Supplemental Material

**Appendix 1** Chemical characteristics of the substrate.

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| Chemical characteristics | Units | Mean in P1 (n = 3) | Mean in P2 (n = 3) | Mean in P3 (n = 3) | \*Legal threshold |
| Conductivity | µS/cm | 204.2 | 243 | 210 | - |
| Organic carbon | % | 9.03 | 16.35 | 7.05 |  |
| Nitrogen | % | 0.34 | 0.52 | 0.19 | - |
| pH | - | 3.82 | 3.70 | 3.88 | - |
| Aluminium | µg/g | 5,305 | 4,172 | 5,980 |  |
| Arsenic | µg/g | 3.82 | 4.04 | 2.38 | 30 |
| Boron | µg/g | < 0.50 | < 0.50 | < 0.50 |  |
| Barium | µg/g | 68.58 | 66 | 42 |  |
| Beryllium | µg/g | < 0.20 | < 0.20 | < 0.20 |  |
| Calcium | µg/g | 1,665 | 2,328 | 1,266 | - |
| Cadmium | µg/g | 0.68 | 1.34 | 0.43 | 5 |
| Cobalt | µg/g | 2.03 | 2.16 | 3.12 | 50 |
| Chromium | µg/g | 10.59 | 8.85 | 14.93 | 250 |
| Copper | µg/g | 13.29 | 19.99 | 14.40 | 100 |
| Iron | µg/g | 7,125 | 5,151 | 7,898 |  |
| Potassium | µg/g | 384 | 571 | 390 | - |
| Magnesium | µg/g | 1,314 | 1,340 | 2,088 | - |
| Manganese | µg/g | 227 | 156 | 108 | 1000 |
| Molybdenum | µg/g | < 5.0 | < 5.0 | < 5.0 | 10 |
| Sodium | µg/g | 82.2 | 115 | 60.16 | - |
| Nickel | µg/g | 6.72 | 10.28 | 10.48 | 100 |
| Phosphorus | µg/g | 363 | 453 | 405 | - |
| Lead | µg/g | 18 | 33.41 | 13.66 | 500 |
| Sulfur | µg/g | 378 | 594 | 319 | - |
| Selenium | µg/g | < 2.0 | < 2.0 | < 2.0 | 3 |
| Silicon | µg/g | 14 | 17.4 | < 5.0 |  |
| Strontium | µg/g | 9 | 12 | 7.4 | - |
| Titanium | µg/g | 472 | 275 | 335 |  |
| Thallium | µg/g | < 5.0 | < 5.0 | < 5.0 |  |
| Vanadium | µg/g | 16 | 10 | 14.46 |  |
| Zinc | µg/g | 26.23 | 34.03 | 24.30 | 500 |
| Total Organic Carbon | % | 7.61 | 15.49 | 6.66 | - |

Note: Total elements are presented here.

\*: Government of Quebec (2017).

P1=Plot 1; P2=Plot 2; P3= Plot 3.

**Appendix 2** Different stages of the root study and the location of the trenchesaround each measured tree.

Une image contenant texte, capture d’écran, sapin, plante

Description générée automatiquement

**Sand**

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