

Quantifying Sustainability with i-Tree® i-Tree® Canopy



If you or your community have questions about your tree canopy cover but don't know where to start, i-Tree® Canopy can help. i-Tree® Canopy is part of the i-Tree® software suite designed to provide our clients with land cover type classifications, percentages, and benefit estimates for tree canopy cover based on aerial imagery. i-Tree® tools are designed to highlight the significance of community trees and advocate for them as sustainable infrastructure.



i-Tree® Canopy is an easy-to-use and cost-effective tool used to assess an entire urban or rural forest's tree canopy (e.g., towns, counties, large campuses, etc.). Once your project boundary and desired land cover types (e.g., tree/shrub, soil, water, impervious surface, etc.) have been decided, i-Tree® Canopy will begin distributing random points (Figure 1).

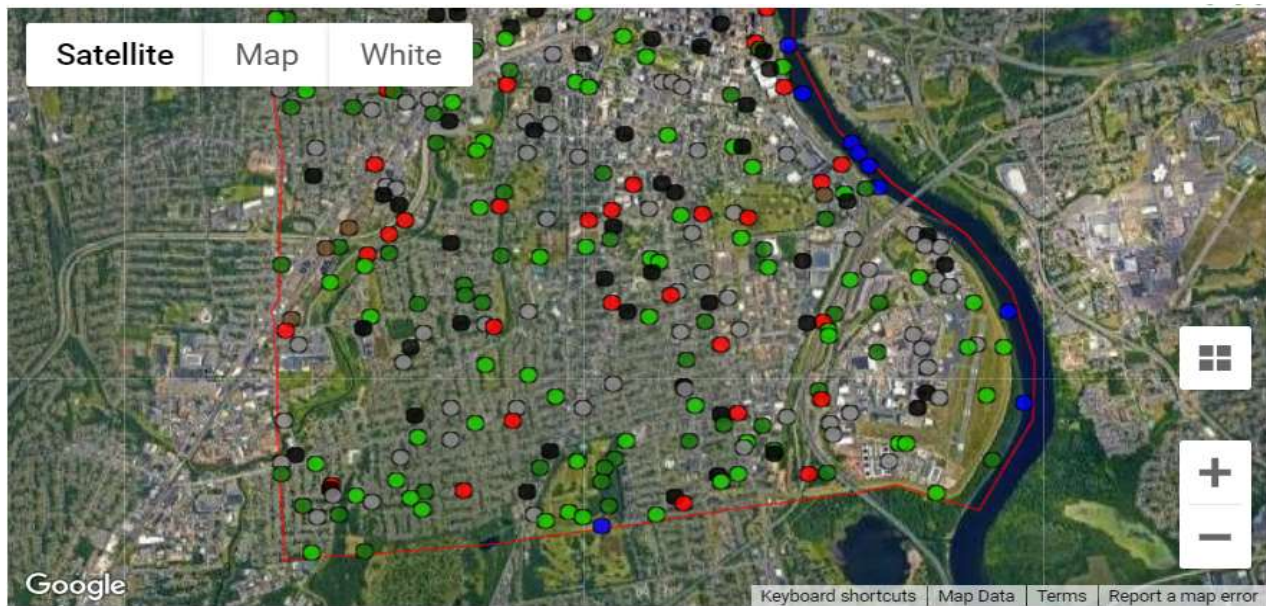


Figure 1. Example of Canopy sample points.

Each random point is then classified as one of the desired land cover types. i-Tree® Canopy provides statistically valid land cover type estimates (Figure 2).

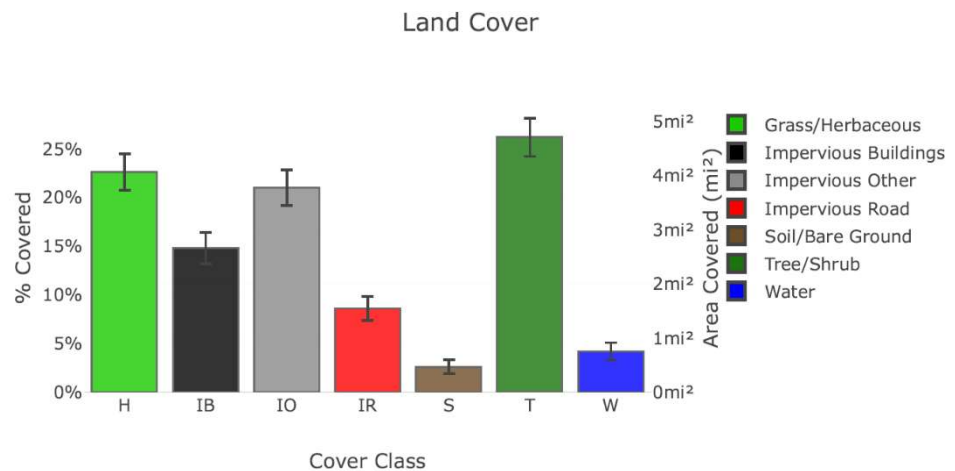


Figure 2. Example of land cover type percentages.

i-Tree® Canopy then uses your tree/shrub land cover percentage to provide carbon dioxide, air pollution, and stormwater (hydrological) impact estimates (Figure 3).

Tree Benefit Estimates: Carbon (English units)

Description	Carbon (kT)	±SE	CO ₂ Equiv. (kT)	±SE	Value (USD)	±SE
Sequestered annually in trees	3.21	±0.24	11.79	±0.88	\$548,166	±41,144
Stored in trees (Note: this benefit is not an annual rate)	103.35	±7.76	378.94	±28.44	\$17,625,735	±1,322,939

Tree Benefit Estimates: Air Pollution (English units)

Abbr.	Description	Amount (T)	±SE	Value (USD)	±SE
CO	Carbon Monoxide removed annually	3.28	±0.25	\$2,042	±153
NO ₂	Nitrogen Dioxide removed annually	8.12	±0.61	\$1,956	±147
O ₃	Ozone removed annually	57.37	±4.31	\$77,040	±5,782
SO ₂	Sulfur Dioxide removed annually	1.54	±0.12	\$120	±9
PM _{2.5}	Particulate Matter less than 2.5 microns removed annually	2.85	±0.21	\$156,116	±11,718
PM ₁₀ *	Particulate Matter greater than 2.5 microns and less than 10 microns removed annually	7.97	±0.60	\$26,901	±2,019
Total		81.12	±6.09	\$264,175	±19,828

Tree Benefit Estimates: Hydrological (English units)

Abbr.	Benefit	Amount (Mgal)	±SE	Value (USD)	±SE
AVRO	Avoided Runoff	21.39	±1.61	\$191,148	±14,347
E	Evaporation	223.52	±16.78	N/A	N/A
I	Interception	224.07	±16.82	N/A	N/A
T	Transpiration	370.12	±27.78	N/A	N/A
PE	Potential Evaporation	1,864.93	±139.98	N/A	N/A
PET	Potential Evapotranspiration	1,369.84	±102.82	N/A	N/A

Figure 3. Example tree canopy benefit estimates.

The results from i-Tree® Canopy can be used in numerous ways. Below are a few of the most common uses of the information.

- Land cover type percentage baselines can be established for future monitoring.
- Canopy estimates can be used to help set canopy goals and provide a building block to generating interest in having a more in-depth analysis performed, such as an i-Tree® Eco project.
- Tree canopy benefit estimates can be used to help inform interested parties about the benefits that trees provide.

Additional information can be found on the i-Tree® website: www.itreetools.org.

For more information, please contact Bartlett Consulting at consulting@bartlett.com or visit www.bartlett.com/bartlett-consulting.cfm.

Bartlett Consulting is a division of The F.A. Bartlett Tree Expert Company with Consulting teams located throughout the United States, Canada, the United Kingdom, and Ireland. This highly educated, experienced, and qualified team provide a wide range of services that include tree preservation, construction monitoring, creation of management plans, tree inventories, tree risk assessments and mitigation plans, and development and support for Bartlett's web-based tree management program ArborScope™.

