



ANALYSIS OF THE STATUS OF MAIZE PRODUCTION IN BULGARIA

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ABSTRACT

Maize is a very important crop that is used for grain, silage and green fodder. It is a raw material for production of starch, vegetable oil, dextrin, liquid and medical glucose, alcohol, paper, fibers and other drugs. It is the only cultural plant in Bulgaria by which are produced so many products and the crop is the second most important cereal in the country after wheat. The purpose of this study is to bring out the possibilities for maize production in Bulgaria, based on the comparison and analysis of data on maize production for twenty years.

The purpose's realization is done by analysis of the state of maize production in Bulgaria, determination of the main differences in the economic systems functioning during the researched period from the positions of their impact on maize production and formulation of the main problems facing farmers producing maize by evaluating the potential for future production. The study is based on several key indicators: planted area, average yields, and total production of the crop. The covered period is from 1980 to 2009. On this basis, the trends in maize production are specified and conclusions about the state and perspectives of manufacturing in Bulgaria are drawn.

Key words: Planted area, Average yield, Aggregate production, Economic importance.

INTRODUCTION

Maize is an important crop because it is "stock" of many vitamins and microelements. It contains significant quantities vitamins B1, B2, E and K. Also in abundance are zinc, iron and potassium. Maize contains much phosphorus, which improves the functioning of the brain, strengthens bones and teeth. It regulates the activity of the nervous system. The maize is also rich in cellulose. This tissue absorbs and neutralizes any carcinogenic product fell in our body. The grains of maize contain a balanced amount of proteins, fats and carbohydrates. Not only grains have important economic value but also "silk" of the crop are used to prepare many kinds of medicines. Maize production is moving within the 1.1 to 1.8 million tons, representing around 20% of cereal production in the country and 0.3% of world maize production. Domestic consumption accounts for about 90% of corn produced - mainly for fodder production and in small quantities for the production of corn starch. The crop is widespread in the country and the results of its production have a decisive impact

on the financial situation of individual farmers, accounted results in the sector and macroeconomic indicators in the country.

MATERIAL AND METHODS

This study will analyze and evaluate the general condition of the maize production in Bulgaria for the period from 1980 to 2009. In that period, as key indicators for the analysis are mainly used: planted area, average yield and total production. Growth rates are calculated at constant base 1980 to characterize the speed of development during the period. Processed in the course of the study information at the national level, is provided by official sources - Ministry of Agriculture and Food (MAF) and National Statistical Institute (NSI).

STATUS AND PROBLEMS OF PRODUCTION OF MAIZE TO 1990

The analysis of maize production requires an overview of the traditions and achievements the country has in this production. Therefore, it is necessary considerate a longer row of data that enable to determine the level reached and to justify an opinion on the trend and prospects of the sector. The provision of such line of data, however, requires analysis and comparison of production results achieved in

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various in their nature socio-economic and political conditions.

The necessary data cover a period in which industry has developed in a central planned economy and a period in which industry has developed in conditions of transition to market economy. In order to take account of the specificities of the two economic systems, the main consideration period 1980-2009 was

divided into two sub-periods. The first covers the conditions of the central planned economy (1980-1990) and the second - the transition to a market economy (1991-2009). A review of data for selected key indicators (planted area, average yield and production) during the first period considered (1980-1990) give rise to claims that maize production has been stable (table 1).

Table 1. MAIN INDICATORS OF SUNFLOWER PRODUCTION TO 1990

Year:	Planted Area, ha:	Average Yield, kg/ha	Production, tons
1980	584 500	3845	2 255 535
1981	563 300	4245	2 400 514
1982	620 900	5482	3 417 731
1983	595 700	5191	3 114 766
1984	541 500	5504	2 993 905
1985	435 200	3068	1 350 433
1986	574 200	4935	2 848 101
1987	497 100	3718	1 857 621
1988	489 700	3169	1 557 202
1989	563 249	3999	2 252 433
1990	424 428	2866	1 216 412

(Source: Statistical Yearbook, 1985, 1990, NSI)

The data presented in the table clearly shows that in the period to 1990 the biggest quantity of land was planted in 1982 (620,900 ha), while at least - in 1990 (424,428 ha). Average for the period the amount of maize planted area in the country is about 535,434.3 hectares, with no significant fluctuations in the years. As regards the rate of yield can be observed that the greatest amount of yield was recorded in 1984 - 5504 kg / ha (1). At least quantity of maize per hectare was obtained in 1990 - 2866 kg / ha. Reported rate of the yield is 4183.82 kg / ha average for the period. Average yields depend mainly on soil-climatic conditions of the region (soils, topography, climate, humidity, etc.), so these values vary significantly.

Total production is dependent variable, reflecting the integrated impact of indicators planted area and average yield. Consequently, the change in total production can be explained by the dynamics of the above indicators.

The total production moves around 2296787 tons per year average for the period and the average growth rate is 101.83, which means that production is relatively stable in volume. The greatest production of cereals in this period Bulgaria marks in 1982 - 3,417,731

tons. The largest area planted registered in the same year and, in parallel, the highest average yields for the period are the explanation of the reported peak. At least quantity of production reported in 1990 (1,216,412 tons) is a result of registered at least hectares planted with maize and the absolute minimum for the period of the average yield. Indicative in this respect is the fact that the growth rate in 1990, calculated on the basis of 1980 was 53.93, which means cuts in production by half. It should be noted that socio-economic in addition to natural and climatic factors have a significant impact here because this is the year that effects of changes in the economic system are starting to show.

STATUS AND PROBLEMS OF MAIZE PRODUCTION SINCE 1990

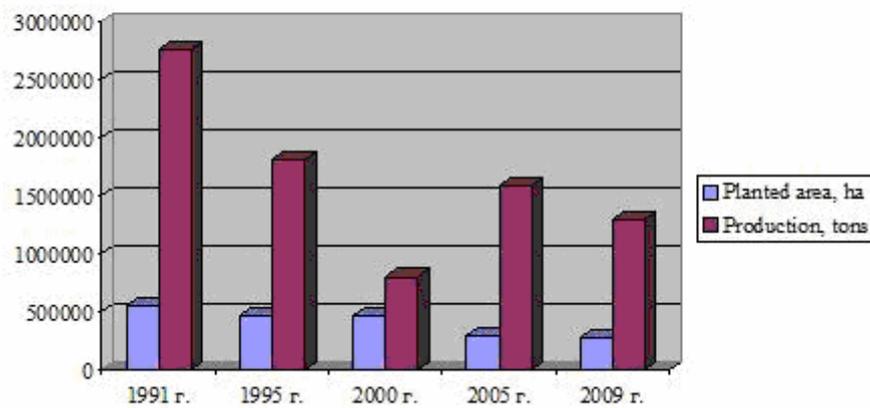
Major changes occur in the Bulgarian economic system after 1990. These changes refocus the operation of the whole economy, including and agriculture. The socio-economic relations changed significantly, both within the country and beyond. As a result traditional channels of distribution and selling are being destroyed, having lost a number of safe until trading partners and markets. The priorities of producers and approaches applied in production and marketing are changed too. These changes inevitably reflect the situation

of maize production in the sector. Although it retains its position as a main crop, maize production undergoes some changes during the second examined in the study period (1991-2009)(1, 2). The analysis of data for selected key indicators show development of divergent trends, but the overall impression is that the state of maize production is declining. Data on the amount of land planted with maize give reasons to distinguish three sub-periods in the production of maize (**Fig. 1**). The first sub-period covers the years 1991-1994, during which the size of the maize area is about

550,255.6 hectares, or this is the period in which the amount of land remains a close and even slightly above average for the previous period. Then, however, began continuous decrease of the area planted with maize. In the period 1995-2000, the reduction is still not so great and the average planted area is about 469,226.2 hectares, but in the third sub-period (2001-2009) average planted area declined to 324,666.3 ha. The biggest planted area for the period from 1991 to 2009 were made in 1992 (619,406 ha), while at least - in 2007 (214,367 ha).

Fig. 1

PLANTED AREA IN HECTARES AND PRODUCTION IN TONS

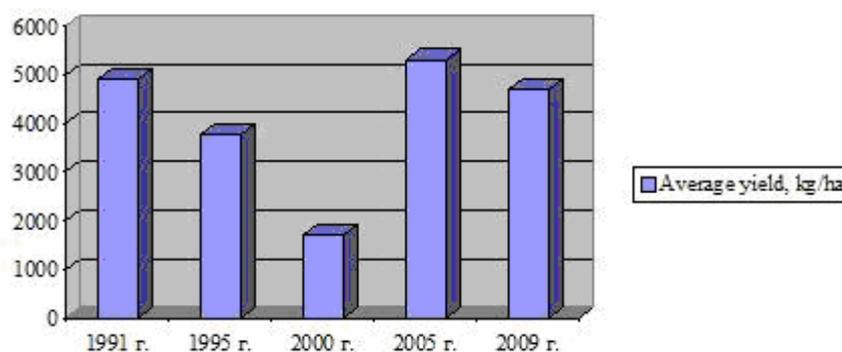


In terms of the average yield, may be noted that it is characterized by extremely dynamic during the period (**Fig. 2**). The average rate of yield during the period amounted to 3,436.89 kg / ha, but the largest reported yield is estimated at 5540 kg / ha (2004) and the lowest - 1459 kg / ha (2007). Fluctuations in the level

of production in the first place can be explained by natural factors (different natural and climatic conditions in years), and secondly with the human factor - mostly non-observing of the technological requirements and growing under non-irrigated conditions.

Fig. 2

AVERAGE YIELD OF MAIZE SINCE 1991



As mentioned above, total production reflects influence of planted area and average yield

during the period. The limited amount of land planted with maize, and generally poor levels

of yields results in significantly reduced levels of aggregate production. The annual volume of production for the period is estimated at 1411639 tons at an average. It is indicative that the growth rate calculated on the basis of 1980 on average for the period is about 62.58, which means that the amount of maize production has shrunk by nearly half. Even the highest rate of production for the period – 2,756,097 tons recorded in 1991, is far below the best achievements of the previous period (3,417,731 tons in 1982) and lowest production for the period (312,860 t in 2007) is below 10% of this peak.

MAIZE PRODUCTION IN TERRITORIAL AND INTERNATIONAL ASPECTS

Data analysis for maize production in the territorial aspect shows some interesting correlations. According to data for 2009 (3) the biggest planted area is in the northeastern region (87,561 ha), then in the North Central and North-West region. The smallest portion occupies South-East region (4769 ha). Logically, distribution of land also affects the volume of production. The greatest production is in North-West region (424,707 tons), then North Central region and Northeastern region. At least the production is in South-East region (21,615 tons).

It can be concluded that the largest amount of land and the highest volume of production is kept in northern Bulgaria, in general, and at least in Southern Bulgaria. This division is the result of different soil - climatic indicators for Northern and Southern Bulgaria. The maize is crop that needs water and in the northern part falls in much rain. In the southern part observed frequent droughts as a result of higher temperatures but corn does not tolerate drought. Moreover, maize is high-mechanized crop and it is more efficient for large arrays, which creation is allowed of the flat terrain in the northern part of the country.

Trends are confirmed by data on average yield. Highest average yield was registered in North-West region (5506 kg / ha) and lowest yields - in the South Central region (3848 kg / ha). This is sufficiently explained by the climatic characteristics of the regions. From the standpoint of international production and trade may be noted that the largest producer and exporter of maize in the

world is USA, followed by China. Thirdly, the EU ranks. The average yield per hectare for maize in Bulgaria is lower than the world average (4400 kg / ha), significantly lower than that of US (8920 kg / ha), EU-15 (7290 kg / ha) EU-25 (6500 kg / ha), Canada (7800 kg / ha) and closer to the results of Ukraine (3430 kg / ha), Russia (3000 kg / ha), Serbia (3170 kg / ha) and Romania (2500 kg / ha).

CONCLUSION

Findings on the state of maize production, give rise to claims that in recent years have seen a sustained downtrend. In comparison with world leaders in the sector, Bulgaria has considerably worse performance. Furthermore, the current state of maize production is worse than in previous periods for the country. This gives reason to raise the issue of factors affecting the production and underlying findings.

The main natural and climatic factors affecting production are the characteristics of soil, topography and climate. These factors are relatively constant and, they can hardly be influenced, but rather their characteristics create good conditions for maize growing. The important technological factors are proper rotation (often grown monoculture), fertilization (primarily nitrogen, phosphorous and potassium are hardly used), irrigation (using limited) and technology of cultivation (often not observed). The important economic factors are price (often varying), the availability and access to markets (hampered by the small quantities produced by individual producers), government policy in the sector.

From a social point of view, it is not key crop in terms of employment because it is grown with a high level of mechanization, but it is a key in the incomes structure of farmers, which has its social consequences.

The detailed examination of various factors - their dynamics and impact and competitiveness analysis of the production – should be done in further work.

REFERENCES

1. National Statistical Institute, *Statistical Yearbook 1985, 1990, 1995, 2003, 2009*.
2. Ministry of Agriculture and Food, *Agricultural Report 2009*, Sofia, pp.313.
3. Ministry of Agriculture and Food, *Bulletin No 152*, February 2010, p. 5.