WITH THE HEAT OF THE MAIN VINE VARIETIES SPREAD IN KAKHETI TERMS OF PROVISION
(Direction - Geography)

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Abstract

Kakheti is one of the main regions of Georgian winemaking. In its territory, vineyards are cultivated at 400-700 meters above sea level and high quality wine is made from the grapes grown here. It seems that climatic conditions should definitely be conducive.

Assessment of agro-climatic resources of Kakheti territory specifically for vine culture, It was conducted by N.Bidzinashvili. He has discussed the conditions of providing heat and moisture for such vine crops as Rkatsiteli, Saperavi and Mtsvane. The study is based on sums of active air temperatures and moisture supply coefficient, which is the ratio of the amount of precipitation to the amount of water required for vine cultivation. He also discusses the radiation regime and heat balance of Kakheti territory. Maps of schematic zones of radiation balance and hydration coefficient have been developed. The hydration coefficient is represented as the ratio of evaporation to evaporation. But, N.Bidzinashvili's research, the main focus is on tabular material and relatively few special content maps, which are necessary for proper planning and conduct of agricultural work. An important climatic indicator for agriculture, such as soil temperature, has also not been considered.

We aimed to discuss the whole set of indicators of agro-climatic resources - the sums of active air temperatures, soil surface temperature and hydration coefficient. We were able to obtain detailed maps of the distribution of these indicators on the territory of Kakheti, which exhaustively reflects the potential of the region's agro-climatic resources specifically for vines. In this paper we will talk only about the sums of active air temperatures.

The sum of more than 10^0 - average daily temperatures is widely used to estimate the general thermal resources of the area. It is believed that most agricultural crops are actively experiencing vegetation at such temperatures.

Achieving the technical maturity of each crop requires the specific value of the sum of active temperatures. For vines this figure is 2500-3100^{0}C. In order to understand whether the main vine varieties would be provided with heat on the territory of Kakheti, we developed a medium-scale map of the distribution of active temperature totals in the Kakheti region (see fig. 1).

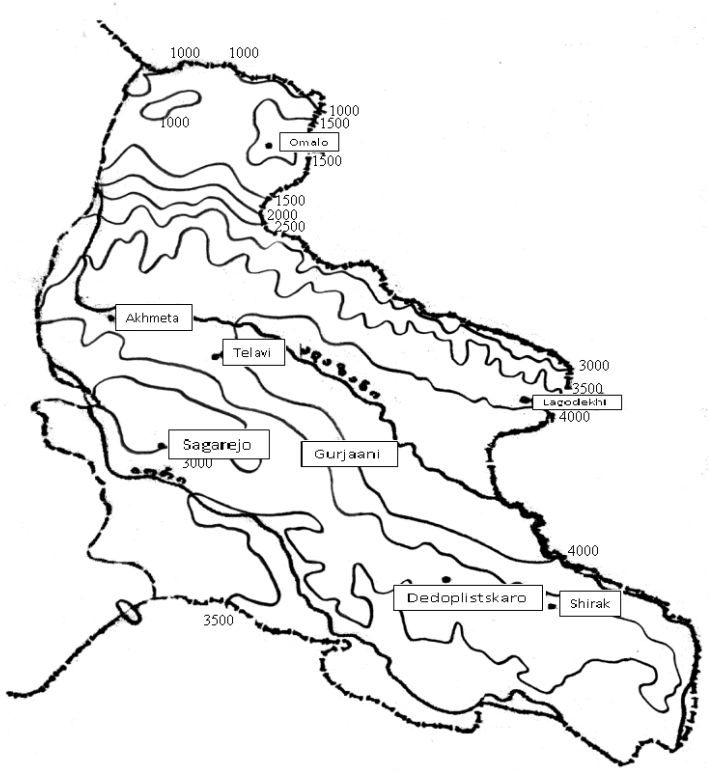

Fig.1. Sum of more than 10^0 active temperatures

As can be seen from the map, the sum of active temperatures is highest in the Alazani Valley, where it exceeds 4000 ^{0}C. The sum of active temperatures in the Eldar plain is more than 3500^0, in the Shirak plain - in the range of $3000\text{-}3500^0$, in the highest zone of the Gombori ridge - less than 3000^0 , and in the highlands of the Caucasus decreases to 1000^0.

The isotherms shown on the map represent the average perennial regime of active temperatures. From year to year, their importance, as well as any characteristic of the climate, fluctuates. This can be clearly seen from Table 1. - which presents the sums of the active temperatures of the various assemblies.

Table 1. The sum of the active temperatures of the various supplies is ^{0}C

Medium C	Collateral %						
	95	90	80	50	20	10	5
1500	1200	1250	1325	1500	1675	1750	1800
2000	1700	1750	1825	2000	2175	2250	2300
2500	2200	2250	2325	2500	2675	2750	2800
2800	2500	2550	2625	2800	2975	3050	3100
3000	2700	2750	2825	3000	3175	3250	3300
3100	2800	2850	2925	3100	3275	3350	3400
3200	2900	2950	3025	3200	3375	3450	3500
3300	3000	3050	3125	3300	3475	3550	3600
3400	3100	3150	3225	3400	3575	3650	3700
3500	3200	3250	3325	3500	3675	3750	3800

As can be seen from the table, the sum of active temperatures is characterized by quite significant variation in a given geographical point. For example, if the average value of the sum of active temperatures is 2000^0 , the range of change from year to year is $1700\text{-}2300^0$. At the same time, this average value corresponds to a 50% guarantee. In 95% of cases it reaches 1700^0, in 90% of cases 1750^0, and so on. And only in 5% of cases - 2300^0. The presented table expresses the statistical regularities of the empirical distribution of the sum of active temperatures. It is on the basis of this table that the heat supply of this or that agricultural crop can be estimated. Such an assessment made by us for the late variety of vines is presented in fig.2.

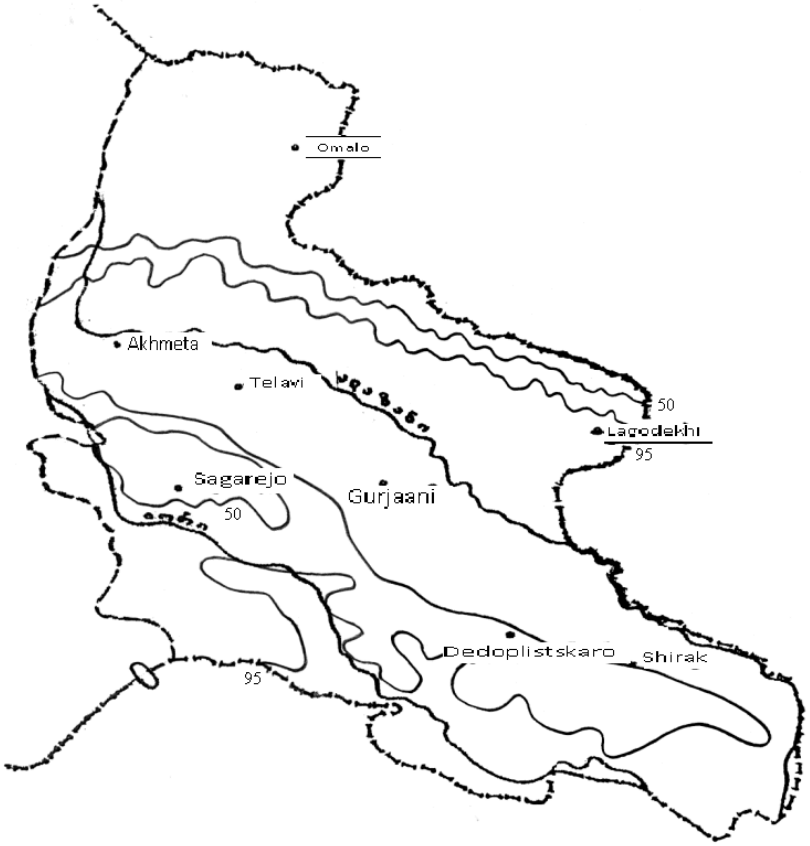

Fig. 2. Provision of heat for late varieties of vines%

As fig.2.- it can be seen that in 95% of the cases, the late variety of vines is provided with heat entirely on the Alazani and Eldar plains. Relatively less is provided on the Iori plateau, while in the central part of the Gombori ridge and in the lowland zone of the Caucasus, the heat supply is less than 50%, which does not create normal conditions for the development of viticulture. As a result, vineyards are cultivated in the areas of Alazani and Iori.

Thus, as we see, in terms of heat supply, the picture is desirable in the Kakheti region and there is a result. We think that these conditions allow the spread of not only vines, but also crops such as corn, potatoes, sunflowers, beans.

In the next paper we will discuss the conditions of moisture supply of vine varieties in Kakheti region and the expected scenarios. Taking into account the distribution of soil temperature, we get a complete picture of the agricultural use of the vast area of Kakheti.

Resume

The paper evaluates the potential of agro-climatic resources of Kakheti region based on the sums of active temperatures specifically for vines and builds a medium-scale map of the area providing heat. Also, a medium-scale map of late heat vines has been developed. Vine culture in 95% of cases provides heat to the Alazani and Eldar plains as a whole, relatively less to the Iori Plateau, and less than 50% to the heat in the central part of the Gombori Range and the lowlands of the Caucasus.

Used literature:

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