Effects of compost in long term field trials in NL

Compost dialogue session 2

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Soil quality on sandy soil

BASIS – clay (sandy loam)

Long term field trials in the Netherlands

Soil quality reclaimed peat soil

Soil health experiment

Farming systems research in south east NL

LOW

1000 kg EOM/ha/yr

Mineralen-concentraat and chemical fertiliser

STANDARD

2000 kg EOM/ha/yr

Pig and cow slurry and chemical fertiliser

ORGANIC

3000 kg EOM/ha/yr

Solid manure, cow slurry and vinassekali

Compostplots on two parcels per system (3000 kg EOM)

Comparison non-inversion tillage and ploughing

Effect on yield

Yield results		
Clay – Compost	●	Significant higher yield in grains and peas
Sand – STANDARD	●	Strongly increased yields ccompared to LOW
Sand – Compost yearly	●	Higher yields in LOW, no effect in STANDARD
Sand – Compost every 3 year	●	Can lead to significant increase in yields
Reclaimed peat soil - Compost	●	Significant higher yield in sugar beet

Effect on organic matter content

Organic matter		
Clay - Compost	•	Significant increase in organic matter
Sand – STANDARD	•	Significant increase in organic matter
Sand – Compost	•	Significant increase in organic matter
Reclaimed peat soil - Compost	•	NON significant increase in organic matter

Effect on carbon sequestration

Soiltype	Measure	C-elementair (%)
Clay	Chemical fertilisation	0,9
	Compost 20 ton	1,0*
	Compost 40 ton	1,1*
Sand	LOW	2,4
	STANDARD	2,2
	STANDARD + compost	2,5*
Reclaimed peat soil	Standard fertilisation	5,4
	Compost	7,1

Effect on nutrient use efficiency

Nutrient use efficiency		
Clay - Compost	E	Extrapolation from results on other soil types
Sand – STANDARD	●	Surplus and efficiency comparable to LOW
Sand – Compost	●	Higher surplusses, lower efficiencies
Reclaimed peat soil - Compost	●	N and P surplusses increase, K surplus decreases, efficiencies decrease

Conclusions

- Compost has a positive effect on crop yield, especially when the general (historic) organic matter addition is low
- Compost does not seem to have an effect on crop quality
- It is unknown what the effects of compost are on water regulation
- Compost leads to higher surpluses of nutrients and thereby a higher risk of losses of nutrients
- Compost leads to more carbon sequestration
- Compost might lead to a stimulation of microbial soil biomass.

Thank you!

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