

Comparison of no-peat and peat substrates: water retention and performance in cultivation

Mélanie CORDIER, Cédric CAMPS, Christoph CARLEN, cedric.camps@agroscope.admin.ch
Agroscope, CH-1964 Conthey; www.agroscope.ch

Aim

The current demand in Switzerland is to develop substrates without peat (today 150'000 tons are imported each year). However, they need to have the same physical and chemical properties to allow an optimal development of plants. This work compares several substrates to analyse their water retention and test the development of two ornamental crops: *perlargonium* and *schefflera*.

Method

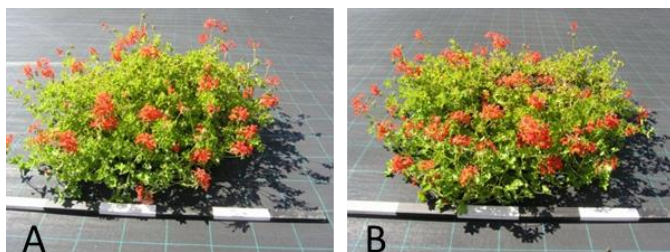
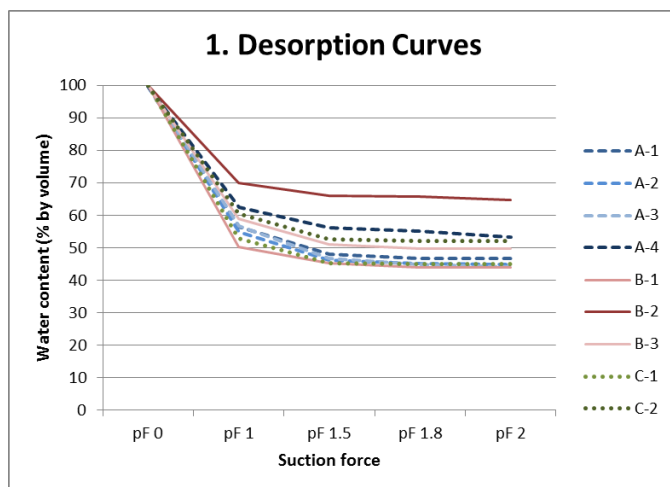
1. Determine proportion occupied by air and water thanks to desorption table. We apply a suction force similar to roots force, until pF2 (buffer zone for dryness).
2. Each week we measure different parameters: substrate EC, plant's height and number of flowers (*perlargonium*).

Results

Three different groups of substrates were tested: A. peat substrates, B. no-peat substrates and C. no-peat and optimized substrates (more finely chopped material).

1. Water retention of the substrates

Water retention is different in terms of substrates components but also within a group of substrates. No-peat and optimized substrates (C) have quite similar results than peat substrates (A).



2. Plant Development

For both crops we notice a difference of EC between the three different substrates
=> not correlated with the presence/absence of peat.

The final height for *schefflera* is similar for all substrates. We observe difference of height with *perlargonium* production
=> not correlated with the presence/absence of peat.

Difference of flowers production is not different between the different groups of substrates. We can say that group C has a similar production than group B.

Table 1: <i>Pelargonium</i>				Table 2: <i>Schefflera</i>		
Substrate	EC (mS)	Final length	Total number of flowers	Substrate	EC (mS)	Final Length
A-1	1.63ab	90a	1103a	A-2	2.83a	59
A-2	1.66a	78ab	933ab	A-4	1.67e	61.5
A-3	1.23c	68b	906ab	B-1	2.00d	59.9
B-3	1.36abc	81.3ab	790b	B-2	2.38bc	59.7
C-1	1.24c	73ab	899ab	B-3	2.43b	56.4
C-2	1.36abc	80ab	813b	C-1	2.22bcd	59.5
				C-2	2.52ab	59.6
<i>p-value</i>	<0.0001	0.002	0.002	<i>p-value</i>	<0.0001	0.925

No visual difference between no-peat and peat substrates

Conclusion

All substrates are satisfying for ornamental crops. There was no important differences between height and floral production between plants. The use of a fertilizer delay was sufficient for all substrates for a four months production. To note that water retention and EC were different. In future we have to test the different irrigation to apply depending on substrates we use.