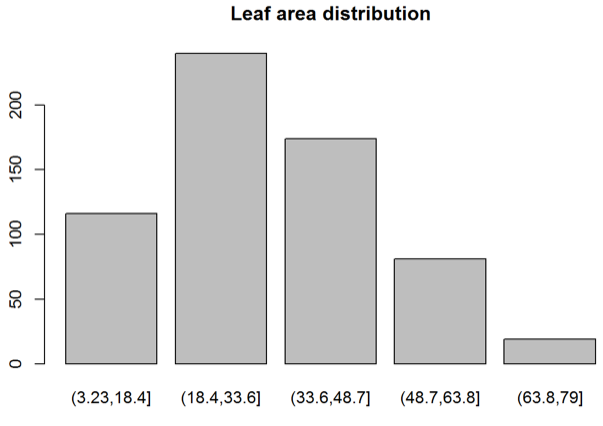
Supplementary File 2:

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**Figure S1.** Leaf area count of the five leaf size classes (extra small, small, medium, large, extra-large), establishing the proportions of leaves to be created by the Leaf Creation Algorithm (LCA).

**Figure S2.** Linear trend between branch length and first order branch diameter (N=12).

**Figure S3.** Branch leaf area as a function of first order branch diameter (N=13).

**Figure S4.** Relative leaf area according the relative branch position. Equation root at 8.47% relative branch position defined the initial position for insertion of leaves.

**Table S1. Measured and adjusted leaf parameters per leaf class**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Leaf Class | Mean leaf area (m²) | Proportion (%) | Mean leaf length (m) | Mean leaf width (m) | Mean test leaf area (m²) | Leaf length (m) |
| Extra large | 71.40 | 3.15873 | 0.14307035 | 0.07133543 | 66.68 | 0.15319195 |
| Large | 56.25 | 12.857143 | 0.12648713 | 0.06177711 | 51.52 | 0.13809366 |
| Medium | 41.15 | 27.619048 | 0.10918835 | 0.05361206 | 38.38 | 0.11706975 |
| Small | 26.00 | 38.095238 | 0.08701727 | 0.04295126 | 24.50 | 0.09232830 |
| Extra small | 10.82 | 18.412698 | 0.05976877 | 0.03126413 | 12.32 | 0.05246372 |

**Table S2. Leaf attributes that define the leaf geometry points, from which six geometric points are derived: length, width, lower and upper edges.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Leaf Class | Leaf length (m) | Leaf width (m) | Rectangle base (m) | | Rectangle top (m) |
| Extra large | 0.15319195 | 0.06339890 | 0.04183469 | 0.11388332 | |
| Large | 0.13809366 | 0.05577857 | 0.03692711 | 0.10052379 | |
| Medium | 0.11706975 | 0.04794724 | 0.03169005 | 0.08626736 | |
| Small | 0.09232830 | 0.03831161 | 0.02520048 | 0.06860131 | |
| Extra small | 0.05246372 | 0.02677285 | 0.01644799 | 0.04477510 | |

**Table S3 – Shaded area and insolation reduction of wild cherry trees (Pa\_1 to Pa\_6, in symbols) for different leaf modes (RL, EL and NoL) and HP.**

|  |  |  |  |
| --- | --- | --- | --- |
| TreeID | Shaded area (m²) | Total insolation reduction (kwh) | Mean insolation reduction (%) |
| Pa\_1\_RL | 135.93 | 2326.7862 | 8.91 |
| Pa\_1\_EL | 126.08 | 1772.3115 | 7.31 |
| Pa\_1\_NoL | 85.36 | 913.4776 | 5.57 |
| Pa\_1\_HP | 183.62 | NA | 6.94 |
| Pa\_2\_RL | 188.35 | 3229.6879 | 8.92 |
| Pa\_2\_EL | 181.61 | 2968.8094 | 8.50 |
| Pa\_2\_NoL | 118.97 | 1315.435 | 5.75 |
| Pa\_2\_HP | 256.31 | NA | 8.81 |
| Pa\_3\_RL | 179.75 | 2726.9472 | 7.89 |
| Pa\_3\_EL | 161.71 | 1905.5864 | 6.13 |
| Pa\_3\_NoL | 104.62 | 898.6653 | 4.47 |
| Pa\_3\_HP | 225.70 | NA | 8.39 |
| Pa\_4\_RL | 204.96 | 3864.0737 | 9.81 |
| Pa\_4\_EL | 182.64 | 2604.8431 | 7.42 |
| Pa\_4\_NoL | 134.61 | 1483.7029 | 5.73 |
| Pa\_4\_HP | 241.81 | NA | 9.05 |
| Pa\_5\_RL | 229.94 | 4098.1172 | 9.27 |
| Pa\_5\_EL | 214.04 | 3022.479 | 7.35 |
| Pa\_5\_NoL | 141.55 | 1493.6384 | 5.49 |
| Pa\_5\_HP | 316.93 | NA | 7.59 |
| Pa\_6\_RL | 116.52 | 1748.909 | 7.81 |
| Pa\_6\_EL | 105.19 | 1233.7298 | 6.10 |
| Pa\_6\_NoL | 57.17 | 495.1845 | 4.51 |
| Pa\_6\_HP | 181.15 | NA | 6.34 |

Supplementary File 1:

There are seven short videos (.GIFs) showing tree Pa\_5 with the different leaf modes in horizontal and top view perspective (see image below as in the image below). Additionally, we provide an extra video for the realistic leaves mode, where leaves can be seen in details.

