



## SUB-IRRIGATION AND CONTROLLED DRAINAGE INCREASE YIELDS AND MITIGATE ACID LOADING IN FINNISH CULTIVATED ACID SULFATE SOILS



Photo: Rainer Rosendahl

**Seija Virtanen**  
seija.virtanen@tukisaatio.fi

Jaana Uusi-Kämpä  
Kari Ylivainio  
Peter Österholm  
Markku Yli-Halla

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## L'IRRIGATION SOUTERRAINE ET LE DRAINAGE CONTRÔLÉ AUGMENTENT LES RENDEMENTS ET ATTÉNUENT LA CHARGE ACIDE DANS LES SOLS SULFATÉS ACIDES FINLANDAIS



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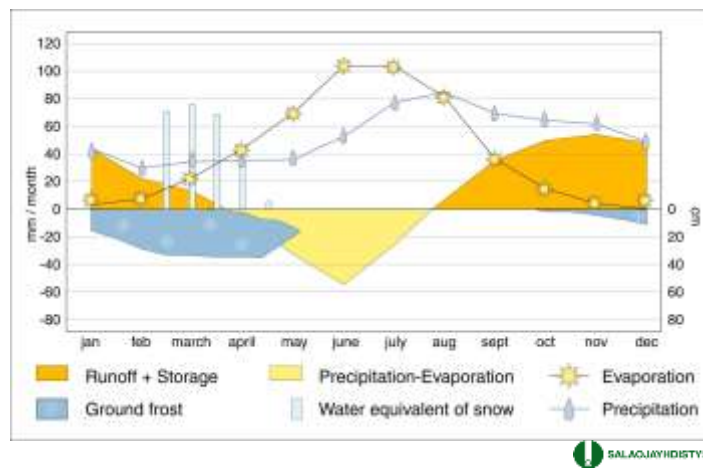
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## Presentation outlines

1. Background information
2. Experimental setup
3. Results
4. Discussion
5. Conclusion

## Hydrological conditions in Finland





## Prevalent water management systems in Europe

Code for normal presence and purpose of an existing water management system in agricultural land on more than 50% of the Soil Typological Unit (STU)



<http://esdac.jrc.ec.europa.eu/resource-type/european-soil-database-maps>

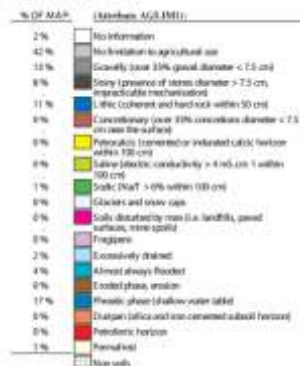
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## The most important limitation to agricultural land use in Europe

Code of the most important limitation to agricultural use of the STU



<http://esdac.jrc.ec.europa.eu/resource-type/european-soil-database-maps>

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## Acid sulphate soils in Finland

- The largest AS areas in Europe are located in Finland
- AS fields have high economic value due to their high yields
- Acid loads from fields are hazardous to aqueous ecosystems
- Large fish kills have occurred after dry summers (e.g. 2006)



## Acid sulphate soils in Finland



## Aim of study

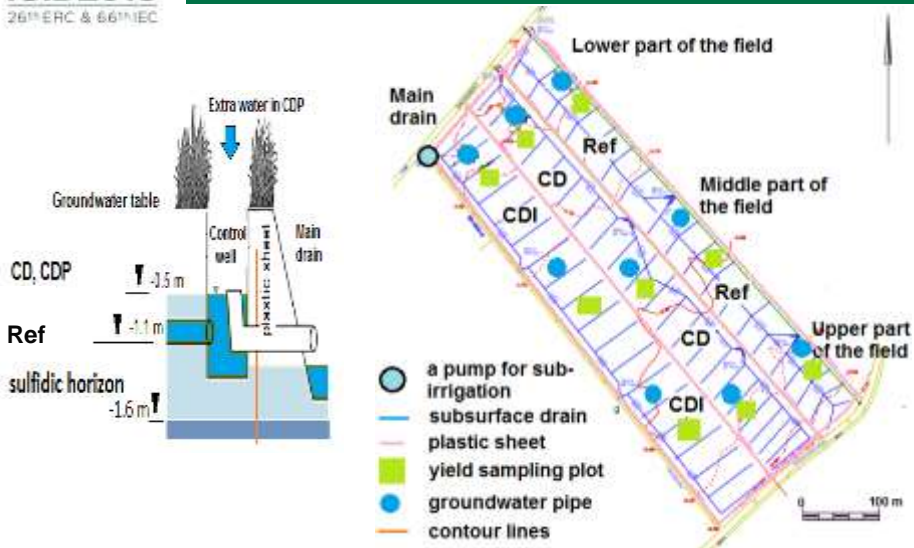
Can off-site hazards of AS soils be mitigated by controlled drainage and subirrigation ?

-> Hypothesis: acid loads decrease

Do controlled drainage and subirrigation result in better yields ?

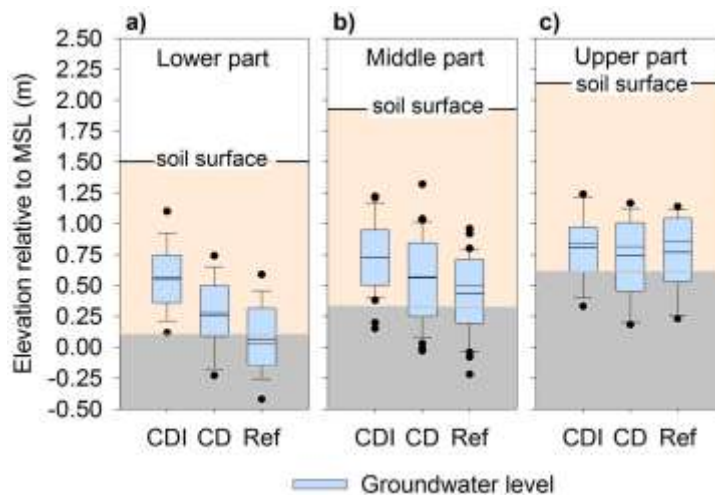
-> Hypothesis: yields increase

## Experimental set up



## Results I

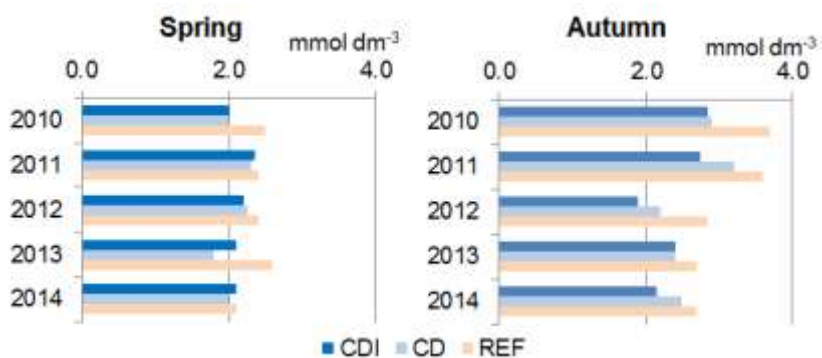
### Groudwater table variation in the fields



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## Results II

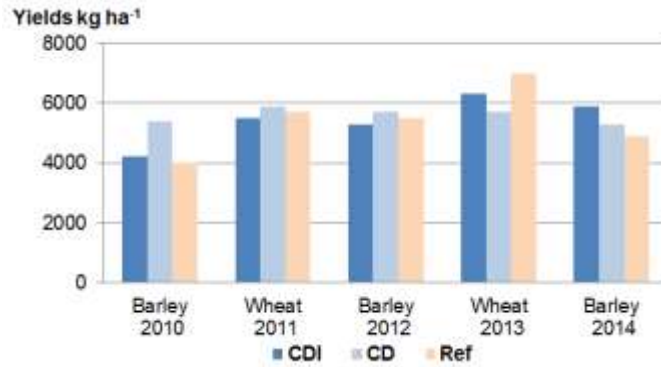
### Acidity of discharge water



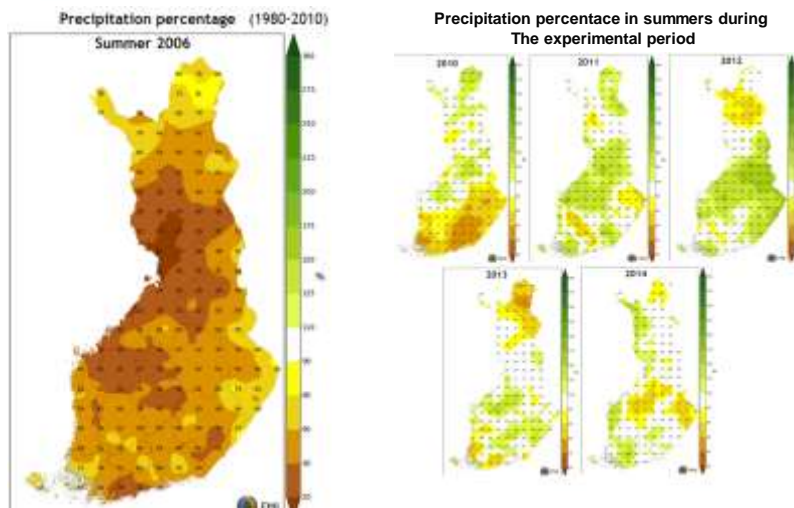
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## Results III Yields



## Discussion





## Conclusions

- The off-site hazards of AS soils can be slightly mitigated by controlled drainage and subirrigation  
-> Effects in dry summer are unknown
- Yields were higher only in one summer  
-> Effects in dry summer are unknown



Thank you for your attention!

**Merci beaucoup pour votre attention !**

Acknowledgements to:

