

Changes in soil organic matter content of grassland and maize land in the Netherlands between 1970 and 2009

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EGF 2010 Kiel



- **Why look at changes in soil organic matter (SOM)?**
- Materials & Methods
- Results
- Discussion + Conclusion



SOM - farmers

Important for farmers

- Cation exchange capacity
- Mineralisation
- Water retention capacity
- Disease suppressiveness
- Soil workability



SOM important for environment and therefore for policy

- Soils contain large amounts of C
- Most of soil C is found in the upper layer (0 – 20)
- Decline will contribute to global warming
- SOM in EU countries decreasing ! (England/Wales – Brittany - Belgium)





so

SOM is important for farmers

and

for government (global warming)

but..

what is the situation in the Netherlands

?

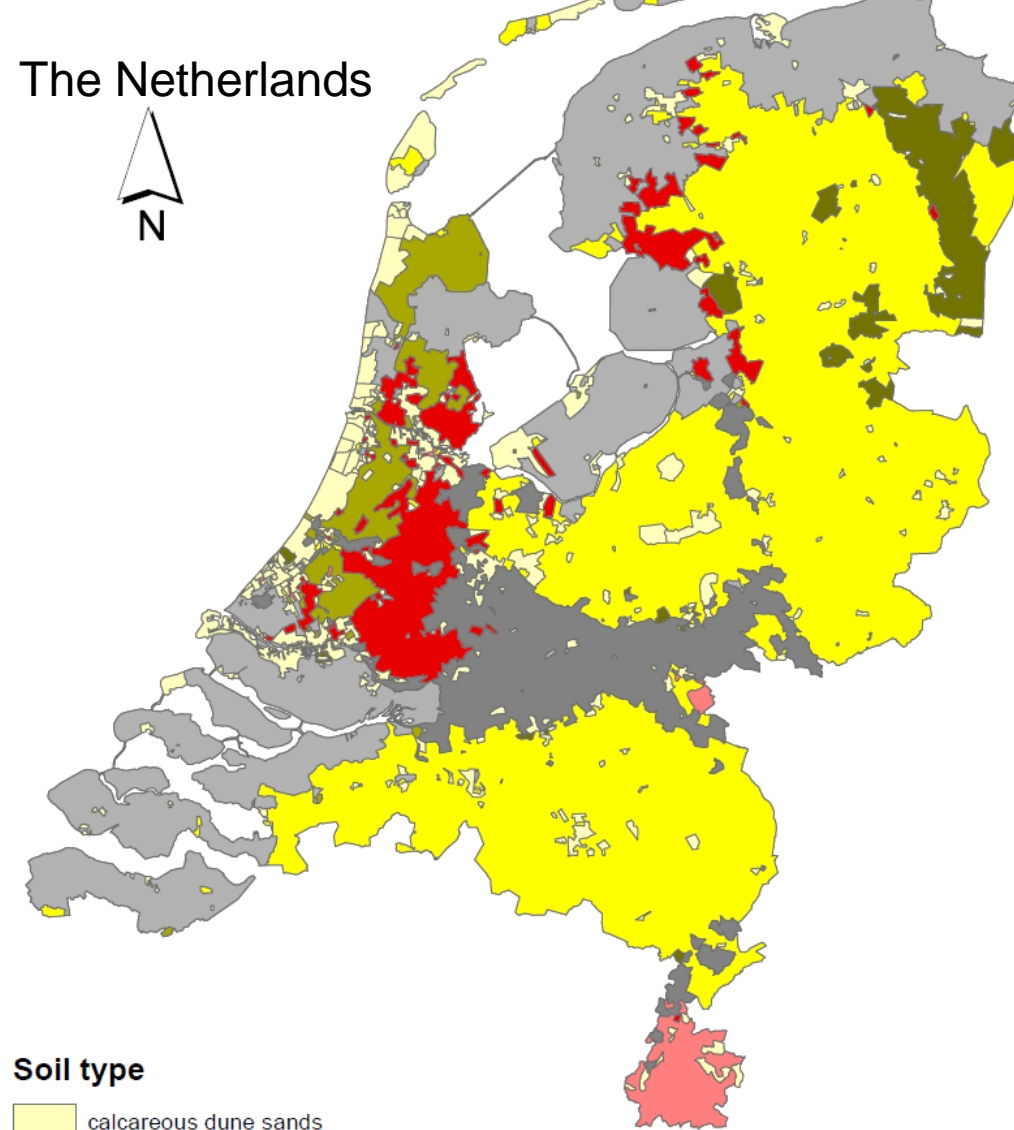


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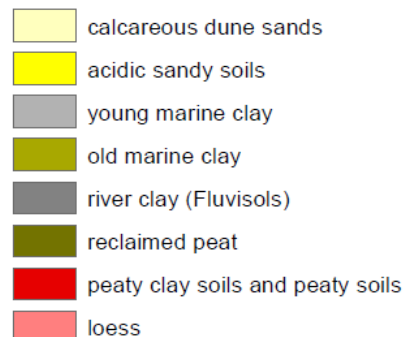
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The Netherlands



Soil type



Area & soil type

Total agricultural area:
2.000.000 ha

Grassland (900.000 ha) on

- sandy soil
- marine clay
- fluvial clay
- peaty soils

Maize land (250.000 ha)

mainly on

- sandy soils



Soil samples from BLGG AgroXpertus

4.500.000 soil samples from 1970-2000

- <1984 results of soil analyses reported in reports
- \geq 1984 digitally recorded

In 2005-2006 because of legislation many soil samples

- Regular clients
- New clients (soils not sampled in $>$ 10 years)
- Used these results for statistical analysis.

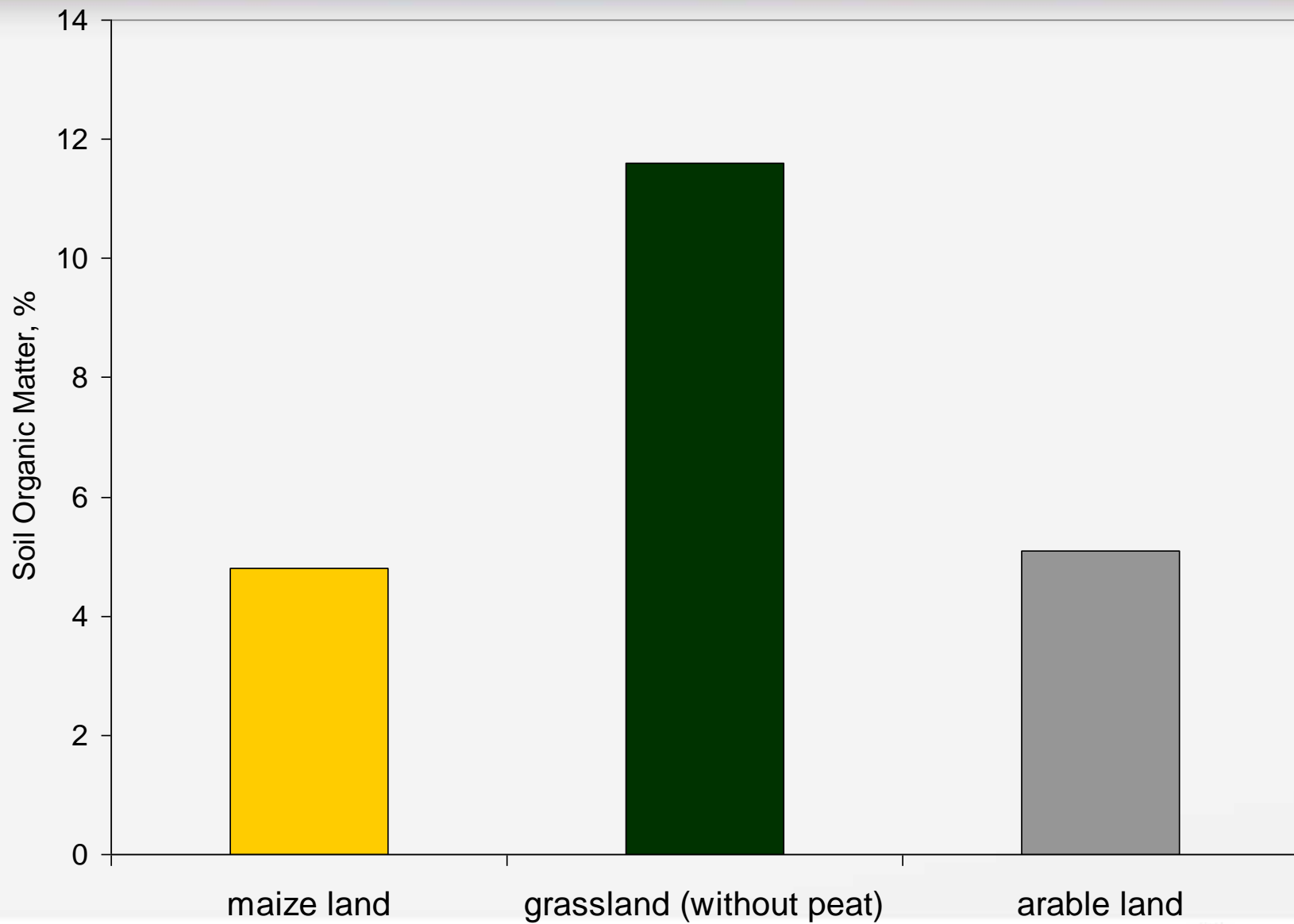


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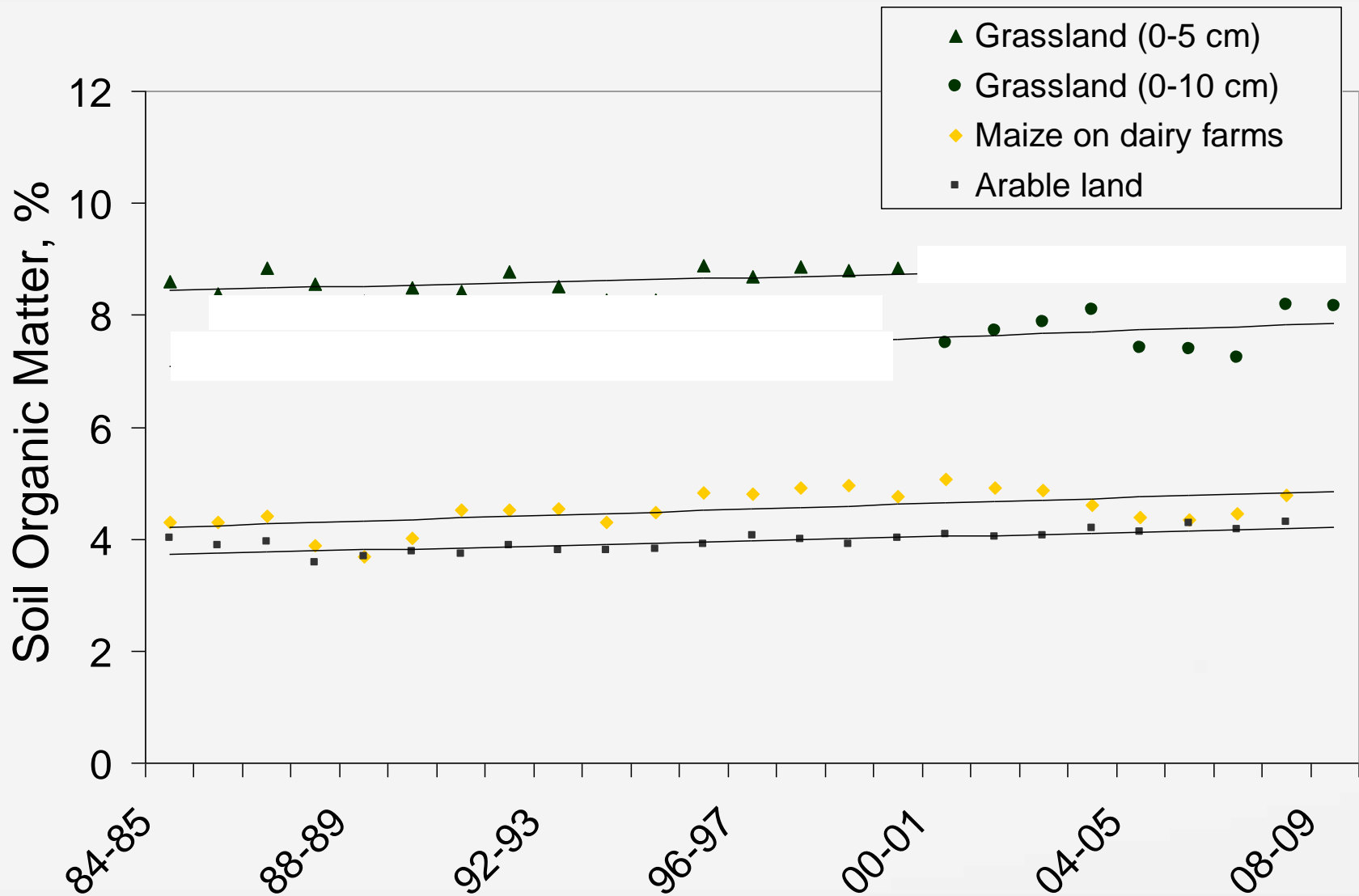
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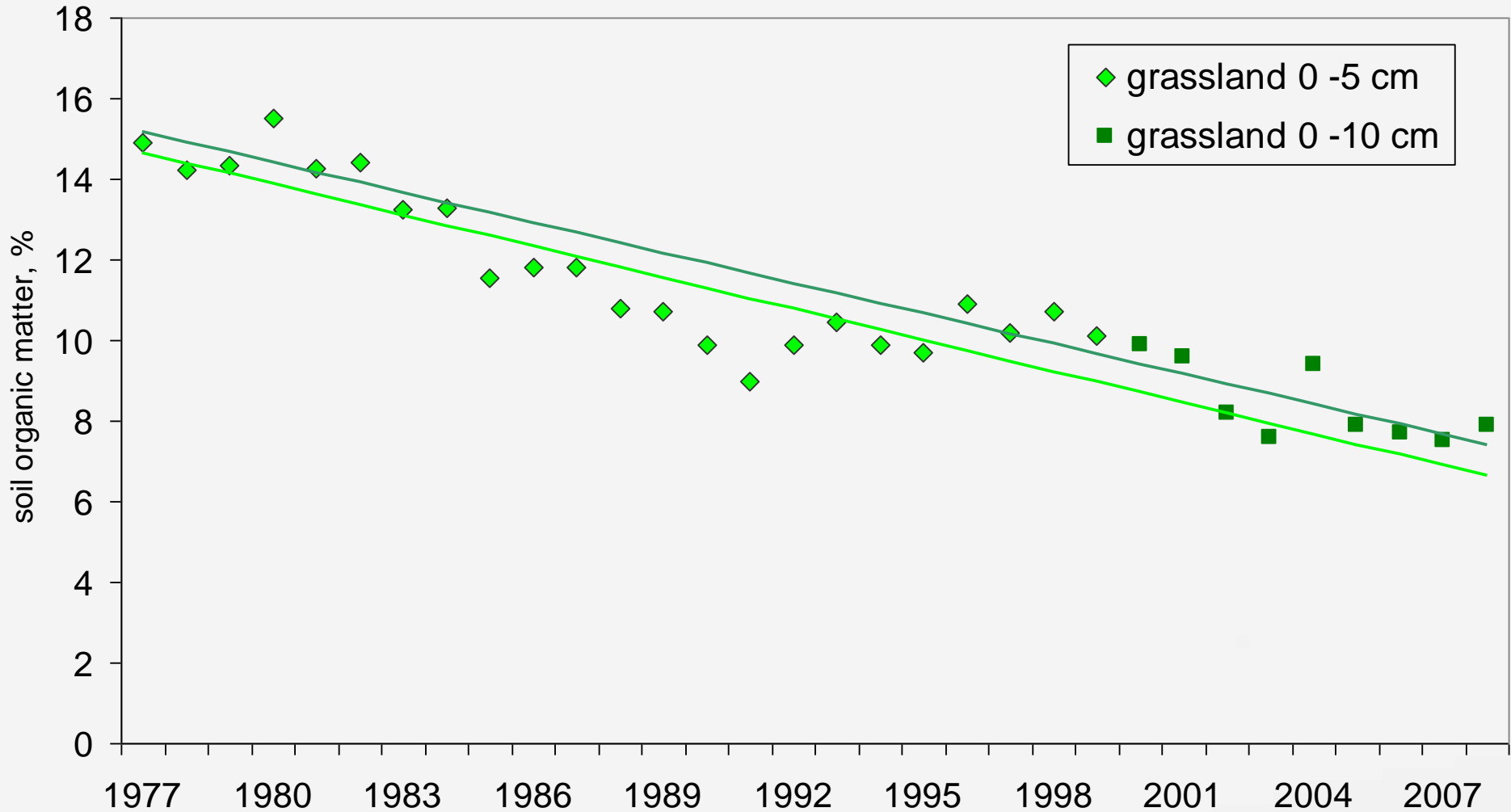
Median SOM in 2008



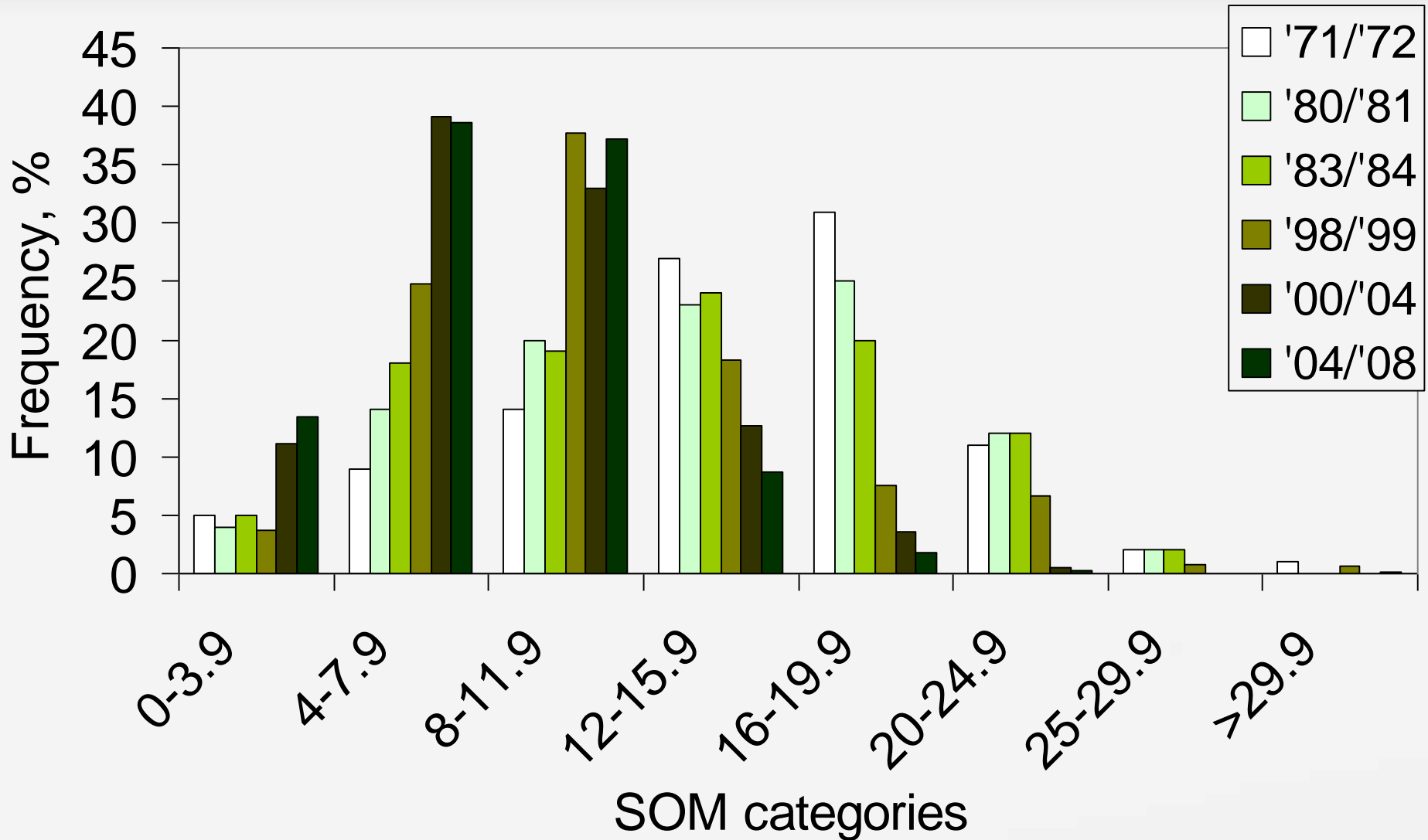
Changes in SOM



Decline in % SOM Northern marine clay, grassland

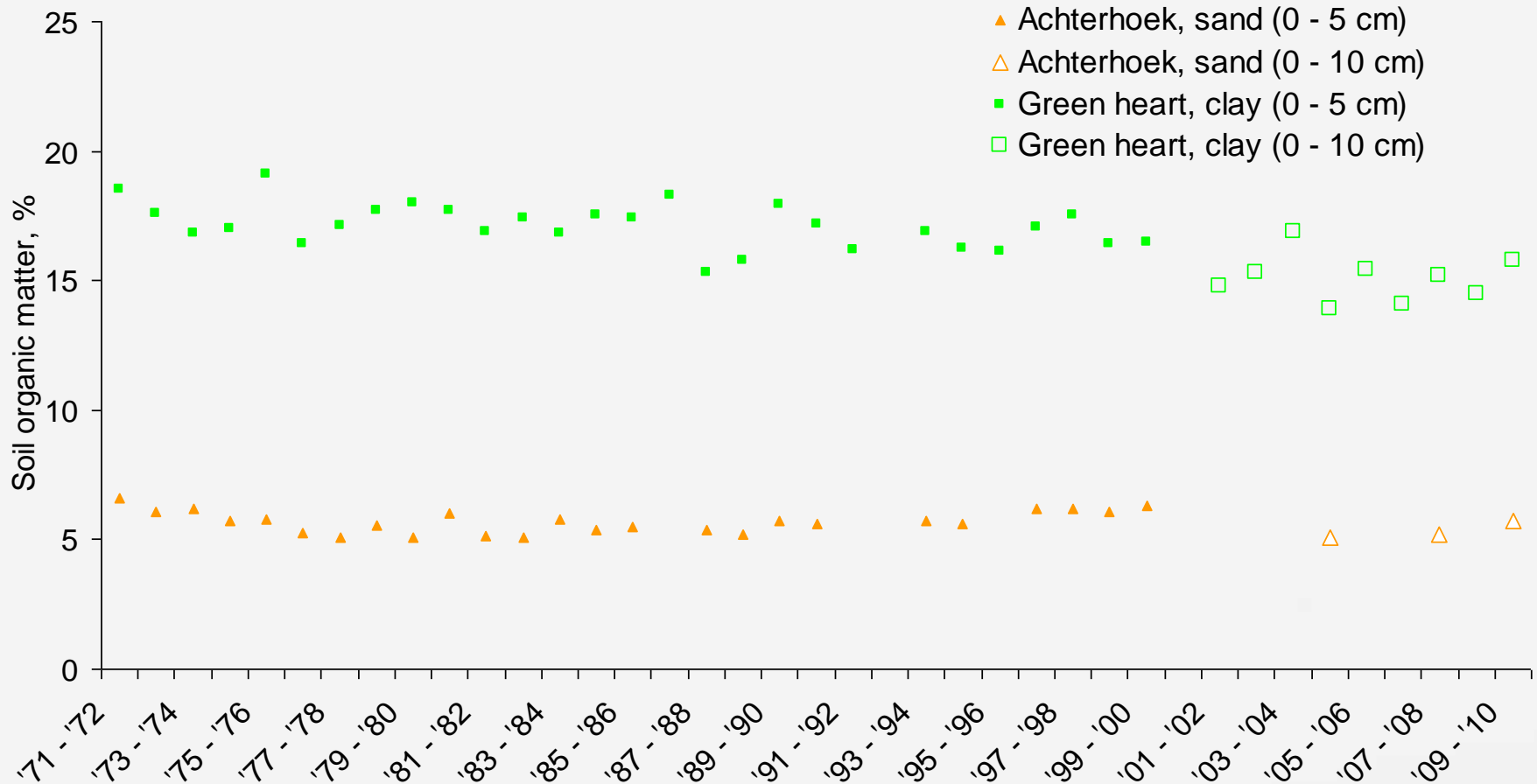


Decline in % SOM Northern marine clay, grassland



Stable SOM

(permanent grassland versus ley farming)





Maize land

Permanent maize on sandy soil from **4.0 to 4.25%** = increase

But, also an increase in maize area on the expense of
grassland (high in SOM)



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Conclusions

- On average no decline in SOM
- A lot of variation between regions



Discussion: Legislation needed?

Minimum SOM values (per soil type)

Combination of

1. Soil workability
2. Water retention
3. Cation Exchange Capacity (CEC),
4. Dynamic soil (soil life)
5. Erosion
6.



Discussion: Monitoring programme needed?

Investments in monitoring programme seems needed to get more insight in the reasons of decrease or increase of SOM content



Questions?



Many thanks for the invitation