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**THE SYSTEM OF PHYSICAL-GEOGRAPHICAL FACTORS INFLUENCING THE FORMATION AND DEVELOPMENT OF THE FOOD BELT OF THE CITY NUR-SULTAN**

**Annotation.** The article examines the system of physical-geographical factors contributing to the formation and development of agriculture in connection with the presence of government documents suggesting the creation of a food belt around the capital of Kazakhstan, Nur Sultan. The climate, which has an absolute priority among the physical-geographical factors and related important agroclimatic indicators of the Akmola region, one of the main grain producers of Kazakhstan and an important link in the provision of the Nur-Sultan food belt, has been analyzed.

**Keywords:** Food belt, physical-geographical factors, climate, agroclimatic indicators, agroclimatic zones.

**Introduction**. One of the most important state tasks is to provide the capital of Kazakhstan with high-quality food at sufficient quantities and affordable prices for the consumer, with a rapidly growing population from year to year.

Currently, the "Roadmap for the formation of the food belt of the city Nur Sultan for 2018-2021" is being implemented for this purpose. According to this program, the food belt zone includes 17 districts of Akmola region (Arshala, Akkol, Atbasar, Astrakhan, Bulandinsky, Egindykol, Birzhan, Ereimentau, Yesilsky, Jaksynsky, Serendin, Serendin, Korgalzhyn, Celinograd, Sandyktau, Shortandy, Burabay) and 4 districts of Karaganda region (Abai, Bukhar-Yyrau, Nura, Osakarovka) [1].

Given that the main features of agriculture as a manufacturing industry depend on natural and climatic factors, the study of the impact of the system of physical and geographical factors contributing to the formation and development of the Nur Sultan food belt is relevant.

**Research methods and materials.** The concept of "factor" means the driving force of any process, phenomenon or the situation that influences them. The concept of "accommodation factor" was introduced into scientific circulation by German economist Alfred Weber (1909). The factors of placement are the set of conditions necessary to choose the most rational location of the economic object, the group of objects and the industry. Natural conditions have a big impact on the development and location of production, but their overall impact is not the same in different industries, but individual elements of natural conditions have different impacts on production [2].

**Research results.** Akmola region is located in the northern part of the country within the Kazakh hills and Tengiz plains. It is bordered by North Kazakhstan region in the north, Kostanay region in the west, Karaganda region in the south, and Pavlodar region in the east. The area of ​​the region is 146,2 thousand km. Its length from north to south is about 350 km, and from west to east it is more than 500 km.

Most of its territory is occupied by plains, which are part of the steppe zone of the temperate zone located in the northern part of Saryarka. The northern part is occupied by the middle part of the Kokshetau plateau and the Kokshetaumountains, the southern part is occupied by low, low-lying plains with an absolute height of no more than 300-400 m. In the central part there are Sandyktau, Dombyraly mountains, in the south-east there are Ereymentau mountains, in the north-east there is Sileti plain, in the center there is Atbasar plain, in the south-east there is Tengiz-Korgalzhyn depression [3].

The largest rivers of Akmola region - Ishim and its tributaries: Kalkutan, Arshaly, Zhabay, Kolyton, Terisakkan; Nura, Sileti and their branches: Akmyrza, Kulanotpes, Olenty.

There are many lakes in the region, 94 of them are fresh. The largest freshwater lakes are Kogalzhyn, Kozhakol, Sholakshalkar, Balyktykol, Uyalyshalkar, etc. The largest salt lakes are Tengiz, Kerey, Itemgen, Kipchak, Mamay, UlkenSaryoba and Astana, Sileti dam. In addition, 37 irrigation ponds were built with a total volume of 180,6 million m3 [3].

Soil cover consists of the following types: black soil, meadow black soil, pink-brown, meadow-pink-brown and mountain. Intrazonal meadows, floodplains and saline soils are also widespread in the region.

Depending on the mechanical composition are divided into clay and heavy clay, clay and heavy clay carbonate and saline, medium and light clay, gravel.

The average soil quality of Akmola region - 31 points. Sandyktau, Bulandy, Zerenda and Burabay districts, located in the ordinary black soil zone, have the highest soil quality score -41-44. In Korgalzhyn, Astrakhan, Tselinograd districts, located in the pink-brown soil zone, the score of soil quality is low -21-22 [4].

Climatic conditions are a key factor in the development of agriculture in the region. The territory of the region belongs to the continental western Siberian and northern Kazakhstan climatic regions. The predominant distribution of temperate air masses, their location in the middle of the continent and orographic features form an acute continental climate, characterized by rapid changes in temperature and lack of moisture.

January average temperatures range from -13°C in the south to -18°C in the northwest. The absolute minimum in different areas of the region is -49-52°С. The average temperature in July is 18,5-21,5°С. The maximum temperature reaches 42 °C, and the average annual temperature is 3,4-4,1°C. The average annual precipitation is 200-300 mm. One of the main factors shaping the climate is the duration of sunlight, which is 2,200 hours a year, with a maximum in july. The total annual radiation fluctuates in the range of 6100-6500 MJ/m². The territory of the region is affected by 3 main types of air masses: arctic, polar, tropical. In cold weather, the air temperature is affected by the western massifs of the Asian anticyclone. In winter there is a clear weather. The anticyclone regime is maintained in the spring, with high temperatures during the day and a sharp drop in temperature at night, and dry winds affect the formation of unstable weather. In summer, the plains are dry and hot due to the intense heat. The duration of the warm period is 194-202 days, in the cold period - 163-171 days. Frost-free days are 105-130 days [5].

The average annual precipitation in the region is more than 300 mm per year in the north and 280 mm in the south. In the center of the region there is a belt covering the area up to the Kokshetau plateau and Ereymetau mountains with a total precipitation of more than 260 mm. Precipitation from this zone decreases in two directions: 220 mm or less in the north-east, 180 mm and less in the south-west. Precipitation is 2-3 times higher in the warm season than in the cold season. The maximum precipitation is in july (50 mm) and the minimum is in february (20 mm).

The average annual wind speed is 5,3 m/sec. In cold weather, the wind regime is determined by the western slopes of the Siberian anticyclone, while in warm weather, the features of the wind regime are determined by the baric depression [5].

The set of climatic factors that predominate in the cultivation of crops is called agroclimatic resources. Taking into account the agroclimatic conditions allows to determine the compliance of the climate of a particular area with the requirements of agricultural production.

In Akmola region, the duration of the growing season increases from 135 to 155 days from north to south. In the region, the set of active air temperatures above 10°C increases from north to south from 2100°C to 3400°C.

For the territory of Akmola region, the long-term average value of the coefficient of humidity K is in the range of 0,67-1,14 [5].

On the territory of the region on the set of values ​​of humidity coefficient K and active air temperature above 10 ° C can be divided into 4 agroclimatic zones: moderately humid temperate year, slightly humid temperate year, slightly dry temperate year, dry year [6].

Zone I - "Moderately humid temperate year" zone occupies the Kokshetau plateau in the north of the region. The southern and western part of Zerendi district, the southern part of Burabay district, the far west of Birzhansal district, the north-west of Bulandy district. The set of temperatures with a coefficient of humidity K = 1,0–1,2 and above 10 °C is in the range of 2000–2200°C.

Zone II - "Slightly humid temperate year" zone occupies the central and northern part of the region, bordering the Kokshetau plateau. North-east of Zerendi district, northern part of Burabay district, Birzhansal district (except far west), southern and eastern part of Bulandy district, southern edge of Sandyktau district, Akkol district, Ereymentau district, Shortandy district, north of Zhaksy district, north of Atbasar district, Astrakhan district (except for the south-western edge), Nur-Sultan a.d.territory, Tselinograd district, except for the southern edge, includes Arshaly district. The set of temperatures above K = 0,8–1,0 and 10°C is 2200–2500°C.

Zone III - "Slightly dry temperate year" zone occupies the south-western part of the region. These include Esil district, central and southern part of Zhaksy district, southern Atbasar district, south-western part of Astrakhan district, far south of Tselinograd district, Egindykol district, Korgalzhyn district, north-eastern part of Zharkayin district, north-eastern part of Ereymentau district. The set of temperatures above K = 0,6-0,8 and 10°C is 2400–2600°C.

Zone IV - "Dry Warm" zone occupies the south-western edge of the region. It includes the south-western part of Zharkayin district. The set of temperatures above K = 0,5-0,6 and 10°C is 2600–2700°C [6].

**Conclusion.** During the study, the physical and geographical characteristics of the Akmola region and the climatic conditions were considered. After all, in the conditions of modern management methods, agriculture is still dependent on natural and climatic conditions.

The length of the growing season in the territory of Akmola region, moisture and heat supply of the growing season were analyzed. The northern part of Akmola region is characterized by humid conditions, which are sufficient for the cultivation of spring crops, and in the rest - insufficient.

Thus, the territory of Akmola region is characterized by fertile soil cover and agro-climatic resources suitable for sowing soft and hard varieties of wheat and some heat-loving crops. The main natural factor limiting grain productivity is insufficient precipitation, as well as its inequality over the years.

In general, the geomorphological features of the territory, land, soil and agro-climatic resources contribute to the development of fairly efficient agriculture. The natural environment is one of the main conditions for the territorial differentiation of agriculture.

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**НҰР-СҰЛТАН ҚАЛАСЫНЫҢ АЗЫҚ-ТҮЛІК БЕЛДЕУІНІҢ ҚАЛЫПТАСУЫ МЕН ДАМУЫНА ЫҚПАЛ ЕТУШІ ФИЗИКАЛЫҚ-ГЕОГРАФИЯЛЫҚ ФАКТОРЛАР ЖҮЙЕСІ**

**Аннотация*.*** Мақалада ҚР астанасы Нұр-Сұлтан қаласының айналасында азық-түлік белдеуін құруды ұсынатын мемлекеттік құжаттардың болуына байланысты ауыл шаруашылығының қалыптасуы және дамуына ықпал ететін физикалық-географиялық факторлар жүйесі қарастырылған.

Қазақстанның дәнді-дақылдар өсіретін және тауарлық астық өндіретін басты өңірлерінің бірі және астананың азық-түлік белдеуін қамтамасыз ету жағынан маңызды буын болып табылатын Ақмола облысының ауыл шаруашылығын дамытудағы физикалық-географиялық факторлар арасынан абсолюттік басымдылыққа ие болып саналатын климаты және сонымен байланысты маңызды агроклиматтық көрсеткіштері талданған.

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**СИСТЕМА ФИЗИКО-ГЕОГРАФИЧЕСКИХ ФАКТОРОВ ВЛИЯЮЩИХ НА ФОРМИРОВАНИЕ И РАЗВИТИЕ ПРОДОВОЛЬСТВЕННОГО ПОЯСА ГОРОДА**

**НУР-СУЛТАН**

**Аннотация.** В статье рассматривается система физико-географических факторов, способствующих формированию и развитию сельского хозяйства в связи с наличием правительственных документов, предполагающих создание продовольственного пояса вокруг столицы Казахстана г. Нур-Султан.

Проанализированы климат, который имеет абсолютный приоритет среди физико- географических факторов и связанные с ним важные агроклиматические показатели Акмолинской области – одного из основных зернопроизводителей Казахстана и важного звена в обеспечении продовольственного пояса г. Нур-Султан.

**Ключевые слова:** Продовольственный пояс, физико-географические факторы, климат, агроклиматические показатели, агроклиматические зоны.