

THE INFLUENCE OF THE CLIMATIC CONDITIONS ON PRODUCTION OF FOREIGN VARIETIES OF PEANUTS GROWN ON SANDY SOILS

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ABSTRACT

The climatic conditions during the growing of groundnuts can disrupt the processes of growth and development of the plant, which is reflected in the level of production achieved.

The best results were recorded in genotypes of chinese origin China 1, Ning, China 2 which recorded production of 2908 kg / ha, 2823 kg / ha, respectively 2414 kg / ha, drawing good climatic conditions in the steppe area in the south of the country.

The most susceptible genotypes to the influence of climatic conditions were found to be Henan Province (1450 kg / ha), Brazilian Begici (1765 kg / ha).

INTRODUCTION

The climatic changes that have occurred in the recent years, manifested by increase of the temperature and reduce the rainfall caused emphasizing the effect of desertification in many countries, and in the south of Romania. These climatic changes have a negative influence on the metabolic processes of the crop plants, which ultimately manifest on production and quality.

The temperature plays a key role in all phases of the plant growth and development. The relations of the plants with the thermal factor start from germination phase and continue throughout the growing season. Depending on the temperatures in the first stages of the growth and development of peanut plants influence precocity and production.

Depending on the vegetation, peanuts have different temperature requirements.

For emergence peanuts need 12^oC temperature and optimum temperature of the flowering period is within a range of values between 20^oC (Wood, 1968) and 30^oC. The optimal temperature for plant growth has been established between 20-25^oC (Wood, 1968) to 32-33^oC (Cox, 1979)

Water is the major limiting factor that influences the plant growth and development. Peanut plants The metabolic processes of the peanut plants normally take place when the tissues have an appropriate degree of turgidity which is dependent on variety, phenophase and age.

For the production of pods A particular importance for the production of pods is the amount of precipitations that fall during the growing season and its distribution on growth phases.

Peanuts are less demanding in the first 15 days after emergence, and claim the rising to the maximum values during flowering and fructification then the needs of water decrease again.

MATERIAL AND METHOD

The research was conducted in the period between 2011-2013 on a sandy soil with low nitrogen content (0.06%), well stocked extractable phosphorus (79.5 ppm), medium stocked in exchangeable potassium (67 ppm), and humus low (0.55%), with a pH of 6.72 which showed a moderate acidic reaction in the irrigation conditions.

The applied technology in the expertise was growing peanuts on sandy soils.

During the growing season the observations and measurements were performed under field conditions.

In the recent years, can be noticed an increase of the temperature during the growing plant which seriously affects crop vegetation status.

The climatic conditions at SCDCPN Dăbuleni meteorological station show that in 2011 there have been a peanut growth during March-September with an average of the temperatures close to the annual average, with values between 4,5⁰C and 23,5⁰C.

In 2012, the recorded average air temperature was above the annual average for the whole period of vegetation, with values between + 1,5⁰C in March and + 3,7⁰C in July. In 2013 the average temperature exceeded the annual average in April, May, July.

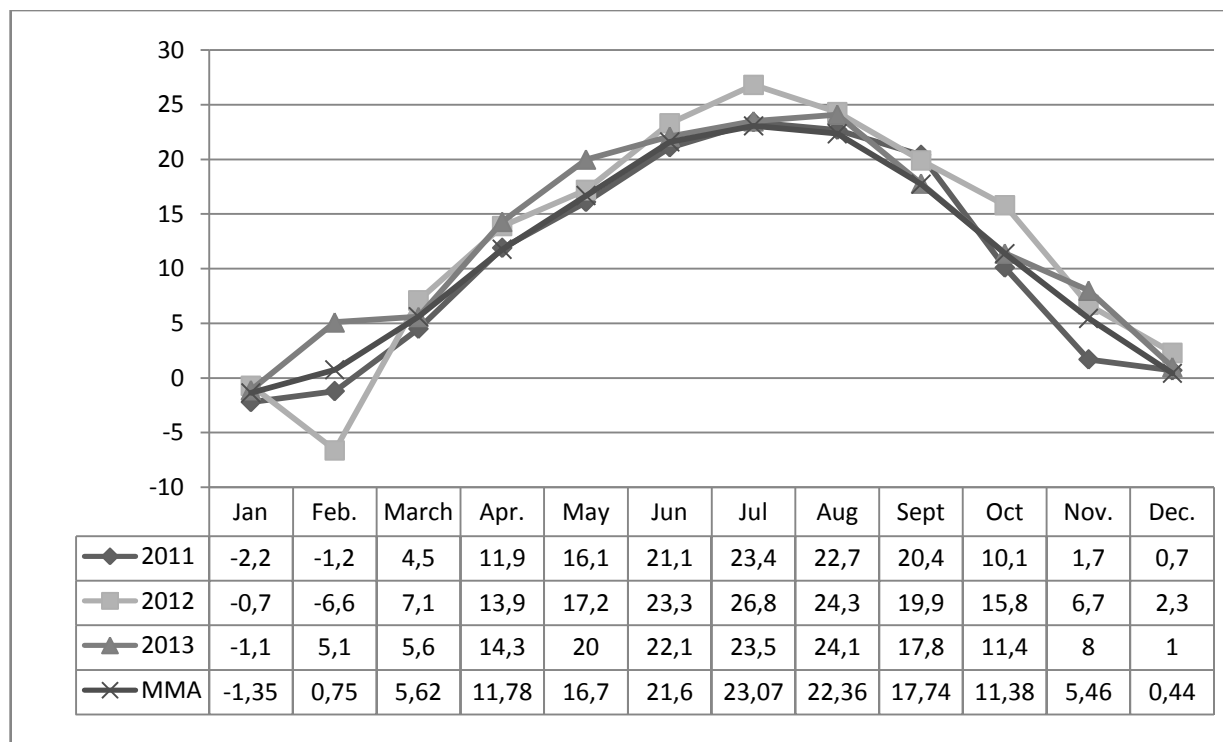


Fig.1 Changes in mean air temperature ⁰C (2011-2013) against the annual average recorded at the weather station CCDCPN Dăbuleni

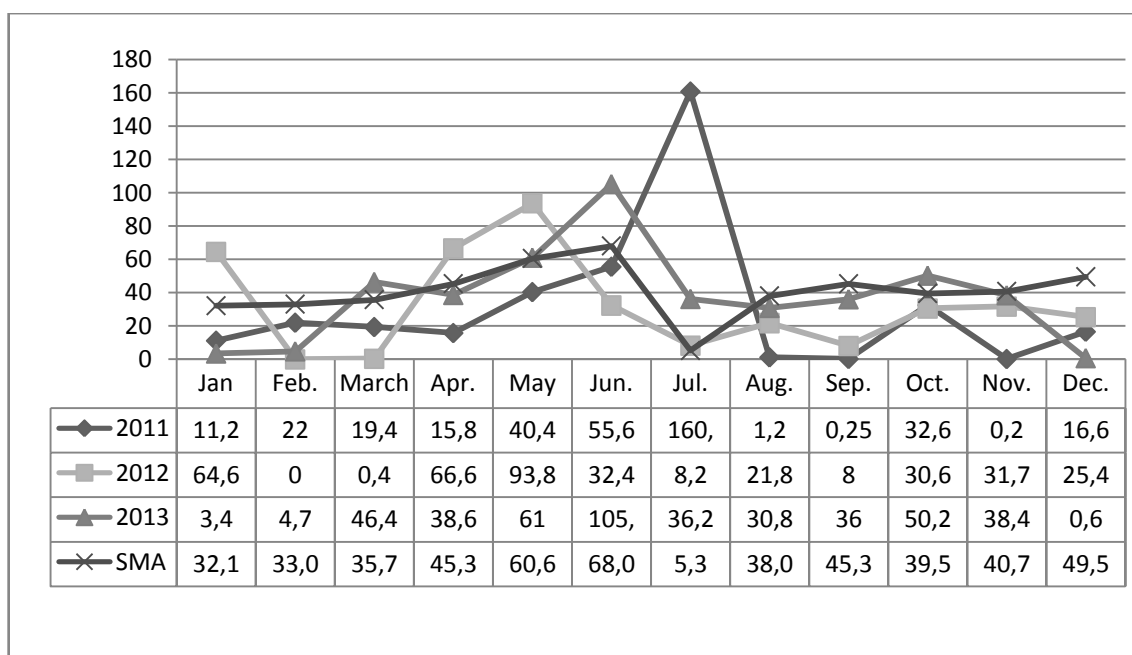


Fig.2 Change in precipitation (mm) against the multiannual sum registered weather Station to CCDCPN Dăbuleni.

Although the cultivation technology was the same for all the genotypes, the climatic conditions are influenced more or less levels of production, resulting in differences between genotypes. This reflects the different varieties capacity to respond to climate change and extreme stress.

The climatic conditions in 2011, the highest yields were recorded in chinese genotypes China 1 and Ning which made 2857 kg / ha respectively in 2678 / ha.

The climatic conditions in 2012, the highest yield was recorded in Chinese genotypes China 1 (1341 kg / ha), followed by genotype Ning 1317 kg / ha, to 1238 kg/ha China 2. The lowest output of 635 kg / ha was recorded in genotype Velican.

The genotype of China 2, in 2013 recorded the highest yield of 4683 kg / ha, followed by China 1 genotypes to 4526 kg / ha, Ning with 4476 kg / ha. The lowest production of 3253 kg / ha was recorded in genotype Velican.

On average in the three years compared with romanian variety Dăbuleni production occurred between 1450 kg / ha at variety Henan Province and 2908 kg/ha variety China 1. Most sensitive genotypes on influence of the climatic conditions are Brazilian Begici, Velican.

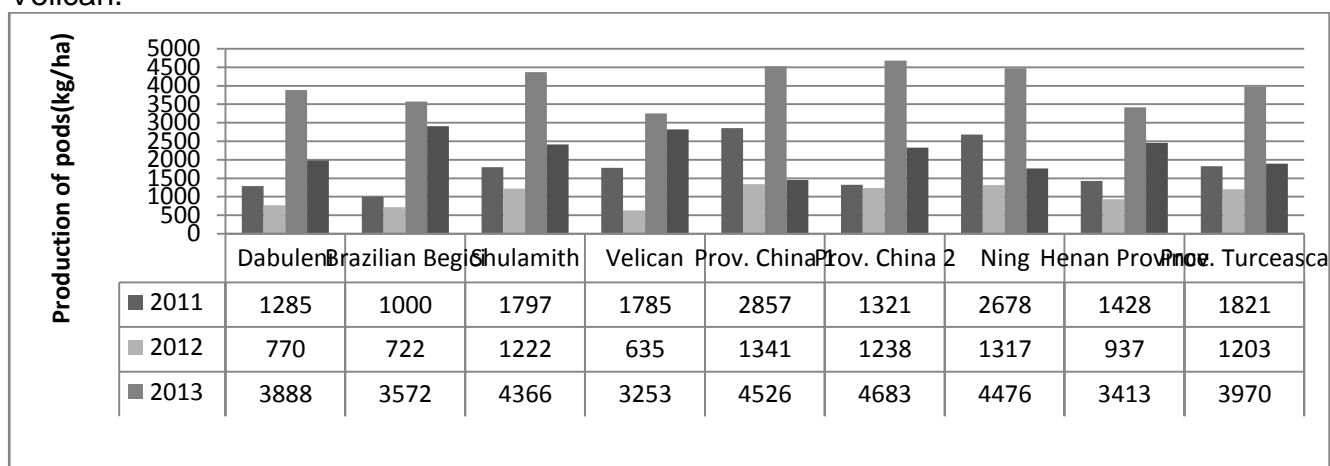


Fig. 3 The average yield obtained in the years 2011-2013 Dăbuleni CCDCPN of some foreign varieties of peanuts grown on sandy soils.

CONCLUSIONS

To reduce the damage of the drought we can take measures as:

- the choice of varieties that prove more resistant to thermal stress fluid;
- the irrigation, which in addition to filling water scarcity contributes to decrease the temperature at ground level and counteracts the effect of high temperatures during the periods of the drought.

The best results were recorded in genotypes of chinese origin China 1, Ning, China origin 2 which recorded production of 2908 kg / ha /, 2823 kg / ha, respectively 2414 kg / ha, drawing good climatic conditions in the steppe area in the south of the country.

The most susceptible genotypes to the influence of climatic conditions were found to be Henan Province (1450 kg / ha), Brazilian Begici (1765 kg / ha).

As a final result of the lack of water in the soil, under conditions of high temperature air and the soil surface is decreasing the vegetation period, hasten ripening and decreasing of the production.

The results obtained in terms of 2012 with maximum temperature recorded in August 42,6°C and lack of rainfall show a favourable behavior of the biological and experienced material and real possibilities to use these varieties and origins on the sandy soils in the south of Oltenia.

This genetic resource, particularly rich, demonstrates the potential development of the peanut culture on irrigated sandy soils in the south of Oltenia.

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