

IRRIGATION



QUELLES STRATÉGIES POUR ÉCONOMISER L'EAU ? WHAT STRATEGIES FOR WATER SAVINGS ?

REGARDS CROISÉS EUROPÉENS
SHARING EUROPEAN VIEWS



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FRANCE



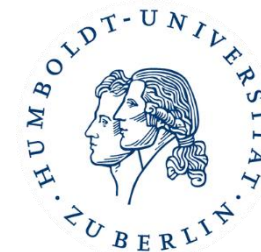
PROJET COFINANCÉ PAR LE FONDS EUROPÉEN AGRICOLE POUR LE DÉVELOPPEMENT RURAL
L'EUROPE INVESTIT DANS LES ZONES RURALES



Irrigation in Germany – Water saving initiatives and achievements

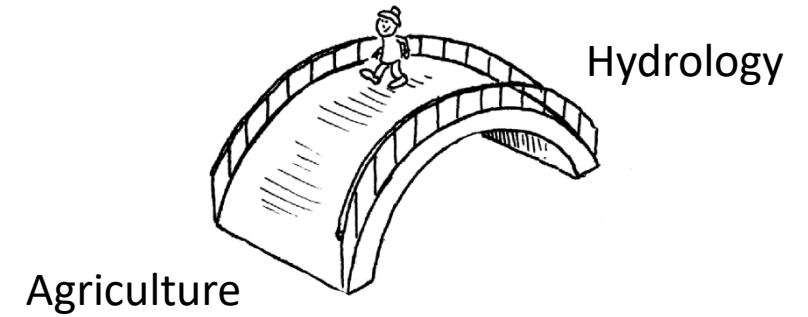
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Dr. Katrin Drastig

- Hydrogeologist (TU-Berlin, Germany)
- Since 2009 research scientist and leader of the investigators group “AgroHyd” at the ATB
- Since 2016 co-chair of the Technical Advisory Group (TAG) on Water Footprinting of the FAO (Food and Agriculture Organization of the UN)



Topic: Improving Precipitation and Technical Water Productivity in Agriculture



No significant increasing or decreasing trend in the irrigation water demand was noted between 1902 – 2018.

But in the last 10 years we had five extremely dry years

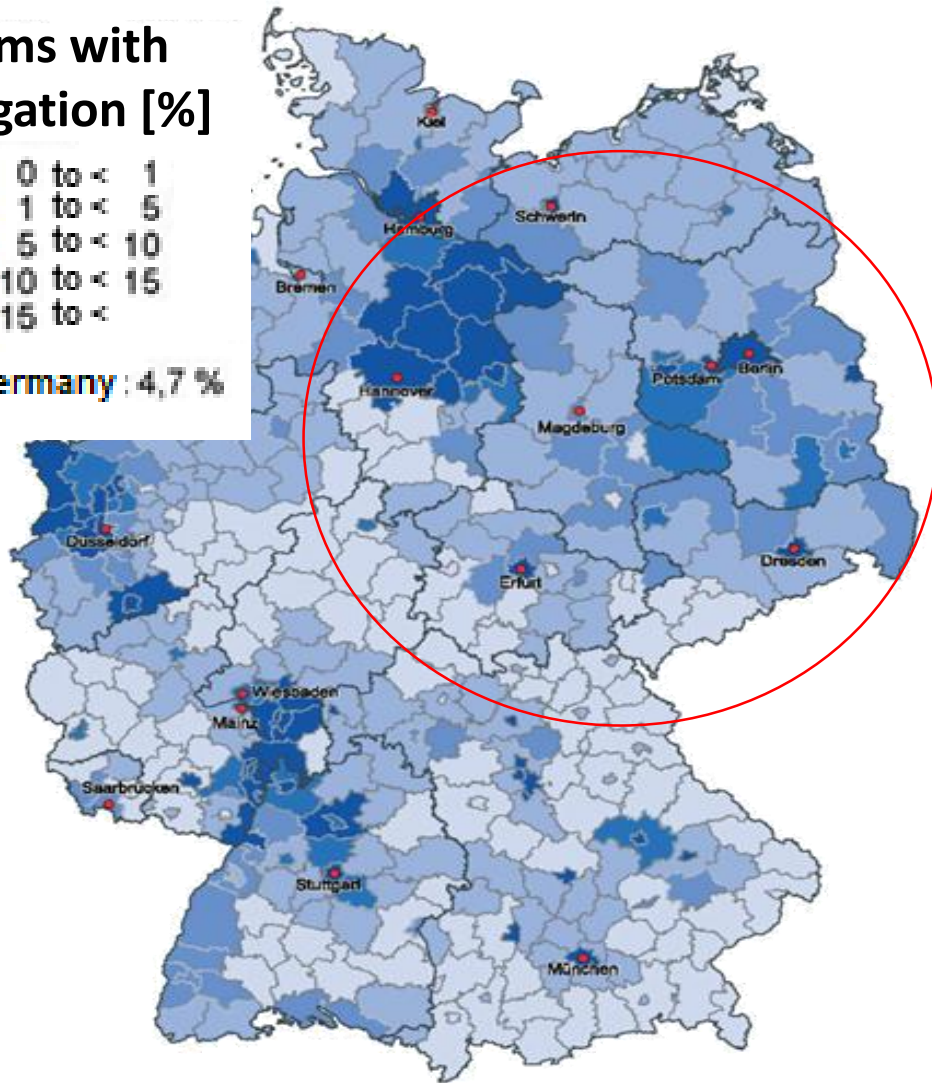
 Increasing use of irrigation water

Irrigation in Germany

Farms with irrigation [%]



Germany : 4,7 %

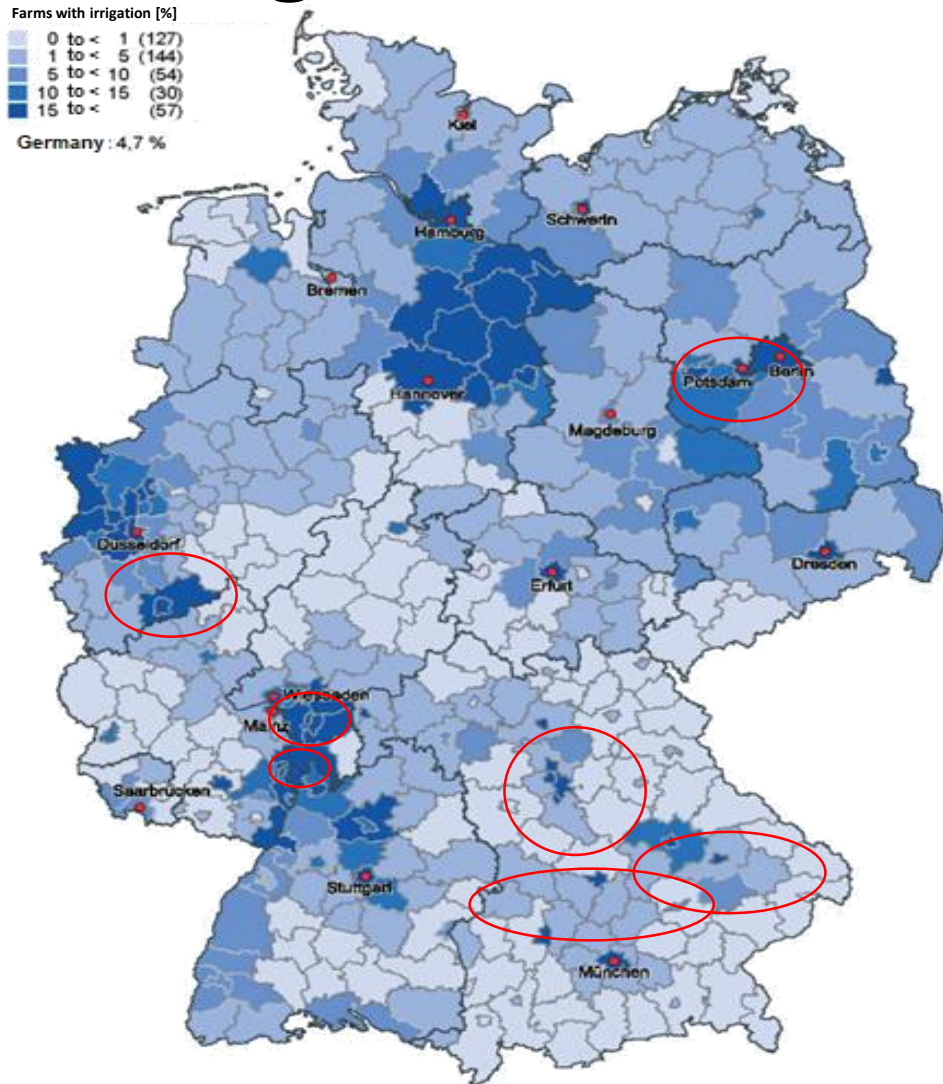


- 13.700 farmers irrigate
- Potatoes, sugar beets, cereals...
- Lower Saxony, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony, and eastern Brandenburg¹



¹Statistische Ämter des Bundes und der Länder – Agrarstrukturen in Deutschland (2010)

Irrigation in Germany



Horticulture with irrigation

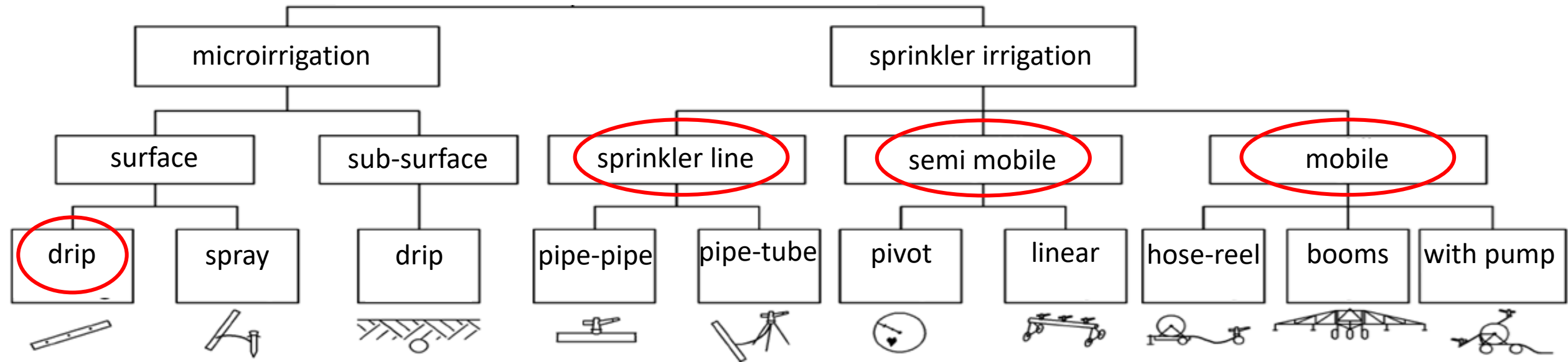
- in the Hessian Ried,
- in the Vorderpfalz region,
- near Cologne,
- near Potsdam.

Vegetable and potatoes (in Bavaria)

- in the „Garlic country' (Franconia) ,
- in the Danube valley and lower part of the river Isar
- in the potatoe region between the river Lech, Danube and river Paar
- in the river Main Valley.

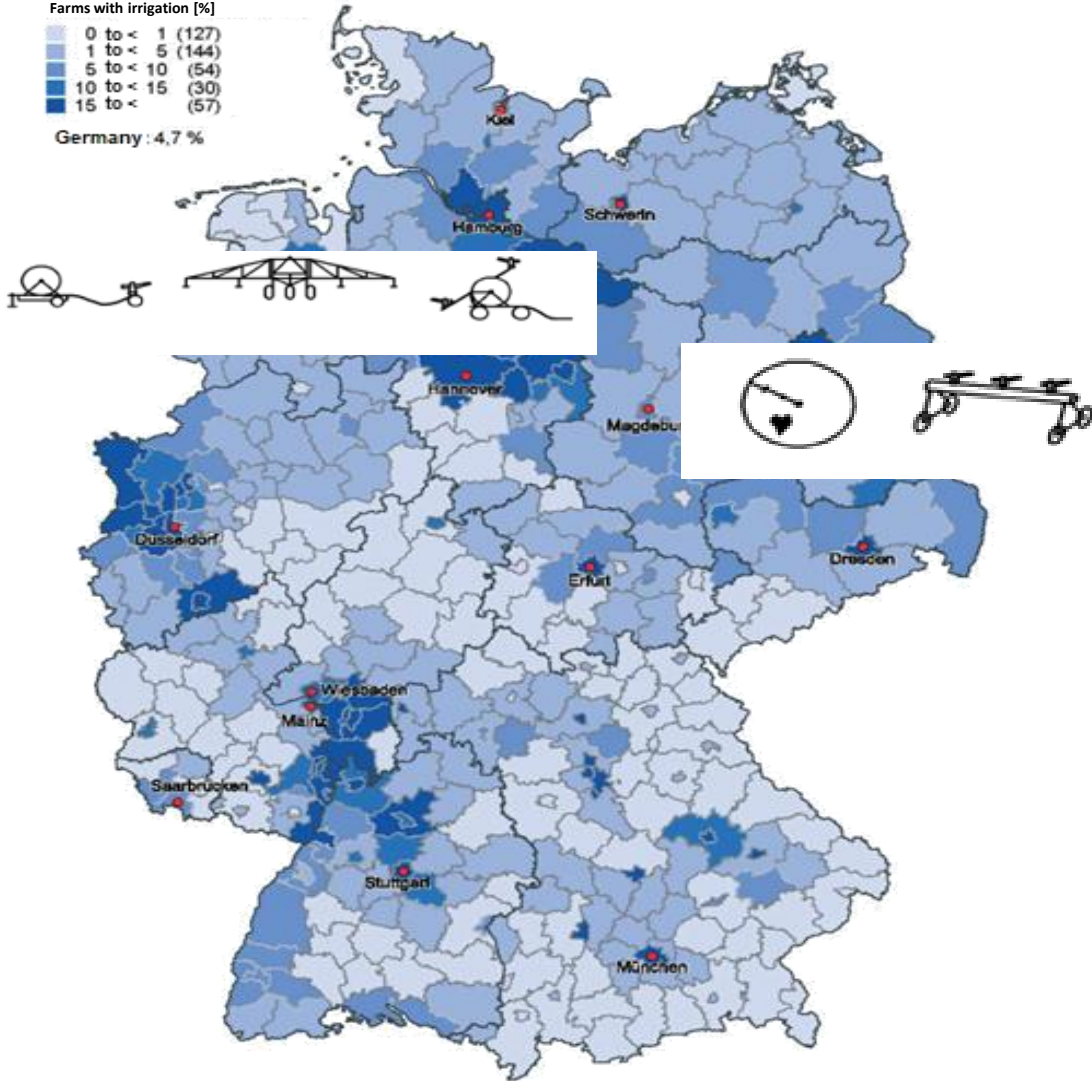
¹Statistische Ämter des Bundes und der Länder – Agrarstrukturen in Deutschland (2010)

Irrigation techniques



Irrigation techniques in Germany

Farms with irrigation [%]
 0 to < 1 (127)
 1 to < 5 (144)
 5 to < 10 (54)
 10 to < 15 (30)
 15 to < (57)
 Germany : 4,7 %





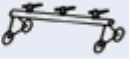





- In the former eastern part: semi-mobile
- In the former western part: mobile
- Horticulture: microirrigation
- 30% micro irrigation
- 70% sprinkler irrigation



¹Statistische Ämter des Bundes und der Länder – Agrarstrukturen in Deutschland (2010)

Quantitative water savings achieved^{1,2}

Irrigation technique	Microirrigation	Sprinkler line	Semi-mobile sprinkler irrigation	Mobile sprinkler irrigation
Water use efficiency	very high	medium	high	low
Irrigation intensity [mm/h]	2	5-8	7-12	15-25
Energy demand [kWh/m ³]	0.2	0.4	0.4	0.5-0.7
Pressure at emitter [bar]	2	5	5	8
Work time [h/ha* water application]	10	2.0	0.1	0.5
Capital requirement [€/ha]	2750	250	650 – 1150	500 – 1000
Procedural costs [€/ha]	700	425	316	335
		 	 	  

¹Sourell (2003);
²Michel, Sourell (2014)

Innovating technological solutions to save water in irrigation

- Irrigation scheduling software
- Precision Irrigation
- Subsurface Drip irrigation (SDI)



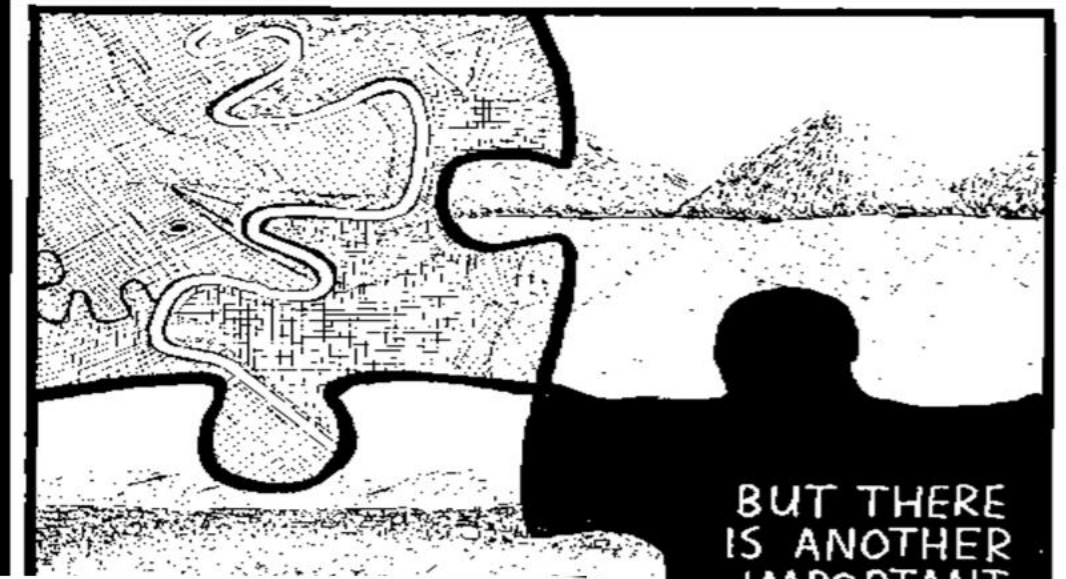
Scheduling tools in Germany

- Irrigation support systems are valuable tools
- Real measurements should be considered in order to improve the performance of the systems
- The adoption of irrigation scheduling tools can be incentivised and increased by
 - i) publications in journals and
 - ii) lectures at field demonstration days addressing growers and consultants.



Please don't forget:
"More efficient precipitation water use implies a reduced need for additional irrigation water"^{1,2}

WHEN MOST PEOPLE THINK OF WATER RESOURCES, IT IS RIVERS, LAKES AND AQUIFERS THAT FIRST COME TO MIND.



BUT THERE IS ANOTHER IMPORTANT PIECE TO THE PUZZLE.



¹Molden (2007)

²Rockström et al (2007)