

Annemie Elsen, Stijn Martens, Mia Tits, Tim Declercq, Jan Bries, Hilde Vandendriessche

LONG-TERM EFFECTS OF COMPOST AMENDMENTS ON CROP YIELD, SOIL QUALITY, SOIL ORGANIC CARBON AND NITROGEN MINERALIZATION



COMPOST TRIAL

since 1997

Boutersem, Belgium

winter wheat / potato / sugarbeet / carrot / onion

- **Compost application**

0 – 15 – 30 - 45 ton/ha -compost

yearly, 2-yearly, 3-yearly

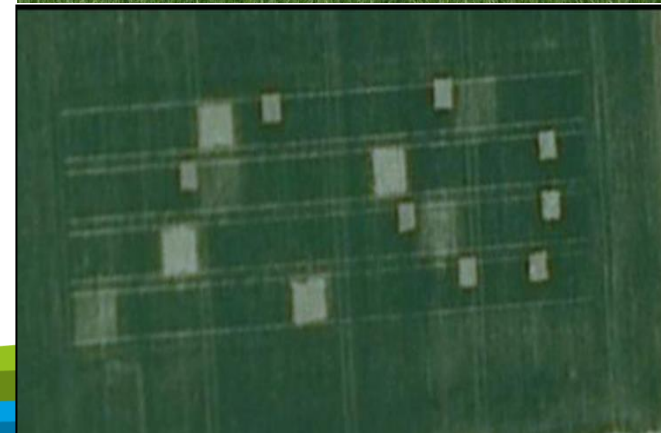
topped with mineral fertilizer according to advice (since 2003)

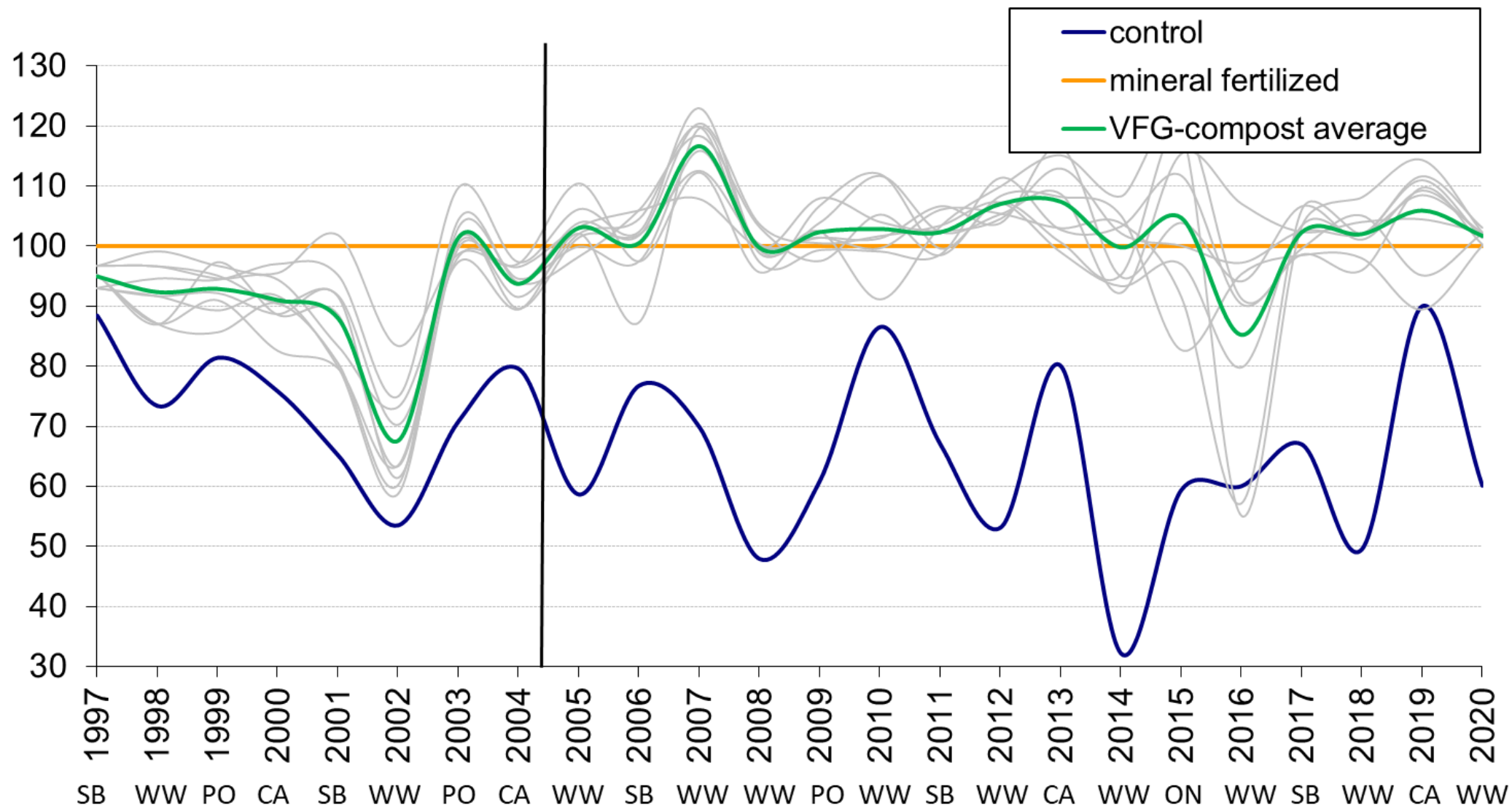
- **Mineral fertilized control**

only mineral fertilization

- **Unfertilized control**

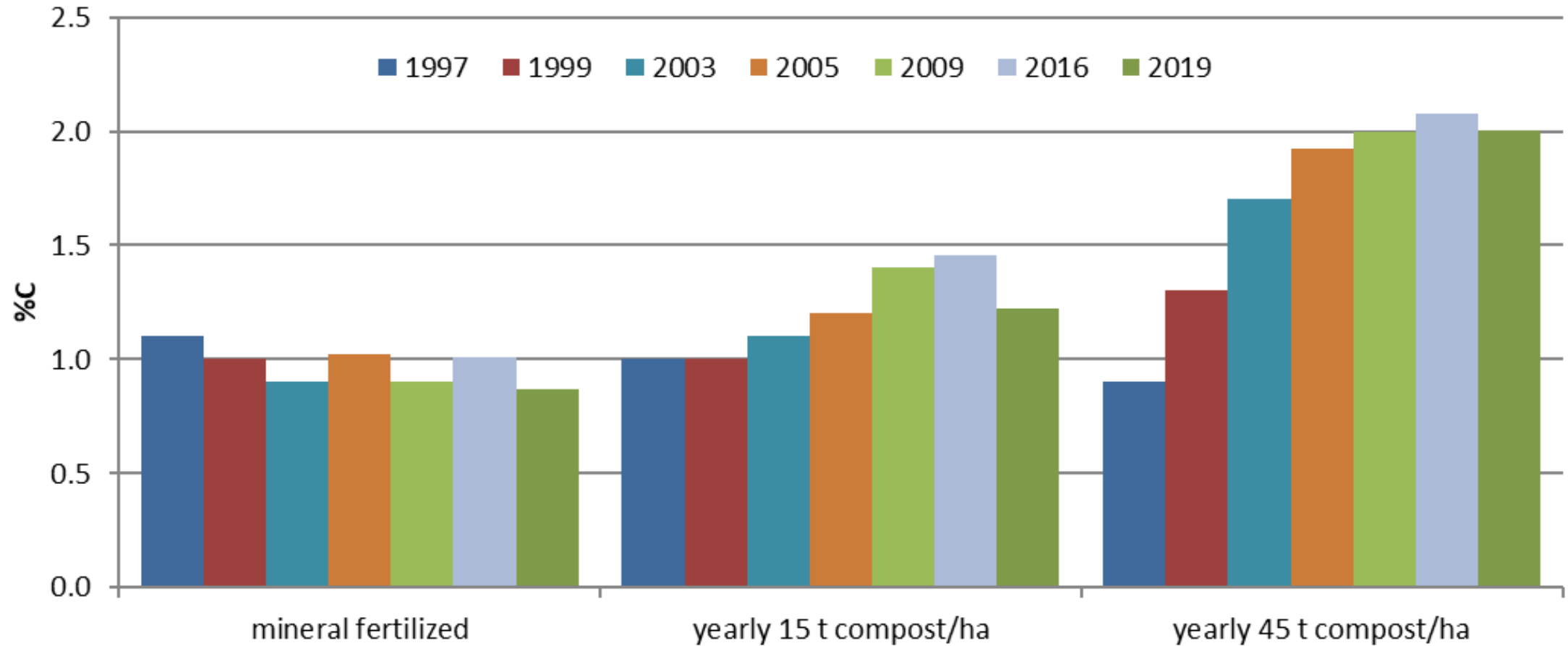
- **Fallow**



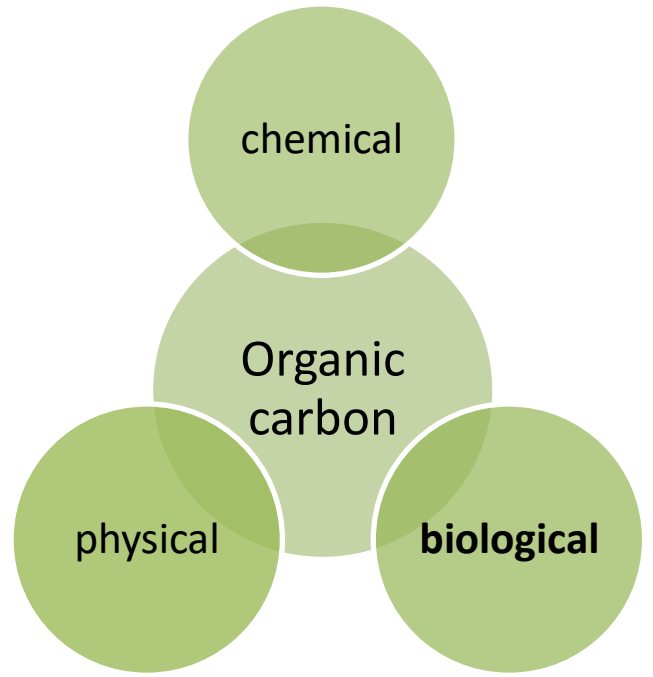
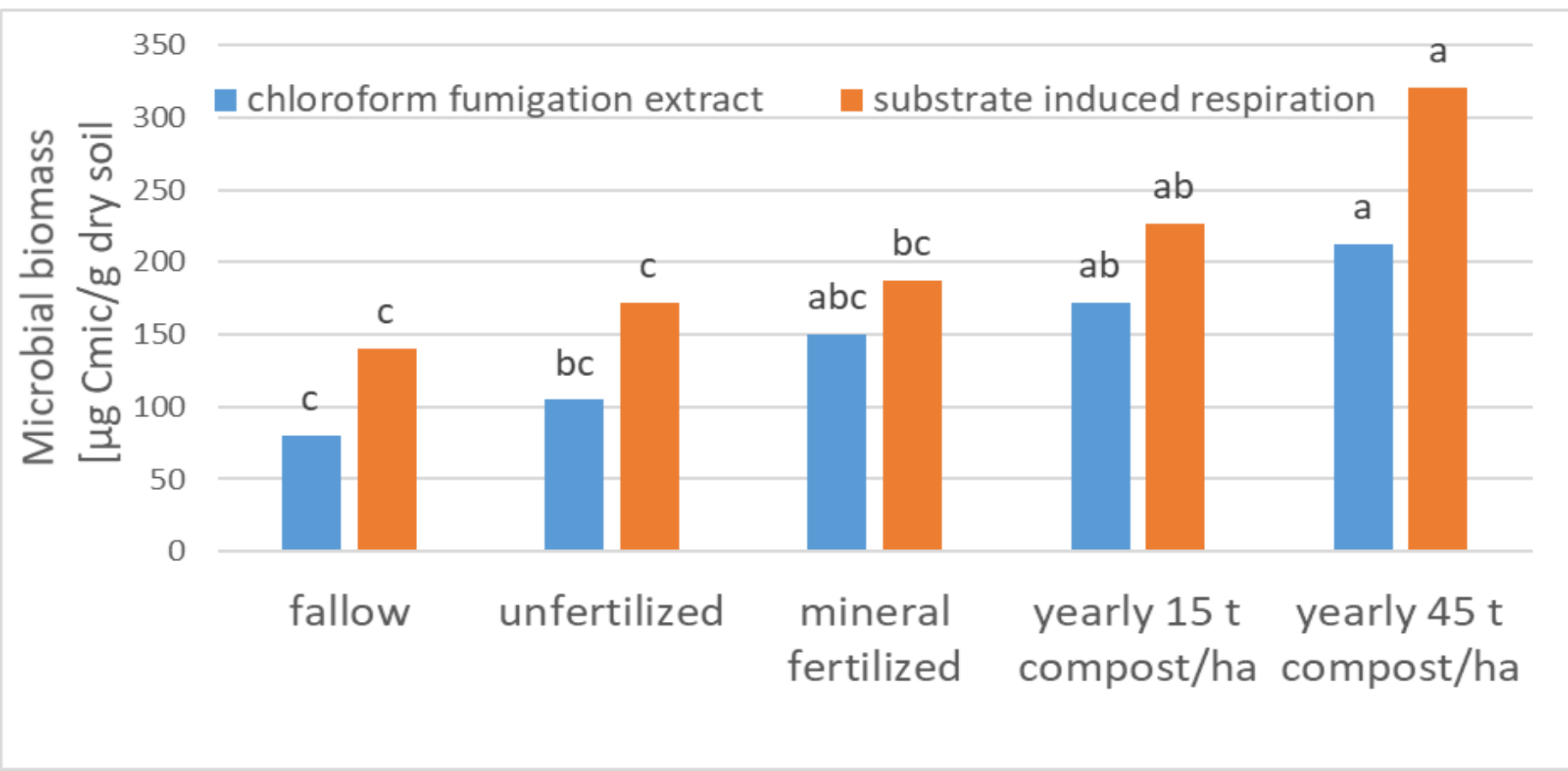


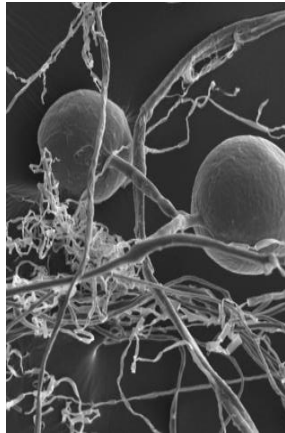
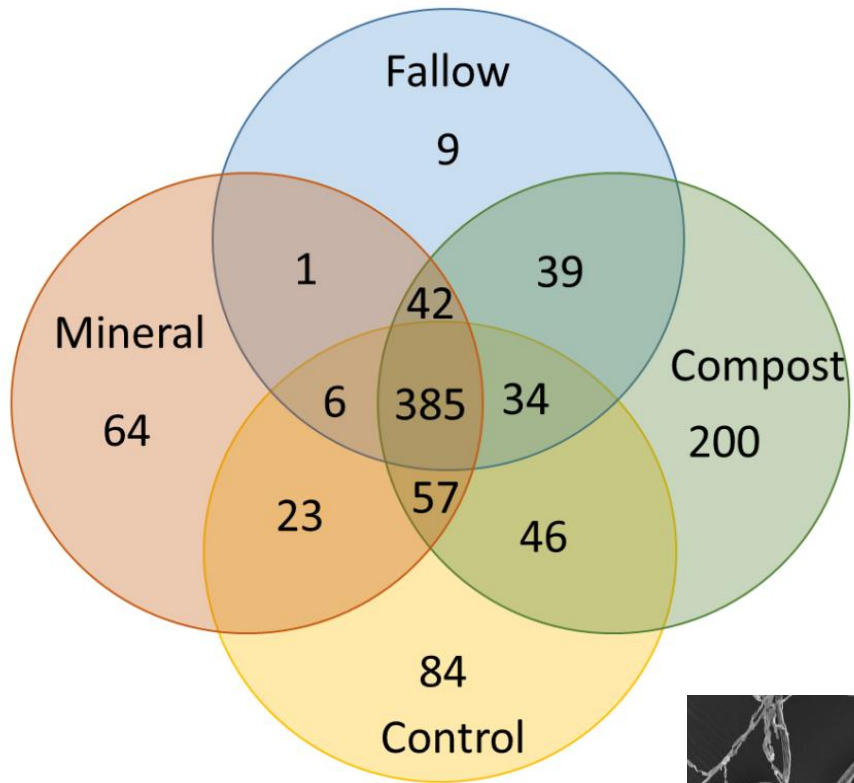
(Tits et al., 2014)

Carbon = long term effect

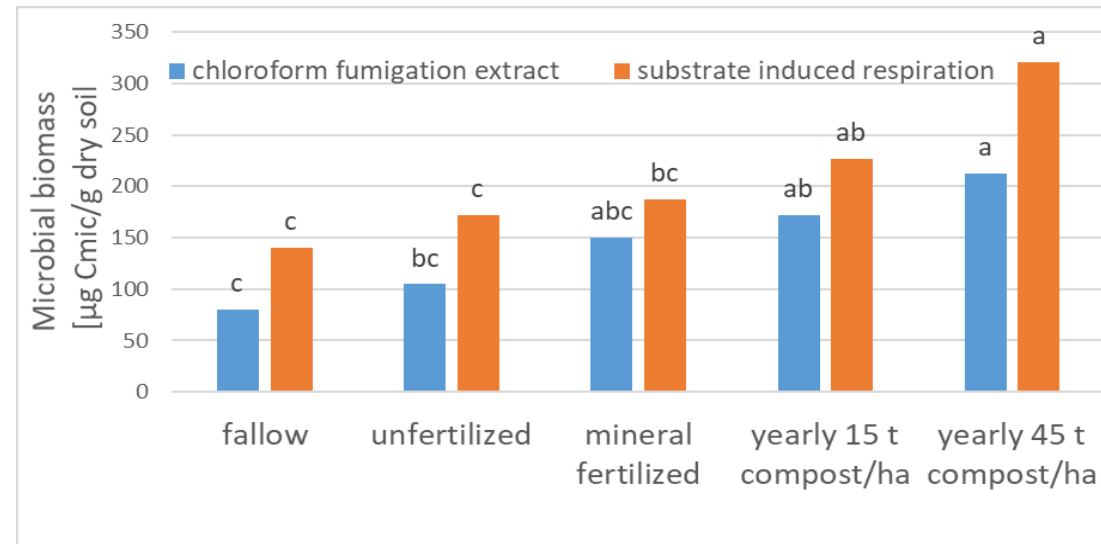
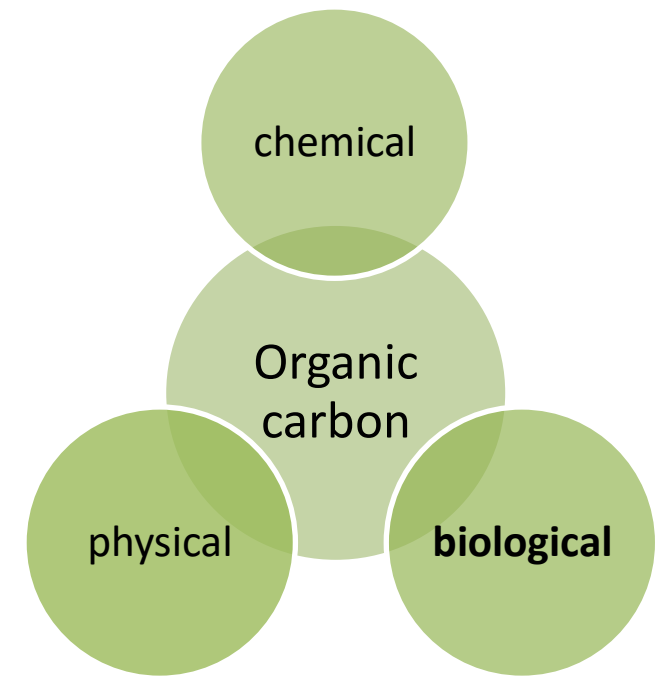


(De Clercq et al., 2015)



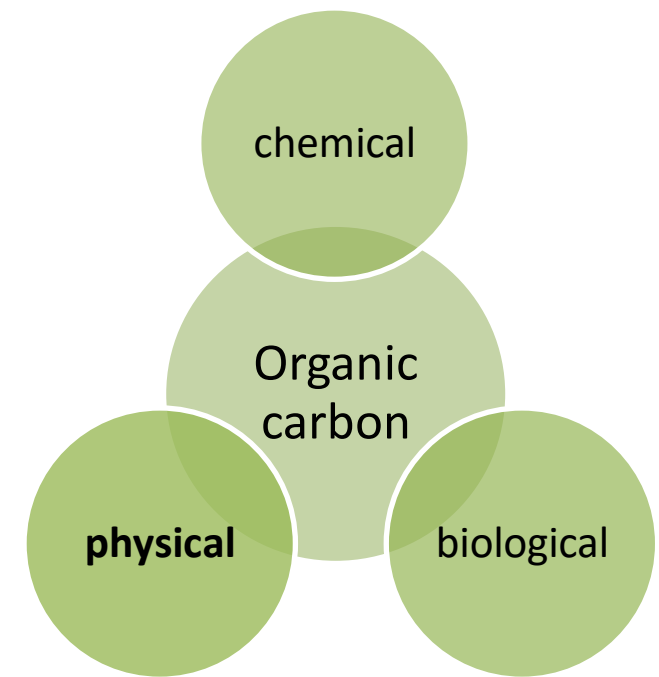
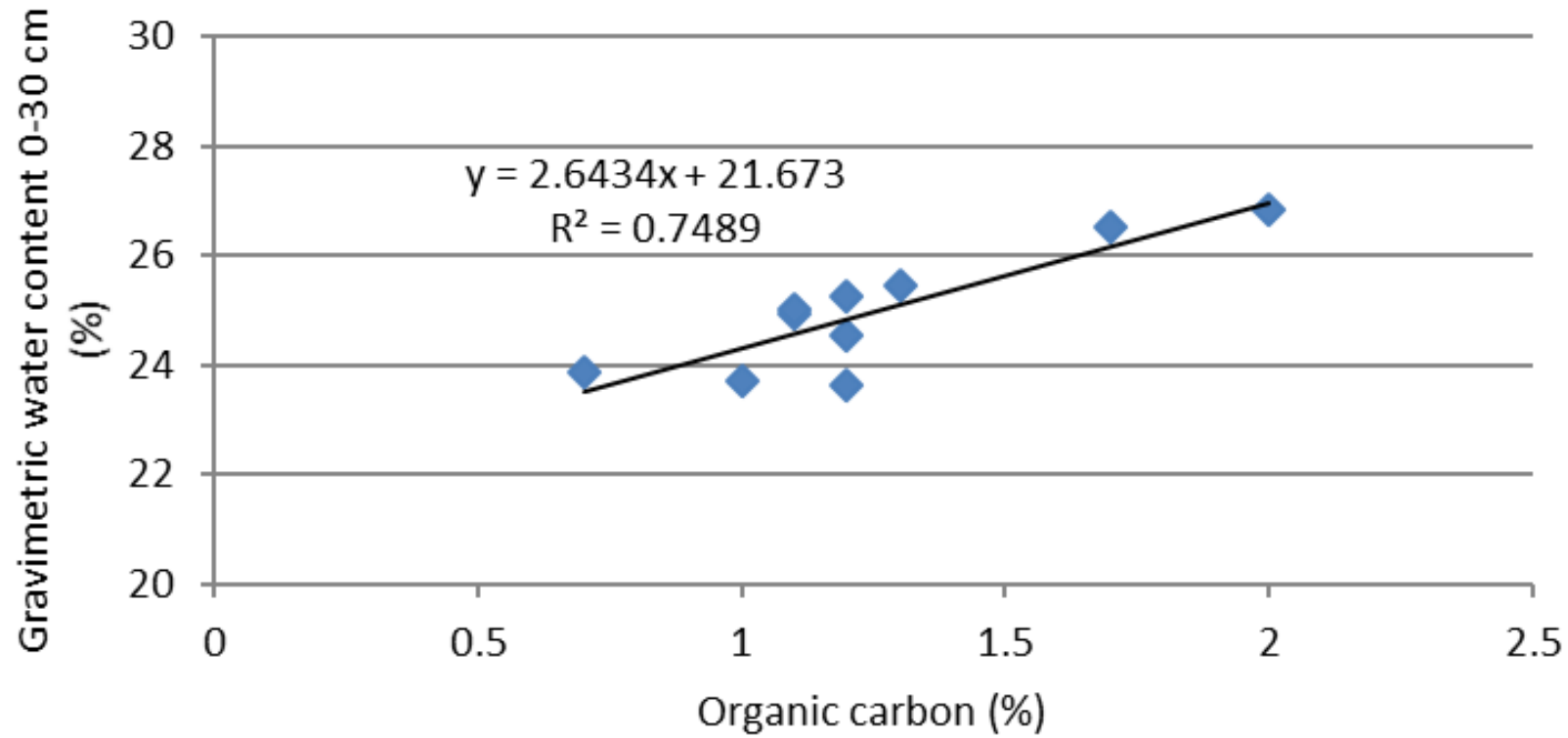


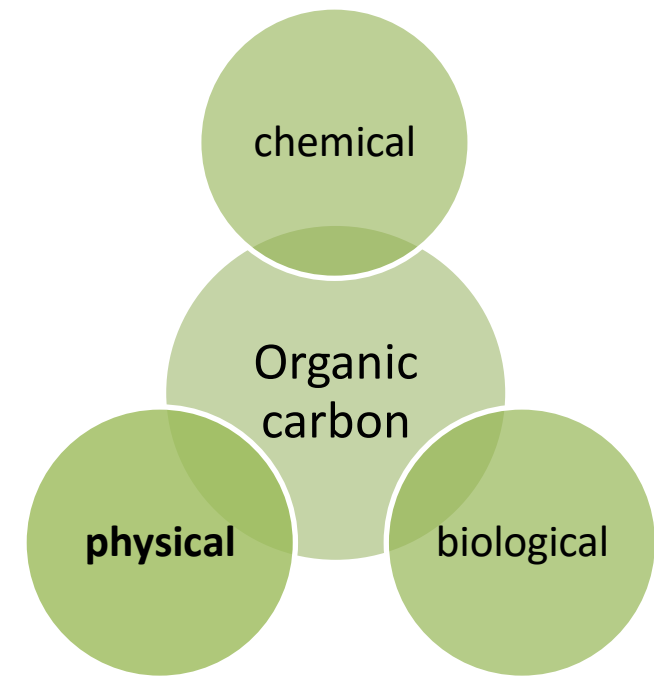
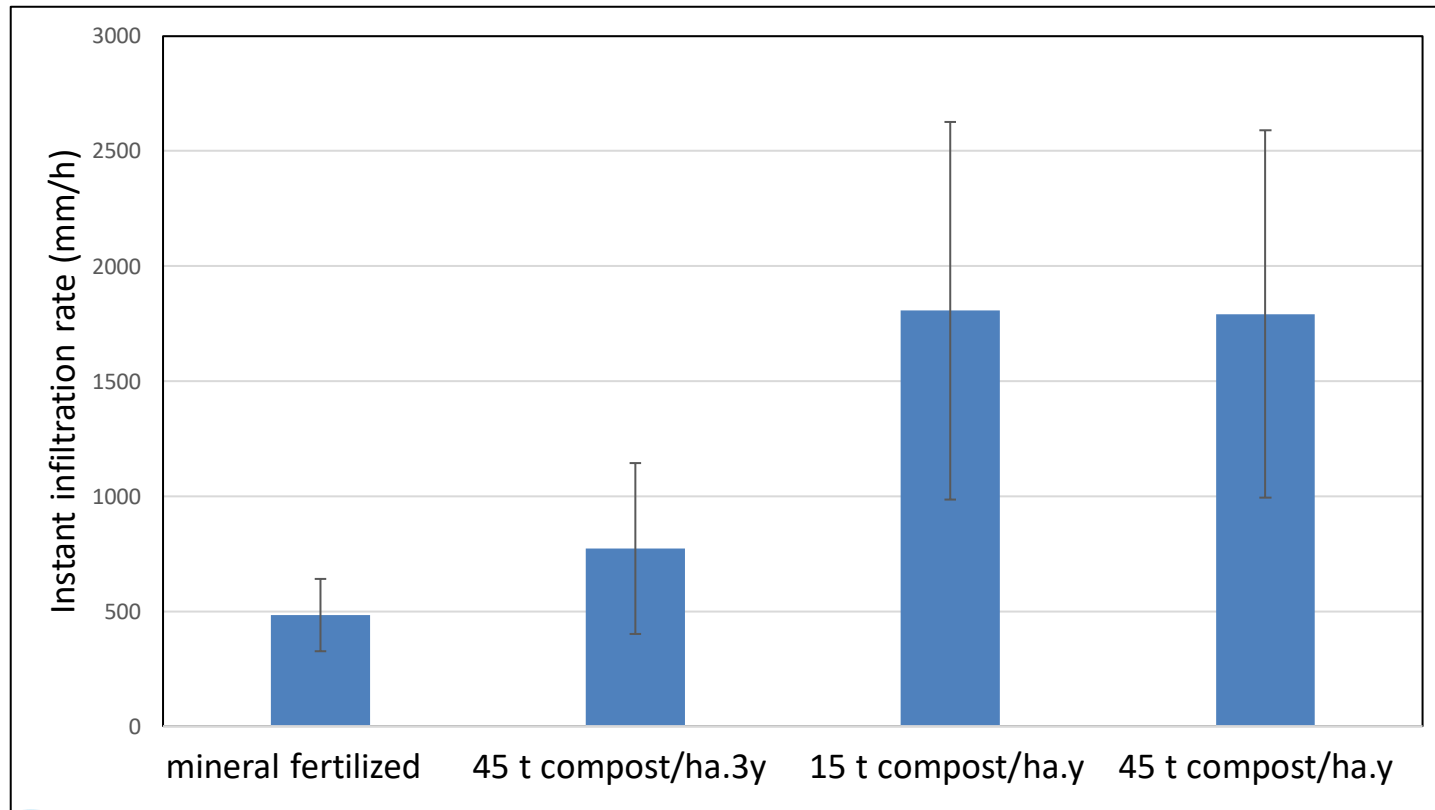
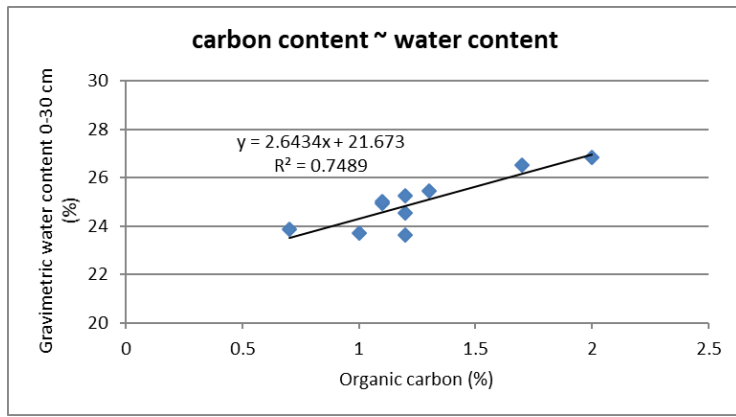
CARBON ↑
 =
 microbial biomass ↑
 biodiversity ↑



fungal metabarcoding (ITS-region)
 (Hannula et al., 2021)

carbon content ~ water content



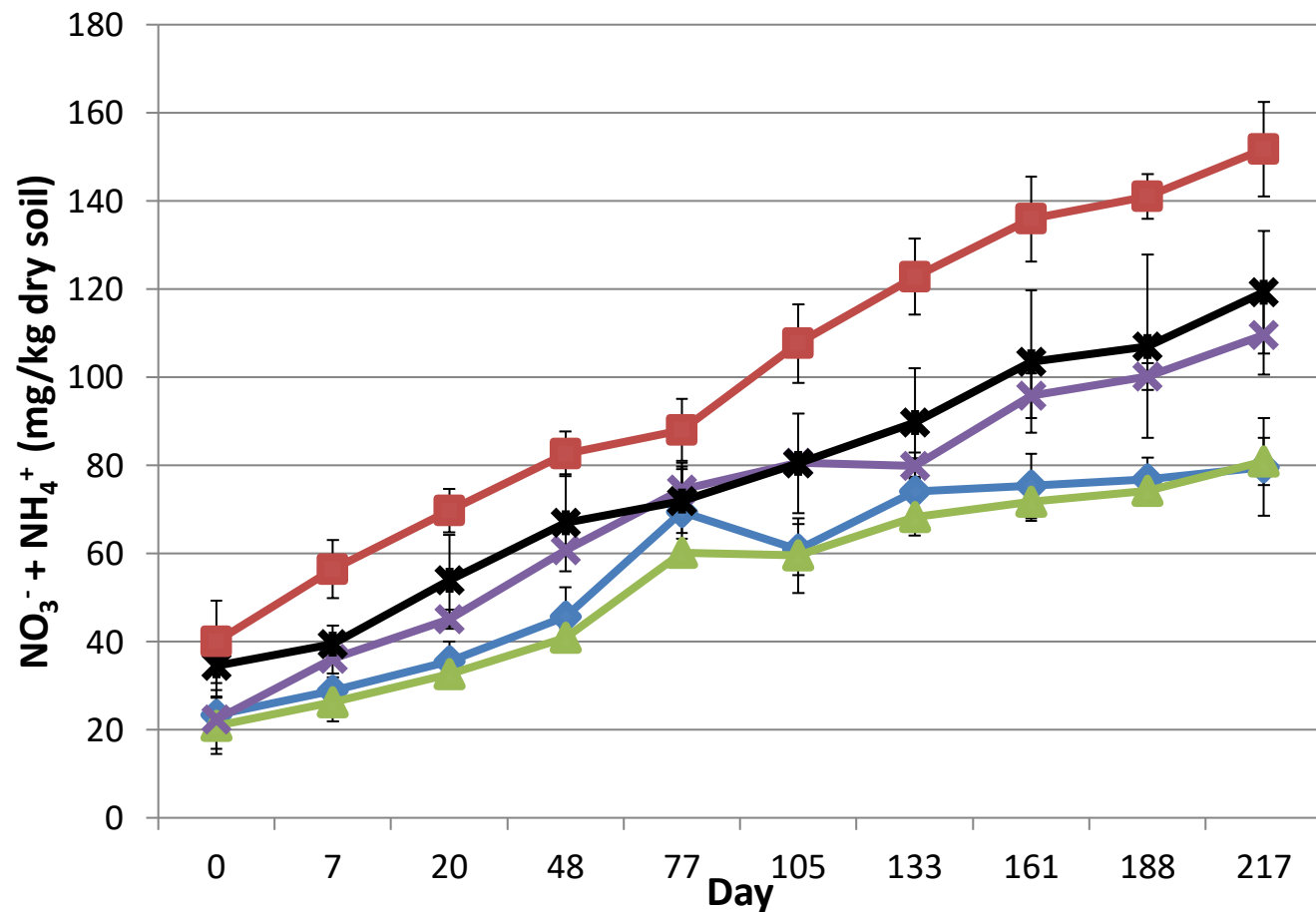


CARBON ↑

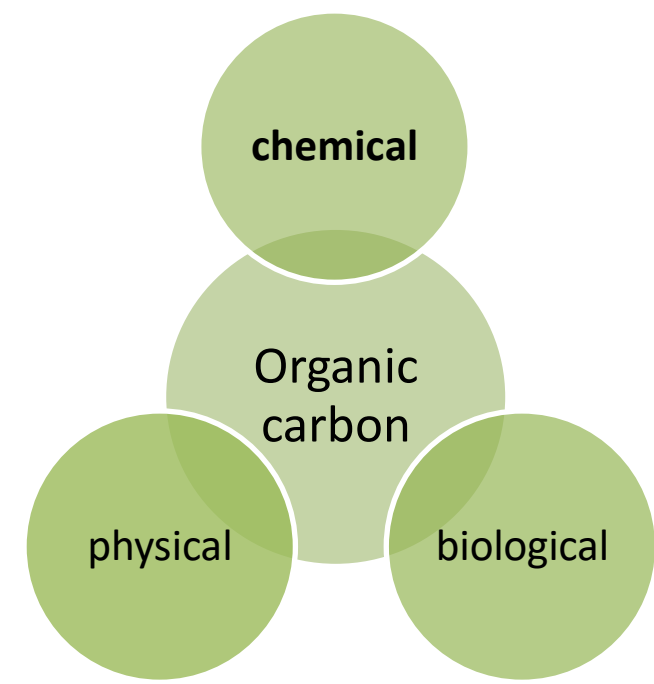
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water retention ↑

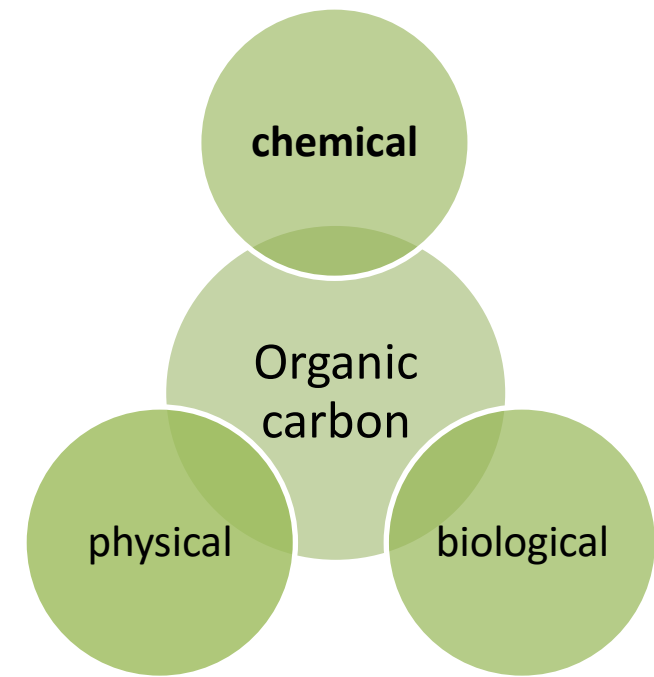
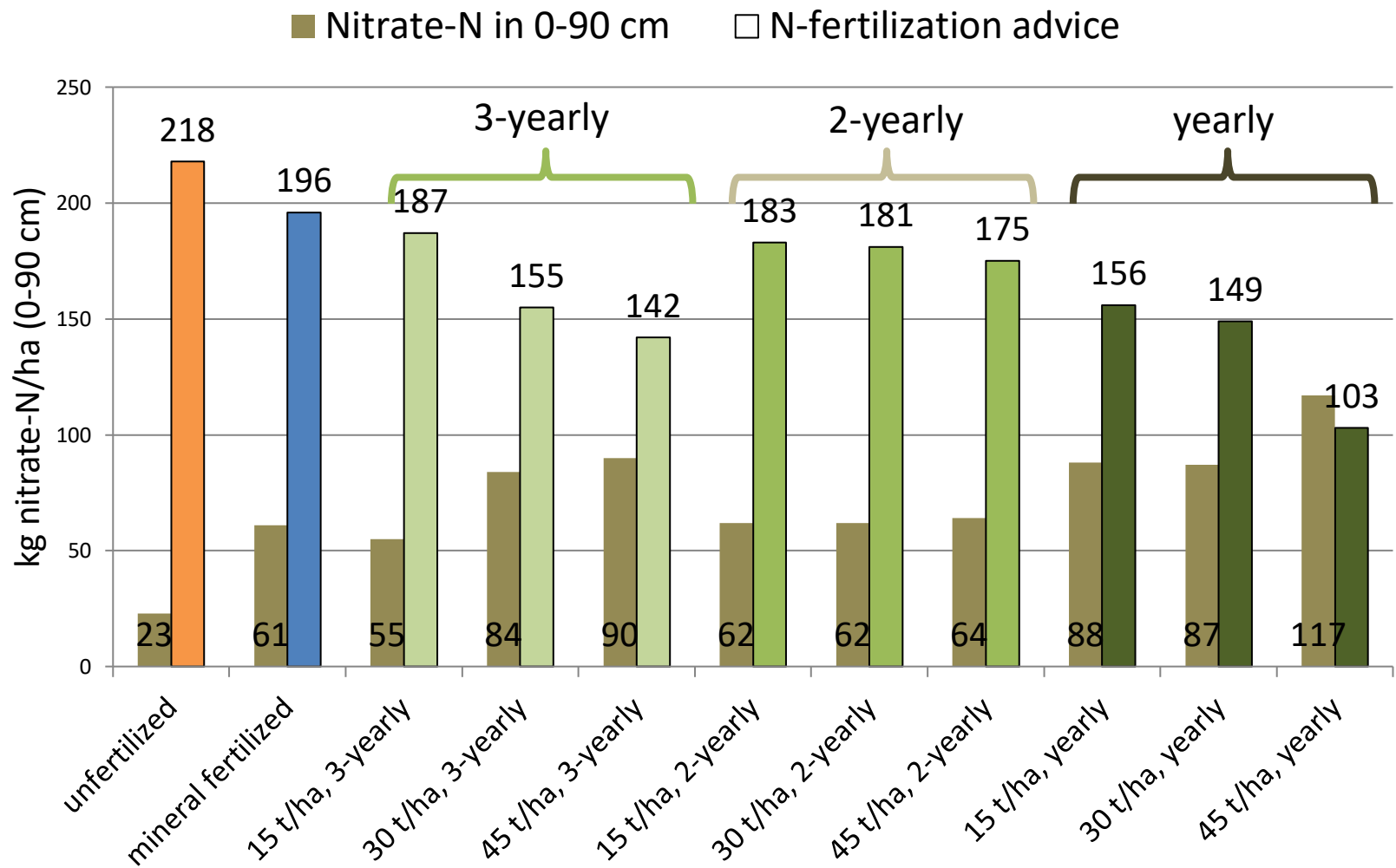
water infiltration ↑



- ◆ G1: unfertilized
- ▲ G2: mineral fertilizer
- ✕ G5: 45 t/ha compost 3 yearly
- ✱ G9: 15 t/ha compost yearly
- G11: 45 t/ha compost yearly



(De Clercq et al., 2016)



CARBON ↑
=

N-mineralisation ↑
N-fertilization advice ↓

