FEATURES OF THE DISTRIBUTION OF SOIL TEMPERATURE IN THE KAKHETI REGION

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ABSTRACT

Kakheti is one of the most important agrarian regions of Georgia. 38% of the country's agricultural land is located in the Kakheti region. The volume of arable land and pastures is especially large. According to this indicator, the municipality of Dedoplistskaro stands out, followed by Akhmeta, Sagarejo and Sighnaghi.

N. Bidzinashvili carried out a fairly comprehensive assessment of the agroclimatic resources of the Kakheti region. However, such an important climatic indicator for agriculture as soil temperature was not taken into account. This is why this became the subject of our research.

One of the most important factors in providing plants with heat is soil temperature. Seed germination, development of the root system, the rate of decomposition of organic matter, etc., largely depend on the temperature of the soil. The solubility of most salts increases with increasing soil temperature. A significant drop in soil temperature damages cereals and perennial crops.

Thus, the assessment of agro meteorological conditions requires knowledge of the nature of changes in soil temperature both during the growing season and in winter. In this regard, we have developed for the first time maps of soil surface temperature for the Kakheti region (see Fig.1. Fig.2. Fig.3. Fig.4. Fig.5.), for which observational data from 20 meteorological stations are used.

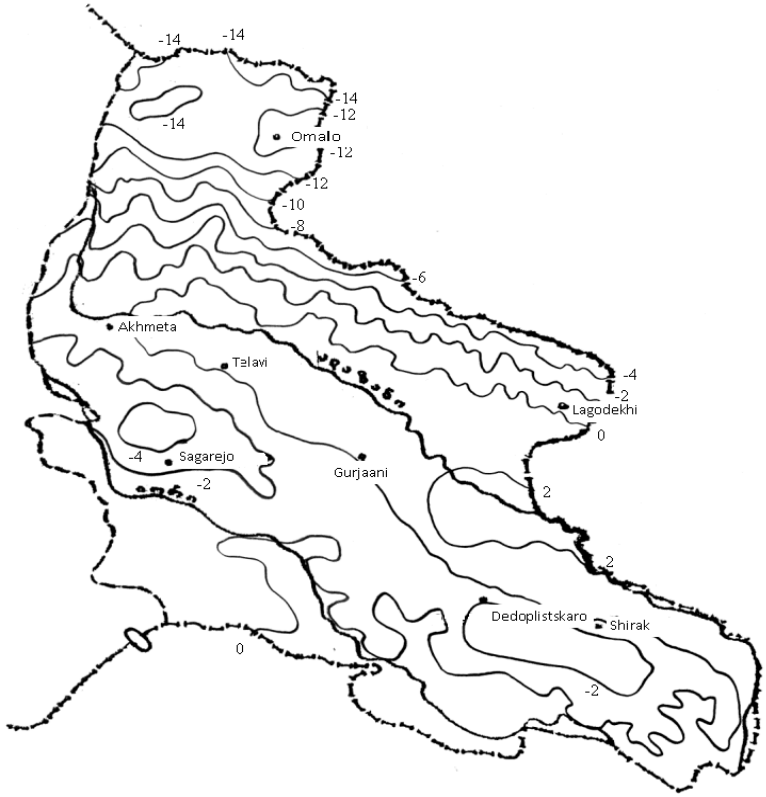

Fig.1. Soil surface temperature. January ^{0}C

Fig.2. Soil surface temperature. April ^{0}C

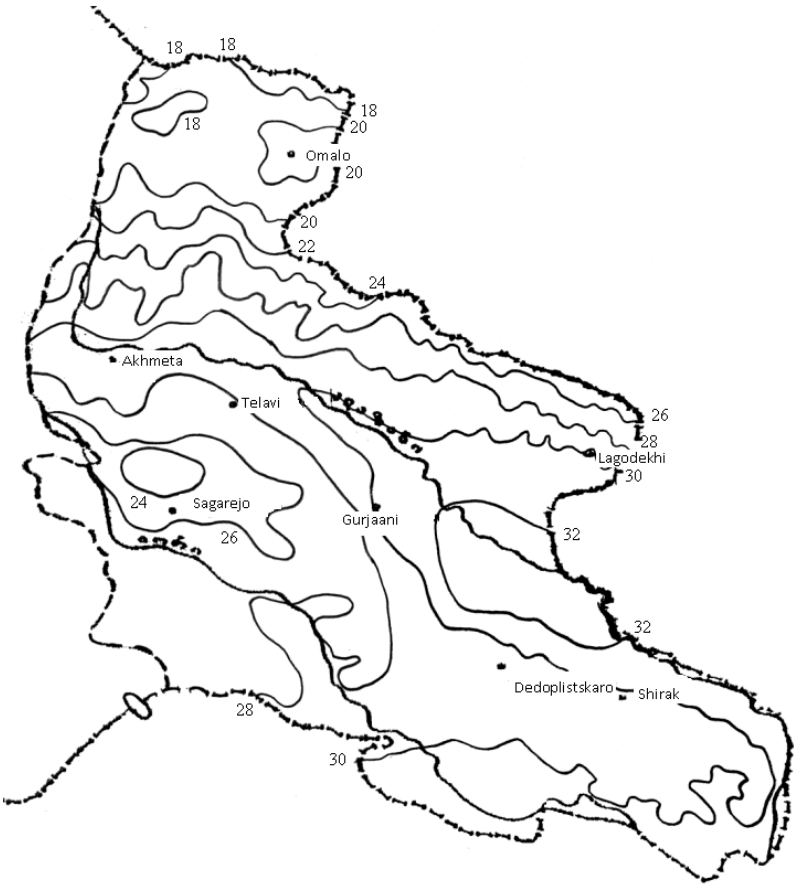

Fig.3. Soil surface temperature. July ^{0}C

Fig.4. Soil surface temperature. October ^{0}C

Fig. 5. Average annual temperature of soil surface ^{0}C

In January, the average monthly soil surface temperature in Kakheti ranges from 2^0 to 14^0 degrees. The Alazani plain is very warm, where the temperature is from 2^0 to 0^0. Also, the average monthly temperature of the soil surface is 0^0 in the Eldar lowland and on a certain part of the Iorsky plateau. In the rest of the Iori plateau, the temperature is even lower and at high altitudes of the Gombori ridge it is 4^0 degrees.

The temperature of the soil surface in the foothills of the Caucasus is about the same, and in the highlands it drops to -14^0.

In April, the soil surface is warmer, and its average monthly temperature ranges from 4^0 to 16^0 degrees. The air temperature on the Alazani Plain is 14^0-16^0. Approximately 14^0 also on the Eldar Plain and in the extreme southeastern part of the Iori Plateau. In the rest of the plateau, the soil surface temperature drops to 12^0 degrees Celsius, and at high altitudes of the Gombori Range, it is up to 10^0 degrees Celsius. Soil temperatures also decrease in the foothills of the Caucasus, and in the high-mountainous zone of its southern slope this indicator is at the lowest level of 4^0.

In July, the soil surface is characterized by the highest average monthly temperature. It varies from 18^0 to 32^0. 32^0 is in the southern part of the Alazani Valley. 30^0 reaches on the greater Alazani plain and the Eldar lowland.

On the Iori plain, the temperature drops to about 28^0, and on the Gombori ridge, rising to a great height, it cools even more and reaches 24^0 degrees Celsius. The temperature in the foothills of the Caucasus also decreases and averages 28^0-26^0C. In the high-mountain zone of the Caucasus Mountains the average monthly temperature of the soil surface drops to 18^0.

In October, the temperature of the soil surface ranges from 6^0 to 16^0 degrees. The soil surface is warmest on the Alazani Plain -16^0. For the most part on the Eldar Plain and a small part of the Iori Plateau, it averages 14^0 degrees Celsius, and when it rises to the Gombori ridge it gradually decreases, and the lowest temperature is 10^0 degrees Celsius. The temperature in the foothills of the Caucasus is insignificant, but still drops (12^0-10^0), and on the southern slope of the Caucasus, this figure decreases to 6^0.

The average annual temperature in the territory of Kakheti ranges from 2^0 to 16^0 degrees. Obviously, the Alazani Plain is characterized by the greatest warmth - on average 16^0, in most of which the surface temperature of the soil surface is 14^0.

The same temperature is in the Eldar Lowland and some of the Iori Plateau.

In the highest parts of the Gombori ridge and in the foothills of the Caucasus, the temperature drops to 10^0 degrees. On the southern slope of the Caucasus, its decline continues, and the temperature in the highlands drops to 2^0 degrees.

Thus, in most of the Kakheti region, agricultural crops are provided with heat, which, unfortunately, does not happen with their moisture supply. This creates certain problems for the full provision of agro-climatic resources for various crops. These conditions are acceptable for some grape varieties (Rkatsiteli, Saperavi, Mtsvane).

Summary

Considering that Kakheti is an agricultural region of Georgia, it is necessary to assess the potential of the region's agro-climatic resources. For this, in the case of soil surface temperature, medium-scale maps of the area heat supply are constructed. Similar maps are built for the sums of active temperatures. In sum, the potential for heat supply of agricultural crops is assessed on a regional scale.

Literature:

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