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JORDBRUKET OCH KLIMATET

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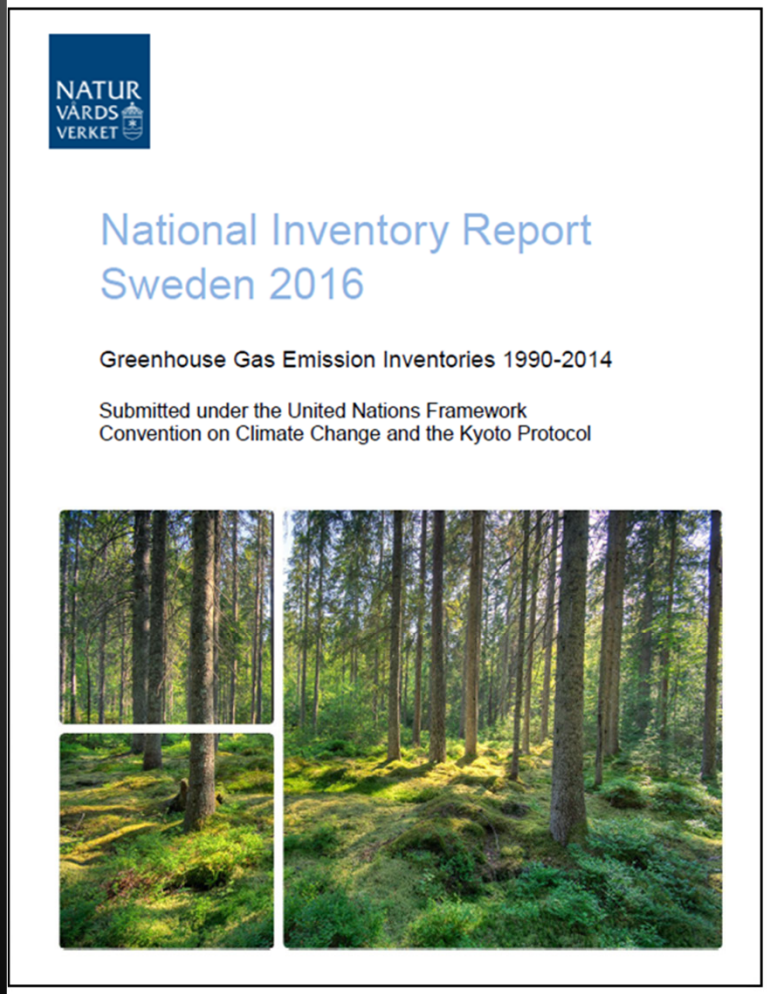
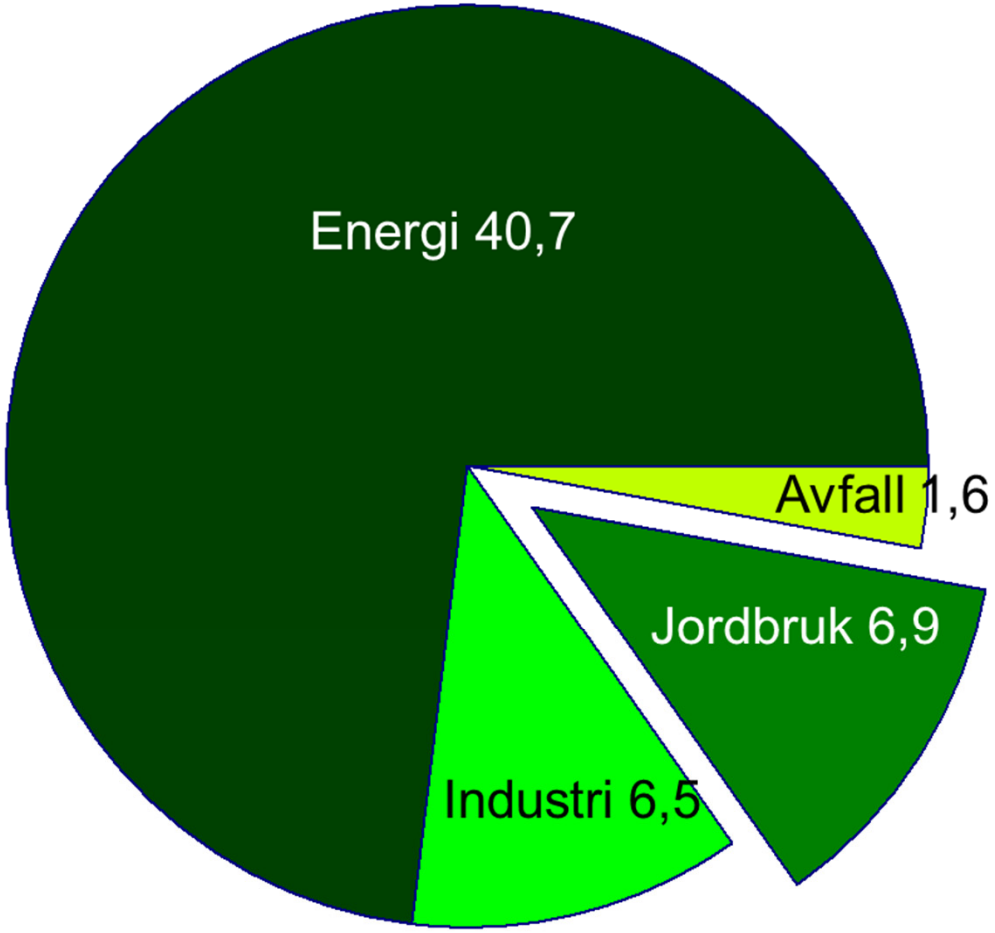
BECC

FORMAS

Biodiversity and Ecosystem services in a Changing Climate

Sveriges emissioner, 56 Mton (eller Tg) CO_2eq $år^{-1}$





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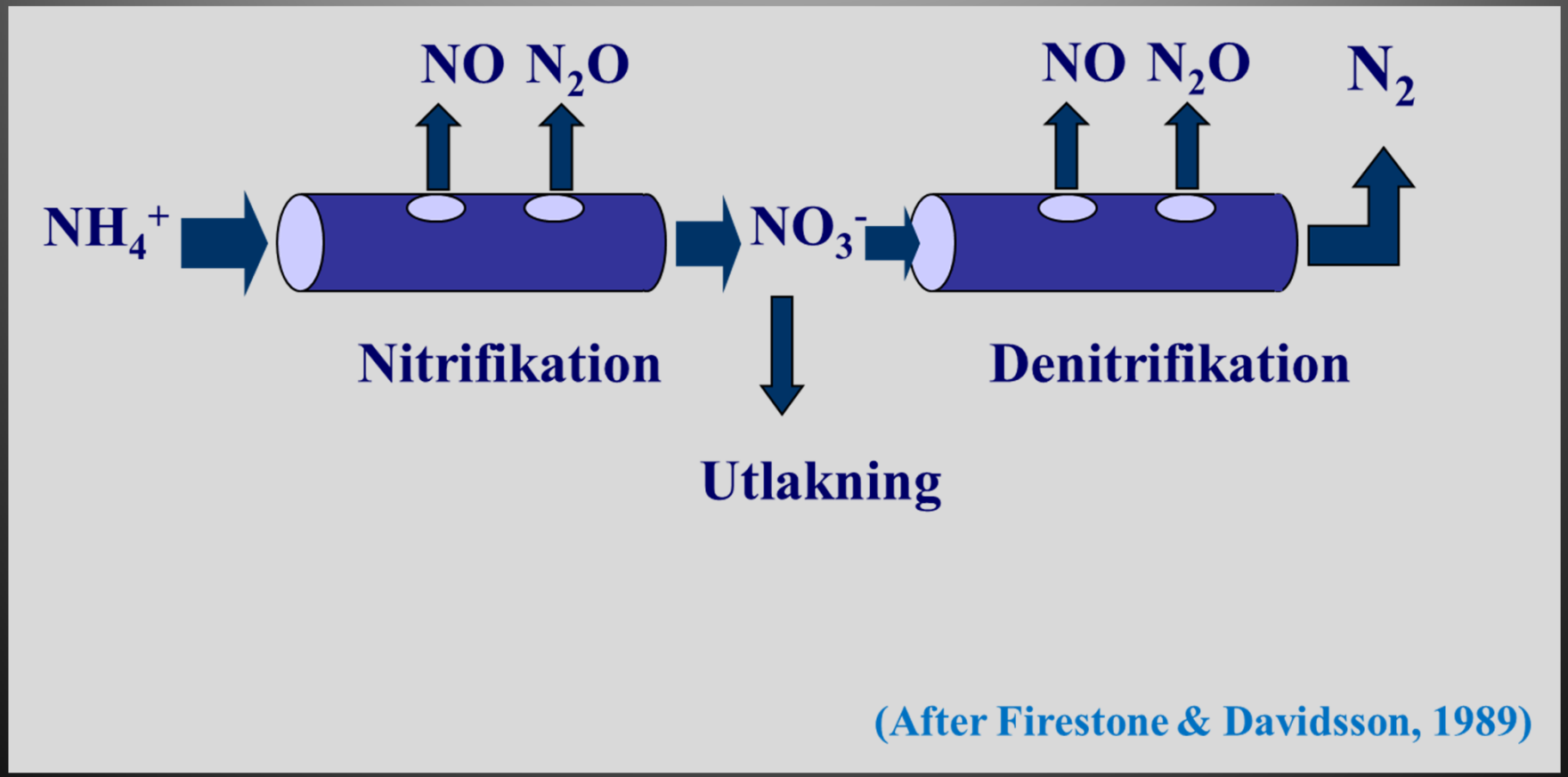
Komplex reglering an lustgasproduktion, förenklas genom “Hole in the pipe” ”Hål i rören”



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Svårt att mäta lustgas

- P.g.a. stor rumslig och tidsmässig variation

Antingen

- Kammarmetodik eller
- Mikrometeorologiska metoder, mäter kontinuerligt och yt-integrerande, men är dyra och kräver fält på 6-10 ha.

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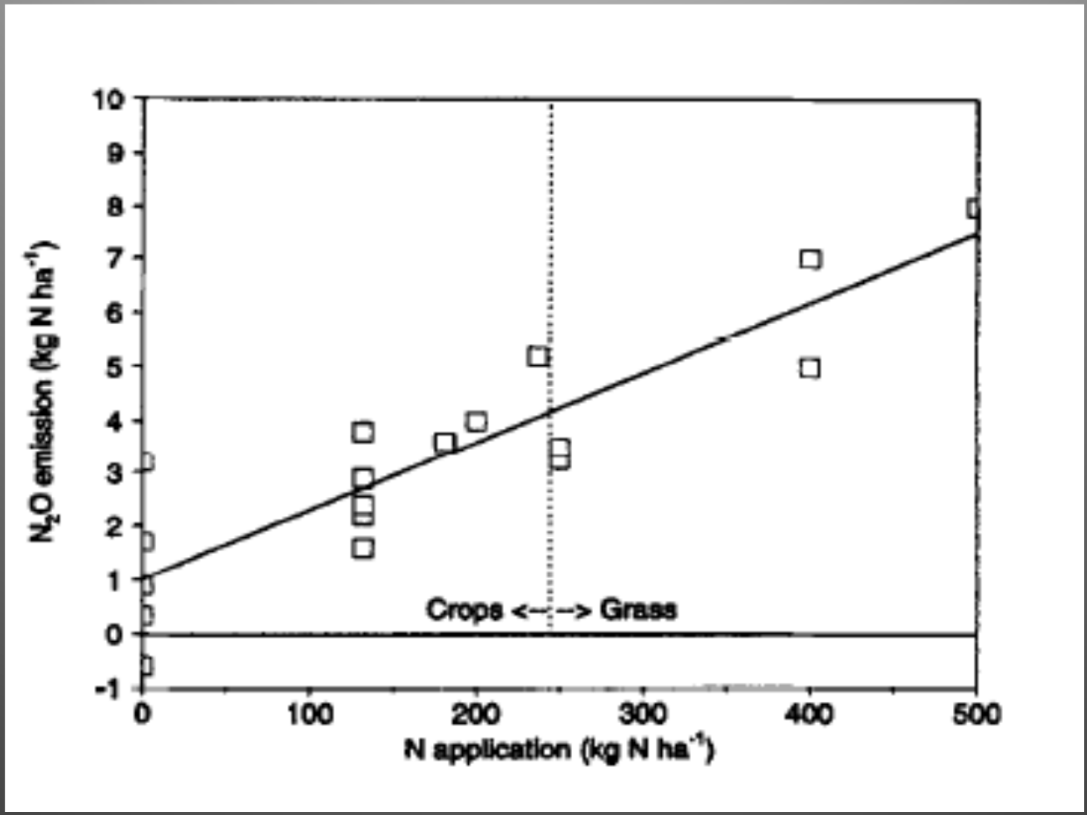
Bouwman, 1996, used in IPCC 1996 guidelines



- EF calculated based on liner relationship
- Fertilizer induced EF=1.25%,
- background emission (crop residue, mineralization)=1kgN/ha

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Arbete pågår: 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

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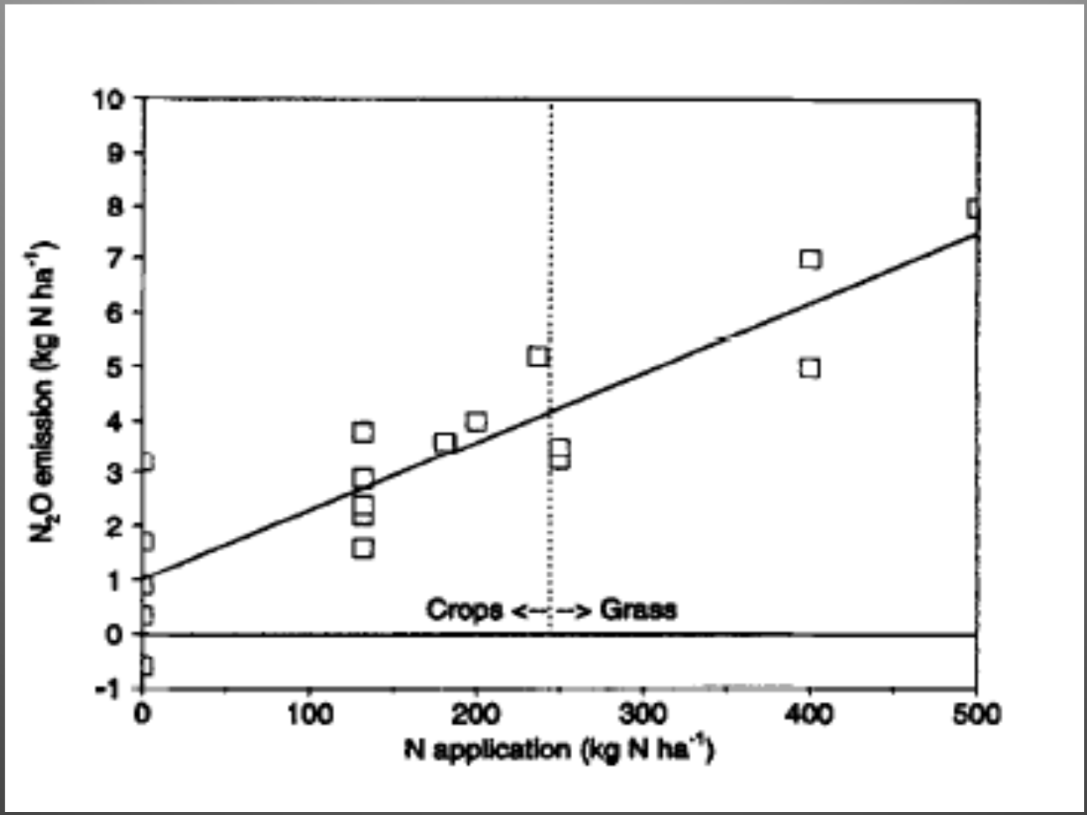

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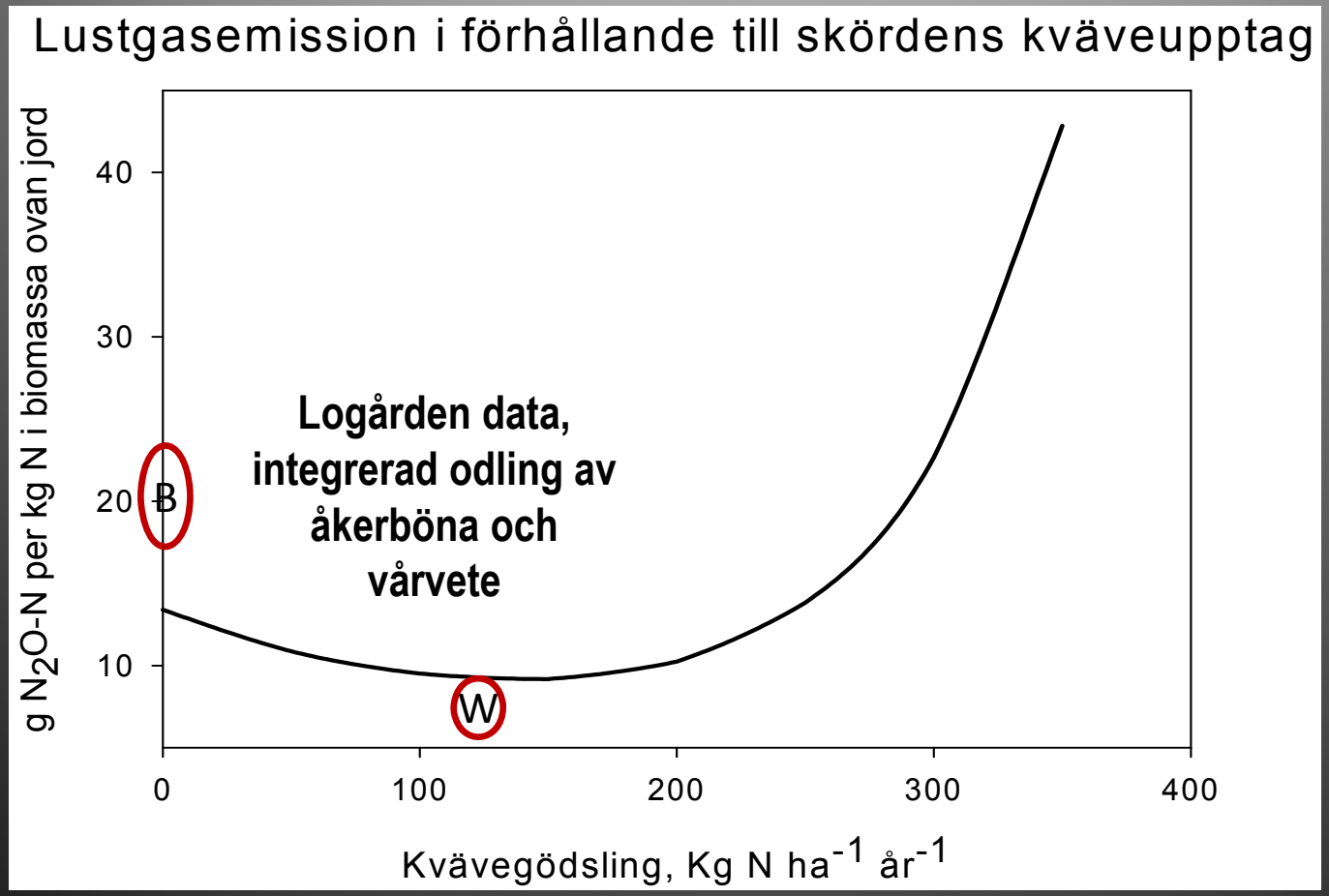
N_2O intensitet



efter Van Groenigen et al. 2010, Towards an agronomic assessment of N_2O emissions: a case study for arable crops. European Journal of Soil Sciences

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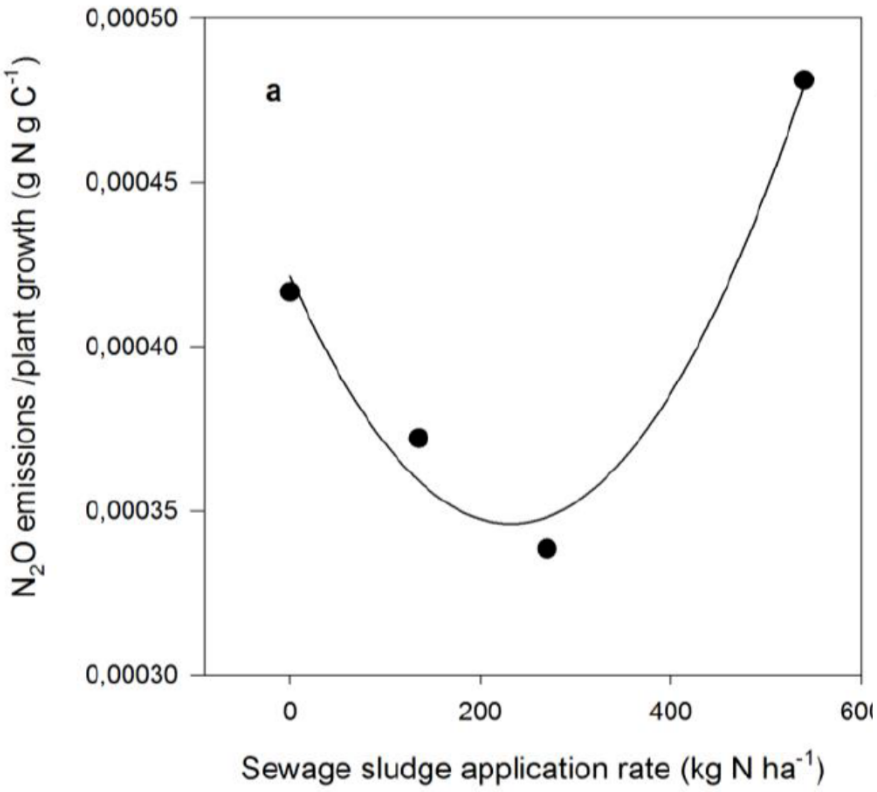
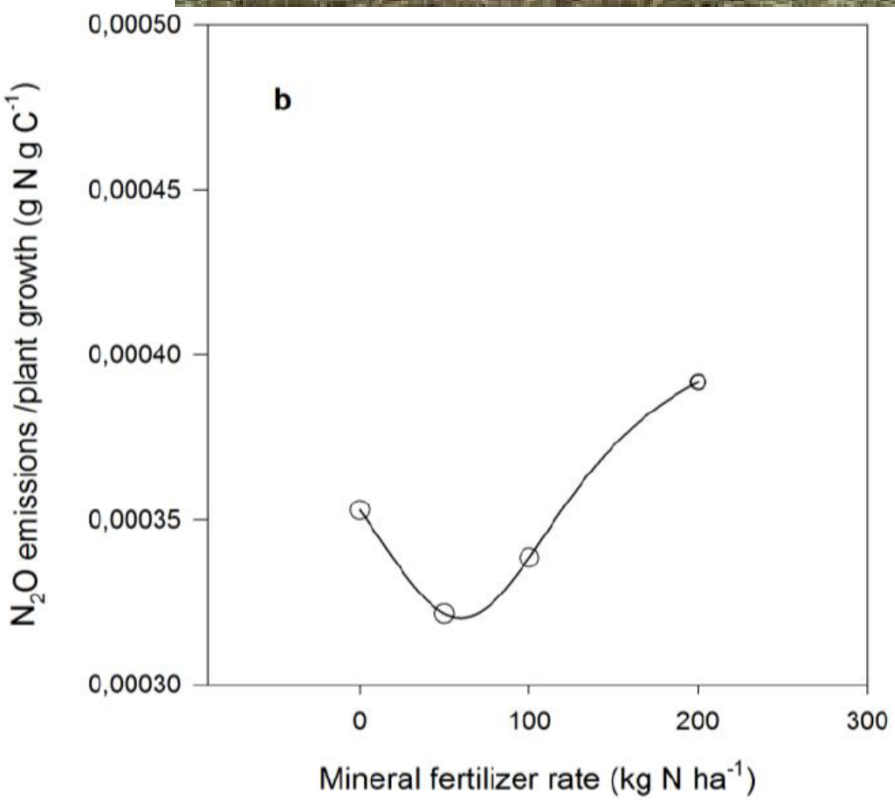
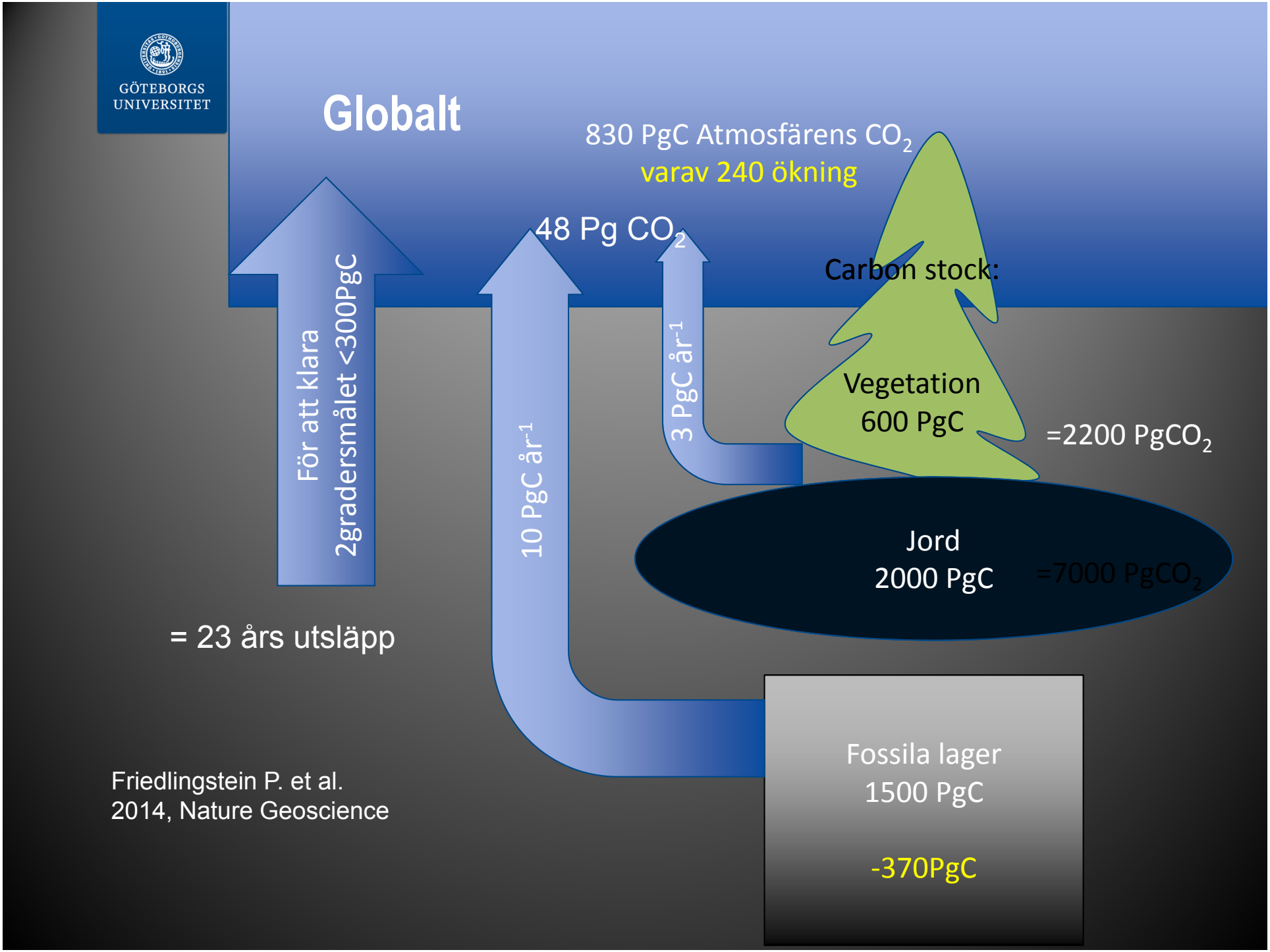
Optimum fertilization for minimum N_2O



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Globalt
830 PgC Atmosfärens CO_2
varav 240 ökning
48 Pg CO_2
För att klara 2gradersmålet <300PgC
= 23 års utsläpp
10 PgC $år^{-1}$
3 PgC $år^{-1}$
Carbon stock:
Vegetation
600 PgC
=2200 $PgCO_2$
Jord
2000 PgC
=7000 $PgCO_2$
Fossila lager
1500 PgC
-370PgC
Friedlingstein P. et al.
2014, Nature Geoscience

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Ministère de l'Agriculture, de l'Agroalimentaire et de la Forêt

4 PER 1000

CARBON SEQUESTRATION IN SOILS FOR FOOD SECURITY AND THE CLIMATE

The quantity of carbon contained in the **atmosphere** increases by **4.3** billion tons every year

+4.3 bn tons carbon / year

CO_2 emissions

Forests ⊖⊖

Oceans ⊖⊖

Human activities ⊕⊕⊕⊕

Deforestation ⊕

⊖ *absorption* ⊕ *emission*

The world's **soils** contain **1 500** billion tons of carbon in the form of organic material

absorption of CO_2 by plants

storage of organic carbon in soils

1500 bn tons carbon

If we increase by 4‰ (0.4%) a year the quantity of carbon contained in soils, **we can halt the annual increase in CO_2 in the atmosphere,** which is a major contributor to the greenhouse effect and climate change

increased absorption of CO_2 by plants :

farmlands, meadows, forests…

+4‰ carbon storage in the world's soils

= more fertile soils
= soils better able to cope with the effects of climate change

HOW CAN SOILS STORE MORE CARBON?

The more soil is covered, the richer it will be in organic material and therefore in carbon.
Until now, the combat against global warming has largely focused on the protection and restoration of forests.
In addition to forests, we must encourage more plant cover in all its forms.

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Never leave soil bare and work it less, for example by using no-till methods

Introduce more intermediate crops, more row intercropping and more grass strips

Add to the hedges at field boundaries and develop agroforestry

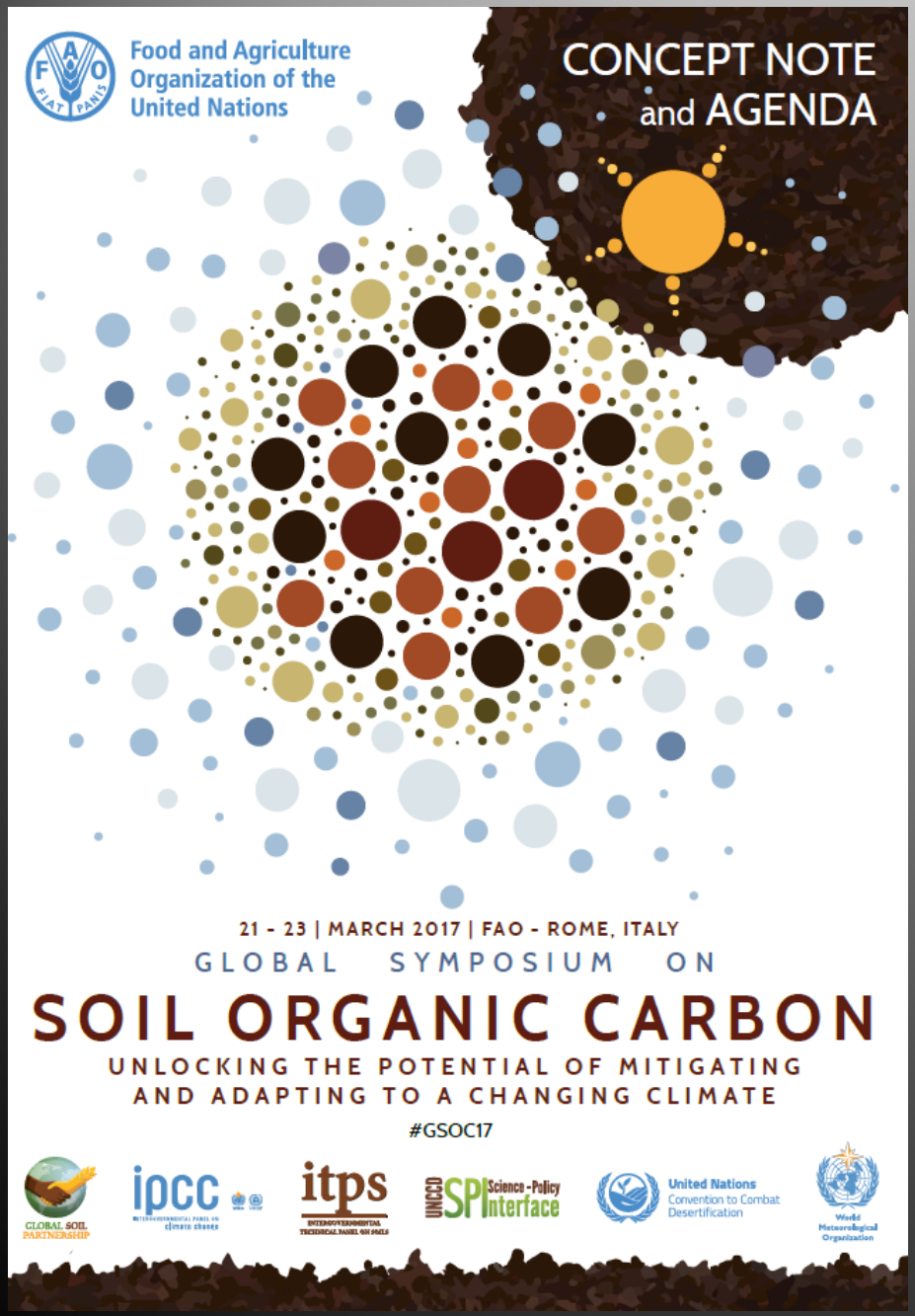
Optimize pasture management – with longer grazing periods, for example

Restore land in poor condition e.g. the world's arid and semi-arid regions

*"This international initiative can reconcile the aims of **food security** and the **combat against climate change,** and therefore engage every concerned country in COP21."*

Stéphane Le Foll, French Minister of Agriculture, Agrifood and Forestry

https://www.4p1000.org/



Re-wetting drained peatlands can potentially reduce large greenhouse gas emissions. Mr. Hongxing He, University of Gothenburg, Sweden

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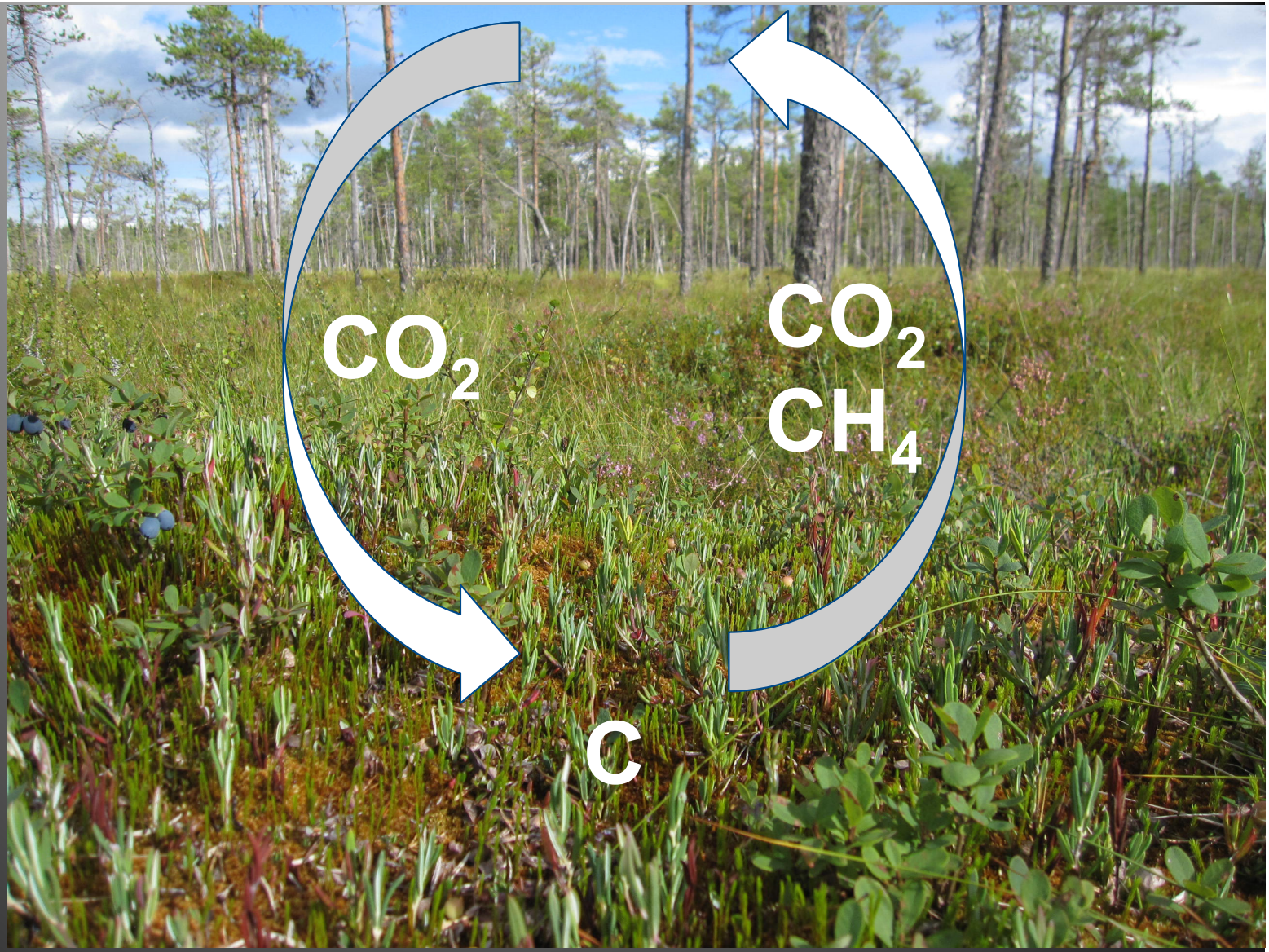

VÄXTHUSGASER FRÅN VÅTMARKER

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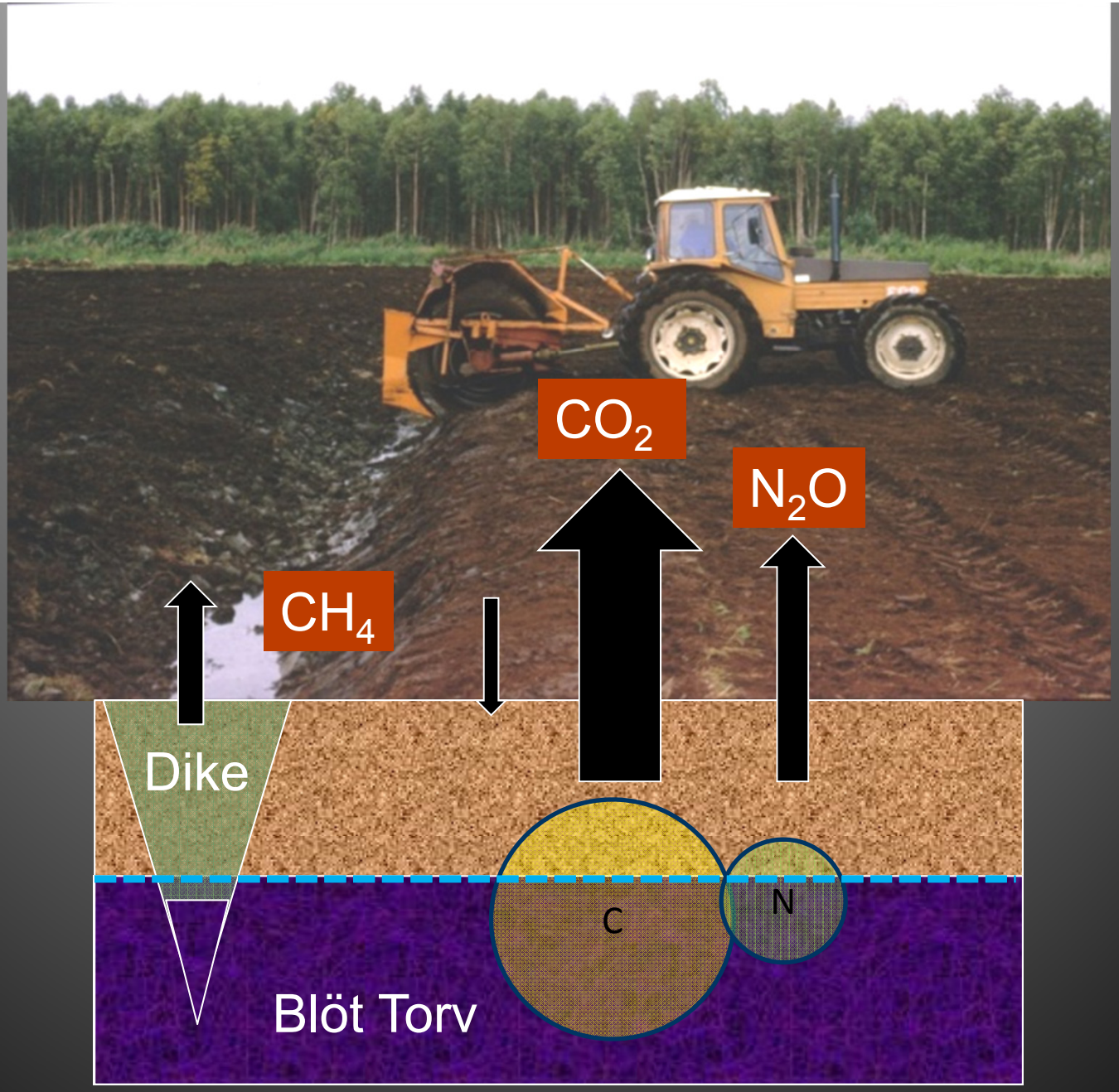
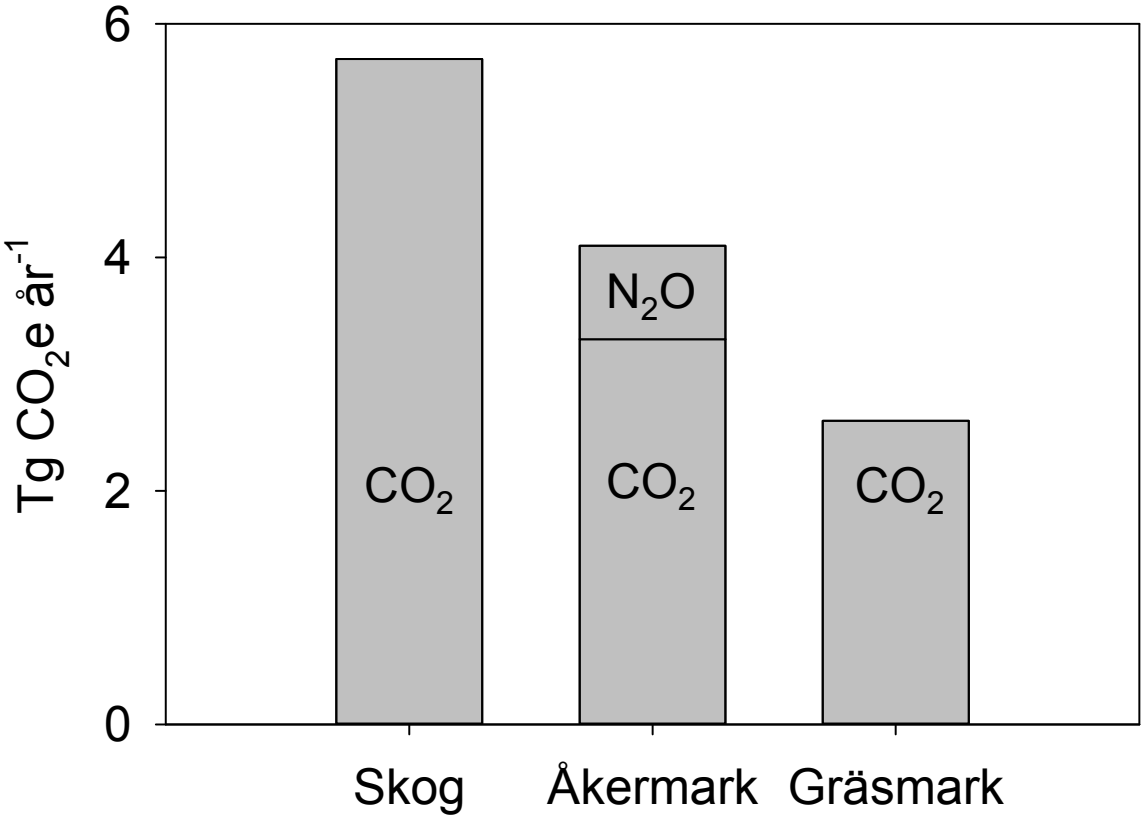


Emissions in Swedish National Inventory Report 2015, CRF-tables

10 Tg CO_2e yr^{-1}

1.2 Mha forest and
200 kha agriculture



Received: 30 June 2017 | Revised: 20 September 2017 | Accepted: 27 September 2017
DOI: 10.1111/gcb.13931

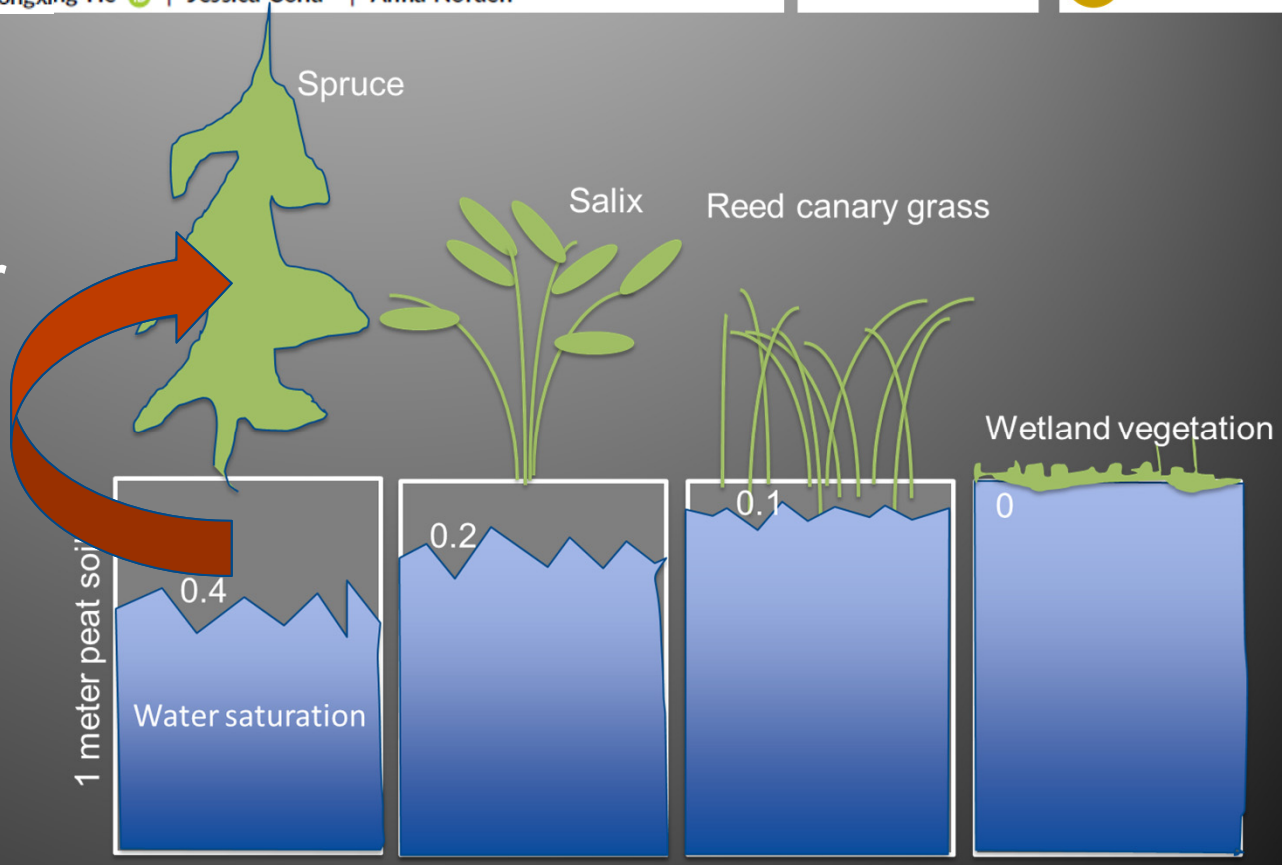
PRIMARY RESEARCH ARTICLE

WILEY Global Change Biology

Land use of drained peatlands: Greenhouse gas fluxes, plant production, and economics

Åsa Kasimir[1] | Hongxing He[1] | Jessica Coria[2] | Anna Nordén[2,3]

Fyra scenarier beräknade med modellen Coup över 80 år



	ton CO_2eq ha^{-1} $år^{-1}$			
Jord växthusgasemission:	33	19	15	11
GHG balans (inkl. växter):	11	7	9	6

Att minska emissionerna?

- Vilka åtgärder tror du skulle ha effekt på din gård?
- Vad skulle du behöva för att göra ändringar?
- Ifall du har en gård där en del är organogen åkermark; Vad skulle få dig att lägga om produktionen till grödor som kan odlas utan jordbearbetning och på blöt jord?