the variety, the climatic conditions established during the growing season of each year and their pollination by the bees. The productivity of gooseberry plants is influenced directly by the variety (Kawecki, 1989).

Form the productivity point of view, the studied gooseberry varieties were divided in four categories: low productivity ('Grushenka' - 1.2 t/ha), medium productivity ('Zenit' - 3.5 t/ha, 'Someş' - 3.3 t/ha, 'Orlionok', 'Finik' - 2.8 t/ha), high productivity 5.5 - 4.2 t/ha - 'Scedrâi', 'Ruskii', 'Smena', and very high productivity: 'Severnii capitan' - 14.6 t/ha (Sava, 2010).

The varieties with vigorous growth as 'Captivator', 'Severnii capitan', 'Colobok', under irrigation conditions, in intensive plantations (1.5 x 1.0 m) can give a high average yields ranging from 13.8 to 19.5 t/ha (Sava, 2012).

### MATERIALS AND METHODS

The investigations were carried out during the years 2015-2017 according to the methods established studying shrubs and influenced the

cultivation conditions in determining the duration of the phenological phases of development of the gooseberry plants, the fruit mass and the productivity of the intensive plantation, established in the year 2004 with a planting distance of 1.5 x 1.0 m, on irrigated land, with varieties which have a few thorns and are resistant to mildew: ‘Smena’, ‘Sadko’, ‘Colobok’, ‘Captivator’, ‘Severnii capitán’, ‘Grushenka’.

## RESULTS AND DISCUSSIONS

Climate change and its influence on the cultivation conditions of shrub species becomes more evident. The climatic conditions during the 2017 vegetation period were manifested by lower temperatures than in the previous years, starting in the third decade of April, which has led to a delay in going through the phenological phases of the development of gooseberry plants, and the rains from the end of May to the beginning of June and the low temperatures at night delayed the growth of plants.

The observations made during the evolution of the phenological phases of gooseberry during the vegetation period, 2015-2017, were introduced in Table 1.

Table 1. The duration of the phenological phases of gooseberries plants

Name of phenophases, duration between them (days)	Years			Average
	2015	2016	2017	
Budding date	16.03	06.03	08.03	
Duration between phases (days)	34	34	32	33
Blooming	19.04	03.04	09.04	
Duration between phases (days)	59	72	73	68
Ripening	17.06	19.06	21.06	

As can be seen from Table 1 data, the duration between budding and blooming phases in 2015 reached 34 days. In 2016, the vegetation period began earlier, similar to the year 2002, when positive temperatures were established at the end of February and the budding took place on 06.03, the period until the flowering lasted 34

days and the flowering started on 03.04.2016. At the end of March there were frosts higher than -5 degrees C, which affected the first young leaf of gooseberry, a phenomenon that has not happened in the past. In 2017, the vegetation period began earlier, similar to 2016, and the budding took place on 08.03., the period until the flowering lasted 32 days and the flowering began on 09.04.2017. At the end of April (19-22) frosts took place and wet snow fell with a layer of 50 cm, which affected the harvest, the plants being with formed small fruits.



Figure 1. Climatic conditions during the vegetation period, 19-22.04.2017



Figure 2. Growing of gooseberry fruits

The productivity of gooseberry varieties studied per hectare depends on the climatic conditions of the year, the characteristics of each variety, the capacities to adapt to the new cultivation conditions, crop maintenance, the age of plantation etc.

The study of the gooseberry varieties introduced during 2007-2017 allowed their appreciation by mass of the fruit and the production obtained, and the results are included in Table 2.

Table 2. Production and average mass of gooseberries fruits depending on variety and year conditions

Variety	2015		2016		2017		Average	
	fruit mass, g	yield, t/ha						
Colobok	2.5	8.9	1.9	6.0	3.4	12.7	2.6	9.2
'Captivator'	2.2	19.2	2.9	18.0	2.1	17.1	2.4	18.1
'Sadko'	3.0	6.7	2.7	6.7	3.1	6.7	2.9	6.7
'Severnii capitan'	1.4	15.9	1.7	22.0	1.7	15.1	1.6	17.7
'Smena'	3.0	4.7	3.4	6.7	3.5	7.3	3.3	6.2
'Grushenka'	1.1	14.0	-	-	1.7	9.8	1.4	11.9
Average	1.1-3.0	4.7-19.2	1.7-3.4	6.0-22.0	1.7-3.5	6.7-17.1	1.4-3.3	6.2-18.1

As shown in Table 2, the average weight of the fruits of gooseberry varieties ranged from 1.4 to 3.3 g values. The largest fruits were obtained in 2017, the maximum mass ranged from 1.7 g to 3.5 g.

The varieties with large fruits are: 'Smena' (3.5 g), 'Colobok' (3.4 g), 'Sadko' (3.1 g). The varieties with small fruits are: 'Severnii capitan' (1.7 g) and 'Grushenka' (1.9 g). The average of fruit weight ranged from 1.4 g (variety 'Grushenka') to 3.3 g (variety 'Smena').

The average fruit harvest obtained for the gooseberry varieties studied ranged between 6.2 (variety 'Smena') and 18.1 t/ha (variety 'Captivator'). The maximum yield of 22.0 t/ha of gooseberry fruits was obtained in the 2016 year for the variety 'Severnii capitan', and in 2015 year - 19.2 t/ha for the 'Captivator' variety.



Fig. 3. Gooseberry varieties with high productivity - 'Severnii capitan'



Fig. 4. Gooseberry varieties with high productivity - 'Captivator'

## CONCLUSIONS

On the basis of the research carried out on the gooseberry varieties introduced to the pedoclimatic conditions of the Republic of Moldova, it was established that:

The phenological phases of the development of the gooseberry plants are influenced by the climatic conditions, and on average between the stages of budding and blossoming there is a period of 33 days, and between the flowering and the maturing of the fruit the interval is 68 days. The average weight of gooseberry fruits varied between 1.4 g in the 'Grushenka' variety and 3.3 g in the 'Smena' variety.

The average fruit harvest obtained in the gooseberry varieties ranged between 6.2 ('Smena' variety) and 18.1 t/ha ('Captivator' variety).

## REFERENCES

- Kawecki Z., 1989. Wzrost i plonowanie krzewow dwuch odmia agrestu wwarun Kach Olztynai Tolkmicka. Acta Acad. Agricult. Techn. Olst. Agric. Nr. 13, 189-198.
- Olihina E.I., Riabushkina E.V., 1987. Sortoizucenie iagodnâh cultur. Sb. Naucinah trudov., vap. 49, Vsesoiuznai NII sadovodstva im. I.V. Miciurina, Miciurinsc, 11-16.
- Sava P., 2010. Specific characteristics of gooseberry varieties in new cultivation conditions. Scientific papers Journal, Horticulture Series, LIII, „Ion Ionescu de la Brad” Publishing House, Iași, 235-240.
- Sava P., 2012. Bazele științifice ale culturii agrîșului în Republica Moldova. Monografie. Tipografia UASM, Chișinău, 192.
- Ștefărtă A., Alunici N., Buceațcaea S., Brânză L., Vrabie V., 2001. Metodele noi de diagnosticare și ameliorare a rezistenței plantelor la un deficit moderat de umezeală. Fiziologia și biochimia plantelor la început de mileniu: Realizări și perspective. Mater. Conr. II, Ch., 342-348.

