

Evaluation of the development of fruit growing in Bulgaria (I part)

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Abstract

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Fruit-growing is a branch of agriculture which originates from ancient times. It is essential for the economy and sustainable development of the Bulgarian agricultural regions. The study tries to explain what is happening to the fruit branch today in the context of its historical development. The purpose of this article is to determine and evaluate the stages in which fruit growing was developed over the years – from its emergence to the present days. In order to achieve this, the study analyzes the development of fruit growing in Bulgaria; estimates the stages it goes through; evaluates the production potential of the fruit branch; analyzes and evaluates fruit export and import. The study considers a long period of time, which requires it to be divided into two parts. Author determined four stages from occurrence of fruit growing to the present day: first (1990 – 1924), second (1925 – 1944), third (1945 – 1989) and fourth (1990 – 2018). This first part of the study discusses the period from the beginning of the 20th century to the end of the 80s. The article concludes that the development of fruit growing begins on a solid basis, including the necessary legislation and scientific assistance. The achievements were consolidated and expanded by 1944. Fruit growing becomes a commodity branch, important for the economy and regions. Production and exported potential expanded. Third stage (1945 – 1989) had the longest duration (45 years). The main feature of this stage is that the land and the other assets were forcibly seized from the private farmers and were given for use by Soviet model cooperatives. Despite some achievements: the creation of new scientific units, good interaction between science and practice, successful specialization and concentration of production, improvement of crop production technologies, the unhealthy economic base led to a crisis in the sector in the late 80's.

Key words: development stages; production potential; fruit areas; production; average yields; foreign trade

Introduction

Fruit production is a livelihood with long-standing history. Ancient travelers looked on our lands as a region extremely favorable for growing fruits. In the early 20th century, the pioneer-growers were convinced that it could bring good profits to farmers and could become a profitable branch for the country (Gulemetov and Petleshkov, 1990). Fruit growing is extremely suitable for a family business. It provides higher employment than other agricultural sectors (Užar and Radojević, 2020), higher incomes per unit area (Zhivondov et al., 2008) and can contribute to the sustainable development of the agricultural regions (Davidova and Thomson,

2014; EUFRIN, 2011). Over the years, it was provided livelihoods for the population in many areas of the country. The production potential of horticulture expresses its ability to ensure the necessary amount of production for the domestic and foreign markets and to obtain a positive end result of the activity (Roycheva, 2019). The production potential depends on many factors – mainly natural, technological and economic. Studying it requires analysis over a long period of time. The article attempts to explain what is happening to the fruit branch today in the context of its historical development. The retrospective analysis will allow us to give a more objective answer to the question why the current state of the fruit growing does not meet its potential. The aim of the arti-

cle is to evaluate development of fruit growing and to define the stages (periods) during which the branch goes from its occurrence to the present days and to analyze its production potential. The following tasks were studied:

- Determination of the main stages of its development;
- Analyzing and evaluation of the stages during which the fruit growing goes through;
- Estimation of the production potential of the fruit branch and of the main fruit crops;
- Analyzing and evaluation of fruit foreign trade;
- Assess of development of fruit growing from the beginning of 20th centuries up to now.

The study considers a long period of time. This requires the article to be divided into two parts. The first part of the article covers the period from the beginning of the 20th century to the end of the 80s.

Material and Methods

The study examines the production potential of the fruit growing branch at national level and applies classical methods of research and analysis: retrospective, situational, expert, comparative and graphic. To research production potential the study uses following indicators: areas under fruiting, average yields, production, export and import. The data sources are official: Statistical Yearbook of Bulgarian Kingdom and National Statistical Institute – Republic of Bulgaria.

Result and Discussions

The development of fruit growing in Bulgaria began in the early 20th century. Four stages can be distinguished from its occurrence to the present day: first (1900 – 1924), second (1925 – 1944), third (1945 – 1989) and fourth (1990 up to now). This periodization uses and further develops previous ones (Popov and Brusarski, 1970; Manolova, 2005). It is based primarily on the socio-economic periods in the country's development.

The first stage lasted from 1900 to 1924. This was the initial stage during which the cultivation of fruit trees began and the production was designed to satisfy the needs of the producers themselves and a smaller part was for market.

During this 24-year period, the areas under fruiting and production increased 3 times and reached 12 734 ha and 88 189 tons respectively (Figure 1). It should be remembered that from 1912 to 1916 Bulgaria participated in the First Balkan War, the Second Balkan War (Inter-Allied War), and the First World War. Undoubtedly, the war years delayed the development of the branch, but there has been no breakdown in fruit growing.

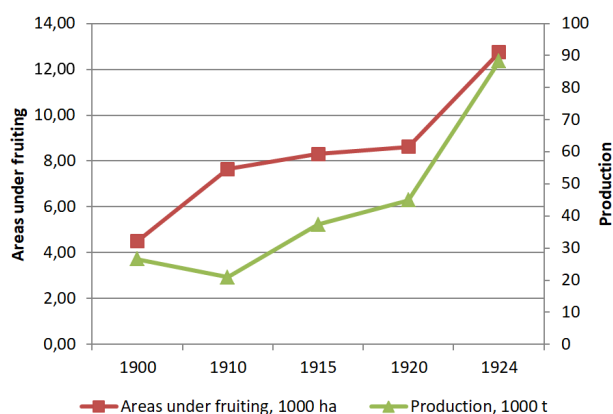


Fig. 1. Areas under fruiting and production of fruit crops in the period 1900–1924

Source: Statistical Yearbook of Bulgarian Kingdom. 1926, 1942

Plums are one of the first fruits grown in our lands. During the first stage, there were a permanent growth of the areas – about 3 times and they reach 8 849 ha (Figure 2). Production also was increased about 2 times. At the end of the period it was amounted 52 477 tons. Yields fluctuate, which was normal, because the producers learn from practice and the made mistakes. The harvest depends heavily on the soil and climatic conditions.

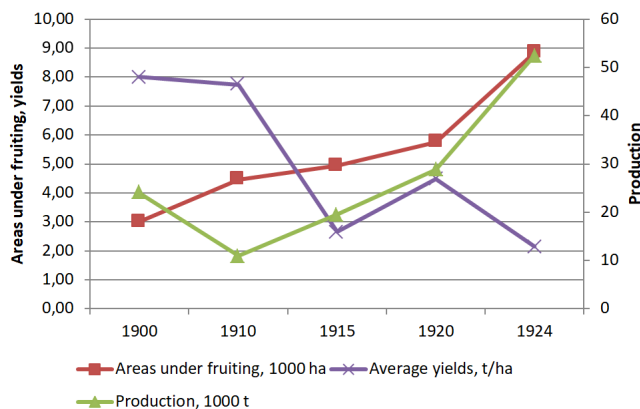


Fig. 2. Areas under fruiting, average yields and production of plums in the period 1900–1924

Source: Statistical Yearbook of Bulgarian Kingdom. 1926, 1942

During the first stage, important trends in product structure emerged. The crops that determined the appearance of fruit growing in these years were plums and nuts. Over 70% of the fruit plantations were concentrated in three districts – Kyustendil, Veliko Tarnovo and Pleven.

Despite the low relative share of market output, 959 tons walnuts average per year was exported in the period 1907 –

1911. For the same period 184 tons of plums, apples and other fruits were exported also. Processed fruits, mainly dried plums, were among exported items – about 300 tons.

During the first stage, fruit nurseries began to be created in the country to supply producers who want to plant orchards with quality seedlings. In 1905 was established fruit nursery in Targovishte. Later in 1910 was established state fruit nursery in Troyan.

The state authorities appreciated the importance of agriculture for the country. In 1922 the first Act for the improvement of agricultural production and conservation of agricultural property was adopted. It was later subsequently amended and supplemented.

From the very beginning of the development of the sector, the need for research, knowledge and training of producers was understood. That is why in 1924 the Government passed the Law on experimental stations and research institutes but in this period no such institutions were established.

Briefly for the first stage:

- The basics of fruit production were laid.
- The main fruit crops were plums and nuts.
- A small share of the fruit was marketed.
- The first export of fresh and processed (mainly dried) fruits was realized.
- The foundations of the legislation were created in the field of agriculture incl. in horticulture.
- The foundations of the research activities were established.

The second stage covered the period from 1925 to 1944 and lasted nineteen years. It was characterized by the fact that fruit growing was becoming a commodity branch. *This marked a qualitatively new stage in its development.* The relative share of fruit in the structure of arable land was increased and at the end of the period it reached 1.19% from the total arable land. The role and importance of the branch for the economy of certain regions and for the country was growing. Exports of walnuts continue to rise and in 1939 amounted to 3 507 tons. In the period 1930-1934, 2 155 tons of plums were exported. Exports of canned and other processed fruits also increased. In 1941 it was 68 618 tons.

In 1929 Fruit growing experimental stations were established in Kyustendil and Dryanovo. They were the main regions for growing fruit gardens. These were the first research units which were created to help growers. The director of the Dryanovo Experimental Station became Petar Lilov, who was considered the founder of the fruit growing experiments in Bulgaria and has gone through a long-term specialization at Cornell University in New York.

In the second stage the areas under fruiting have increased about 3 times. Fruit areas from 13 159 ha in 1925 reached 40

721 ha to the 1944 (Figure 3). Production increased significantly after 1935. At the end of the period (1944) it increased about 9 times compared to 1925 and reached 405 041 tons. These data showed that fruit farmers gain experience and improve the cultivation of fruit crops.

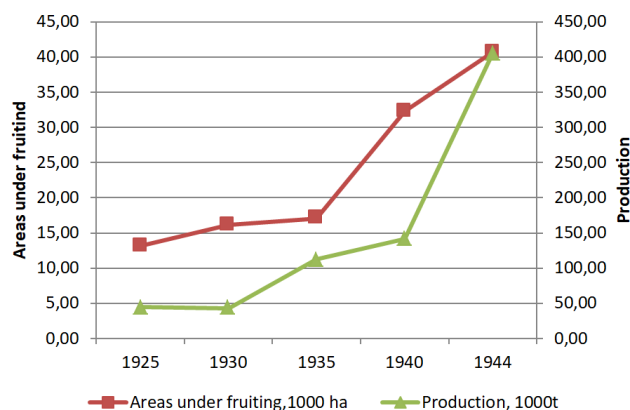


Fig. 3. Areas under fruiting and production of fruit crops in the period 1925–1944

Source: Statistical Yearbook of Bulgarian Kingdom. 1926, 1942, 1943–46

Second stage was also characterized by structural changes. Plum and apple orchards were grown significantly. The first pear gardens were established. The structure of cultivated fruit crops was diversified with cherries, apricots, peaches and other species.

During the years of the Great Depression, Bulgarian fruit-growing opened up its potential as an essential sector with great importance for the country's economy and export. At the same time, large amounts of fruits were exported. The exported volumes of fresh and processed fruits in 1939 reached a record high amounts of 50 746 tons. Bulgaria managed to benefit from a favorable international environment and build new facilities for dried plums, which allowed it to increase exports of dried fruits, which even exceeded exports of fresh fruits (Brusarski, and Popov, 1970). The export of apples began after 1930. In 1939, 14 995 tons of fresh apples were exported. For the first time, pears, strawberries, as well as processed and canned fruits, cherries, apricots, peaches and others were exported. Export of processed fruits accounted for 1 072 tons per year for the period 1930 – 1934. The main export destinations were Germany, Bohemia and Moravia and England. Fruit growing increased its income potential for the country's economy. The fruit branch accounted for 5.8% of the country's total agricultural export in 1935.

In the second stage, *specialization of the regions for most appropriate fruit crops began*. The most suitable for local soil and climate conditions crops were planted. It was realized on the base of accumulated production practice and experience. At the same time mixed gardens were established. Another typical characteristic for this period was that 35% of the orchards were mixed. This was a way to diversify the fruit produced.

Legislation governing agricultural relations was expanded. Governance acts directly related to the sector were: Law for improvement of agricultural production and protection of field properties, Regulations for the control of chemical agents for the control of diseases and pests of plants, Regulations for the control of the production and marketing of fruit propagating material, Rules for the control and testing of materials, preparations, tools and machines used in agricultural holdings, Rules for application of the ordinance-law for improvement of the agricultural production and protection of the field properties, Ordinance for protection of walnut trees and the method of cutting and using them (Law, 1938).

Briefly for the second stage:

- This was a qualitatively new stage in the development of fruit growing, through which it became a commodity branch.
- The number of cultivated fruit species was risen including cherries, apricots, peaches and others.
- Areas and fruit production were increased.
- The importance of fruit growing to the regions and economy of the country was risen.
- The first research units were established to support and guide the fruit growers.
- The foundations of concentration and specialization of the branch based on practice were laid.
- Legislative regulation of relations in agriculture was expanded, including in fruit production.
- Export of fresh, processed and canned fruits was increased.

The third stage began in 1944 with the establishment of the one-party power of the Bulgarian Communist Party and ended in 1989 with the collapse of the socialist system. It had the longest duration – 45 years.

During this stage, the land and *other productive assets were forcibly seized* from the private farmers and were given for use by Soviet model cooperatives. With the change of socio-economic relations and the transition to a socialist centralized system of planning, two organizational forms of agricultural production were created – the Labor cooperative farm and the State agricultural farms. In Labor cooperative farm the land was privately owned. In the beginning a part of the income from the production activities of the

farms was distributed among the owners as a rent. Over the years, the rents were declined and in the 1960's were discontinued.

New experimental stations and research institutes were built in the 1950's. Agricultural Experiment Station in Pomorie was established in 1949. Fruit Growing Experimental Station was founded in Plovdiv (1950). In 1952 Government transformed the Fruit Growing Experimental Station in Plovdiv into Fruit Growing Research Institute and increased the number of the researchers and the used experimental land. In 1952, the Fruit Experiment Station was established in Silistra. In 1953, a State fruit nursery in Troyan was transformed into a Plum Experiment Station. The main tasks of the built experimental units were – carrying out research, implementation and consulting activities in the field of fruit growing. The activities of these institutions were specialized. The station in Pomorie was specialized in studying of almonds and southern crops suitable for cultivation for the soil and climatic conditions of Bulgaria. Fruit Growing Institute, Plovdiv was specialized to covers most fruit species – apples, plums, cherries, nuts. The Experimental Station in Silistra was deal with the apricot. The station in Troyan was specialized in plum crop. During 1987 Experimental Station in Sliven was establishes with main goal to be a major scientific peach center in the country.

Between 1953 and 1965, three studies were conducted on positioning of fruit species in the most appropriate areas for their growing. This was contributed to *the specialization and concentration of the crops* into the most suitable for the soil and climate conditions areas, sub-areas and sub-regions and led to the creation of larger fruit gardens. The main regions for growing apples are: Plovdiv, Pazardzhik, Stara Zagora, Kyustendil, Blagoevgrad, Varna and Shumen districts. The main regions for plums are Gabrovo, Lovech, Veliko Tarnovo, Plovdiv and Stara Zagora districts. The main regions for peaches are Sliven, Stara Zagora, Blagoevgrad, Kyustendil, Barne and Burgas districts. The area of fruit plantations has grown steadily until 1966 and reached 176 960 ha, after which it began to decrease. At the end of the period (in 1989) it was 112 432 ha. Until 1960, the increasing of production was achieved through expansion of land, so there were no major progress in technology.

The technologies were improved with the help of science after 1960 years. Moderately grown and weakly grown clone rootstocks and more productive varieties were introduced. The systems of formation of the tree crowns and pruning were improved also. The palmette tree pruning system was implemented in order to maximize output.

In the 1970s, a new organizational form – Agro-industrial complexes was created. It merges the Labor cooperative

farms and the State agricultural farms. This was intended to overcome the weaknesses of the system.

The density of trees were increased, the systems of formation and pruning continued to improve especially in apples. The spindle system began to establish in orchards aiming at facilitating the most labor-intensive practices of growing fruit crops. In the separate frontal farms working with science, excellent results and high economic efficiency of production were achieved. During this period, the science received a good funding from the state. For the period considered, the largest production was received in 1976 – 2 232 496 tonnes from all fruit crops. Fruit-growing supplied the processing industry with raw materials, fulfilled the country's commitments to the Council for Mutual Economic Assistance (CMEA), and provided the foreign exchange earnings required for the Bulgarian economy.

Between 1960 and 1980 Bulgaria was a *well-known exporter of fruits* in East and West European countries. The export included cherries, pears, apricots, strawberries and nuts. According to our calculations, in 1965 the fresh fruit export accounted for 34% while the fresh and canned export accounted for 44% of agricultural export, which testifies to the importance of fruit branch.

In the second half of the 1980s, the first symptoms of the fruit and vegetable crisis were arised. Excessive concentration of the orchards led to problems. There were difficulties in protection the fruits from diseases and pests. Many people were needed in order to pick fruits within the appropriate agrochemical timeframe. To ensure this pupils and students were involved in the harvesting of the fruit production. This led to difficulties in management. The quality of work has deteriorated. Costs increased and production became inefficient. Workers' personal interest in outputs were diminished over the years. The state monopoly in trade, which provided

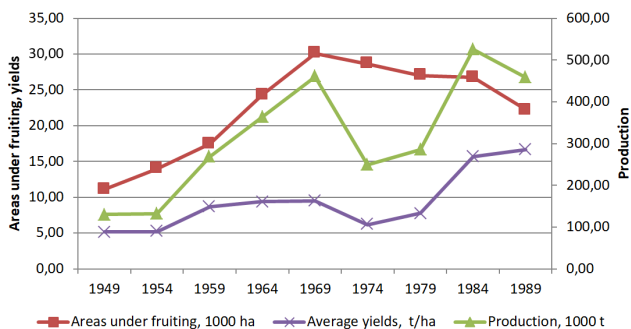


Fig. 4. Areas under fruiting, average yields and production of apples in the period 1949–1989

Source: Statistical yearbook – Republic of Bulgaria, 1956, 1960, 1970, 1974, 1980, 1987, 1995

security for producers, in the long run reduced the competitiveness of Bulgarian fruit growing.

Apple was a major fruit crop during the third stage. The area of orchards increased until 1968 and reached 30 421 ha (Figure 4). After this year it began to decrease. The trend in obtained yearly production was more volatile, reaching its highest values in 1984 – 525 984 tons. Average yields also varied. They were highest in 1986 – 17.489 t / ha.

Plums are a traditional fruit culture for Bulgaria. During this period the areas with plums were increased and reached 33 031 ha in 1971 (Figure 5). After that they began to decrease and in 1989 they amounted only 10 227 ha. Production followed the same trend, but fluctuations were more pronounced as yields were unstable. The largest production was in 1970 – 334 300 tons. Yields varied widely, from 0.438 t/ha in 1954 to 11.034 t/ha in 1987. This could be explained with the low technological level and the strong dependence of production from natural factors.

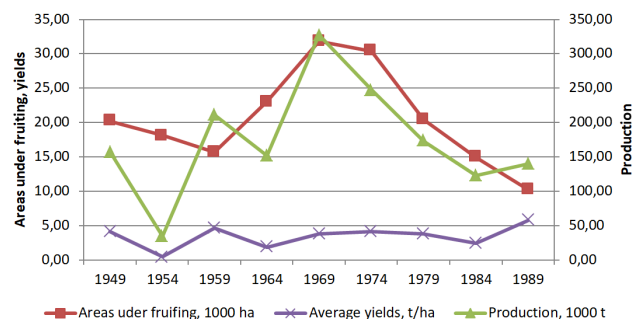


Fig. 5. Areas under fruiting, average yields and production of plums in the period 1949–1989

Source: Statistical yearbook – Republic of Bulgaria, 1956, 1960, 1970, 1974, 1980, 1987, 1995

Cherries were the other important fruit crop for our country. The areas of cherries has grown from 733 ha at the beginning of this period to 9 136 ha in its end (Figure 6). Production was increased also over the years. Its lowest level was in 1949 – 5 603 tons, and its maximum was in 1986 – 83 849 tons. Average yields were poor and tended to decline. The highest average yield was recorded in 1948 – 8.703 t/ha. The low yields were result of growing of tall trees, which develop large crowns, problems of picking fruits that are small, delicate and difficult to harvest.

The other main fruit crops were peaches and nectarines. The areas under fruiting began to increase in 60's. They reached the highest level in the end of the 60's – 14 055 ha (Figure 7). The areas increased drastically (49 times) in 1989 in comparison with 1949. The yields were very volatile and varied widely – from 5.7 t/ha in 1979 to 12.788 t/ha in

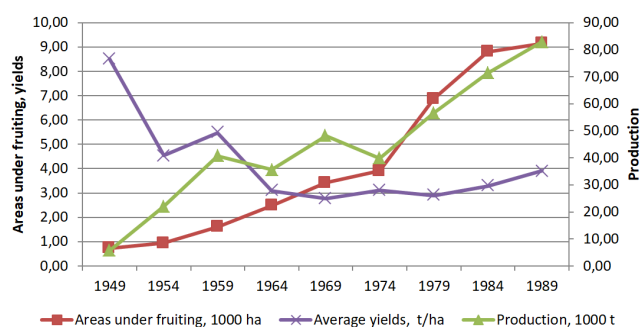


Fig. 6. Areas under fruiting, average yields and production of cherries in the period 1949–1989

Source: Statistical yearbook – Republic of Bulgaria, 1956, 1960, 1970, 1974, 1980, 1987, 1995

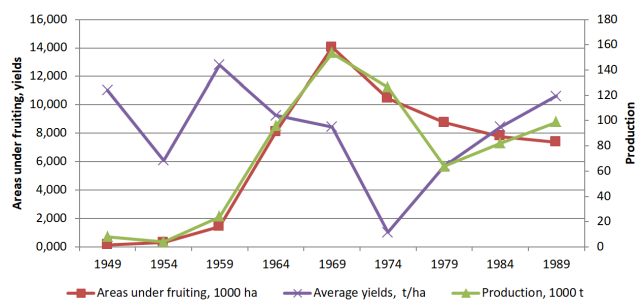


Fig. 7. Areas under fruiting, average yields and production of peaches and nectarines in the period 1949–1989

Source: Statistical yearbook – Republic of Bulgaria, 1956, 1960, 1970, 1974, 1980, 1987, 1995

1959. Production followed the dynamics of the areas under fruiting.

Briefly for the third stage:

- Sharp change in the economic basis of production and transformation of the private economy into central planning system.
- Introducing cooperative forms of production organization.
- Establishment of new experimental stations and research institutes for scientific and implementation activities.
- Good collaboration between science and practice and achieving high results in some farms.
- Positioning of fruit growing in the most suitable areas for their growing which allowed specialization and concentration of the production.
- Technologies were improved.
- Increasing the production potential and the export of fruits within the Council for Mutual Economic As-

sistance (CMEA).

- Despite some achievements, the unhealthy economic base led to the start of crisis for the fruit branch in the second half of the 1980s.

Conclusions

The study attempts to evaluate the development of fruit growing since its emergence to the end of 80s. The study draws the following conclusions:

- From the very beginning (1900 – 1924), a solid foundation is given for development of fruit branch: the necessary legislation is adapted and research activities are started. Part of the production is processed and not only fresh but also processed fruits are exported to European markets.
- The second stage (1925 – 1944) consolidates and expands the achievements of the first stage: the foundations of specialization and concentration of fruit growing are laid, legislative regulations are expanded, the first research units are established and fruit growing becomes an important industry for the regions and the economy.
- The third stage (1945 – 1989) changes the economic base of production and transforms the private economy into a centrally planned system. This destroys much of what has been achieved so far. Despite some achievements: the creation of new scientific units, good interaction between science and practice, successful specialization and concentration of production, improvement of crop production technologies, the unhealthy economic base led to a crisis in the sector in the late 80's.

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