Ecoroof Soils and Systems Comparisons

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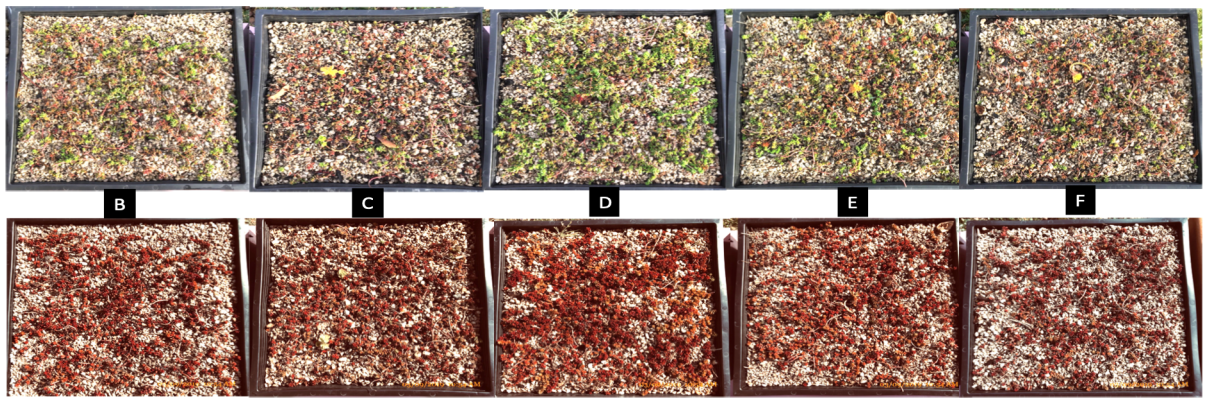
Tray*	Dry weight	Wet weight	Rain capacity	Rain Capture 2019	Rain Capture 2020	Rain Capture 2020.	Rain Capture %
	psf	psf	psf	psf	psf	inches/sf	% of #6
A	11.8	19.2	7.4		55.9	10.7	71%
B	10.6	18.1	7.5	50.4	64.5	12.4	82%
C	14.0	20.3	6.3	48.6	59.8	11.5	76%
D	11.9	19.2	7.3	50.2	62.3	12.0	80%
E	12.2	19.1	6.9	48.0	58.9	11.3	75%
F	10.2	17.8	7.6	52.6	64.8	12.5	83%
1	10.7	18.0	7.3		69.0	13.3	88%
2	9.2	16.4	7.2		71.7	13.8	92%
3	11.6	19.3	7.7		69.7	13.4	89%
4	10.2	19.2	9.0		71.8	13.8	92%
5	9.5	19.4	9.9		75.1	14.4	96%
6	9.9	18.9	9.0		78.2	15.0	100%
7	9.5	17.4	7.9		70.9	13.6	91%
8	8.9	15.9	7.0		69.8	13.4	89%
9	13.9	22.5	8.6		67.8	13.0	87%
10	11.5	18.2	6.7		69.2	13.3	88%
11	11.0	22.2	11.2		62.9	12.1	80%
12	10.6	15.9	5.3		60.4	11.6	77%
13	8.6	16.1	7.5		57.8	11.1	74%
14	9.4	15.8	6.4		64.3	12.4	82%
15	11.7	17.4	5.7		62.3	12.0	80%
16	5.9	9.9	4.0		55.6	10.7	71%
17	10.6	15.9	5.3		57.8	11.1	74%
18	8.1	13.8	5.7		56.6	10.9	72%

Trays after 3 months Dec. 12, 2018



Trays after 6 months Mar. 9, 2019

Ecoroofs have been used in Portland for rain management since 1999 when the Bureau of Environmental Services put ecoroofs in Portland's first Stormwater Management Manual as an approved green technique. Since then, many ecoroof products have come on the market. But what hasn't been done is comparing one product to another. This poster shows the tip of the iceberg as it relates to the complexity of trying to do just that. The purpose of this initial research is to "test the waters" to determine if more rigorous methods and related expenses are justified.

In 2018 5 trays were set up to primarily measure rain capture of different proprietary soils. In 2019 several more trays were added, 18 of those trays are shown in this poster. Products are confidential at this time. The table shows 2019 results for trays B,C,D,E,F and 2020 results for all trays. Most results are shown in pounds per square foot (psf), as this is important for structural design. There is a column for rain capture inches depth per sf. Two important factors not included here are cost and plant health.

*Tray 6 has most rain capture, however Tray 5 is a close second. All of the top ten trays out perform the original 5 trays.

* Dry weight is important when considering the work effort needed to get soil and materials up onto the roof. Tray 16 is lightest but its rain capture is only 71% of Tray 6.
* Wet weights are critical regarding structural design. Tray 9 is 3.5psf heavier than Tray 6 with capture at 87% of Tray 6.
* Rain/water capacity is the difference between the driest and wettest measured conditions, although none of the trays have ever held that amount of water from one storm as soils and materials respond differently at different times of year.
* Rain capture for 2019 shows F,B,D,C,E from most to least. For 2020 F,B,D,C,E remain the same but B is getting much closer to F performance. Trays 1-10 all out perform the original 6 trays in 2020.
* Capture is also shown in inches of rain but does not represent measurement of all storms. I miss some of them.

Conclusion: Not all ecoroofs perform the same and the differences appear important to determine. Higher quality research is warranted to obtain more conclusive results and potentially the development of performance standards.