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A new adaptation tool for Dutch farmers to cope with drought and excess water

Lodewijk Stuyt
Alterra, Wageningen, The Netherlands

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Problem with water


Action 1

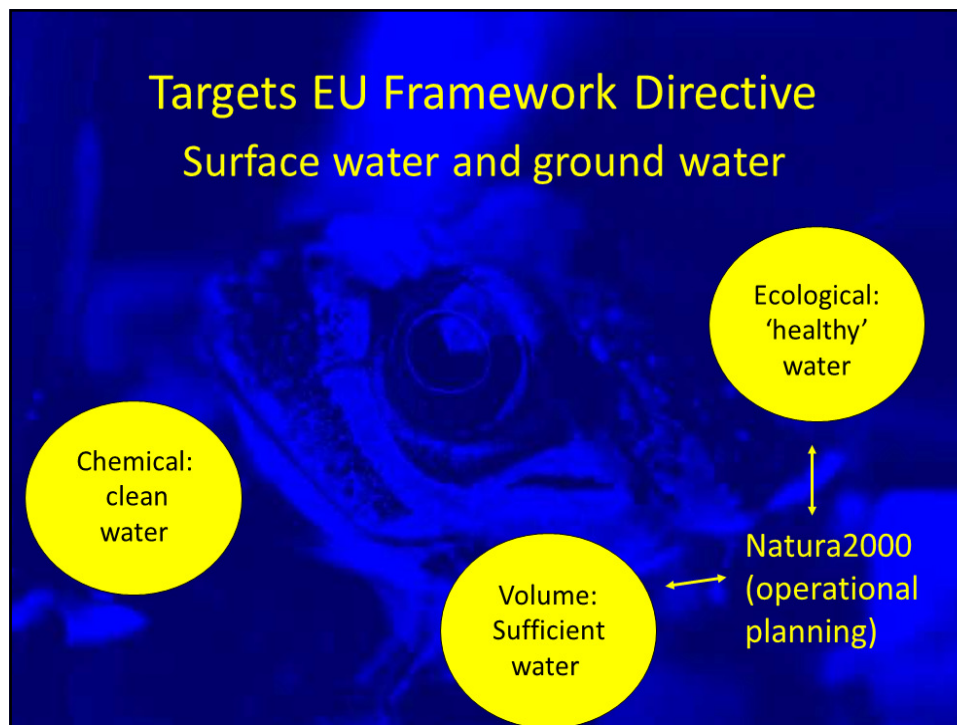
Action 2

Action 3

Results

Impact of results





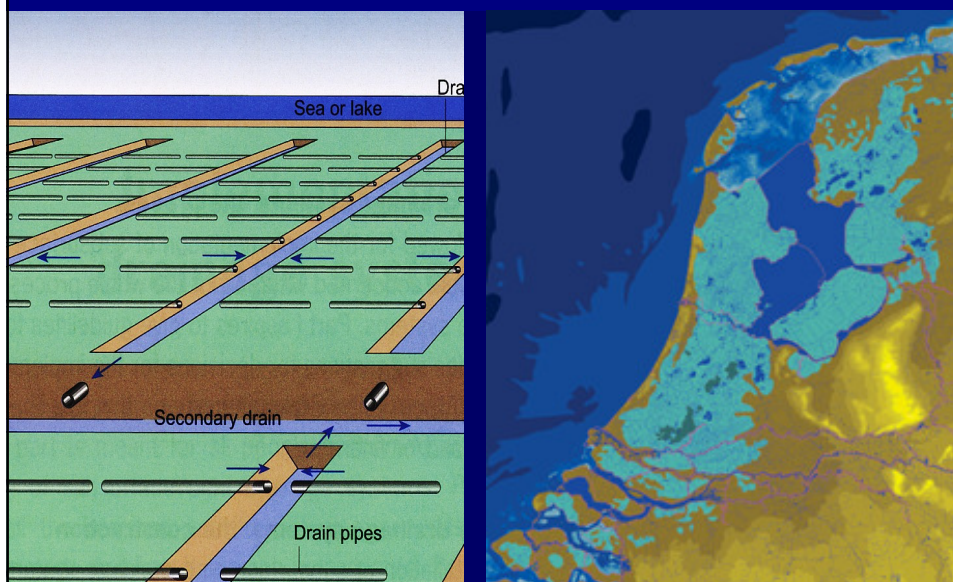
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➔ Problem

- * **Land drainage systems** of farmers:
very effective yet inflexible & too intense
- * Negative impacts:
 - water *quantity*: too dry in summer
 - water *quality*: salinization
 - water *quality*: leaching nutrients & pesticides
- * Climate Change: impacts getting worse

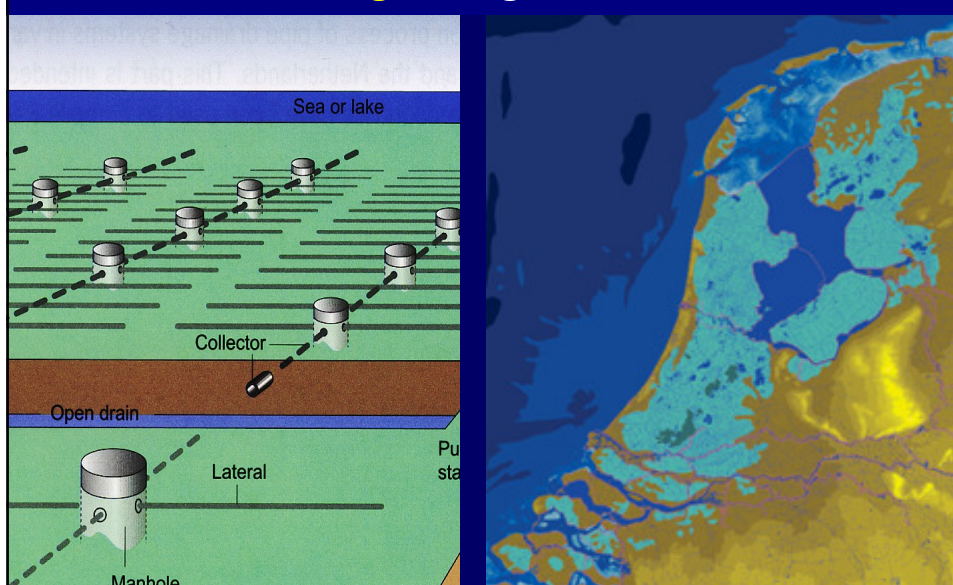
Land Drainage: Proven Technology

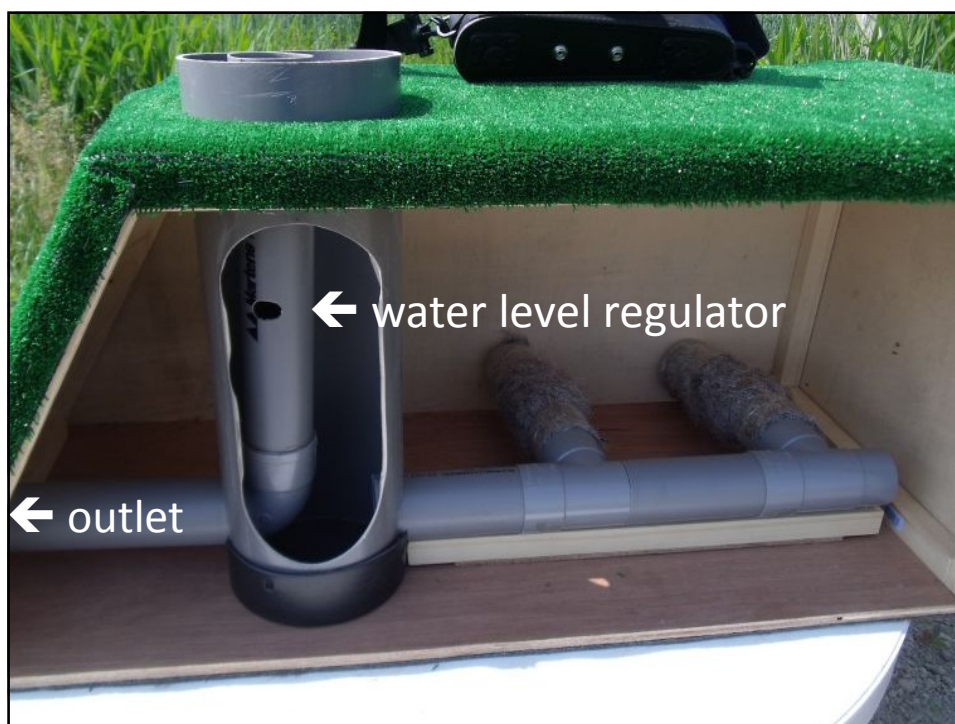
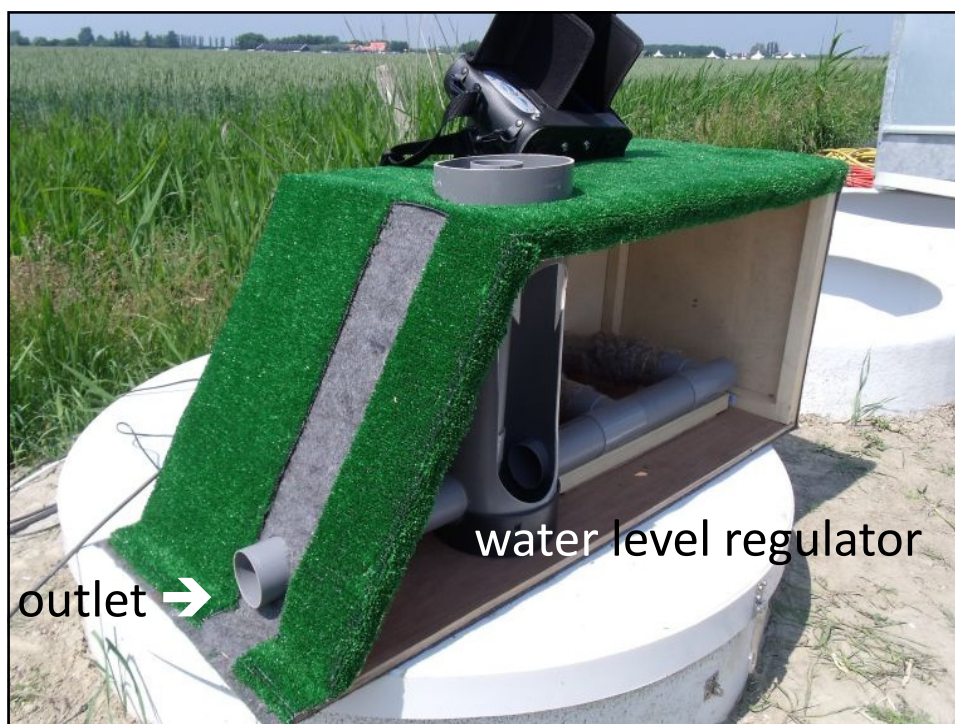
Conventional Drainage of agricultural lands



Action 1: Introduction of

Controlled Drainage of agricultural lands









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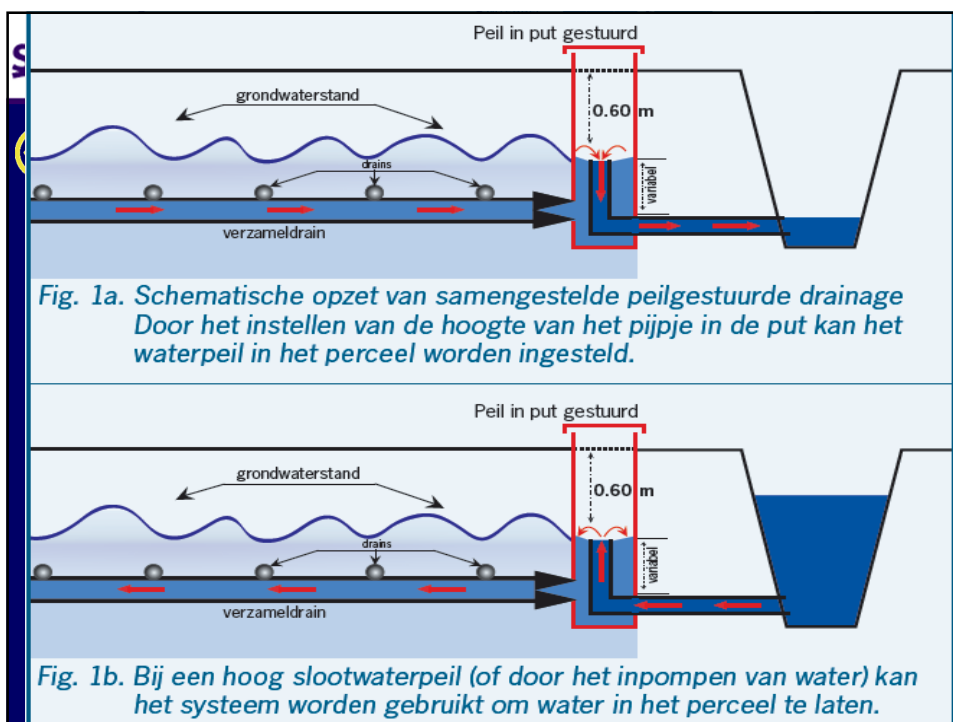
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Drainage: iets voor u?



U kunt als groep agrarisch ondernemers, bijvoorbeeld uw studieclub, of andere belangstellenden een excursie aanvragen naar het bedrijf van Vermeer. Dit biedt u de gelegenheid dit drainagesysteem te bekijken, u hierover te laten voorlichten over de (on)mogelijkheden ervan en erover te discussiëren. U kunt zich hiervoor opgeven bij Abco.debuck@wur.nl of rene.vermeer@hetnet.nl.





Foto van een verzamelput met regelbaar peil





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➡ **Action 1**
Introduction of 'controlled drainage'

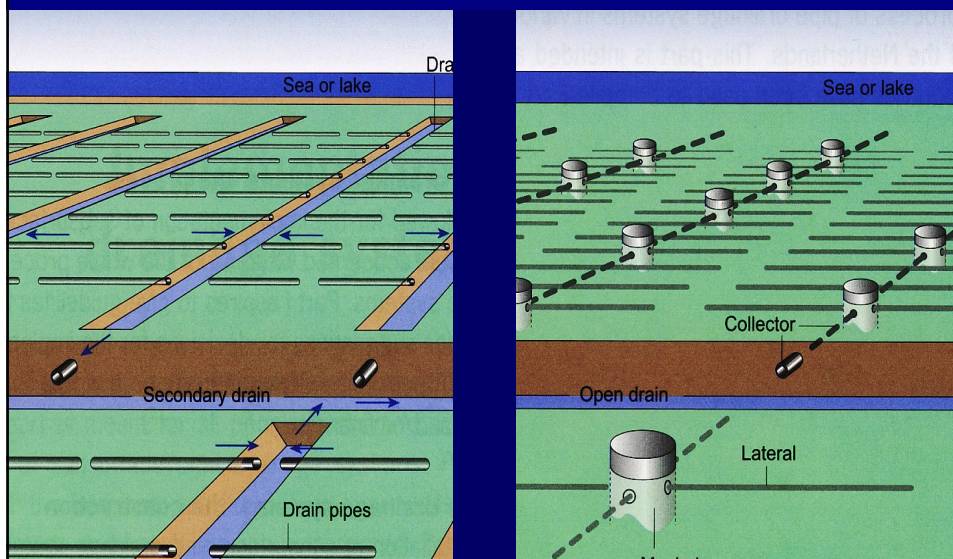
Claims:

- 1 water tables are up: water conservation
- 2 higher crop yields (subsurface irrigation)
- 3 incidental groundwater storage: security
- 4 improved use of nutrients: leaching is down
- 5 salinization is down (climate change)

➔ farmers: local water managers

Land Drainage: Proven Technology

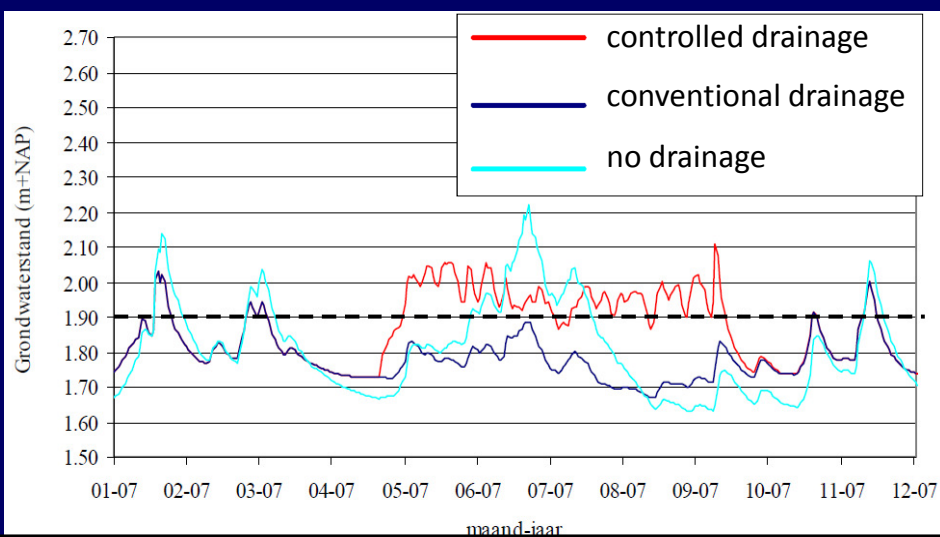
Conventional Drainage **Controlled Drainage**



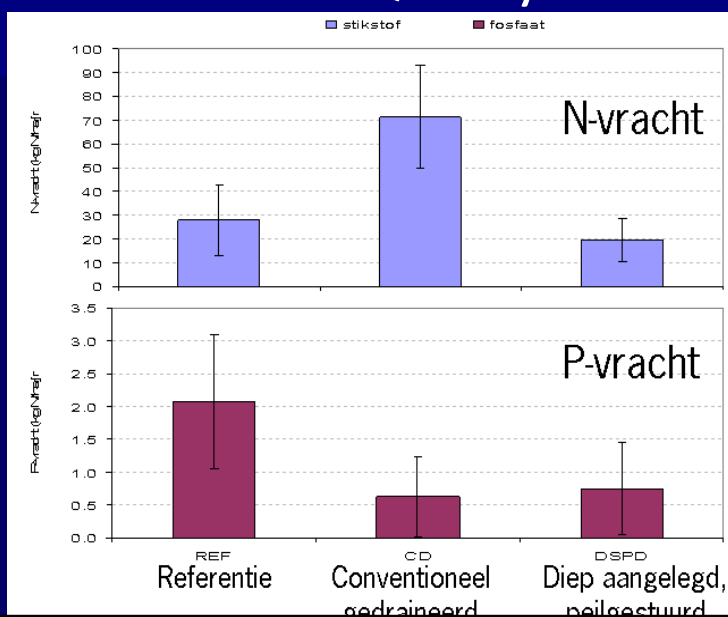
➡ Action 2





- * **model study** to verify claims
- * identify 'pros' & 'cons'
- * better control groundwater table
- * better control leaching nutrients, pesticides

Ground Water Table Control



Drain Water Quality Control



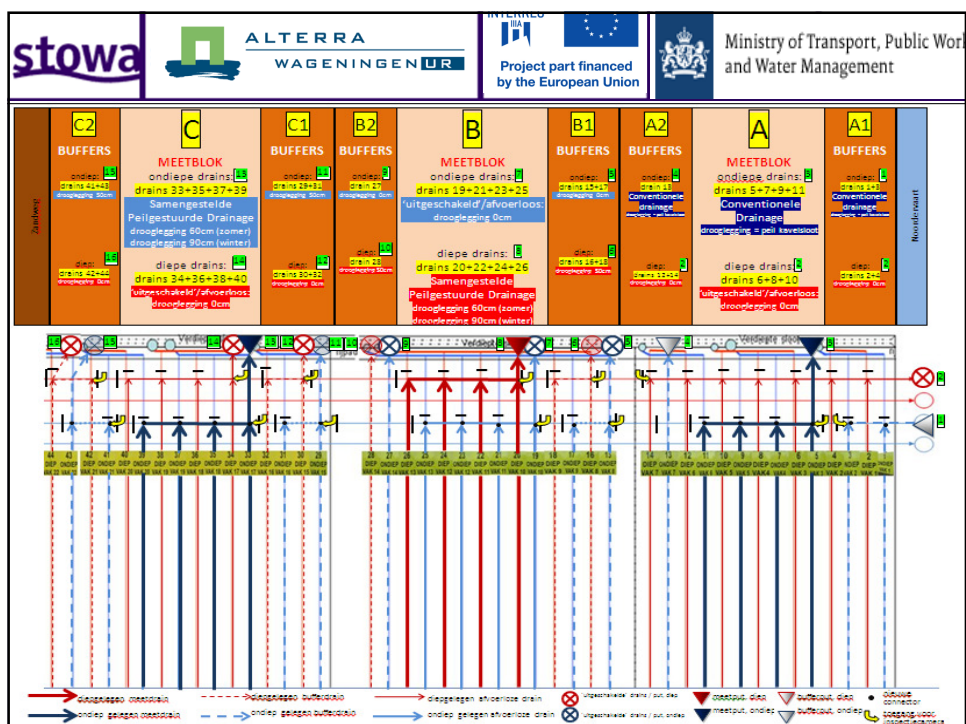
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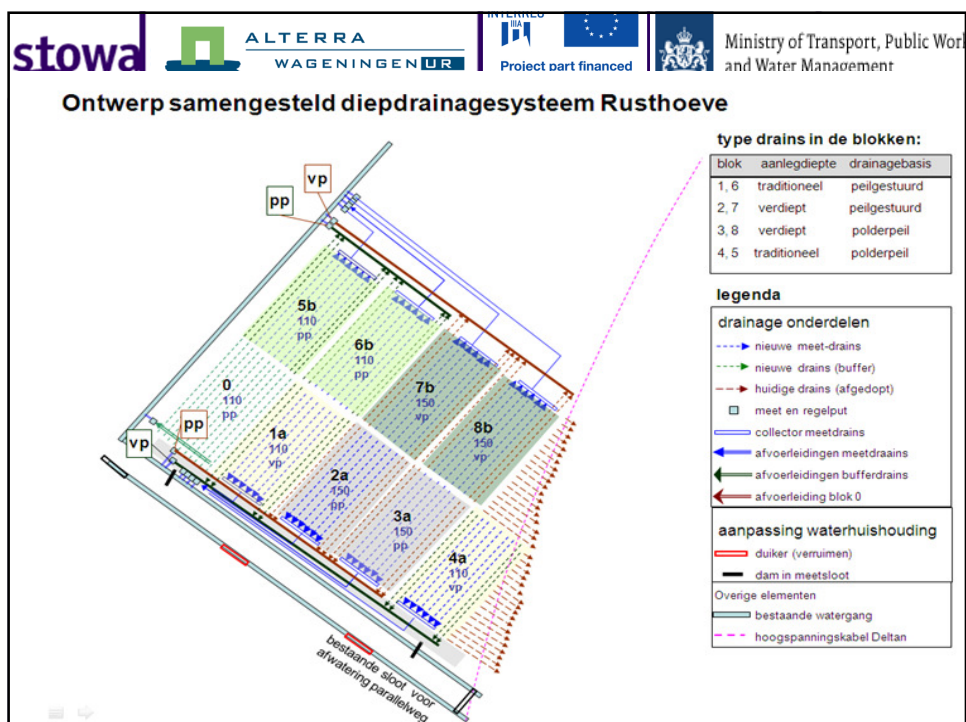
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➔ Action 3





Field verification of forecasted impact(s) of new drainage design:


- * 2 locations: scientific monitoring
- * 5 locations: operational monitoring
- * 25 locations: farmers' experiences
- * field **demonstrations**
- * **meetings** with stakeholders, farmers, scientists, contractors (certification)



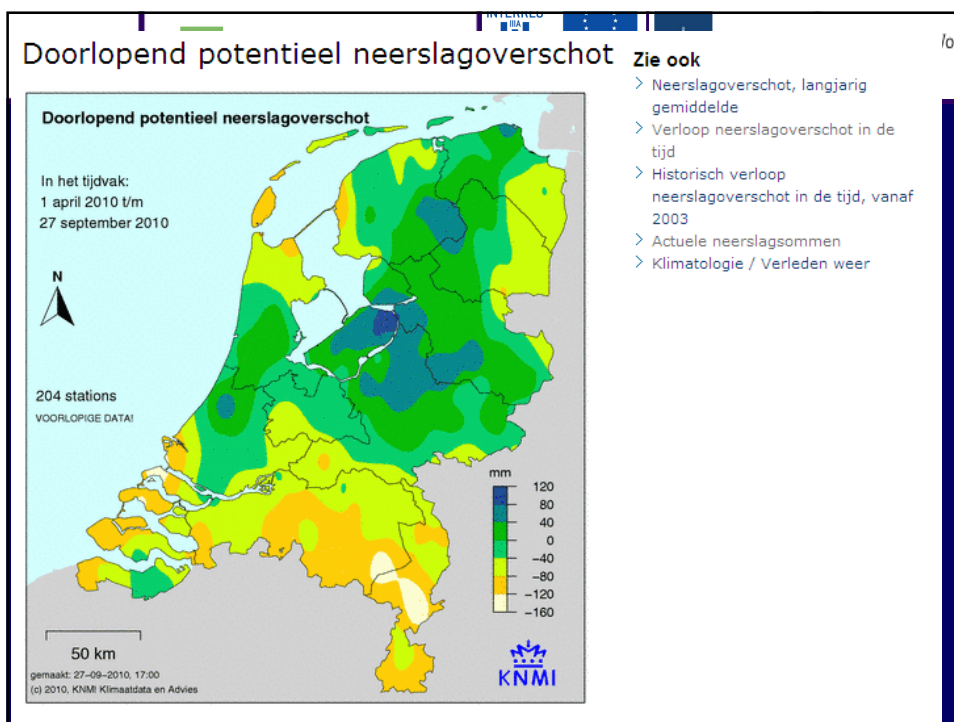




 **Results**

- 1 Farmers: subsurface irrigation!
- 2 Policy Makers: average groundwater levels in summer are up!
- 3 Flexible groundwater storage
- 4 Impact on water quality (N, P)?
(European Framework Directive)








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Impact of results

- * Nationwide management of water scarcity, -quality
- * Management coastal salinity
- * New awareness of farmers



Controlled drainage: Linking agriculture, water and nature

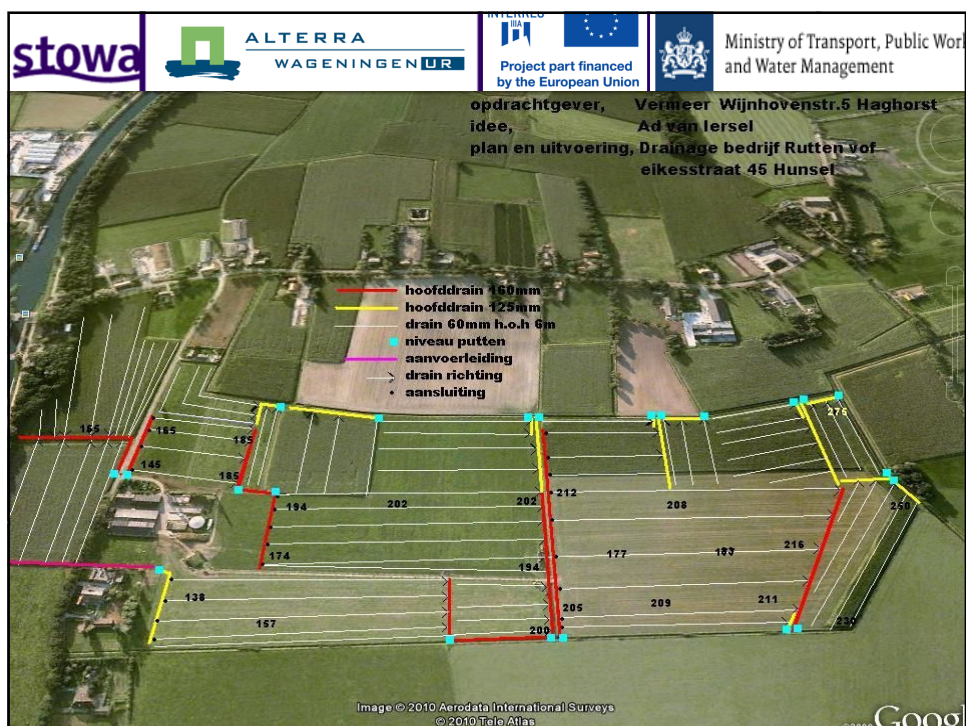
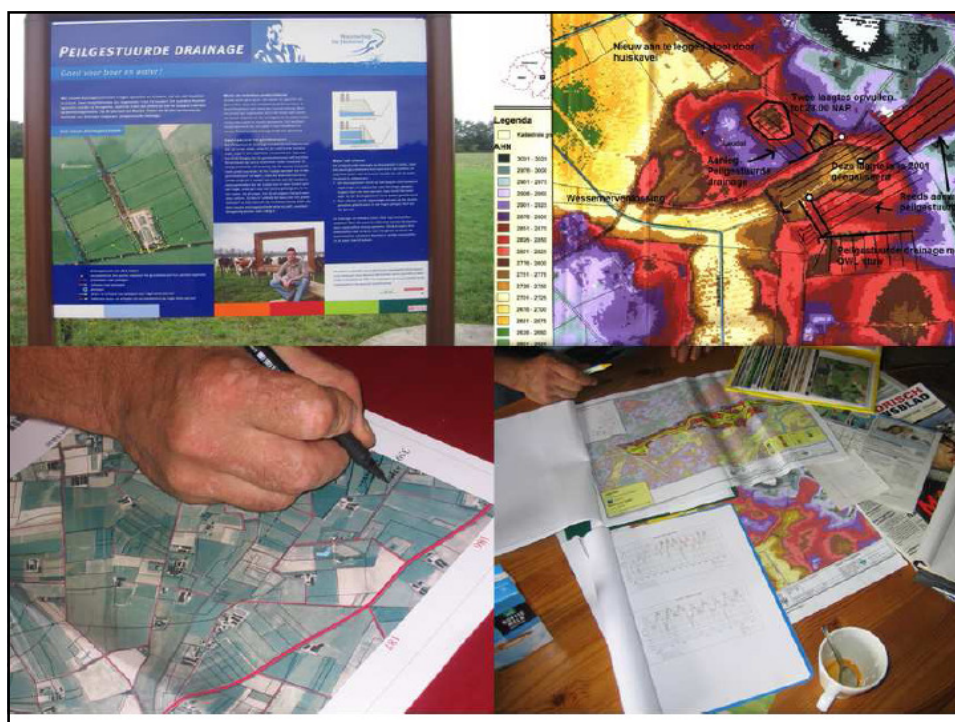






Involvement is high

Expectations are high

We can't wait....

Ministerie van Verkeer en Waterstaat



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➤ **Conclusions – the Future**

- * Farmers very positive: I decide!
- * Policy makers: important tool for water management
- * spreading rapidly over NL
- * automation (weather forecast)
- * good option for many Deltas

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Thank You!