



Sveriges lantbruksuniversitet
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Reed canary grass on peat soils in northern Sweden

– carbon dioxide emission measurements on restored agricultural land

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**Hushållnings
sällskapet**



Reed canary grass- the plant

A tall grass- 2.5 m
Perennial 10-15 years
Rhizomes
Deep root distribution
Natural habitats
Nutrient rich shores
Ditches, field margins
Abandoned fields



Delayed harvest –spring harvest



- Photographer: Håkan Örberg

Cut in autumn
Dry and harvest in
spring

- + the crop is dry
- + less ash
- + less N, K, Cl, P

- winter
decomposition
- harvest losses

Agriculture on peatland in Sweden

- 1800s
 - Harvest of sedges
- 1900s
 - Ditching
 - Sowing of fodder grasses
- 1946
 - Cultivated peat and gytja in Sweden 705000 ha
- 1996
 - 300000 ha of this still cultivated

Abandoned non-forested agricultural land



Data: Swedish National Forest Inventory

Reed canary grass on peatland

1900s Fodder crop

1990s

- Energy crops promoted to use surplus agricultural land – Conversion 90

Today

- 1000 ha in Sweden
- 20 000 ha Finland
- Concern about risk of increased carbon emissions



Utilisation of RCG

Present use

- Bales or bulk RCG as fuel
- Briquetting to fuel
- Bedding for livestock
- Fibre additive for livestock



Future use

- Biogas
- Ethanol



The restoration project Fårträsk in Malå



Drainage and sedimentation pool



Removal of Sedges and bushes



Soil preparation

preparing miller
crushing of roots and slash



Scum leveller
moving soil to the middle



Established Reed canary grass

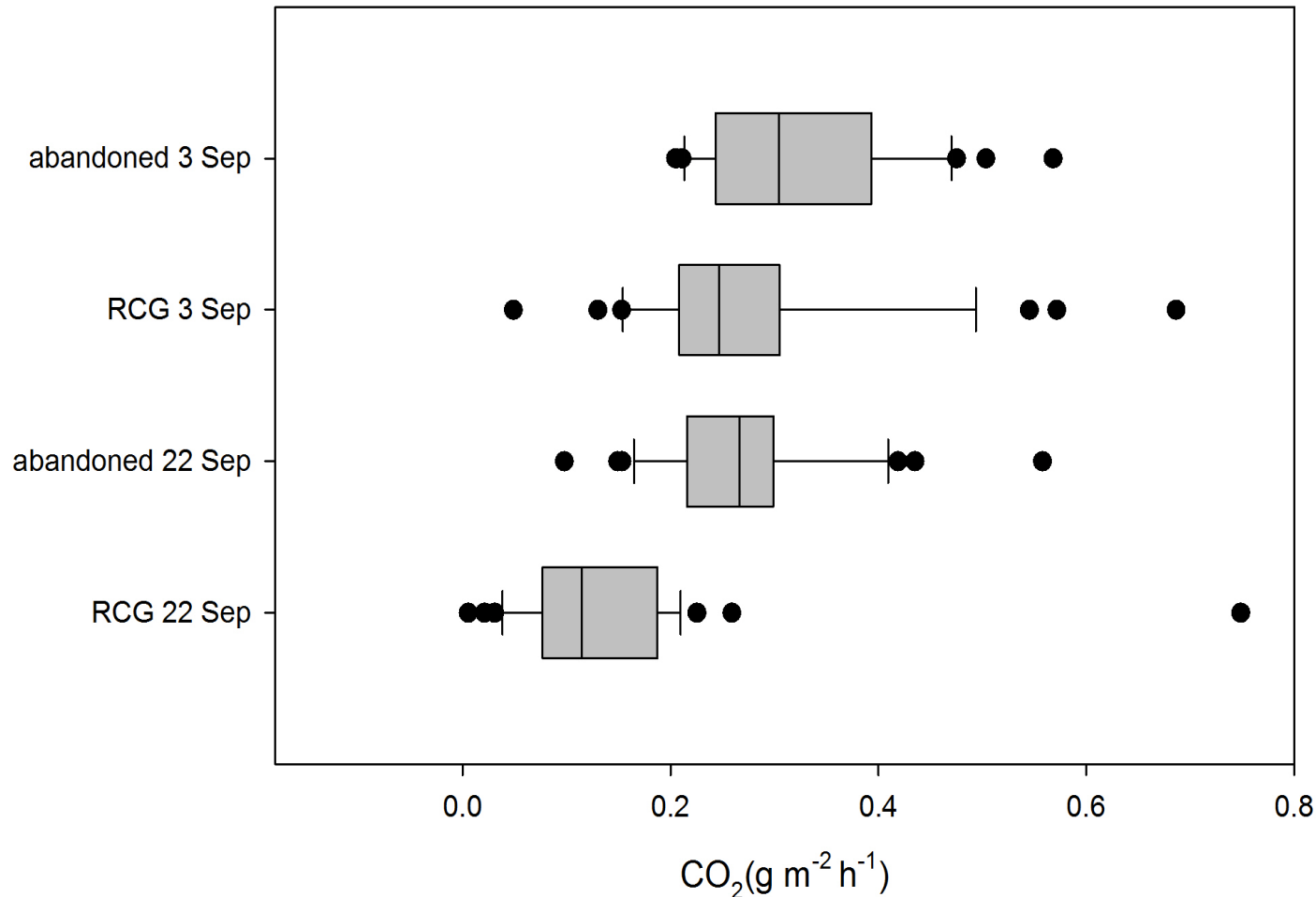


Measuring CO₂ emission





CO₂ emission from abandoned and reed canary grass field



Will come in a special issue on greenhouse gases in agriculture
in Acta Agricultura Scandinavica Section A Animal Science

Experiment with groundwater regulation



Drain trap



Effect of surrounding vegetation

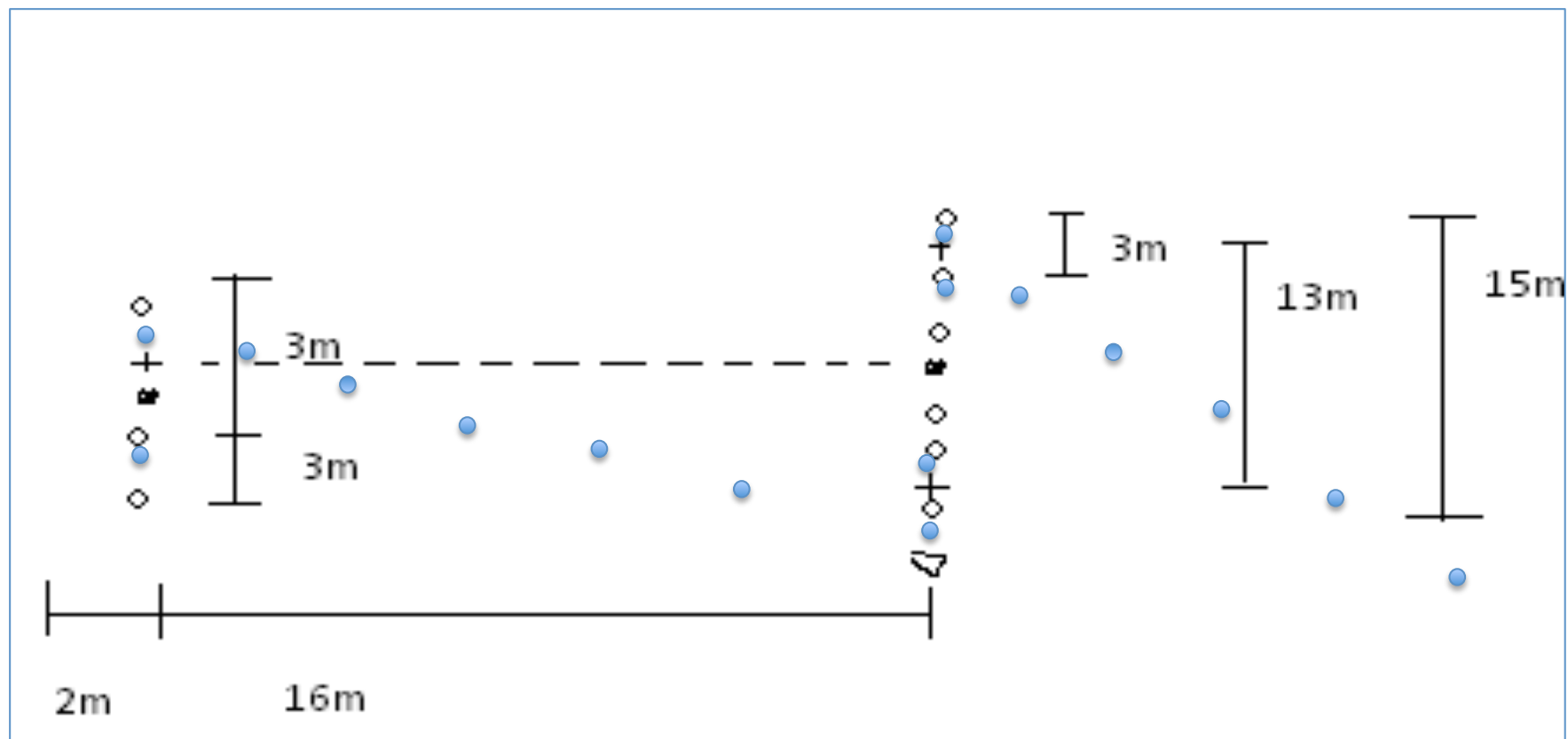
bare plots cut 2010



Vegetated plots

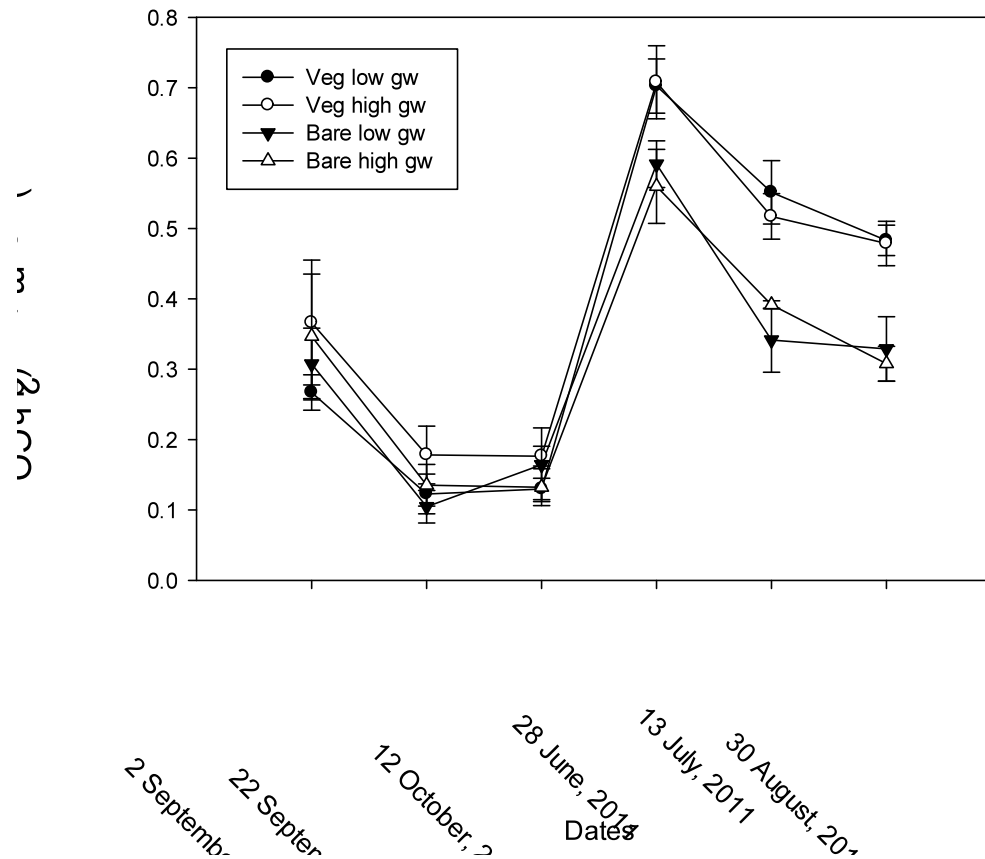


Layout of measurements in regulation plots



Results

Carbon dioxide emissions



Groundwater level

- Drain trap plots 66-86 cm and free-draining plots 80-93 cm below the soil surface
- Only significant elevation in drain trap plots in June 2011

CO₂ emissions

- No significant effect of drain traps
- Higher emissions on vegetated plots 2011

Plant biomass

- No significant effect

Conclusions

- In the establishment year there was no enhanced CO₂ emission from RCG, rather the opposite
- The soil was more compact and had higher groundwater level and water content on the RCG-field
- Drain traps to increase the groundwater level during the growing season had no effects on RCG growth and CO₂ emissions



Thank you for listening

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Här växer energigräset rörflen
–Ett klimatsmart biobränsle!

