

# **Vulnerability and adaptation of the agricultural crops to the climate changes in the Balkans**

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Numerous investigations in the 20<sup>th</sup> century have registered apparent warming and drought tendencies in the long-term variations of the air temperature and precipitation over the territory of the Balkans. Since the last decade, the National Meteorological Institutes of the Balkan countries have been thoroughly investigating the climate change by using the Global Atmospheric Circulation mathematical models. The climatic scenarios demonstrate 15-25% decrease of the yields from the basic grain crops when the greenhouse gases concentration doubles in 2070. Our countries' public should not passively wait for the changes in the warming and moisture regimes, and in the productivity of the agricultural crops to happen. Strategic plans in two directions should be elaborated: 1) adaptation of the agricultural production to the climate changes; and 2) reduction of the greenhouse gas emissions by the agricultural activities. The paper consists of detailed measures suggested, classified into these two directions. The adaptation measures include: broadening the agricultural land boundaries and areas of traditional agricultural crop growing to new regions of more favorable warming and moisture conditions; increasing the sort and hybrid variety and elaborating new requirements towards genetics, selection and introduction; special measures for improving the irrigation efficiency; changes in the struggle technology against pest and diseases. As to the reduction of the greenhouse gas emission during the agricultural production processes, the following topics are discussed: possible reduction of methane emission by the biological fermentation in stock-breeding or in rice-growing; reduction of carbon-consistent gas emission and keeping carbon in soil; improving the fertilizer efficiency. Special attention is paid to the main strategic goal of Balkan agriculture in the future decades – stabilization and sustainable development of agriculture adequate to the European standards, gaining maximum competitive power and world market share under the European integration terms.