

# BMP's for crop yield reduction model (AGRICULTURE ADMINISTRATION)

## model of crop yield reduction for the Central Statistical Office

supports estimates of yield decrease of agricultural crops and impact on forest development.

Model of reduction of agricultural yields has been developed through analysis of DISS drought index based on satellite data averaged with voivodships in relation to yield figures published by the Central Statistical Office. Two groups of cases were selected for the analysis:



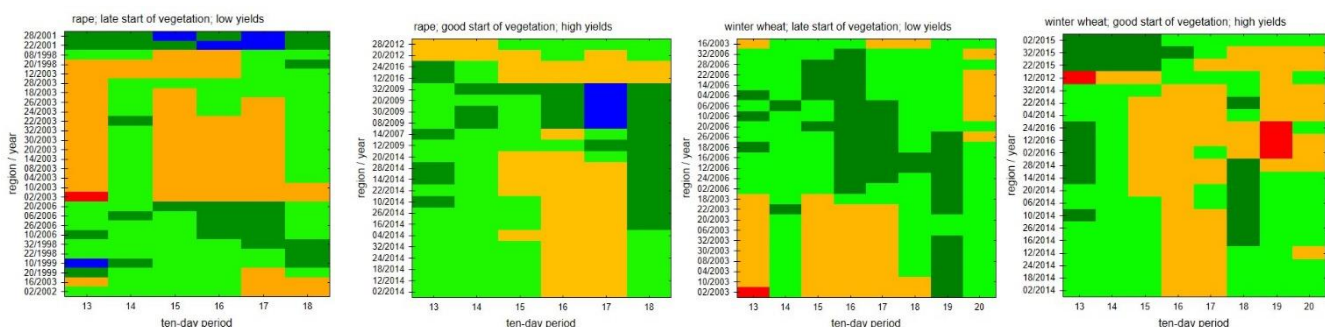
- voivodships with low yields (below 25 percentile)
- voivodships with high yields (over 75 percentile)

DISS drought index within vegetation period was related to yield values for these two groups and for two types of crops – winter wheat and rape. Statistical cluster analysis was applied in this approach, which was finalized in the results presented in the form of colour charts, which enabled to demonstrated periods, where drought conditions have impact on yield values. Comparison of high yield cases with low yield cases allowed to formulate conclusions related to drought impact on level of yield for both types of crops, as defined by DISS drought index. Date of start of vegetation period in particular year and area was also taken into analysis, as this factor has the significant influence of final yield figures.

*Table: Percentage contribution of arable area affected with drought events related to yield reduction in 2003, 2006, 2015, 2016 and 2018 by regions (voivodships)*

year	region	ten-day period						month		yield reduction		
		13	14	15	16	17	18	May	June	CEREALS	WHEAT	RAPE
2003	2	89%	15%	41%	52%	71%	46%	48%	56%	31%	31%	44%
2006	2	61%	35%				11%			39%	34%	17%
2015	2						28%			11%	4%	15%
2016	2	41%	22%	51%	51%			38%		3%	3%	12%
2018	2	19%	17%	54%	42%	82%	75%	30%	67%	17%	17%	19%
2003	4	71%	20%	68%	65%	78%	44%	53%	62%	35%	33%	42%
2006	4	8%	33%	6%		10%	18%	16%	10%	35%	29%	24%
2015	4			23%	74%	89%	59%	10%	74%	15%	13%	16%
2016	4	49%	80%	95%	89%	80%	76%	75%	82%	8%	16%	27%
2018	4	33%	21%	53%	77%	97%	94%	36%	89%	22%	25%	36%
2003	6	58%	14%	58%	20%	45%	16%	44%	20%	28%	26%	40%

### Changes of DISS index through vegetation period for rape and winter wheat in case of low and high yield



For more information contact us:

[info@windhydro.pl](mailto:info@windhydro.pl) and [igik@igik.edu.pl](mailto:igik@igik.edu.pl)