Agrobacterium spp. = *Rhizobium* spp. And prebasic propagation material from the vine in cultivation facilities

- Monitoring studies of biology, phenology and epidemiology of economically important pests on the vine and their impact on vine, grapes and wine.
- Establishing the biological action of plant protection products on the pests of the vine and its impact on beneficial species, alcohol fermentation and wine quality.

The department has two laboratories: for the diagnosis and identification of phytopathogenic fungi, insects and weed plants and for in vitro viticulture and diagnosis of phytopathogenic viruses, bacteria and phytoplasms.

THE IMPACTS OF CLIMATE CHANGE IN TURKEY IN THE CONTEXT OF AGRICULTURE AND DEVELOPMENT

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Agriculture is the most important because this is nutrition for the community, contribution to employment, foreign currency, national income, raw materials for agriculture and agriculture-related industries, for environmental contributions, livelihood in the rural area.

What is climate change? Climate change is a change in the pattern of weather and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer. Natural causes and human-induced causes are responsible for climate change. Global average temperatures have increased over the past century. The regional differences of climate change in the world are presented in Figure 1.

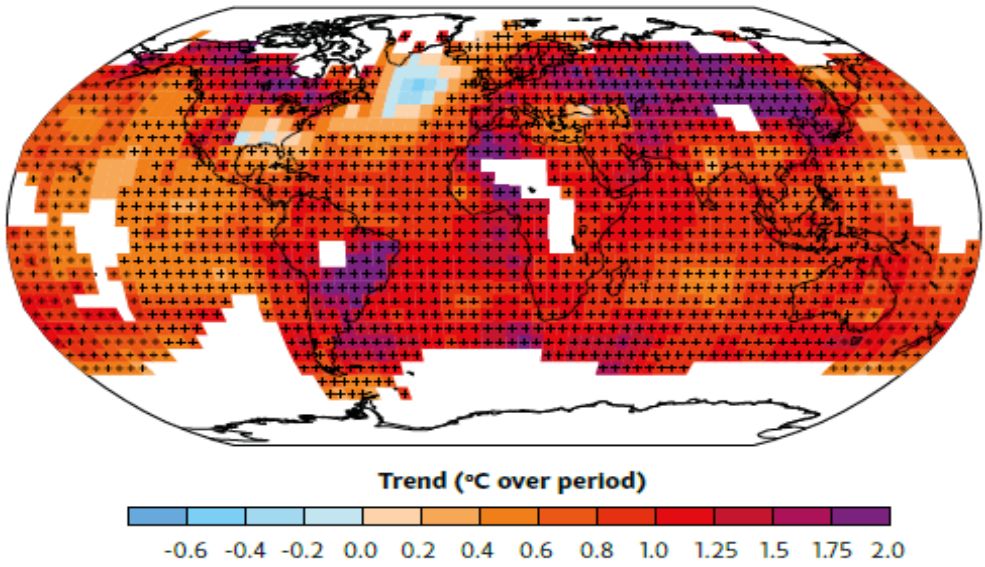

Figure 1. The regional differences of climate change in the world

In total greenhouse gas production in the world is: 32 % - industrial processes, 30 % - energy sector, 16 % - transportation, 16 % - other sectors and only 6 % - agriculture.

The aim of this study is to provide some general information about climate changes for agriculture and development in Turkey.

As a result, the effects of climate change on the agriculture sector in Turkey is yield decrease, increase in irrigation, water demand and cost of it, changes in planting and harvesting time, more pests and diseases, decrease in water resources, fertilization and pesticiding problems, increase in extreme meteorological events and sustainable food safety issues.

Agricultural greenhouse gas emissions are caused by fertilizer use and management, use of nitrogen fertilizers (N_2O), CH_4 production, burning the stubble (CH_4, N_2O).

Decreasing in agricultural production is connected to severe weather events: tropical storms, heat wave and damaging frosts.

The agriculture and food report of Turkish Industry-BusinessAssociation (TÜSİAD) in 2020 stated that increase on the climate should be considered as an assumption scenario and policy plans should be made within this framework. The change in GNP is in the direction of decrease. Yield losses are in the direction of increase.

It is predicted that the annual yield variability in grains will also increase. As a result of hot and dry conditions, more than expected, in agricultural areas: negative impact on the crop, decreasing in production. The food supply is threatened by the negative impact on development.

And the next ones are future predictions in agriculture in the world. The first is the emergence of more natural resource constraints, problems in meeting water demand, further degradation of arable land, food and energy production competition. All of these reasons are directly related to climate change.

The second is the global climate change: desertification, degradation of soils, environment and marine pollution, erosion, animal and plant species extinction.

Conclusions:

1. Agricultural crops need soil, water, sunlight and warmth to grow.

2. Climate is a dynamic component that affects all of these components.

3. For this reason, the risk it creates for the agricultural sector is very high due to the uncertainties it contains.

4. Huge losses are experienced as a result of natural disasters caused by the effect of climate change. Farmers in less developed countries remain vulnerable to climatic changes. The share of agricultural production and agriculture in the Gross National Product is decreasing. After all, the contribution of agriculture to the economy is decreasing day by day.

5. Reduction and Adaptation Policies in Turkey.

Soil conservation and land. We use the law: this law should be improved for climate change adaptation and reduction.

Also, there are other legal regulations both national and international in Turkey.

Turkey has recently formulated its policies in the fight against climate change within the framework of sustainable development principles.

7. It is predicted that drought will be felt in large regions and the number of extremely hot days will increase in Turkey, which is located in the Mediterranean Basin. For this reason, this problem should be handled seriously in national terms.

We have some suggestions for Turkey:

1. Climate change adaptation supports should be provided to low-income farmers.
2. Rain harvesting practices should be expanded.
3. The goal of applying more environmentally friendly agricultural methods should be set.
4. Climate-based dynamic agricultural insurance should be expanded.
5. Farmers should be supported with training programs depending on the observed and expected effects of climate change.

To sum up we should state that like almost every country in the world, Turkey is affected by climate change. And we must work on the amount and severity of climate change. We must work on applicable policies.

Material:

Based on a literature review. Internet sources, books and articles on this subject have been used.

ОЦІНКА ПРОДУКТИВНОСТІ ПОСІВІВ РІПАКУ ОЗИМОГО В УМОВАХ ЗМІНИ КЛІМАТУ В КИЇВСЬКІЙ ОБЛАСТІ

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Ріпак озимий є важливою культурою, що вирощується для отримання рослинної олії в умовах помірного клімату та другим за важливістю джерелом рослинної олії в світі. У структурі посівних площ господарств ріпак озимий є обов'язковою культурою у переважній більшості регіонів України. Культура рано звільняє поле, що забезпечує своєчасне надходження коштів, які відразу використовуються на наступну посівну. Збільшення площ під ріпаком в Україні спостерігається з року в рік, адже ріпак зараз найдорожча з основних олійних культур в Україні. Відмічається і зростання середньої врожайності ріпаку від 2,5 до 2,76 т/га, хоча дане значення є значно нижче генетичного потенціалу сучасних гібридів та сортів. Причини криються і в слабкій матеріально-технічній базі