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Climate change adaptation options for sustainable management of agriculture in the Eastern Lower Danube Plain, Romania

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The current study was carried out within the FP7 ECLISE project in the Eastern Lower Danube Plain (Bărăgan Plain), one of the major agricultural areas in Romania. In this region, climate change signals are becoming more evident being predominantly characterized by increasing temperatures, decreasing of precipitations and intensification of extreme events in terms of frequency, intensity and duration. Over the past decades, the effects of extreme climatic phenomena on crop production have been ever more severe (very low outputs in the droughty years, significant crop losses during flooding periods, hailstorms, etc.). Concurrently, these effects have been the result of a whole range of complex interactions with other environmental, social, economic and political factors over the post-communist period.

Using questionnaires survey for small individual households and large agricultural farms, focus group interviews and direct field observation, this study analyses the farmers' perception in terms of climate change, the impact of climate change on agriculture and how the farmers react and adapt to these changes. The current study have revealed that all farmers believe drought as being by far the most important climatic factor with major impact on agricultural production, followed by acid rains, hail storms and ground frost, facts evidenced also by the climatic diagnosis of the region. The majority of respondents have taken adaptation agricultural measures in response to changes in climate conditions (drought resistant seeds, modern technology to keep the moisture in the soil, etc.), but they consider that a national strategy for mitigating the effects of climate change would be more effective in this respect.

Also, in order to correlate the farmers' perception of climate change and climatic factors, the authors used and processed a wide range of meteorological data (daily, monthly and annual from the most representative meteorological stations in the study-area), as well as calculated some of relevant climatic indicators (Standardized Precipitation Index, Climatic Water Deficit and Thornthwaite Aridity Index for the main crops). These indicators frame the region in a temperate-continental climate with excessive influences, imposing specific management practices in agriculture: rehabilitation of irrigation systems, drought resistant seeds, planting forest belts, etc.).