KUJAWY & POMORZE REGIONAL XC APPROACH

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Brief summary of what has been achieved so far
Regional characteristics

K&P Quality Indicator of Agricultural Production Space (scores) is 71, which places the region at 4th position in Poland

Climate change characteristics most relevant for agriculture
   severe rainfalls/droughts (rainfall between 400 and 500 mm yearly)
   strong frosts damages

Land use /farming system
   mixed, arable, some irrigated,

Main soil types
   luvisols, phaeozems

WRB classification
   Dominant topsoil texture loam sand, clay

Yields
   High crop yield variability

Water needs
   Insufficient drainage
   Increasing irrigation needs

Assessment method
   stakeholder interaction, field experiments

Brief summary of what has been achieved so far

Origin of data: meteorological measuring point located in Kujawy & Pomorze Region owned by the UTP

MACSUR study found over 40% probability of occurrence of 6-week periods without precipitation - intensification of extreme events confirmed by other studies, the findings were applied to predict drops in yield and output in 2030 and 2050 with economic models (CAPRI)

Within MACSUR 2 study statistical analysis was done for years 1971-2015, it was found that in Central Poland the average length of series without rainfall is 4.31 days while SD is 4.41 days while the maximum length of dry spell during a growing season is 40 days.

MACSUR 2 study based on the daily rainfall totals from the period 1971-2013, and two-state Markov chain approach let meet and confirm high risk of very low crop yields in a temperate climate in Poland (represented by climate conditions in Kujawy & Pomorze Region). It must be taken into account the possibility of occurence long series of days without precipitation.

On the base of cited findings and opinions of farmers it has been shown, that in the area of Bydgoszcz the environmental conditions of farming in the agricultural sector are changing and intensifying, the climatic risk of growing plants will change and increase.

Lessons Learned

- Determined probability of occurrence of the length of series of days without precipitation can be used in forecasting productive and economic effects in agriculture through application of met parameters in biophysical and economic models.
- The developed biophysical and socioeconomic models allow to evaluate the predicted changes in the production of selected crops in the long run not only locally, but also to apply the defined yields to larger areas of similar to Bydgoszcz agroclimate, although each solution developed for other regions must be verified based on specific parameters of a given microregion.
- Evaluating production and business risks in agriculture by:
    - support from public funds for crop insurance,
    - improvements in small retention infrastructure.
- So, obtained findings can be useful in providing appropriate parameters for agricultural and rural policy shaping,
- Specific case studies should not be generalized – hence,
- **the EU agricultural and rural policy should be decentralised as much as possible**

Possible suggestions for further collaborative work in MACSUR 3 and beyond that

- Providing data, models and tools necessery for policy makers and decision makers (farmers, advisors, agricultural means production producers) reliable, precise, adequate, easily accessible and delivered on time information included the following areas:

- technology - appropriate selection and creation of species and varieties of crops,

- planning optimal business scale,

- selection of crop rotation (taking into account specific natural conditions of a given farm)

- preserve biodiversity from the farmer's perspective, these changes in production risk can be effectively mitigated if appropriate decision support systems (SWDs) are available that generate useful for all interested stakeholders information