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Regional aspects of climate change impacts and related adaptation options in European agriculture

J. Eitzinger and the ADAGIO Team

Univ. of Natural Resources & Applied Life Science, WAU, Vienna, Austria (josef.eitzinger@boku.ac.at)

Through a change in climatic conditions and variability, for example, extreme weather events (heat waves, droughts, etc.) are likely to occur more frequently in different spatial and time scales in future. Since agriculture is one the man' activities more dependant on weather behaviour, the impact on risks of agricultural production is indeed one of the most important issues in climate change assessments. Therefore an early recognition of risks and implementation of adaptation strategies is crucial as anticipatory and precautionary adaptation is more effective and less costly than forced, last minute, emergency adaptation or retrofitting. Results of climate change impact and adaptation studies often show considerable different results, depending on the spatial scale of regionalisation. However, for a decision maker, only a high spatial resolution of related study results are useful as it can represent local conditions and its spatial variablitiy much better. Therefore the ADAGIO project (adagio-eu.org) was designed to focus on regional studies in order to uncover regional specific problems. In this context a bottom-up approach is used beside the top-down approach of using scientifc studies, involving regional experts and farmers in the evaluation of potential regional vulnerabilites and adaptation options. Preliminary results of the regional studies and gathered feedback from experts and farmers show in general that (increasing) drought and heat is the main factor having impact on agricultural vulnerability not only in the mediterranean region, but also in the Central and Eastern European regions. Another important aspect is that the increasing risk of pest and diseases may play a more important role for agricultural vulnerability than assumed before, however, till now this field is only rarely investigated in Europe. An important aspect is also that there are increasing regional differences in the crop production potential in Europe due to climate change and that positive or negative impacted agricultural systems can vary in a relatively small spatial scale, depending on the specific limiting environmental conditions such as climate or soil conditions (especially in complex terrain). Although dominating risks such as increasing drought and heat are similar in most regions, the vulnerabilites in the different regions are very much influenced by characteristics of the dominating agroecosystems and prevailing socio-economic conditions. This will be even be more significant for potential adaptation measures at the different levels, which have to reflect the regional conditions.