

THE SOY BEAN CROP CULTIVATED IN THE CONTEXT OF TURDA AREA CLIMATE CONDITIONS

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Abstract. *The paper makes a comprehensive analysis of the climatic conditions of the agricultural area of Transylvanian Plain, in the general context of the progressive warming of the atmosphere and significantly reduce rainfall. Testing in this area of some valuable soybean varieties created the Agricultural Research Station Turda and Development, highlighted the importance of technology elements in achieving high production levels. After studies were considered necessary to test the biological material and irrigation conditions, such experiences are organized at Vișoara - Turda since 2009.*

Keywords: climate data, bean crop, technology elements.

INTRODUCTION

Evaluation of the IPCC report on climate global change, published in 2007, describes an accelerating transition to a warmer world, marked by more frequent extreme temperatures including heat waves, worsening drought in some regions, abundant precipitation in other regions, melting glaciers and Arctic ice, and rising global average sea level and ocean.

According to the report, global average air temperature increased with about 0.74 ° C in the last 100 years (1906 -2005) to 0.6 ° C over the period 1901-2000 (IPCC Report, 2001). 11 of the last 12 years have been among the warmest in the range of data recorded after 1850.

Global warming has increased the frequency of extreme events, rapid alternation between intense rainfall and flooding, severe heat and severe drought.

Climate data from the last century shows a gradual warming of the atmosphere and a significant reduction in rainfall. In the twentieth century, annual average temperature increased by 0.5, in terms of ascertaining the heating season especially significant in winter and summer season. In such conditions, it is necessary in more and more of Romania's farmland, filling the need for water main crops (Luca et al. 2008).

THE EVOLUTION OF THE SOY BEAN CULTURE IN ROMANIA

Soy is one of the heat-loving crops, with claims to moderate humidity. In our country the introduction of soybean in culture takes place in 1876, when cultivated in gardens as a rare plant (in Transylvania), and was known as "soy beans".

The first paper on soy appeared in 1905, written by Dr. Urbeanu, who presented the understanding of the economic importance of soybean, recommend

very strongly, even then, noticing that human nutrition has a wide range of products made from soy.

Romania was the European country which has expanded rapidly this culture, reaching to 8000 ha in 1963 to 1965, more than 170 000 ha in 1977 and about 400 000 ha in 1982, holding it first in Europe.

With the creation of the first varieties of soybeans in Turda at the Agricultural Research Station (Muresan et al., 2002), researchers tried to act and adapt to this culture technologies for specific conditions of the plains of Transylvania. These investigations are completed, starting in 2009 with studies on the influence of irrigation complex in interaction with other technological factors, the production of soy beans on the results of these investigations will be communicated in a future paper.

Characterization of climatic conditions of 2009 in Turda. Temperatures recorded during the research were taken from Meteorological Station Turda, and data presented on the thermal regime of the area analyzed, from January 1 to December 31, 2009.

Recorded data shows that, in the period under consideration, temperature was relatively normal. Thus, except March, when there was a negative deviation of -0.3 in all other months have varied between 0.40 positive deviations C and 3.4 0 C, the warmest month, compared to the climatological normal, with a deviation over 3.4 0C (2.80 C) was April, which can be observed in fig. 1.

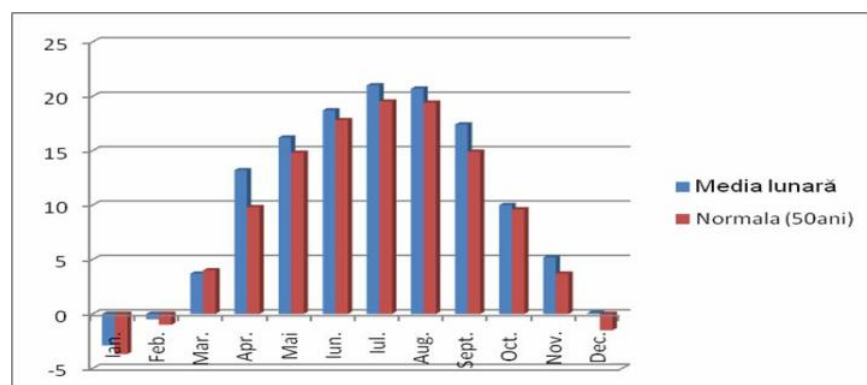


Fig. 1. The variation of the monthly average temperature (t °C), Turda – 2009

Regarding the distribution of monthly average temperatures, winter 2008-2009, was characterized by a warm temperature characterized as to normal, with positive deviations. In January, the thermal regime in the region analyzed was 1.40 C higher than the climatological normal, average air temperatures were above the normal values. Monthly average temperatures in February were normal for this period, exceeding the average temperature by 0.50 C climatological normal.

Spring was characterized by an average temperature above the normal values. March was characterized by the monthly average temperatures were below normal values, is considered a normal month. In April it was a hot month, there were 13.20 C, monthly average temperature above normal (9.80 C), the month with the

largest deviation, and in May, temperature was warm, with a positive deviation of only 1.40 C compared to the climatological normal.

Summer is characterized by average temperatures that were above the normal values, so in June and August, temperature in the country was by 0.90 C, 1.30 C above their respective average annual and July had a 1.50 C temperature deviation from the reference period (19.50 C).

Autumn was characterized by average temperatures that were within normal limits, but slightly higher than the annual average. In September monthly average temperatures were above normal, with a positive deviation of 2.5 0C. October, in terms of heat was normal, with 0.40 C higher than the yearly averages.

Characterization of climatic conditions of 2010 in the Turda area.

General climate of the area were conducted researches is temperate continental boreal, with various local nuances. Temperatures recorded during the research were taken from Meteorological Station Turda, so the table. are presented data on the thermal regime of the area analyzed, from January 1 to December 31, 2010.

Shows that the values recorded in the period under consideration, temperature was relatively normal. Thus, in all months positive deviations ranged between 0.30 C and 20C, the warmest month, compared to the climatological normal, with a deviation from 20C in February.

Regarding the distribution of monthly average temperatures seasons, winter 2009-2010, was characterized by a warm temperature characterized as to normal, with positive deviations. In January, the thermal regime in the region analyzed was 0.60 C higher than normal only climatological, air temperatures average stood slightly above normal.

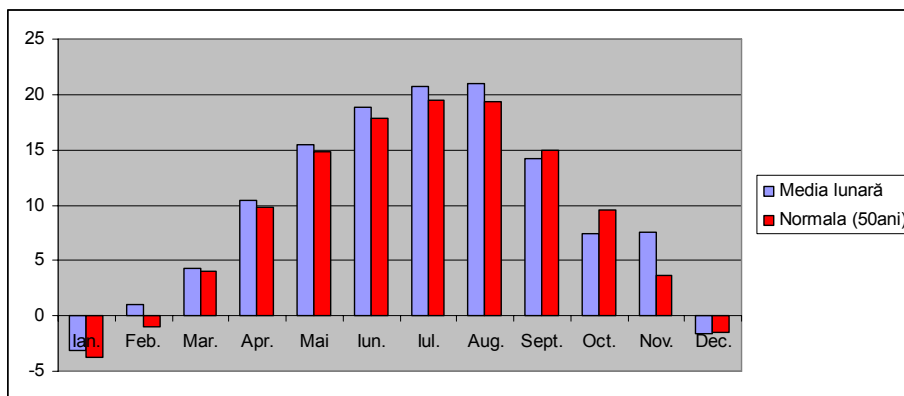


Fig. 2. The variation of the monthly average temperature (t °C), Turda – 2010

Spring was characterized by an average temperature above the normal values. March, April and May were characterized by average monthly temperatures in excess than the normal average values, deviations between 0.3 to 0.70 C.

Summer is characterized by average temperatures that were above the normal values, so in June and July, the thermal regime in the country was by 1.10 C,

1.20 C above their respective average annual and August saw a 1.6⁰ C temperature deviation from the reference period (19.5⁰ C).

Characterization of climatic conditions of 2011 in the Turda area.

Regional climate is symbolized as Koppen classification, and boreal climate with continental characteristics, precipitation throughout the year with a single maximum in early summer, harsh winters and hot summers.

Temperatures recorded during the research were taken from Turda weather station.

The data presented can be appreciated that in the period under consideration, temperature was relatively normal, with temperatures slightly higher than the climatological normal. Thus, except February, when there was a negative deviation from the reference period (-2.20C) in all other months have varied between 0.10 positive deviations C and 1.40 C, the warmest months, compared to the climatological normal, to within 1.40 C (2.80 C) are June and August (Fig. 3).

Regarding the distribution of monthly average temperatures seasons, winter 2010 - 2011, was characterized by a temperature to cool characterized as normal, with positive deviations, with the exception of February 2011 when negative deviations were -2.20 C. In January, the thermal regime in the region analyzed was higher than the climatological normal with 0.10 C, average air temperatures were above the normal values.

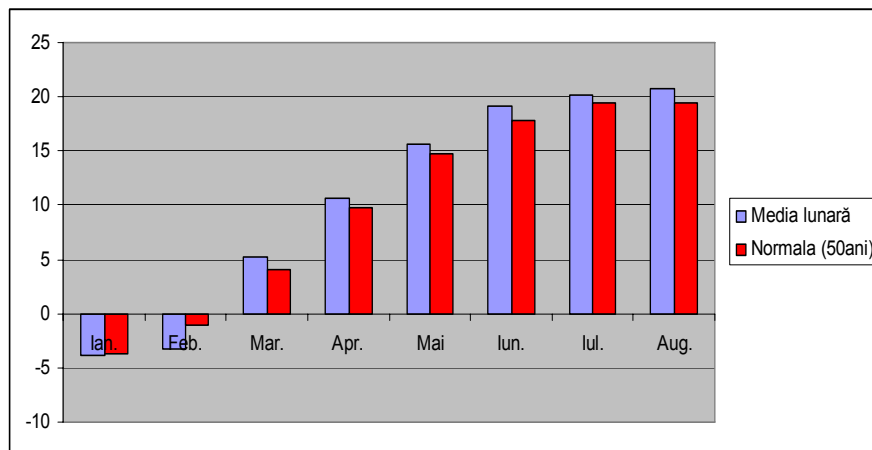


Fig. 3- The variation of the monthly average temperature (t °C), Turda – 2011

Spring was characterized by an average temperature above the normal values. March was characterized by the monthly average temperatures which were above the normal values, being a warm month. In April there were 10.70 C, monthly average temperature above normal (9.80 C) and in May, temperature was normal, with a positive deviation of only 0.60 C compared to the climatological normal.

Summer is characterized by average temperatures that were above the normal values, so in June and August, temperature in the country was by 1.40 C above the mean multi-annual and July temperatures were recorded 20 10C with a positive deviation of only 0.60 C compared to the climatological normal (19.50 C).

CONCLUSIONS

Climate studies conducted in the last century in Romania shows, a gradual warming of the atmosphere and a significant reduction in rainfall.

In the twentieth century, annual average temperature increased by 0.5, in terms of ascertaining the heating season especially significant in winter and summer season.

In the conditions of Transylvania Plain, followed the same trend of general climate of increasing temperature and decreasing the amount of precipitation. The three years, 2009, 2010 and 2011, confirmed this trend.

In such conditions, it was considered that the agricultural area is necessary to test the Transylvania Plain soy biological material, in addition to the usual conditions of technology, and provided to supplement the water needs by irrigation.

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