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Climate change adaptation in agriculture: an integrated assessment

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Aim

Assessing the consequences of climate, market, policy and technology changes and agricultural adaptation strategies on different farm types in the multifunctional landscape

Research questions

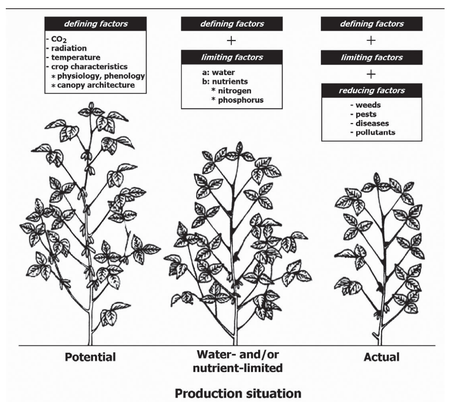
- What are the impacts of climate change, including extreme events, and technological development on crop yields, and what are main adaptation options?
- What are the impacts of climate, market, policy and technology changes and agricultural adaptation strategies on (socio-)economic indicators (e.g. food production, farmers' income) and environmental indicators (e.g. fertilizer, crop protection and energy use) for different farm types?
- Which factors contribute to farmers' willingness to adopt green and blue infrastructure and how does this contribute to adaptation for nature?
- What are the impacts of climate, market, policy and technology changes and agricultural adaptation strategies on the regional environment (e.g. nutrient leaching, GHG emissions?

Cross-sectoral

Multiple levels

Crop yields

Method: Crop model

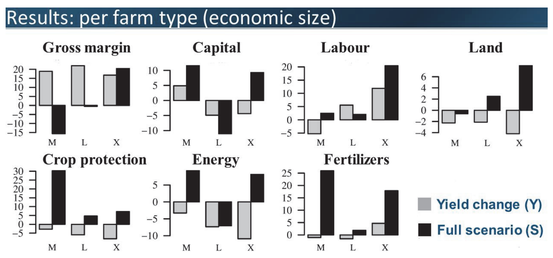


Method: AgroClimateCalender

Crop	Climate risk	Impact	Frequency 1990	2050 W+	2050 G
Ware potato	Heat wave	Decease of plant	12	61	24
	Warm and wet	Erwinia	6	19	11
	Warm winter	Storage problems	7	29	12
	Heavy precipitation	Rotting	10	12	15
Fodder maize	Heat wave	Reduces grain filling, reduces digestability	22	59	29
	Long dry period	,,	30	47	39
Tulip	Warm and wet	Botritus, fusarium	4	20	8
	Extremely hot days	Burning, delay in growth	2	20	6
	Heavy precipitation	Inundation	9	9	11
Grass	Long hot period	Grass deteriorates	15	85	31
Winter wheat	No risks				
Sugar beet	Warm winter	Loss of sugar content	7	29	12

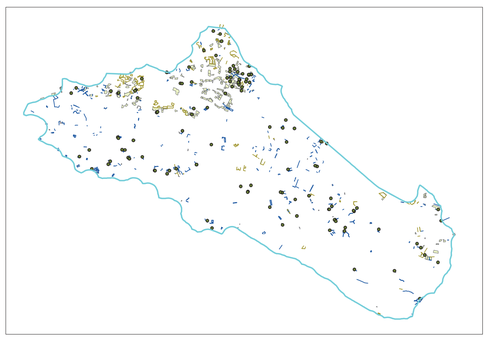
Farm performance

Method: Bio-economic modelling using individual farm data (FSSIM)

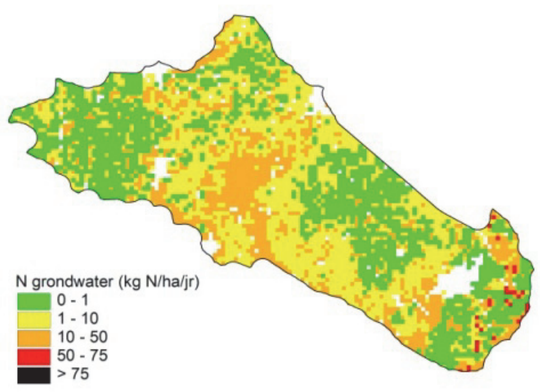


Agricultural nature management

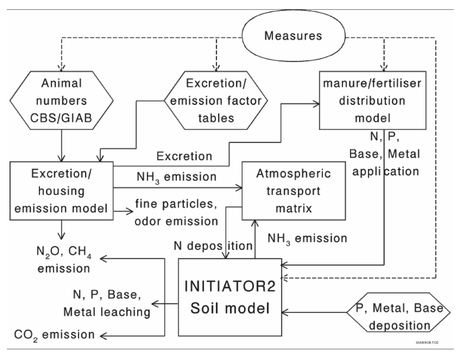
Method: Spatial regression analysis, cost-benefit analysis, stakeholder workshop



Regional environment

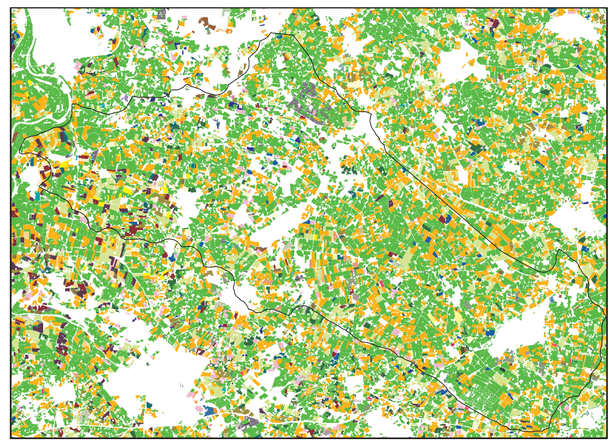


Method: Regional environmental modelling (INITIATOR)



Case study

Baakse Beek, Gelderland
Hotspot Dry Rural Areas



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Theme 3: Climate Adaptation for Rural Areas (CARE)
Project 3.2: Consequences of adaptation by farmers

Knowledge for Climate