What Can A Tree Do For You?

Tree Data - Resource Sheet

Table 1. How Much Carbon Is In a Tree? (estimated in pounds)

Tree Height (feet) \ Diameter (inches)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
5	21	24	27	32	39	47	56	67	80	93	109	125	142	162	183	205	229	255
10	22	26	34	44	57	73	92	114	139	167	197	231	265	304	346	391	439	490
15	23	29	40	56	75	99	128	161	198	239	285	336	387	446	509	576	648	724
20	24	32	47	67	94	126	164	207	257	313	374	441	509	588	672	762	858	960
25	24	35	53	79	112	152	199	254	316	385	462	546	631	729	834	947	1067	1194
30	25	38	60	91	130	178	235	301	375	458	550	651	753	870	997	1132	1276	1428
35	26	41	67	102	148	204	271	347	434	531	639	756	875	1013	1160	1318	1486	1664
40	26	44	73	114	166	231	307	394	493	604	727	861	997	1154	1322	1503	1694	1898
45	27	47	80	126	185	257	342	441	553	677	815	966	1120	1296	1486	1689	1904	2133
50	28	50	86	137	203	283	378	487	611	750	903	1071	1242	1438	1648	1873	2113	2368
55	29	53	93	149	222	310	415	535	672	825	994	1179	1366	1583	1815	2063	2327	2608
60	29	56	99	161	239	336	450	581	730	896	1080	1281	1486	1721	1974	2244	2532	2837
65	30	59	106	172	258	362	485	627	789	969	1168	1386	1608	1862	2136	2429	2741	3071
70	31	61	113	184	276	388	521	674	848	1042	1256	1491	1730	2005	2300	2615	2951	3307
75	32	64	119	196	294	415	557	721	907	1115	1345	1596	1852	2146	2462	2800	3159	3541
80	32	67	126	207	312	441	592	767	966	1188	1433	1701	1974	2287	2624	2985	3368	3775
85	33	70	132	219	331	467	628	814	1025	1261	1521	1806	2096	2430	2788	3171	3578	4011
90	34	73	139	231	349	493	664	861	1084	1333	1609	1911	2218	2571	2950	3355	3787	4245
95	34	76	145	242	367	520	700	908	1143	1407	1698	2017	2341	2713	3113	3541	3997	4480
100	35	79	152	254	385	546	735	954	1202	1479	1786	2121	2462	2854	3276	3726	4206	4714
105	36	82	158	266	404	572	771	1001	1261	1552	1874	2226	2584	2996	3438	3911	4414	4949
110	37	85	165	277	422	598	807	1048	1321	1625	1962	2332	2707	3138	3601	4097	4625	5184
115	37	88	172	289	440	625	843	1094	1379	1698	2050	2436	2829	3279	3764	4282	4833	5418
120	38	91	178	301	458	651	879	1141	1439	1771	2139	2542	2951	3422	3927	4468	5043	5654

These estimates are based on the formula: M_C (mass of carbon in the tree) = 0.5 x M_w (mass of the wood), where M_w = 0.55 x V (volume of tree) x D_w (density of wood); V = 0.0567 + 0.5074 x $[CBH/\pi]^2$ x H. It assumes D_w = 0.6 g/cm^3 and that water makes up 45% of the tree's mass.
This table is credited to Project Learning Tree - Focus on Forests, Activity 8.

Table 2. Global Terrestrial Biomes Table - Carbon Storage (gigaTons of Carbon)

Ecosystem Type	Area (10^{12}m^2)	Mean Plant Biomass (g/m^2)	Total Plant Carbon Storage (gTC)
Boreal Forest	12	18000	108
Cultivated Land	14	1000	7
Desert Scrub	18	600	5.4
Lake and Stream	2.5	20	0.02
Rock, Ice, Sand	24	20	0.2
Savanna	15	3600	27
Swamp and marsh	2	13600	13.6
Temperate deciduous forest	7	27000	95
Temperate evergreen forest	5	32000	80
Temperate grasslands	9	1400	6.3
Tropical rain forest	17	40000	340
Tropical seasonal forest	7.5	32000	120
Tundra and alpine meadow	8	600	2.4
Woodland and shrubland	8	5400	22
Total Land	**149**	**11100**	**827**

Area: total area occupied by each biome type. Mean Plant Biomass: the average grams of biomass per square meter of each biome type. Total plant carbon storage: the gigatons of carbon stored in each biome type. This table is adapted from Whittaker and Likens 1973; GLOBE Carbon Cycle

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