

STATE AND PERSPECTIVES OF SWEET CHERRY PRODUCTION IN BULGARIA

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Abstract

Natural and climatic conditions in our country are suitable for expanding sweet cherry plantations. For the investigated period (2001-2017) the areas with sweet cherry plantations decreased from 9,704 ha in 2001 to 4,411 ha in 2008 and in 2017 increased to 8,989 ha. The production of sweet cherry fruit also decreased from 28,487 t in 2001 to 14,830 t in 2010, then in 2017 increased to 48,391 t. Average cherry yields recorded are strong below the biological capabilities of sweet cherry varieties and range from 2,936 kg/ha in 2001 to 5,383 kg/ha in 2017. The recent trend in planting high productive varieties using advanced technology for sweet cherry fruit production, leads to higher yields and better quality of fruits.

Key words: sweet cherry, production, varieties.

INTRODUCTION

Sweet cherry is an economically valuable fruit specie with traditions in production in Bulgaria. Featuring early ripening, high yielding, excellent nutritional and dietary qualities of fruits, quick return on capital investment.

During the period around World War II, sweet cherry culture has no particular importance to our country (Georgiev et al., 2007). In 1950 sweet cherry area was 900 ha and 23,000 t of fruit production was obtained mainly from single trees (Djouvinov et al., 2006), after that the extensive development of the fruit-growing in our country started.

In 1960 sweet cherry fruit production was 54,948 t and the occupied area was 2 007 ha.

In the 1970's, intensification of the Bulgarian fruit growing started and the sweet cherry areas increased significantly, the peak being observed in the 1980s (Borovinova et al, 2008).

Contemporary sweet cherry production is aimed at mechanizing the working processes in plantings, including the most labor-intensive (fruit harvesting and pruning), (Tasseva et al., 2007).

The purpose of current investigation is to study the state and perspectives of sweet cherry production in Bulgaria, to review the problems and ways to overcome them.

MATERIALS AND METHODS

Analysis of the sweet cherry production in Bulgaria by regions for the period 2001-2017 was made in order to characterize the most suitable areas for cultivation of sweet cherry trees in Bulgaria using harvested areas (ha), average yield (kg/ha) and fruit production (t).

The collected data from the Agrostistics Department at the Ministry of Agriculture and Food and the FAO are statistically processed and shows the state of sweet cherry production in Bulgaria.

RESULTS AND DISCUSSIONS

Sweet cherry plantations in Bulgaria from 9,704 ha in 2001 decreased to 4,411 ha in 2008, then increased to 8,989 ha in 2017 (Table 1). Over the last few years there has been some increase in harvested cherry areas, but still far from sufficient to meet market and consumer needs.

According to the Ministry of Agriculture, Food and Forestry Department for 2017, the cultivars of the sweet cherry trees in Bulgaria is represented by Van (33.3%), Bing (16.2%), Bigarreau Burlat (8.9%), Kozerska (4.5%), Bulgarska hrushtyalka (2.8%) and other varieties (34.3%), while the distribution by age of sweet cherry plantations in total is 12,532.7 ha, non-yielded or in initial yielding (up to 4 years) is 2,032.2 ha, in full yielding (5-14 years) are

7,123.6 ha, from 15-24 years are 1,886.8 ha, 25 years and more are 1,490.1 ha. Kyustendil, Pazardzhik, Plovdiv, Sliven, Targovishte-Razgrad, Silistra, Lovech, Vratsa, Varna, Bourgas and Stara Zagora sweet cherry producing regions are identified (Shuleva et al., 2018).

The main problems in sweet cherry production in Bulgaria are related to improving the cultivar structure, increasing the yields by improving the care of the plantations, creating new intensive plantations, improving the quality and reducing the cost of production. New production technologies, including mechanization of pruning and harvesting of fruit production, must be implemented.

Sweet cherry allows rational use of semi-mountainous areas where soil and climatic conditions are favorable for its cultivation.

Recently, there has been a trend in the use of high yielding cultivars and modern fruit production technologies, resulting in higher and better yields.

Table 2 shows that, during the studied period, the production of sweet cherry fruit also decreased from 28,487 t in 2001 to 14,830 t in 2010 and then increased in 2017 to 48,391 t.

This reduction in yield due to the age structure of plantations, the lowered agrotechnology in existing plantation (such as fertilizing, processing, irrigation, pruning and plant protection).

Then, from 2009 to 2015 there was an increase in sweet cherry fruit production by two and a half times. The share of young

cherry plantations created by a new planting scheme and new, more yielding and disease and pest resistant cultivars is also increasing.

According to MAF, department "Agrostatistics", Bulletin "Fruit Production in Bulgaria" 2001-2017 sweet cherry production by regions is the smallest in the Northwest region (12 t) and the largest (22,466 t) in the Southeastern region in 2015.

The highest average sweet cherry fruit yields in our country for the period 2001-2015 were obtained in 2013 (6,387 kg/ha) and the lowest in 2002 (3,018 kg/ha) (Table 3).

Significant impact on average fruit yields and received fruit production have the annual climatic conditions.

Depending on the region, the lowest average fruit yields were obtained in the Northwest in 2002 (291 kg/ha), and the highest in the Southeast (6,800 kg/ha) in 2015.

In conclusion, the area, the production and the average yields of sweet cherry fruit in Bulgaria are insufficient to satisfy the needs of our population. In support of this, the following two figures regarding the import and export of cherries in Bulgaria were presented.

The import of cherry fruit in Bulgaria (Figure 1) starts in 1992 - 37 t, reaching its maximum in 2013 - 4,787 t, and in 2016 it is 1,363 t. With the decrease of the cherry areas in our country, the import is increasing because the cherry is a desired fruit of the domestic market.

The largest exported quantity From our country of cherry fruit was 8,646 t in 1987 and at lowest 1 t in 1974, with 745 t in 2016 (Figure 2).

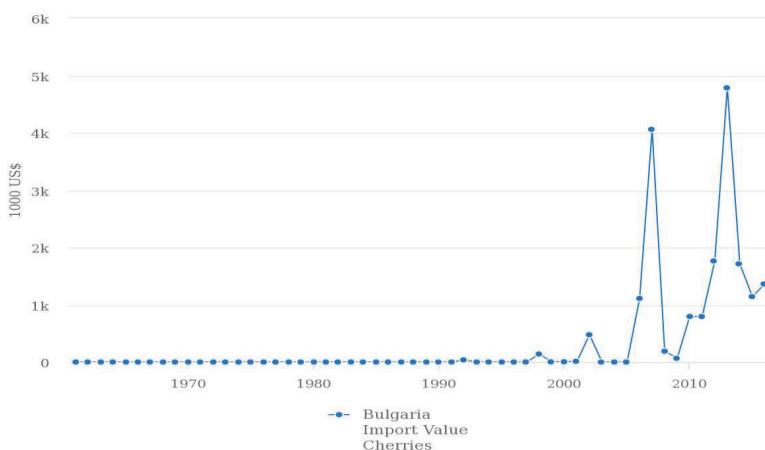


Figure 1. Import of cherry fruits for the period 2001-2016 (t) (Source: FAOSTAT)

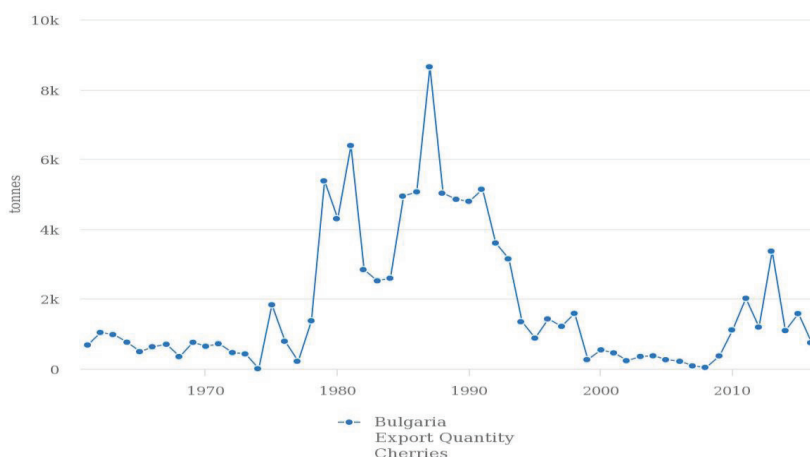


Figure 2. Export of cherry fruits for the period 2001-2016 (t) (Source: FAOSTAT)

Table 1. Harvested areas with sweet cherries for the period 2001-2017 (ha)

Regions	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest	72	60	34	34	12	8	26	81	66	135	111	58	108	33	117	138	108
North central	1887	1 070	451	422	397	380	381	373	397	457	516	466	455	327	672	854	842
Northeast	829	704	496	475	427	428	466	150	162	396	550	484	373	230	535	578	648
Southeast	2826	1 375	1 197	1 239	1 028	1 024	1 488	1 655	2 006	3529	3 297	3265	2 985	2 676	3 304	3 489	3 622
Southwest	1632	1 207	1 360	1 353	1 465	1 506	1 213	1 071	1 163	1488	1 835	1 600	2 021	1 868	1 595	1 653	1 701
South central	2458	2 335	1 505	1 548	1 394	1 445	1 433	1 081	1 375	1687	1 438	1 116	1 663	1 122	1 832	1 751	2 068
Bulgaria	9704	6 751	5 043	5 071	4 723	4 791	5 007	4 411	5 169	4 517	7 747	6 989	7 605	6 256	8 055	8 463	8 989

Source: MAF, Department "Agrostatistics", Bulletin "Fruit Production in Bulgaria", 2001-2017

Table 2. Production of sweet cherry fruit during the period 2001-2017 (t)

Regions	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest	42	26	12	94	20	14	93	116	98	117	182	127	271	75	577	827	582
North central	2692	1 768	635	892	436	404	466	748	641	907	1 343	848	1 787	1 253	3 106	2 642	4 127
Northeast	1296	728	667	938	971	774	1 109	282	497	769	2 241	1 080	2 152	1 129	2 577	1 756	3 732
Southeast	9164	1 648	2 628	5 245	4 646	4 649	5 979	6 238	6 550	13037	13169	10615	15735	15236	22466	19389	20 316
Southwest	3513	4 052	8 394	8 027	5 982	9 190	5 121	5 697	4 165	3 826	7 160	4 812	10263	10332	9 368	5 895	8 074
South central	11780	7 432	4 907	6 173	6 180	5 473	5 659	2 986	5 505	6 295	5 968	2 030	7 954	5 269	11329	7 987	11 560
Bulgaria	28487	15654	17243	21369	18235	20504	18427	16067	17456	14830	30063	19512	38162	33294	49423	38496	48391

Source: MAF, Department "Agrostatistics", Bulletin "Fruit Production in Bulgaria", 2001-2017

Table 3. Average yields of sweet cherry fruit during the period 2001-2017 (kg/ha)

Regions	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest	585	291	369	2 765	1 657	1 864	3 543	1 447	1 480	867	1 639	2 189	2 509	2 273	4 932	5 993	5 389
North central	1427	1 648	1 410	2 112	1 098	1 061	1 224	2 002	1 614	1 983	2 602	1 820	3 927	3 832	4 622	3 094	4 901
Northeast	1562	1 012	1 344	1 977	2 276	1 807	2 380	1 881	3 065	1 944	4 073	2 233	5 769	4 909	4 817	3 038	5 759
Southeast	3243	1 193	2 195	4 235	4 519	4 540	4 018	3 769	3 265	3 694	3 994	3 251	5 271	5 694	6 800	5 557	5 609
Southwest	2153	3 155	6 172	5 934	4 083	6 101	4 222	5 319	3 581	2 572	3 903	3 007	5 078	5 531	5 873	3 566	4 747
South central	4792	3 168	3 259	3 985	4 434	3 788	3 948	2 762	4 005	3 731	4 150	1 820	4 783	4 696	6 184	4 561	5 590
Bulgaria	2936	2 273	3 419	4 214	3 861	4 279	3 680	3 642	3 377	3 283	3 880	2 792	5 018	5 322	6 136	4 549	5 383

Source: MAF, Department "Agrostatistics", Bulletin "Fruit Production in Bulgaria", 2001-2017

These facts show unsatisfied needs of our cherry fruit consumer. Therefore, areas with cherry plantations should be increased.

At the same time, to improve agrotechnology in existing plantations, and to introduce more productive, pest and disease resistant or tolerant varieties.

CONCLUSIONS

Between 2001 and 2017, the area occupied by sweet cherry plantations in Bulgaria decreased from 9,704 ha in 2001 to 4,411 ha in 2008, afterwards increased to 8,989 ha in 2017.

The production of sweet cherry fruit decreased from 28,487 t in 2001 to 14,830 t in 2010 and increase in 2017 up to 48,391 t.

The average yields obtained are far below the biological potential of sweet cherry varieties ranging from 2,936 kg/ha in 2001 to 5,383 kg/ha in 2017.

The following issues have to be solved in order to expand the sweet cherry production:

- to introduce new, earlier and productive sweet cherry varieties in commercial production;
- to create new, intensive, sweet cherry plantations providing regular and high yields;
- to reduce the non-productive period by using dwarf rootstocks (vegetative rootstocks);
- to use certified planting material to create new plantations;
- introducing new training systems for sweet cherry trees;
- to improve the water-fertile regime and to mechanize the production processes in the plantations in order to increase labor productivity and reduce the cost of production;
- to extend the period of fresh fruit consumption by proper storage and processing in different products;
- modern and specialized sweet cherry production is based on plantations created on fertile soils;

- to carry out effective plant protection against white rust and *Rhagoletis cerasi*.

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