

Tree Facts

Based on average practices, how many trees are planted per acre as part of American Forests' Global ReLeaf reforestation projects?

- We assume a population of 200-300 trees per acre through our Global ReLeaf projects. This is only an average and our projects vary considerably depending on the ecology of project area, species type, and a number of other factors.

Using real world examples and average Global ReLeaf practices, about how many trees would I need to plant to cover the following areas?

- Central park is 843 acres. (170,000 – 250,000 trees)
- The National Mall is 309.2 acres. (60,000 – 90,000 trees)
- Disney's Magic Kingdom is 107 acres (20,000 – 30,000 trees)
- Texas Stadium is 14 acres (2,800 – 4,200 trees)
- Fenway Park is 9 acres. (1,800 – 2,700 trees)
- Venice Beach is 6 acres. (1,200 – 1,800 trees)
- The average football field is 1.7 acres. (340 - 490 trees)

How many acres would the following animals cover during some of their “normal” activities?

- The endangered Red-cockaded Woodpecker requires up to 500 acres to live.¹
- Female Black Bears living in the mountains can roam over 2,800 acres.²
- Gray foxes generally have a home range of about 500 acres.³
- A Golden Eagle needs a territory of around 3,000 acres to fly over and hunt.⁴

How do healthy trees reduce the buildup of greenhouse gases in the atmosphere?

- Planting trees is considered one of the least expensive, most effective means of drawing excess carbon dioxide from the atmosphere.
- Deforestation accounts for up to 25% of global emissions of heat-trapping gases.⁵

¹ <http://www.fws.gov/carolinasandhills/rcw.html>

² <http://www.wildwnc.org/education/animals/black-bear-ursus-americanus>

³ http://www.state.nj.us/dep/fgw/speciesinfo_fox.htm

⁴ <http://www.birdlvr.com/golden-eagle/birds-the-golden-eagle/>

⁵ <http://www.independent.co.uk/environment/climate-change/deforestation-the-hidden-cause-of-global-warming-448734.html>

- Over a year, an acre of forest can consume the amount of carbon dioxide created by driving a car 26,000 miles, about twice the annual mileage for an average driver.⁶
- One tree absorbs carbon dioxide at the rate of 48 pounds per year.⁷
- Forests are the largest forms of carbon storage, or sinks, in the United States. Currently, carbon sequestration by plants offset 15% of total U.S. carbon dioxide emissions from the transportation and energy sectors.⁸

How do trees contribute to energy savings?

- A mature tree can reduce peak summer temperatures by 2° to 9° Fahrenheit through the evapotranspiration of roughly 40 gallons of water per day. If planted near a building, the cooling effects of evapotranspiration and shading can reduce energy bills by 7% to 40%.⁹
- The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day.¹⁰
- By reducing wind exposure, planting trees near a home can reduce heating bills by 2-8%.¹¹

How do trees contribute to improved air quality?

- A single tree can absorb 10 pounds of air pollutants per year. This can be valued at \$45 per year.¹²
- The average healthy mature tree produces roughly 260 lbs of net oxygen annually. The average person consumes 386 lbs of oxygen per year.¹³
- Ground-level Ozone (O₃), Particulate Matter (PM₁₀), Nitrogen Dioxide (NO₂), Sulfur Dioxide (SO₂), Lead (Pb), and Carbon Monoxide (CO) are all hazardous

⁶ <http://www.dnr.state.md.us/forests/publications/urban2.html>

⁷ American Forests Global ReLeaf 2 Pamphlet CFC #10632

⁸ <http://www.epa.gov/sequestration/faq.html>

⁹ <http://www.epa.gov/heatisld/strategies/vegetation.html>

¹⁰ <http://www.dnr.state.oh.us/Home/urban/features/trimming/tabid/5464/Default.aspx>

¹¹ <http://www.epa.gov/heatisld/strategies/vegetation.html>

¹² Urban Forest Research, *Center for Urban Forest Research*, March 2001.

¹³ http://www.fs.fed.us/psw/publications/documents/psw_gtr202/psw_gtr202.pdf

byproducts of transportation and industry, and can cause major health problems.¹⁴
In 2006, urban trees in the United States absorbed an estimated 711,000 metric tons, or 1.6 billion pounds, of these harmful pollutants.¹⁵

How exactly do trees contribute to improved water quality, reduced storm water flows, and reliable water supplies?

- On average, a mature tree can absorb 36% of the rainfall it comes in contact with, translating into reduced runoff and soil erosion. Sedimentation and erosion can destroy fish eggs and other aquatic wildlife, and cause more flooding.¹⁶
- Trees act as natural pollution filters; their canopies, trunks, roots, and associated soils filter polluted particulate matter from waters flowing into streams and municipal storm water infrastructure. Trees absorb nutrients like nitrogen, phosphorus, and potassium, all common byproducts of human activities that contribute to eutrophication (nutrient levels in excess of what natural systems can support) and sedimentation in streams, lakes, and rivers.
- Over half the nation's drinking water originates from forests.¹⁷
- A single front yard tree can intercept 760 gallons of rainwater in its crown, reducing runoff and flooding on your property.¹⁸
- For every 10 percent increase in forest cover across a watershed (up to about 60 percent forest cover), treatment and chemical costs decrease by approximately 20%.¹⁹

¹⁴ <http://www.epa.gov/air/urbanair/>

¹⁵ http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B7GJD-4J7B12G-2&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000050221&_version=1&_urlV=0&_userid=10&md5=46a4caac74d8a369eb73c08be8be50e6

¹⁶ <http://www.epa.gov/heatisld/strategies/vegetation.html>

¹⁷ <http://www.fs.fed.us/publications/policy-analysis/water.pdf>

¹⁸ Urban Forest Research, *Center for Urban Forest Research*, March 2001.

¹⁹ http://www.tpl.org/content_documents/econbens_landconserve.pdf

What are some estimates for the ecological and economic value of services provided through healthy trees?

- A strategically placed tree in your yard can reduce annual air conditioning costs by about 9% and add 1% to the sales price of the property per year.²⁰
- Studies have shown that every \$1 invested in urban trees results in \$2-4 in benefits from lowered energy costs, reduced storm water flows, improved aesthetics, higher air quality, and reduced carbon dioxide concentrations.²¹
- Green tree jobs are expected to grow at a rate of 22% during this decade. That's faster than the average employment growth projected for all occupations.²²
- Shoppers in tree lined shopping districts tend to spend 12% more than shoppers in traditional urban settings.²³

How many everyday products can be produced from a single tree?

*A tree with a diameter of 12 inches at chest height (4.5 feet) can make:*²⁴

- 4 dining room tables
- 10 rocking chairs
- 364 copies of the *National Geographic*
- 285 one-pound books
- 454.5 pounds of paper
- 2,500 toothpicks

What are some interesting facts about fruit trees?

- Of the 7,500 apple varieties produced worldwide, 2,500 are grown here in the United States. Apple trees take four to five years to produce their first fruit.²⁵
- Orange trees are evergreens, seldom exceeding 9 m (30 ft) in height.²⁶ Oranges are rated #1 on nutrition among five popular fruits and are among the healthiest items in the produce section that provides valuable health benefits.²⁷
- There are over 200 species of Maple trees. Maple trees are not harmed by the tapping process because tapping only harvests about 10% of all the sap a tree produces.²⁸

²⁰ Urban Forest Research, *Center for Urban Forest Research*, March 2001.

²¹http://www.fs.fed.us/psw/programs/cufr/products/powerpoint/cufr_653_35_Selling%20U.F._St.Louis.swf

²² <http://www.bls.gov/opub/ooq/2005/spring/art03.pdf>

²³http://www.fs.fed.us/psw/programs/cufr/products/powerpoint/cufr_653_35_Selling%20U.F._St.Louis.swf

²⁴ Laura Huberman, *The American Tree Farmer*, (1988): 862-1144.

²⁵ <http://urbanext.illinois.edu/apples/facts.html>

²⁶ http://www.fillmorepirucitrus.com/Orange_Facts.htm

²⁷ http://www.associatedcontent.com/article/297366/little_known_facts_about_oranges.html

²⁸ <http://www.olkkolafarm.com/maplefacts.html>

- In the United States, there are more than 1,000 different varieties of cherry tree, almost all of them blossoming over a three-week period in late May and early June. Of those 1,000, only about ten varieties are produced commercially. Every tree produces about 7,000 cherries.²⁹

What are some additional services that trees provide for society and the environment?

- Studies show that trees in urban areas improve cognitive function, reduce crime, promote a more active lifestyle (thus improving health), and provide a sense of accomplishment to the community. For adults, views of vegetation can reduce stress, improve recovery from surgery, and even reduce aggression. Children who play in green spaces display a lower incidence of ADHD symptoms and improved performance in school.³⁰
- Those who view tree-dominated scenes tend to experience quicker recovery from stress and a higher tolerance for stress as well.³¹
- Greener urban areas lead to healthier and more social interactions between adults and children, as well as lower levels of graffiti, property crimes, and violent crimes.³²
- Forests planted by American Forests provide habitats for a variety of rare and endangered species such as the Goose Lake Redband Trout (CA), the Spotted Owl (CA), River Otters (IL), Nashville Warbler (MD), the Northern Flying Squirrel (WV), the Siberian Tiger (Russia), the Bard Owl (NJ), Red-cockaded Woodpecker (NC), Bald Eagles (FL), and Monarch Butterfly (Mexico).

²⁹ <http://www.thenibble.com/REVIEWS/MAIN/fruits/cherry-facts.asp>

³⁰ <http://treelink.org/joa/2003/may/03westphal.pdf>

³¹ Parsons, Russ. *The view from the road: Implications for stress recovery and immunization*. Journal of Environmental Psychology (1998)

³² Kuo, Frances. *The Role of Arboriculture in a Healthy Social Ecology*. Journal of Arboriculture (2003)