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Climate change, agroclimatic resources and agroclimatic zoning of agriculture in Bulgaria

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The important factors for the agrarian output in Bulgaria are only thermal and water probability. From the two factors the component related to soil moisture is more limited. As well water and temperatures probabilities in the agrarian output are estimated trough sums of temperatures and rainfalls or by derivatives indicators (most frequently named as coefficients or indices).

The heat conditions and the heat resources are specified by the continuousness of the vegetative period. Duration of vegetative season is limited for each type of plant, between the spring and autumn steady pass of air temperature across the biological minimum. For the agricultural crops in Bulgaria the three biological minimums: in 5°C are taken for wheat and barley, oat, pea, lentil and sunflower; 10°C for corn, haricot, and soybean and in 15°C for the cotton, vegetables and other spring cultures).

The cold and warm period duration are mutually related characteristics. The first period define number of days with the snow fall and days with the snow cover, that are in the basis in the formation of soil moisture reserves after the spring snow melt. Definition of the regions with temperature stress conditions during vegetative season is one of the most important parameters of agroclimatic conditions. The values indicating for the limitations are one or more periods from at least 10 consecutive days with maximal air temperature over 35 °. More from the agricultures, character for the moderate continental climatic zone are developed normally under temperatures 25-28°. Temperatures over 28°C are ballast slowing the growth and destroying plants due to the heat tension.

The component, limiting in greatest degree growth, development and formation of yields from the agricultural crops are the conditions of moisturizing, present trough atmospheric and soil moisture. The most apparent indicator is the year sum of the rains or their sum by the periods with the average daily temperatures of over 5 and 10°C. Cross correlation matrix between the meteorological elements from which evapotranspiration depends – temperature, relative air humidity, wind speed and the vapor pressure deficit is present.

One of the ways for assessment of water necessity is by the difference between the sum of rainfalls and potential water uses i.e. evapotranspiration. The difference between two magnitudes presents the balance of atmospheric moisturizing (BAO).

The data about the limitations, emergent from the soil moisture lack, to the base of the existing agrometeorological data are present. Values of the relation between real and potential evapotranspiration / were calculated for potential vegetative period which is divided up of the two sub periods, Mart-June, when is the period of formation outputs from wintering cultures and July- August, when is the period for outputs from the spring cultures are formation, as well.