

Fertilisation of peat mixtures

Wim Voogt



Base dressing

■ Base potting soil:

- Pg Mix, (NPK = 12 14 24) 0.5 – 0.75 kg /m³
- CaCO₃ 2 – 4 kg/m³

■ Stock

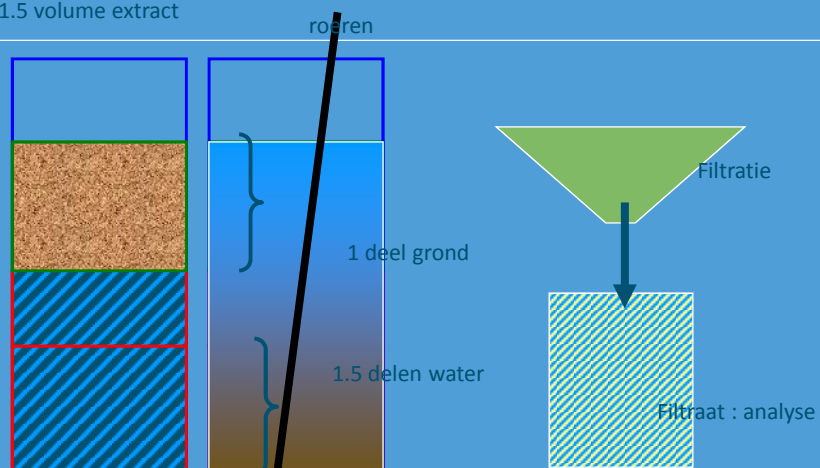
- 0.5 kg Pg Mix = EC 0.5 mS/cm, N 3 mmol/l = 75 g/pot (12 cm)
- Total N demand= approx. 300 mg/pot = **25 %**
- Ca, totale demand = approx. mg/pot = >> **1500 %**



- 0.5 kg Pg Mix = EC 0.4 – 0.7 mS/cm
- 1.8 – 4.3 mmol/l (6.5 – 8.5 mmol/l 'soil'- solution)
- 12 cm pot = approx. 75 mg/pot
- Total demand = ca 300 mg/pot = 25 %

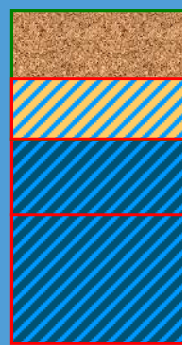
Analytical method organic substrates

1: 1.5 volume extract



Dilution !!

Soil solution



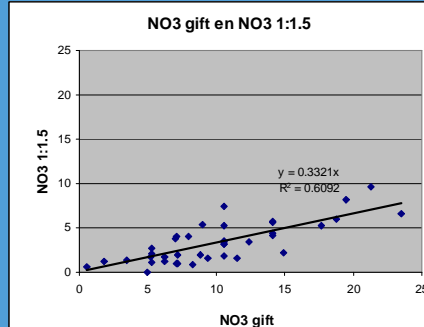
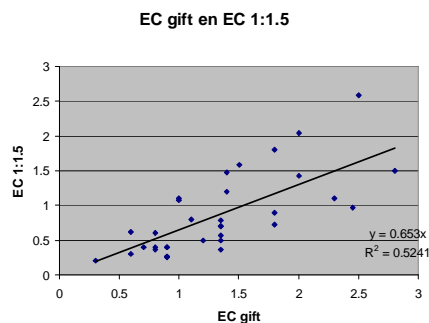
1 part soil

Matrix (25 %)
moisture (45 %)
Air (30 %)

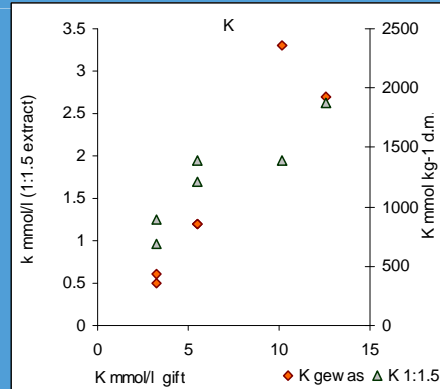
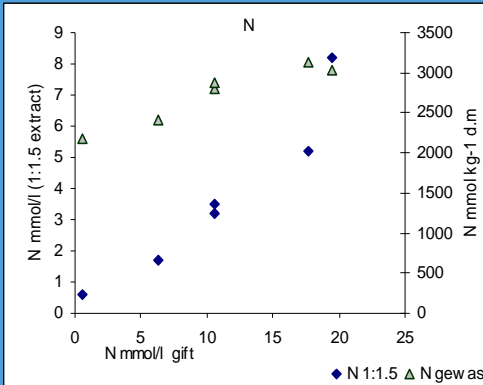
$$\text{Dilution} = 0.45 / (1.5 + 0.45) = 0.23 = 4.3$$

Fertilisation in practice

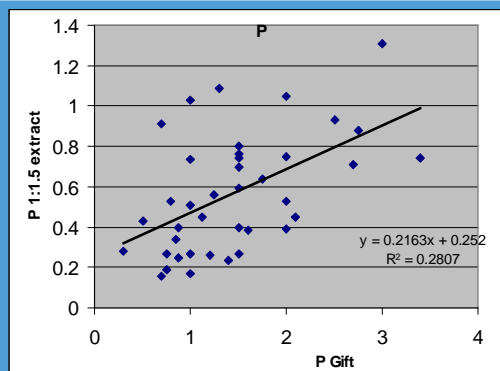
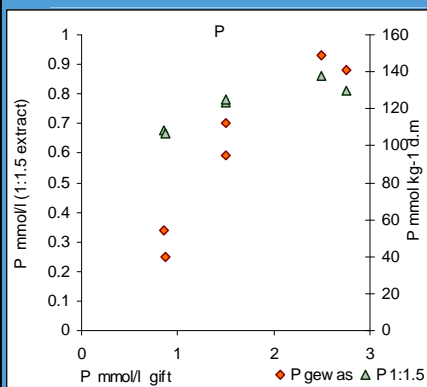
Kg Pg Mix	EC	N	P	K
0.25	0.3 - 0.4	0.5 - 1.5	0.05 - 0.13	0.2 - 0.4
0.5	0.4 - 0.7	1.5 - 4.3	0.20 - 0.70	0.5 - 1.6
1	0.7 - 1.2	3.4 - 6.6	0.40 - 1.24	1.1 - 2.6
1.5	0.9 - 1.4	4.9 - 8.6	0.6 - 1.50	1.5 - 3.3



Supply and uptake



P supply and uptake



Potted plants

- Too many species
- Classification into groups
 - TOTAL NUTRIENT DEMAND
 - SALINITY
 - pH CLASS

3.1 KLASSE-INDELING

Klasse	Gewas	Synoniem
1.1.1	Dionaea	
1.1.1	Drosera	
1.1.1	Sarracenia	
1.1.4	Asplenium	
1.3.5	Aporocactus	Cereus
1.3.5	Cereus	2.1.4 Tillandsia
		2.1.4 Vuylstekeara
		2.1.4 Zelkova
		2.1.5 Saintpaulia
		2.2.3 Achimenes
		2.2.3 Aeschynanthus *
		2.2.3 Calceolaria (perkpl)
		2.2.3 Callistemon
4.2.4	Sparmannia	
4.2.4	Zantedeschia	Calla
4.2.5	Capsicum *	
4.2.5	Hebe *	Veronica
4.3.4	Brugmansia	Datura
4.3.5	Pelargonium	
5.1.4	Vriesea	
5.2.4	Aechmea	

pH

klasse	streefwaarde	grenswaarde waarboven NH ₄ -aanpassing
X.X.1	< 4.6*	5.1
X.X.2	4.6 - 5.4	5.9
X.X.3	4.9 - 5.7	6.2
X.X.4	5.2 - 6.0	6.5
X.X.5	5.5 - 6.3	6.8



WAGENINGEN UR
For quality of life

Potted plants and salinity

Klasse	Salinity class	EC dS m ⁻¹	Na mmol l ⁻¹	Cl mmol l ⁻¹
. 1.	susceptible	1	1.7	1.7
. 2 .	Moderate suscept.	1.4	2.5	2.5
. 3 .	tolerant	1.8	3.5	3.5

Klasse 1	Klasse 2	Klasse 3
Asplenium	Saintpaulia	Bougainvillea
Erica	Anthurium	Clerodendrum
Rhododendron	Areca	Chrysanthemum
Chamaedorea	Calathea	Hibiscus
Neoregelia	Cordyline	Petunea
Osteospermum	Dracaena	Pelargonium
Phalaenopsis	Kalanchoe	Hedera



WAGENINGEN UR
For quality of life

Example recommendation system

Group 1				
	Nutrient solution		1:1½ extract	
	Veg. + Gen. ¹		Veg. + Gen.	
EC mS cm ⁻¹	0.5		0.40	Crops: <i>Dionea</i> <i>Drosera</i> <i>Asplenium</i> <i>Cereus</i> <i>Echinocactus</i> <i>Opuntia</i> (approx. 20 species)
NH ₄ mmol l ⁻¹	0.4		<0.1	
K	1.8		1.0	
Ca	1.0		0.8	
Mg	0.25		0.3	
NO ₃	3.5		1.5	
SO ₄	0.35		0.4	
H ₂ PO ₄	0.5		0.5	

Group 4					
	Nutrient solution		1:1½ extract		
	Veg. ¹	Gen.	Veg.	Gen.	
EC mS cm ⁻¹	2.0	1.5	0.90	0.70	Crops: <i>Bougainvillea</i> <i>Clerodendrum</i> <i>Chrysanthemum</i> <i>Hibiscus</i> <i>Petunea</i> <i>Pelargonium</i> (approx. 20 species)
NH ₄ mmol l ⁻¹	1.4	1.0	<0.1	<0.1	
K	7.3	6.5	2.4	2.5	
Ca	4.0	2.5	1.4	1.0	
Mg	1.0	0.75	0.6	0.5	
NO ₃	14.1	9.0	6.0	3.5	
SO ₄	1.3	1.75	1.0	1.4	
H ₂ PO ₄	2.0	1.5	0.5	0.5	

Micro elements

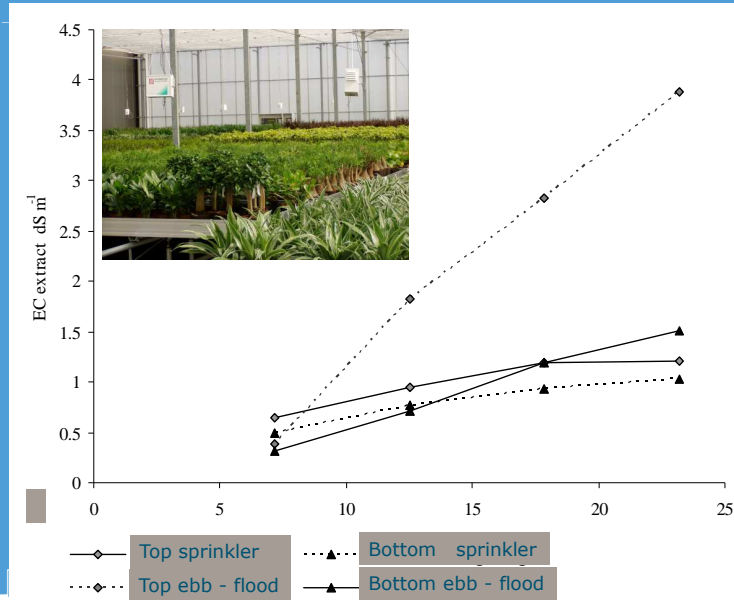
all groups

	Nutrient solution	Guide values	Maximum	Minimum
Fe $\mu\text{mol l}^{-1}$	15	8	5	10
Mn	5	2	1	3
Zn	3	2	1.5	2.5
B	10	15	10	25
Cu	0.5	0.7	nd	0.9
Mo	0.5	nd	nd	nd

Single salts versus compound fertilizers

	enkelvoudig	Corn bak	Peters 20 20 20	P excel 13 5 20
N	10.1%	12.8%	20.0	13
P	9.2%	5.8%	20.0	5
K	28.1%	36.0%	20.0	20
Ca	9.6%	0.0%	0.1	7
Mg	2.8%	1.6%		2
S	6.84%	3.22%		0.02
Fe	0.18%	0.07%	0.05	0.12
Mn	0.06%	0.03%	0.03	0.05
Zn	0.04%	0.03%	0.003	0.03
B	0.02%	0.01%	0.01	0.02
Cu	0.01%	0.03%	0.004	0.01
Mo	0.01%	0.00%	0.001	0.01

EC en sampling



EC recommendation

