

Use of farm level data for policy analysis – case of water input

Zbigniew Floriańczyk
Polski FADN

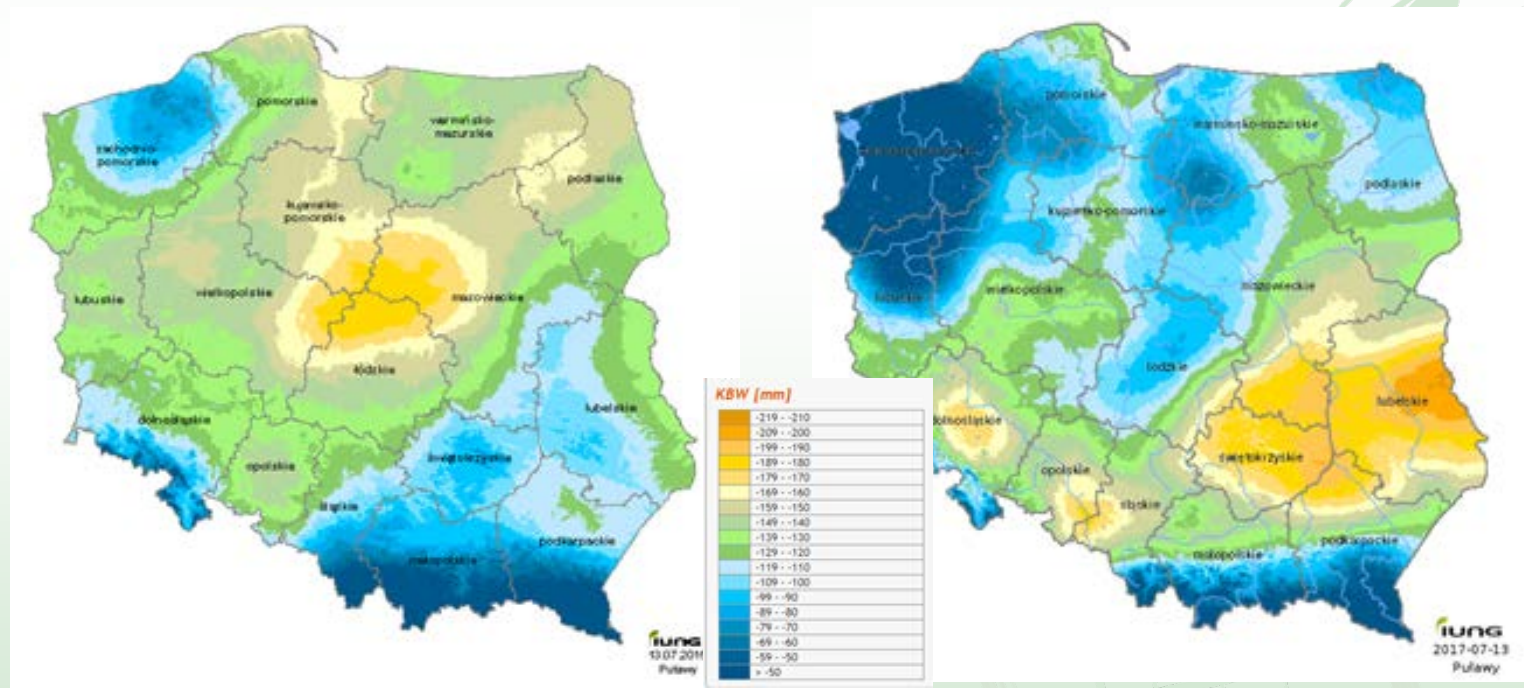
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Water – critical resource for Polish agriculture I

Permanent deficit of water jeopardies development of agriculture production

2015

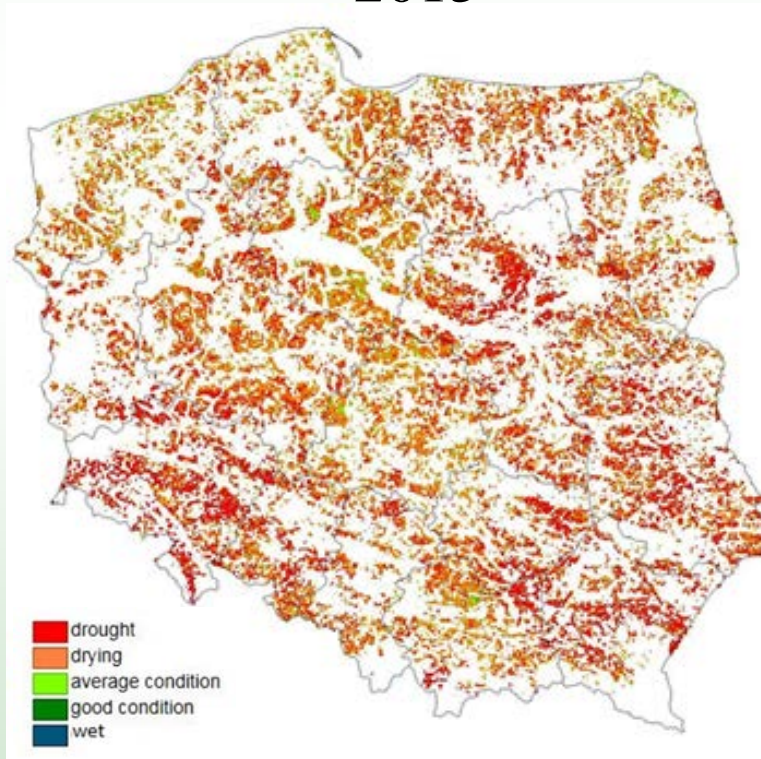
2017



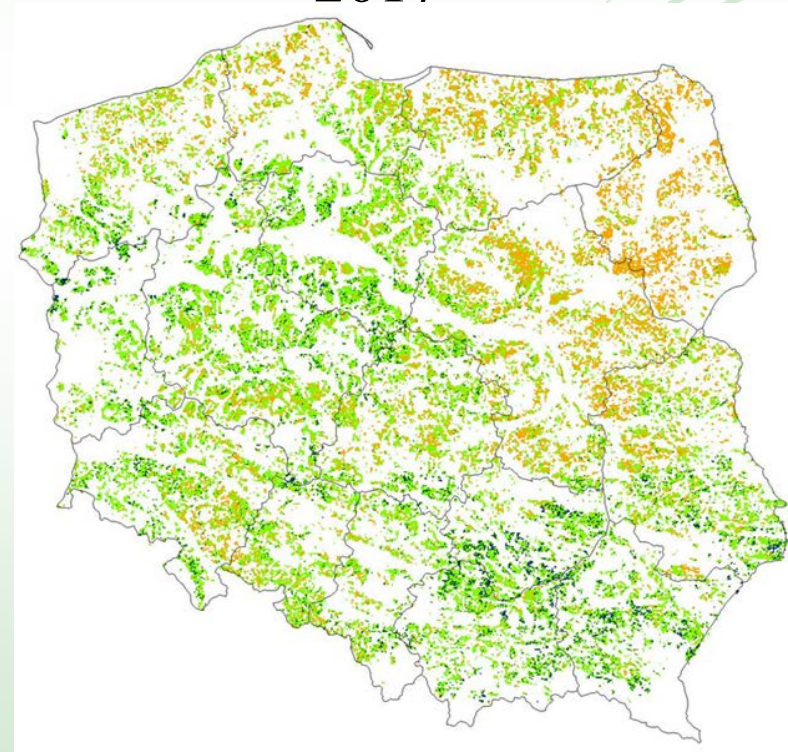
Water – critical resource for Polish agriculture II

Annual fluctuations of water – results in policy makers fluctuation of the water problem importance

2015

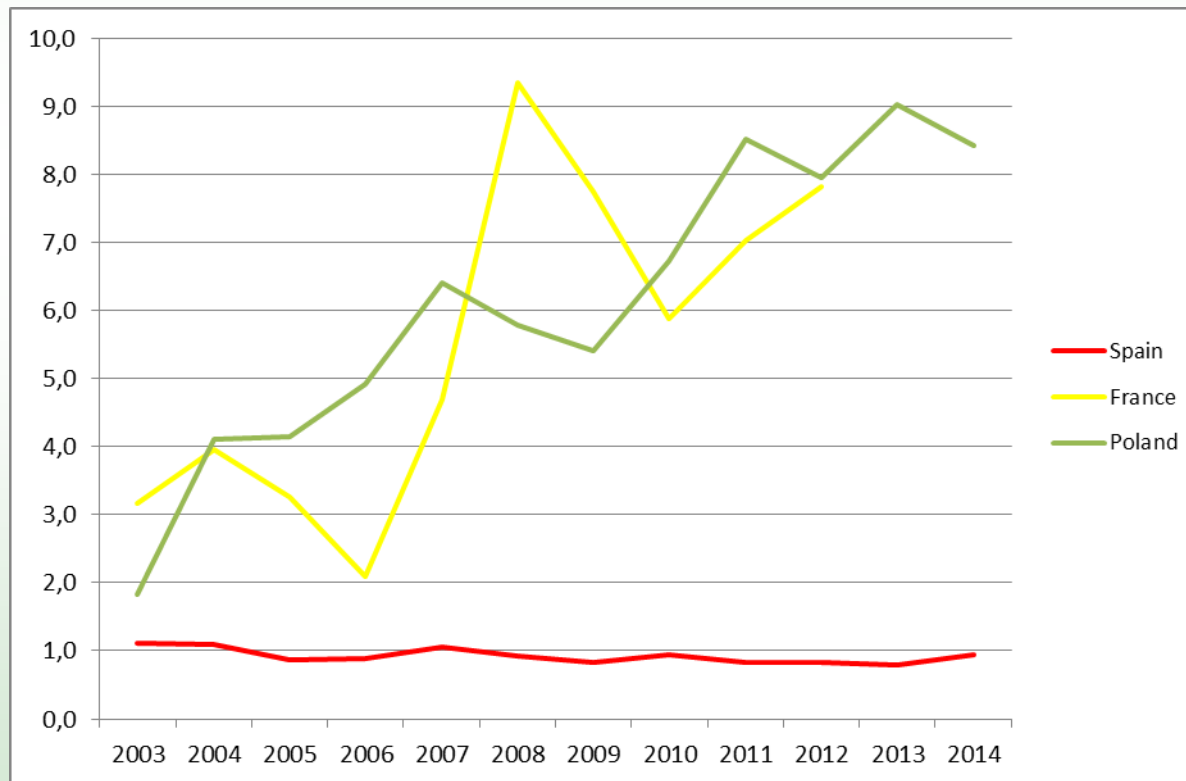


2017



Use of water by agriculture in Poland

Agriculture in Poland strongly depends on natural precipitation and there is a tendency of increasing value of production per unit of abstracted water.



Value of agriculture output in EUR per 1 m³ of water abstracted in agriculture

Policies to enhance water safe practices in agriculture production

- Water markets vs. public subsidies for investments efficient irrigation systems (Kahil et al., 2015)
- Increasing water reuse and water infrastructure improvements, in conjunction with increasing use of desalinated water (Downward, Taylor 2006)
- Unit subsidies for water saving, and subsidies on water-conservative crop (Wang et al., 2015)
- Higher irrigated land taxes vs more intensive use of land (Watts et al., 2014)

Estimation of water consumption by production on farm level

- Crop production

Estimation of water amount needed for farm crops were based on outcomes from different technical research institutes. Use of water needed for plant protection and fertilizer application according to producer or national normative.

- Animal production

National normative of average water use per farm animal were used. (Dz. U. nr 8, poz. 70).

- Farm performance characteristics

FADN data for 2014 were used to estimate needs for water on farm level and for economic characteristic of production

Tabela 4
Przeciętne normy zużycia wody w fermach i obiektach inwentarskich

Lp.	Zwierzęta	Jednostka odniesienia (j.o.)	Przeciętne normy zużycia wody			
			obiekty inwentarskie drobnostwarowe dm ³ /j.o. · dobę	m ³ /miesiąc	obiekty i fermy wielkotowarowego przemyślowego chowu dm ³ /j.o. · dobę	m ³ /miesiąc
1	2	3	4	5	6	7
1	Konie	1 zwierzę	50	1,5	65	2,00
	zrebęta	1 zwierzę	30	0,90	40	1,20
2	Krowy	1 zwierzę	70	2,10	120	3,60
	a) mleczne i sztuki wyrolnione	1 zwierzę	35	1,00	40	1,20
	b) bydło mleczne (do 1,5 roku)	1 zwierzę	40	1,20	60	1,80
	c) jałówki i bukaty powyżej 1,5 roku	1 zwierzę	80	2,40	100	3,00
3	Swinie	1 zwierzę	20	0,60	30	0,90
	a) taczniki	1 zwierzę	10	0,30	15	0,45
	b) prosięta do 4 m-cy	1 zwierzę	70	2,1	50	1,50
	c) maciory z przychowkiem	1 zwierzę	25	0,75	35	1,00
4	Knury	1 zwierzę	25	0,75	35	1,00
	d) buhaj	1 zwierzę	80	2,40	100	3,00
4	Kozy, owce	1 zwierzę	8	0,27	10	0,30
	a) dorosłe	1 zwierzę	8	0,27	10	0,30
	b) jagnięta	1 zwierzę	5	0,15	7	0,21

Dziennik Ustaw Nr 8
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Results by type o farm – field crops

	Size class			
	Small	Medium-small	Medium-large	Large
Amount of water m ³ /ha	144	366	221	102
Value of production EUR/ha	1 556	1 839	1 836	1 314
Farm income EUR/ha	434	560	658	218
Farm income EUR /1 m ³ /ha	3,0	1,5	3,0	2,1
Value of production EUR/1 m ³ /ha	10,8	5,0	8,3	12,9

Results by type o farm –horticulture outdoor

	Size class			
	Small	Medium-small	Medium-large	Large
Amount of water m ³ /ha	162	515	709	933
Value of production EUR/ha	2 972	3 068	3 096	2 987
Farm income EUR/ha	1 515	1 123	1 208	929
Farm income EUR /1 m ³ /ha	9,4	2,2	1,7	1,0
Value of production EUR/1 m ³ /ha	18,3	6,0	4,4	3,2

Results by type o farm –horticulture indoor

	Size class			
	Small	Medium- small	Medium- large	Large
Amount of water m ³ /ha	316	344	517	1237
Value of production EUR/ha	7 967	8 813	11 621	32 234
Farm income EUR/ha	2 168	2 221	2 631	9 368
Farm income EUR /1 m ³ /ha	6,9	6,5	5,1	7,6
Value of production EUR/1 m ³ /ha	25,2	25,6	22,5	26,1

Results by type o farm – mixed: crop production

	Size class		
	Small	Medium-small	Medium-large
Amount of water m ³ /ha	109	133	47
Value of production EUR/ha	1 486	2 922	2 068
Farm income EUR/ha	599	895	556
Farm income EUR /1 m ³ /ha	5,5	6,7	11,8
Value of production EUR/1 m ³ /ha	13,6	22,0	44,0

Conclusions

- Except the farms specialized in horticulture outdoor production medium and large farms generate more production value per water and land used
- Mixed crop production generate highest value from water while horticulture indoor very similar across economic sizes.
- Large farms more efficiently use water - policy should be more concentrated on small farms
- Technical information on water needs are critical and vary depends on technology

Thank you for your attention

