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How crop yields have responded to climate conditions in Poland between 1972 and 2009

$$\text{Yield} = \text{WI} * \text{Y}_d$$

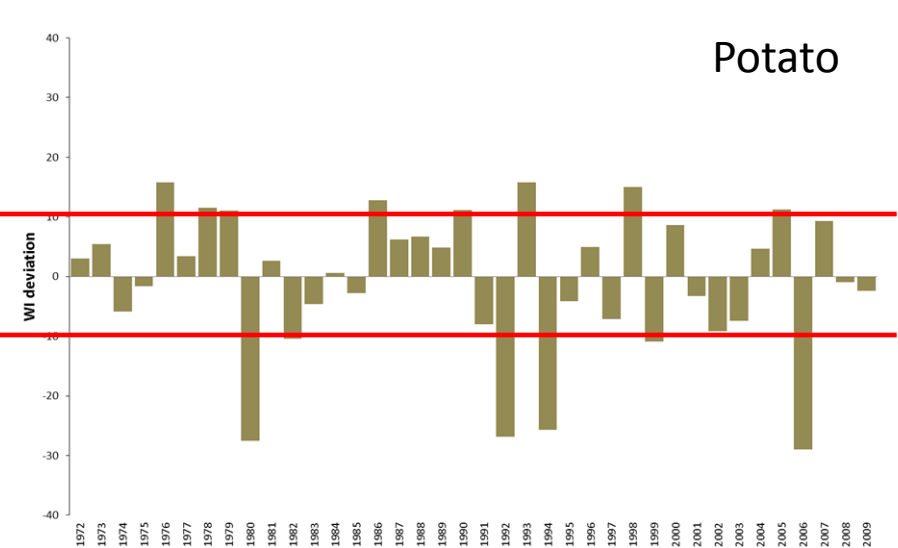
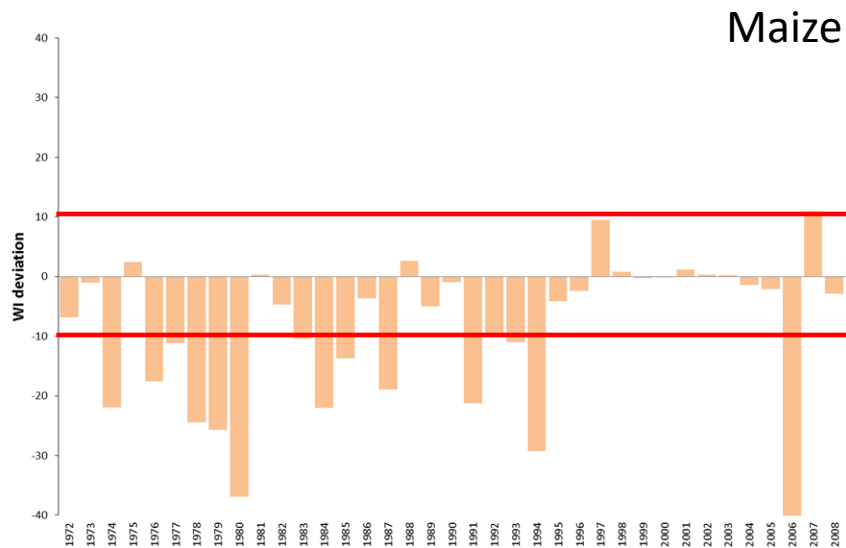
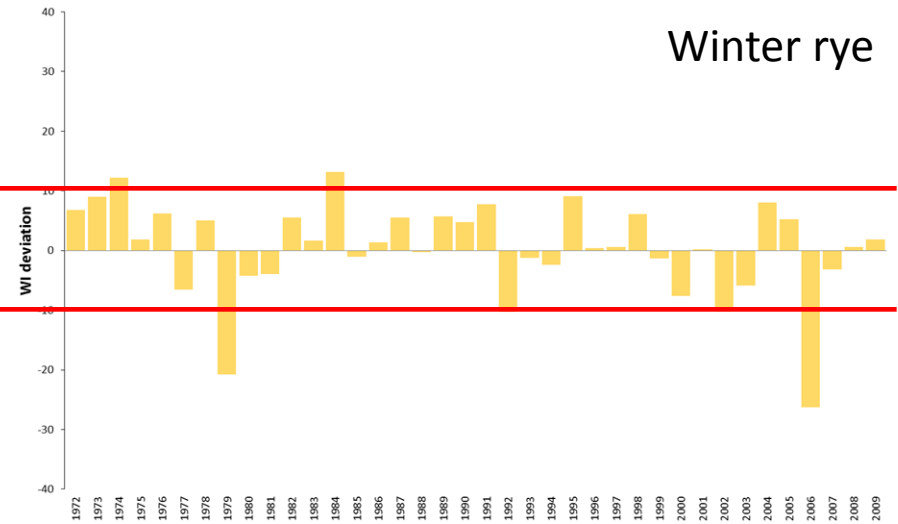
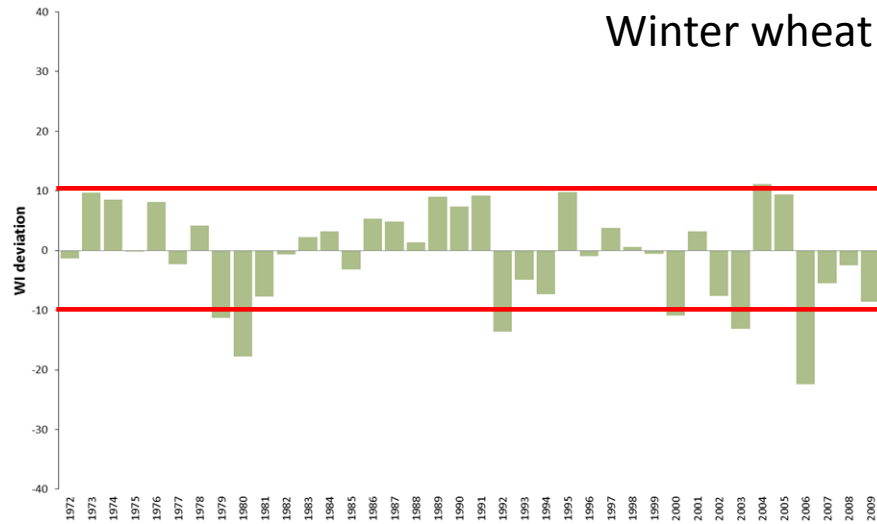
WI -weather index

Y_d – detrended yield



3rd-6th of May, 2011, Topolčianky, Slovakia

The WI deviation from average value (100) in the years 1972-2009



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The WI coefficient of variance in the years 1972-2009 and 1981-2000 and 1990-2009

Crop	1981-2000	1990-2009	1972-2009
Winter wheat	9.2	11.9	11.3
Winter rye	8.7	10.5	9.5
Spring wheat	8.4	10.0	9.1
Spring barley	7.7	10.3	10.0
Sugar beet	10.9	13.6	12.8
Potato	15.1	16.5	15.6
Maize	15.1	16.0	18.2

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Conclusions

- ✓ The greatest crop losses appeared in 2006, caused by cold winter and drought conditions, and in 1980 under wet and cool conditions in vegetative period. It also has been shown, that in the recent years the yield variability has increased.
- ✓ The results shows that between 1972 and 2009 the yield measured at a national level for the analysed crops, was reduced in the most extreme years by 30% in relation to average conditions, whilst in maize it was 40%.