GreenhouseStock

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Example

Modified

Analysis

Investigation/ordernr:	Date sampling:	Date report:
651337/004656818	22-03-2019	14-05-2019

Results

	Unit	Result	Target value	low	rath.low	good	rath.high	high	Soil fertility advice (kg/are)
Total N stock	kg N/are	50	25 - 50						
C/N-ratio		19	23 - 27						
N-supplying capacity	kg N/are	0,77	0,95 - 1,45						
Total S stock	kg S/are	18	6 - 7						
C/S ratio		50	50 - 75						
S-supplying capacity	kg S/are	0,45	0,20 - 0,30						
P-soil stock	kg P/are	37	15 - 19						
K-soil stock	kg K/are	10,1	4,7 - 6,3						
Ca-soil stock	kg Ca/are	95	89 - 133						
Mg-soil stock	kg Mg/are	8,7	3,5 - 6,6						
Na-soil stock	kg Na/are	1,4	< 1,1						
Acidity (pH)		7,1	6,2 - 7,0						0
C-organic	%	2,9							
Organic matter	%	5,2	2,0 - 10,0						46
C/OS-ratio		0,56	0,45 - 0,55						
Carbonate lime	%	4,1	0,1 - 2,0						
Clay	%	5							
Silt (2-50 µm)	%	20							
Sand (>50 µm)	%	66							
Clay-humus (CEC)	mmol+/kg	182	40 - 200						
CEC-saturation	%	100	> 95						
Ca-saturation	%	82	75 - 85						
Mg-saturation	%	12	6,0 - 10						
K-saturation	%	4,5	2,0 - 5,0						
Na-saturation	%	1,0	1,0 - 1,5						
H-saturation	%	< 0,1	< 1,0						
Al-saturation	%	< 0,1	< 1,0						
Soil crumbling	rapportcijfer	9,8	6,0 - 8,0						
Soil slaking	rapportcijfer	8,2	6,0 - 8,0						
Microbial biomass	mg C/kg	287	260 - 780						
Soil life	mg N/kg	65	10 - 40						
Fungal/bacterial ratio		1,2	0,6 - 0,9						

Explanation

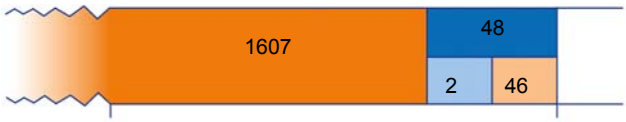
Essential nutrients
Each crop requires nutrients. The essential nutrients that a crop needs most are nitrogen (N), sulphur (S), phosphate (P), potassium (K), calcium (Ca) and magnesium (Mg). The other essential nutrients are the micro nutrients iron (Fe), zinc (Zn), manganese (Mn), copper (Cu), boron (B), molybdenum (Mo) and chloride (Cl). A crop require relatively low concentrations of these micro nutrients, however a deficit can cause loss of yield and/or quality in every crop.

A number of other nutrients (sodium, silicon, cobalt, selenium) can also be important to - amongst other factors - the yield, quality, resilience, sturdiness, fertility, palatability and (animal) health.

Elements can also compete with each other. For example, if the Mg status is "good" but the K status is "high", then an Mg deficiency can still occur. Therefore, the recommended dosages take these interactions into consideration.

Organic matter

Figure: Organic matter balance



4,7 % 5,2 % Organic matter

Yearly breakdown rate (percentage) of the total organic matter content (%): 2,9

- Stock of organic matter which will remain after 1 year in the sampled layer if no (effective) organic matter is supplied.
- Total required supply of effective organic matter as a result of the degradation of the organic matter.
- Supply through crop residues (average within provided rotation scheme or crops).
- Remaining to be supplied through e.g. animal manure, green manures and/or compost.

Crop (residue)	Input of effective organic matter
Chysanthemum	2

For increasing the soil organic matter content by 0.1%: 32 kg effective organic matter per are is needed.

Figure: Quality of the organic matter

Organic matter consists primarily of C, N, P, S. If the organic matter contains relatively high amounts of N and/or S, this makes it attractive to soil organisms. Soil organisms happily eat this organic matter. N and S are released in the process and the amount of organic matter decreases slightly (dynamic organic matter). Organic matter can also contain a lot of C. This is generally less attractive to soil organisms (bacteria). As a result, the organic matter is not consumed as quickly by the soil organisms; making the organic matter more stable. Stable organic matter contributes - among other factors - to the workability of the soil and the looseness. Dynamic organic matter contributes primarily to the release of N and S and is therefore a source of these nutrients for the crop.

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Physical

The assessment of soil structure is based on the Ca-CEC, K-CEC, and Mg-CEC ratio. Actual soil structure is - of course - not merely depending on ratio, but also on weather conditions, moistere condition of the soil, and the weight of the machinery.

Figure: Structure triangle

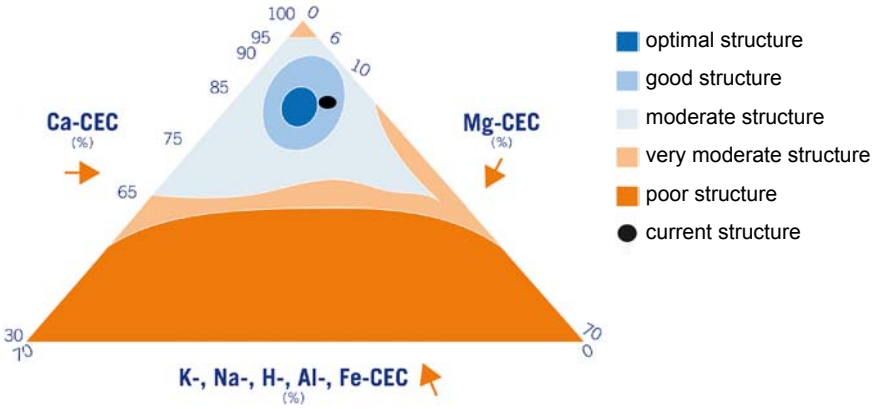
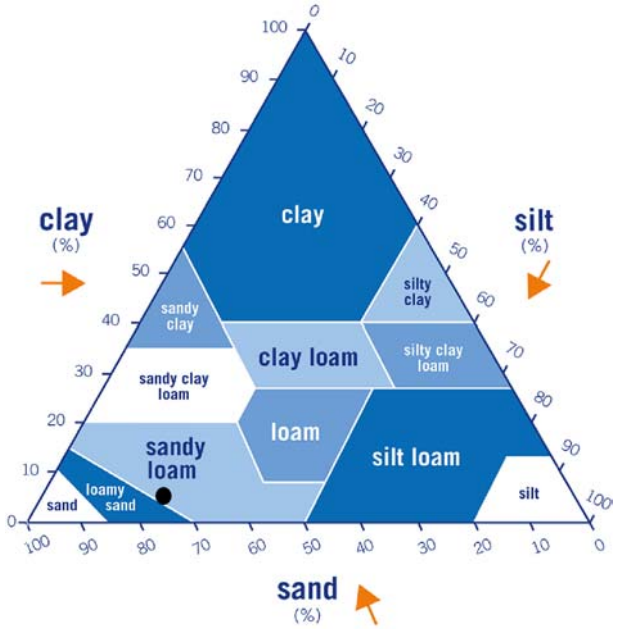


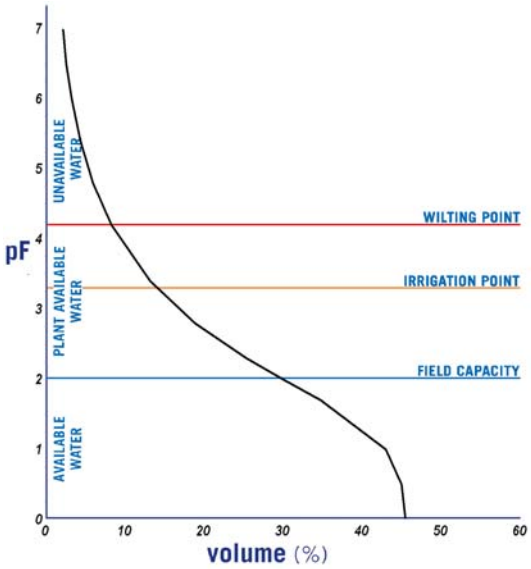
Figure: Texture triangle



Besides clay, the silt and sand fractions are presented as well. Clay is smaller than 2 micrometer (µm), silt particles are 2-50 µm and sand particles are larger than 50 µm. The relative distribution of soil particles is used to estimate the risk of slaking. Slaking causes the soil pores to be clogged with smaller particles and degrades soil structure. The risk of slaking is greatest at 10-20% clay.

Soil crumbling score is: good, however the evaluation of soil crumbling status is also depending on crop type. Considering the results, the chance of soil slaking is small.

Physical **Figure: Water retention curve**



The amount of plant available water in the sampled layer is 54 mm. This is the maximum amount you should irrigate. All excess irrigation will drain off the parcel or will sink to deeper layers.
Plants have difficulty taking up water when the moisture content of the field decreases, the limit is at pF 3,3. When you are able to measure the moisture level, start with irrigation if the moisture content of the parcel is at 14,2 % and irrigate 40 mm.

The actual moisture level can be measured by using a soil moisture sensor, or collect soil from ten spots in the parcel. Measure the weight of the moist soil and the weight after 24 h drying. The difference between moist and dry soil is an indication of the moisture level of the parcel.

Contact & info

Code of object:	1
Soil type:	Loamy sand

Method		**Result**	**Unit**	**Method**	**RvA**
Results analyses	Nitrogen	1560	mg N/kg	Em: NTT4+6	
	Total sulphur stock	575	mg S/kg	Em: STT6:(Gw NEN 6966)	
	P-plant available	26,5	mg P/kg	Em: CCL3(PAE®)	
	P-Al	267	mg P_2O_5/100 g	PAL1: Gw NEN 5793	
	K-soil stock	8,1	mmol+/kg	Em: NIRS (TSC®)	
	Ca-soil stock	171	mmol+/kg	Em: NIRS (TSC®)	
	Mg-soil stock	22,5	mmol+/kg	Em: NIRS (TSC®)	
	Na-soil stock	1,9	mmol+/kg	Em: NIRS (TSC®)	
	pH-$CaCl_2$	7,1		Em:PHC3(Gw NEN ISO 10390)	
	C-organic	2,9	%	Em: NIRS (TSC®)	
	Organic matter	5,2	%	Em: NIRS (TSC®)	
	C-inorganic	0,57	%	Em: CAN6	
	Carbonate lime	4,1	%	Em: CAN6	
	Clay	5	%	Em: NIRS (TSC®)	
	Silt (2-50 µm)	20	%	Em: NIRS (TSC®)	
	Sand (>50 µm)	66	%	Em: NIRS (TSC®)	
	Clay-humus (CEC)	182	mmol+/kg	Em: NIRS (TSC®)	
	Microbial biomass	155	mg C/kg	Em: NIRS (TSC®)	
	Soil life	65	mg N/kg	Em: NIRS (TSC®)	
	Fungal biomass	116	mg C/kg	Em: NIRS (TSC®)	
	Bacterial biomass	100	mg C/kg	Em: NIRS (TSC®)	

The values stated on page 1 and 2 under 'Result' are calculated from the above mentioned analysis results.

Q Method accredited by RvA
Em: Method Eurofins Agro, Gw: Equivalent of, Cf: In conformity with
All procedures have been completed within the maximum shelf life between sampling and analysis.

Results are reported in dry soil.
The reported results only refer to the processed material.

Sample was taken by:	Jan van der Smit
Sampling method:	under Eurofins Agro standard MIN 3020 Q

MODIFIED REPORT This report supersedes all earlier versions sent under the same number on the basis of "date report".

651337, 14-05-2019