



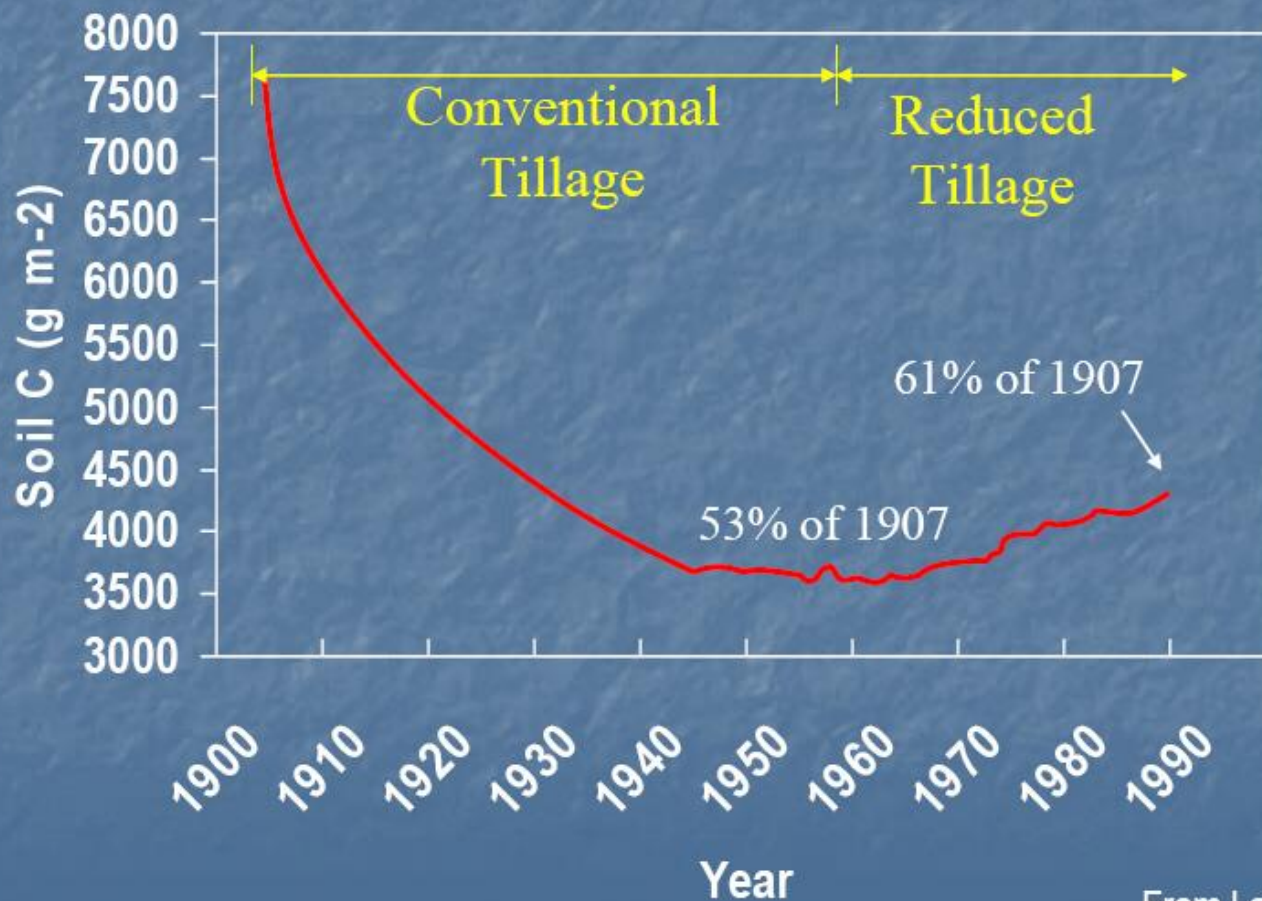
The farm:
Placed in the middle of Sealand
265 hektar
Soiltype: JB 6

(app. 14% clay, 14 silt, 45% fine sand, 27% sand)

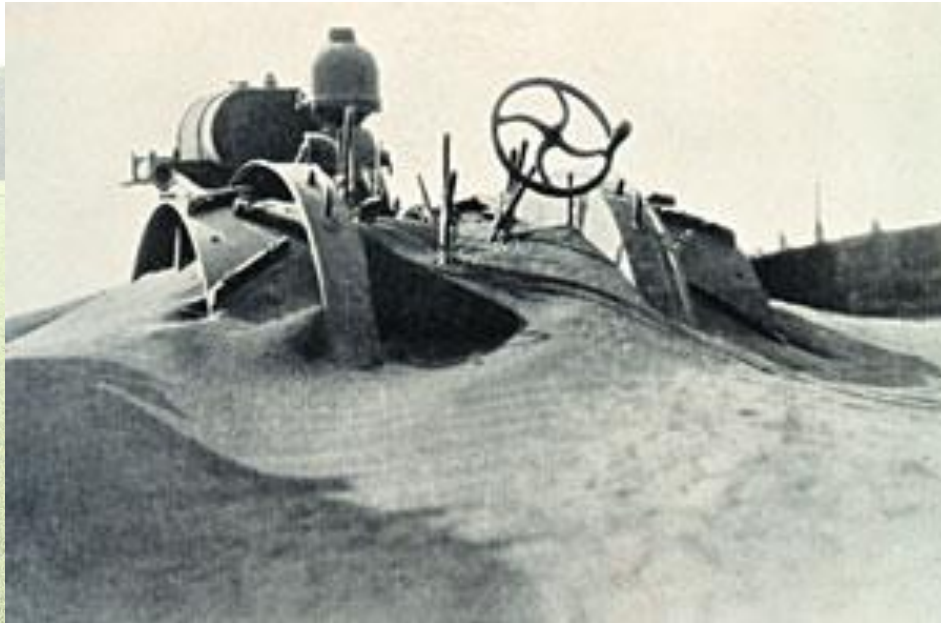
The soil is mistreated!

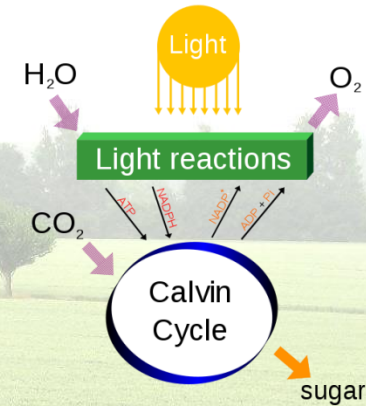


Historic Loss of Soil Carbon

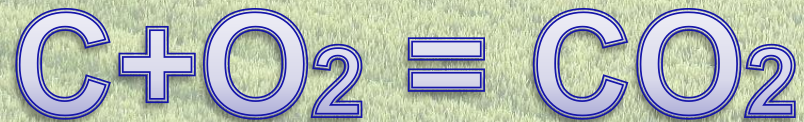


From Lal et al., 1998





Tillage = oxidation = CO_2 releases
 = Carbon losses = less organic matter = less yield



Introduced healthy crop rotation:

25-30% malting barley

40% winter wheat

20% oil seed rape

10-15% Spring beans

Not the same crop on a field in two following years!

This means healthy crops – especially wheat (DTR)

N can be moved from spring barley to winter wheat =
better wheat yields

My "traditional" min-tillage system:

**Kompactdisk after
combine
5 cm**



5-6 liter/ha

15 min/ha

**Tine cultivator, 80 mm
tines
10-15 cm**



7-10 l/ha

25 min/ha

Drilling



4-5 l/ha

20 min/ha

Totally: 16 to 21 l diesel/ha and 1 hour

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Total: 16 to 21 l diesel/ha and 1 hour

Let the nature do the job!



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The system for spring crops:

Straw rake after the combine



2 liter/ha

10 min/ha



0 l/ha

0 min/ha

Direct Drilling



4-5 l/ha

20 min/ha

Total: <10 l diesel/ha and 35 minutes (excl. Establishing cover crop and glyphosate spray)





4.6.2008 with -200 mm water balance:



Photo by night with 11 *Lumbricus Terrestis* on 0.25 m²



"The plough is one of the most ancient and valuable of man's inventions; but long before he existed the land was in fact regularly ploughed, and still continues to be thus ploughed by earthworms. It may be doubted whether there are many other animals which have played so important a part in the history of the world, as have these lowly organized creatures."

Charles Darwin











Biological tillage by soil fauna has to replace “iron tillage”!

– Rolf Derpsch



Relaxed Tillage



Soil samples:

Humus: **2,86% to 6,0%** (most fields: 4.0 to 5.5%)

Typically **2-3 % carbon**

This represents about **125.000 kg Carbon/ha**

Or **450.000 kg CO₂/ha**

More intense use of cover crops will speed up this process further!





More beetles = predators against aphids = less insecticides



Demo of direct drilling of barley in cover crop









