



WESTFEST

The TreeMendous Benefit of Trees!

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Who will save the planet from plant enemies?



Plant Doctors!





**What should we do
if a plant is sick?**

Goals



1. Go out and enjoy the outdoors!



2. Observe some differences
between healthy and sick trees



Why is this important?

1. Go out and enjoy the outdoors!



2. Observe some differences between healthy and sick trees

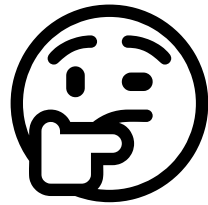
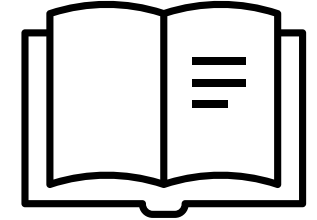
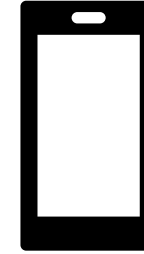




Photo: Jeanell
Pruitt, Citrus
Research and
Education Center,
Florida

<https://youtu.be/cmPAwilK2BU>

I am plants
1:04 min



Some things you can do

Draw pictures

Take photos

Keep a nature journal

iNaturalist app for plant id

Check out books

Enjoy the view!



treebenefits.com



Understanding This Tool:

The Tree Benefit Calculator allows anyone to make a simple estimation of the benefits individual street-side trees provide. This tool is based on [i-Tree's](#) street tree assessment tool called [STREETS](#). With inputs of location, species and tree size, users will get an understanding of the environmental and economic value trees provide on an annual basis.

The Tree Benefit Calculator is intended to be simple and accessible. As such, this tool should be considered a starting point for understanding trees' value in the community, rather than a scientific accounting of precise values. For more detailed information on urban and community forest assessments, visit the [i-Tree](#) website.

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The National Tree Benefit Calculator was conceived and developed by
[Casey Trees](#) and [Davey Tree Expert Co.](#)



National Tree Benefit Calculator

Beta

Thank you for choosing this site to calculate the economic and ecological benefits of your tree.

Find your climate zone to get started:

Enter your zip code below:

-OR-

Select a zone from the [map](#)

Scavenger Hunt – you can find nature scavenger hunts online

- ___ Tree wounds
- ___ Dead branches
- ___ Cracks in bark or trunk of tree
- ___ Big, healthy tree
- ___ Gall (tumor) on a plant
- ___ Insect on a tree
- ___ Mushroom
- ___ Bird
- ___ Roots growing aboveground





Jason Sharman, Vitalitree, Bugwood.org

5454691



Photo: Monica Lewandowski, Ohio State



Photo:
Monica
Lewandowski,
Ohio State

Canker – tree wound
(various causes)



Photo: Monica
Lewandowski,
Ohio State



Leaves or shoots at the base of the tree (sometime called suckers) might mean the tree is under stress ("sick")



Mushrooms on logs
or tree trunks



Mushrooms on logs or
tree trunks

Photo: Monica Lewandowski
Ohio State

A male cardinal is perched on a thin, light-colored branch. The bird is facing left, showing its vibrant red plumage, a black mask around its eyes, and a prominent red crest. The background is a soft-focus mix of brown branches and bright yellow leaves, suggesting an autumn setting. The lighting is natural, highlighting the texture of the bird's feathers.

ure photographer
omas D. Mangelsen

©THOMAS D. MANGELSEN



This tree is very sick.
It's even "bleeding" sap!

Photo: Monica Lewandowski, Ohio State



Roots may grow
aboveground if they
cannot grow into the soil.



Photo: Monica Lewandowski, Ohio State



Dead or dying needles may be from disease, insect, drought stress or another problem.

This is a photo of disease symptoms caused by a fungus - pine needle rust

Photo: USDA Forest Service - North Central Research Station, Bugwood.org

UGA1406007



Many insects and other organisms make their home in trees.

Insects may be beneficial, neutral or harmful to the tree.

Photo: gypsy moth on oak
(Columbus, Ohio)



Photo: Monica Lewandowski, Ohio State



Oak leaf skeletonizer

Photo: Monica Lewandowski, Ohio State

Oak leaf skeletonizer



Photo: Monica Lewandowski, Ohio State




Galls. These tumor-like growths are galls on bur oak

Steven Katovich, USDA Forest Service,
Bugwood.org



Galls on maple caused by
a very tiny mite
(mites are related to
spiders)

Photo: Monica Lewandowski, Ohio State



Leaf scorch symptoms on a dogwood branch. (sort of like a sunburn)

Photo: Cheryl Kaiser, University of Kentucky,
Bugwood.org

5430481



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treebenefits.com



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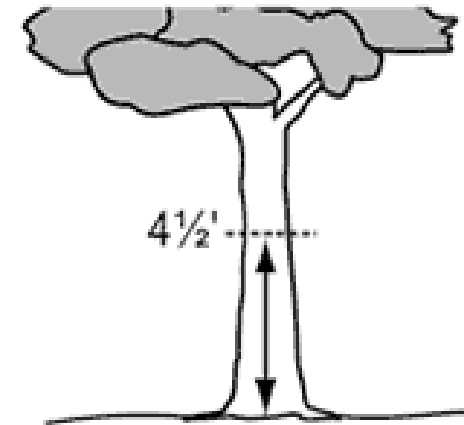
-OR-

Select a zone from the [map](#)

To use the Tree Benefit Calculator, you'll need to know, for your tree:

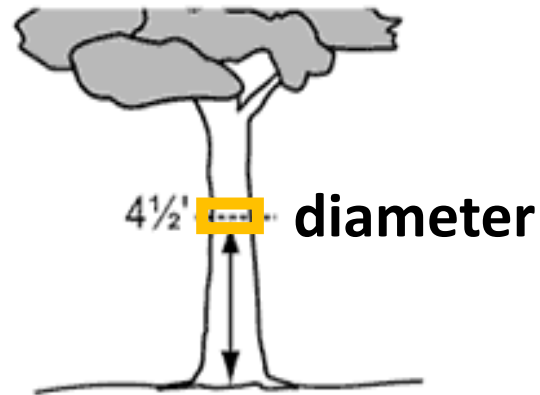
1. The location of the tree (zip code)
2. The kind of tree it is
3. The tree trunk diameter
4. If it is located at a house, park or business

Figure 80-4
Measuring Tree Size for Existing Trees



<https://www.portlandoregon.gov/trees/article/424017>

Figure 80-4
Measuring Tree Size for Existing Trees



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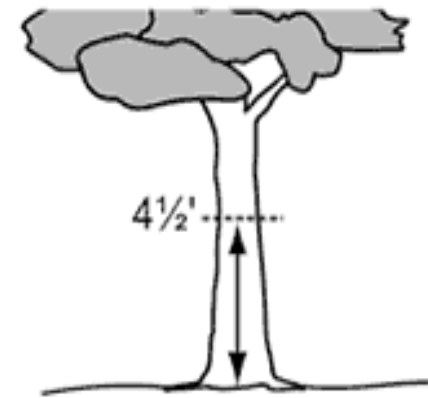
Video, measuring diameter of a tree

You'll need:

- Tape measure, or string & ruler
- Paper/journal and pencil to record measurements, observations, drawings

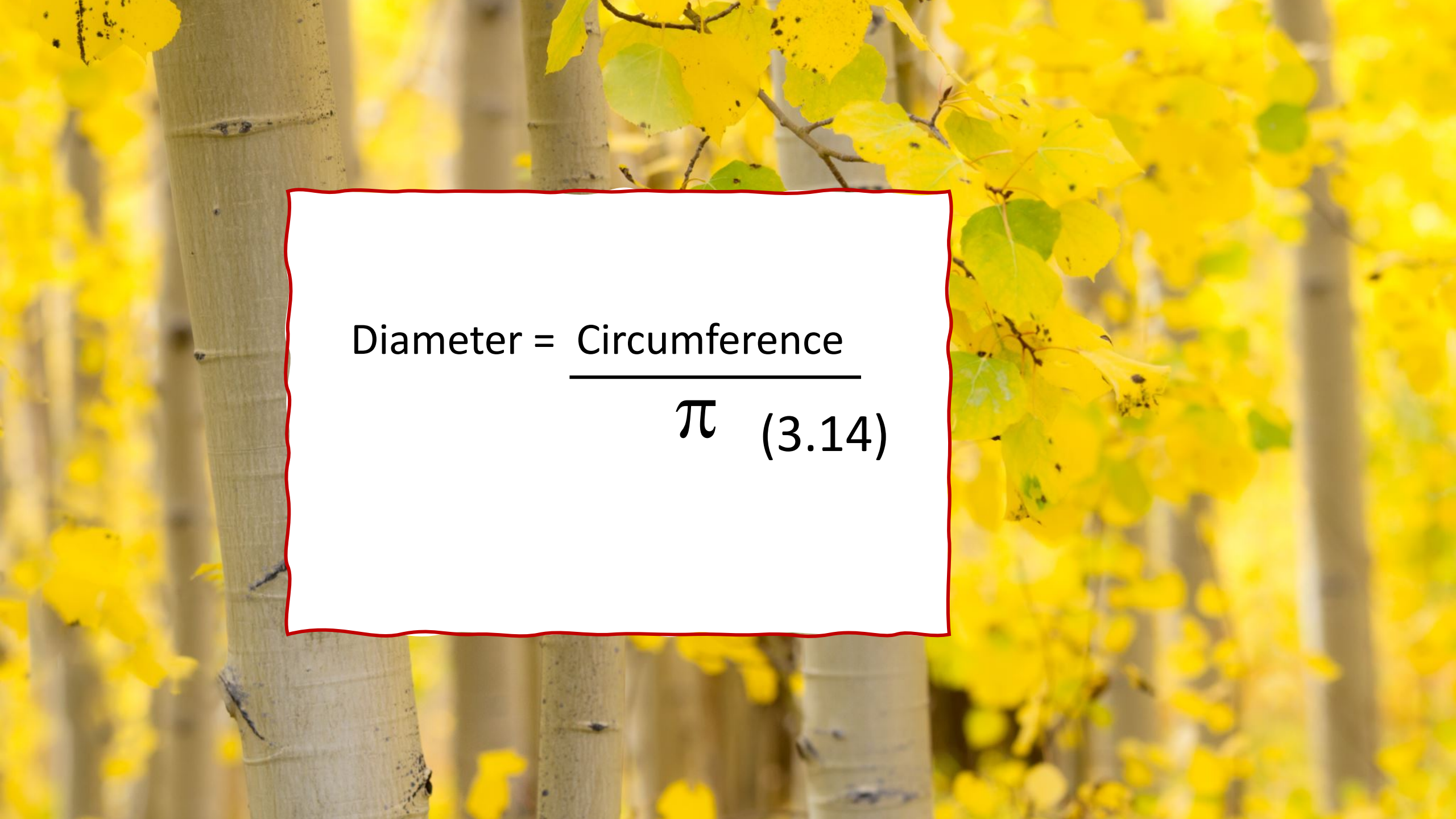
Optional: camera


Figure 80-4
Measuring Tree Size for Existing Trees



<https://www.portlandoregon.gov/trees/article/424017>

Video, measuring diameter of a tree

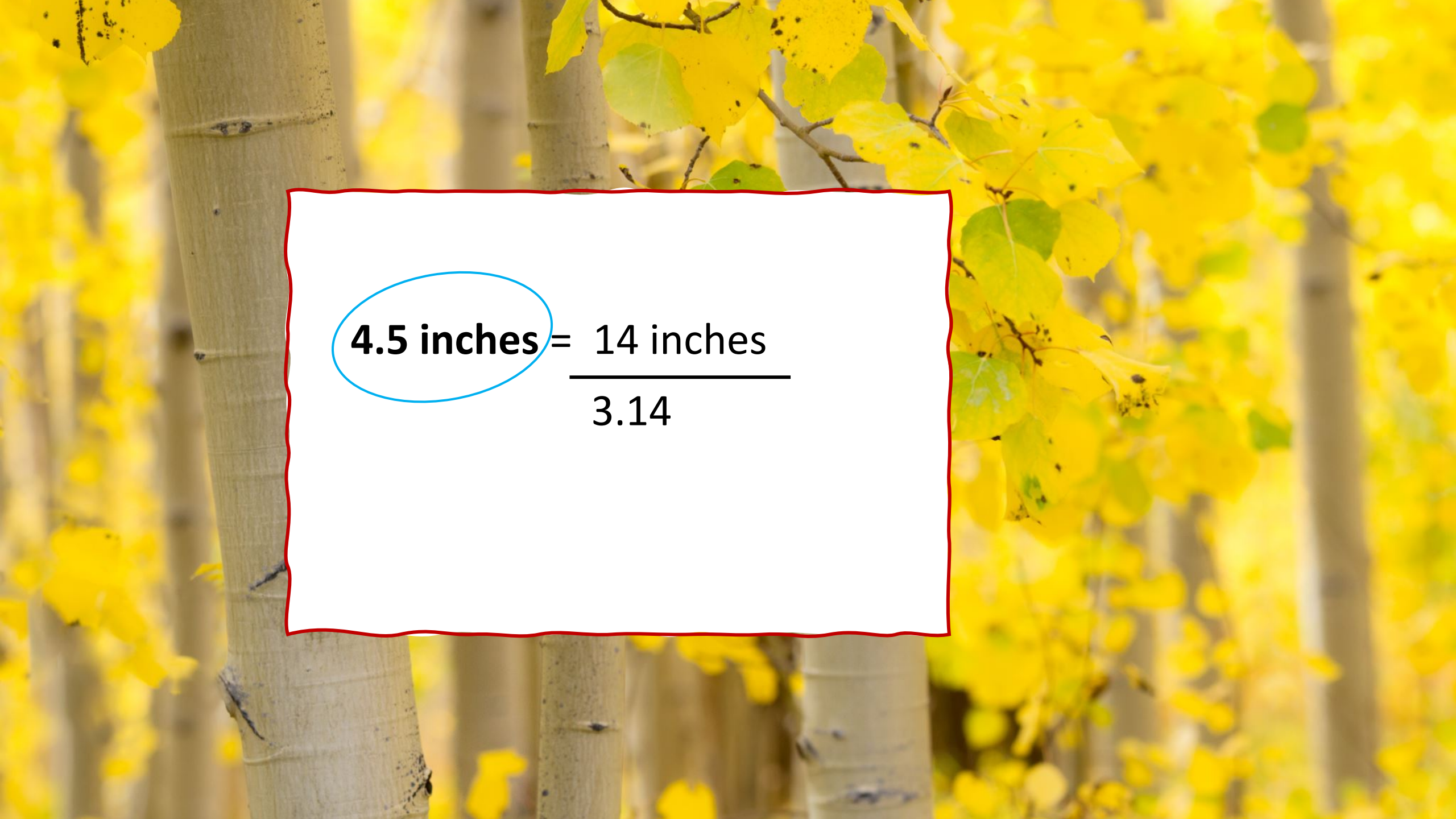

$$\text{Diameter} = \frac{\text{Circumference}}{\pi \text{ (3.14)}}$$



This is the number
I measured

$$\text{Diameter} = \frac{14 \text{ inches}}{3.14}$$

This is π


$$\frac{4.5 \text{ inches} = 14 \text{ inches}}{3.14}$$

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Instruction:

Species: If you're looking for a Willow Oak it's listed as "Oak, Willow". If your tree isn't listed, use the general "Other" listings.

Diameter: How wide is your tree at about 4.5 feet from the ground?

Enter your tree info:

Enter your tree's species:

Buckeye, Ohio

Enter your tree's diameter (between 0 and 45 inches):

4

What land-use type is this tree nearest?

Park or other vacant land

Calculate

National Tree Benefit Calculator

Beta

Trees in urban areas provide a number of important benefits. They help to clean the air, curb stormwater runoff, raise property values, sequester carbon, and reduce energy costs.

You have chosen:

Zip Code: 43210

City: COLUMBUS, OH, US

Climate Zone: Midwest

[change](#)

Enter information about a street-side tree and learn about the benefits it provides. Street-side trees are typically located in front yards, medians, parkways, planting strips or other common planting areas adjacent to streets.



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Overall Benefits

Storm Water

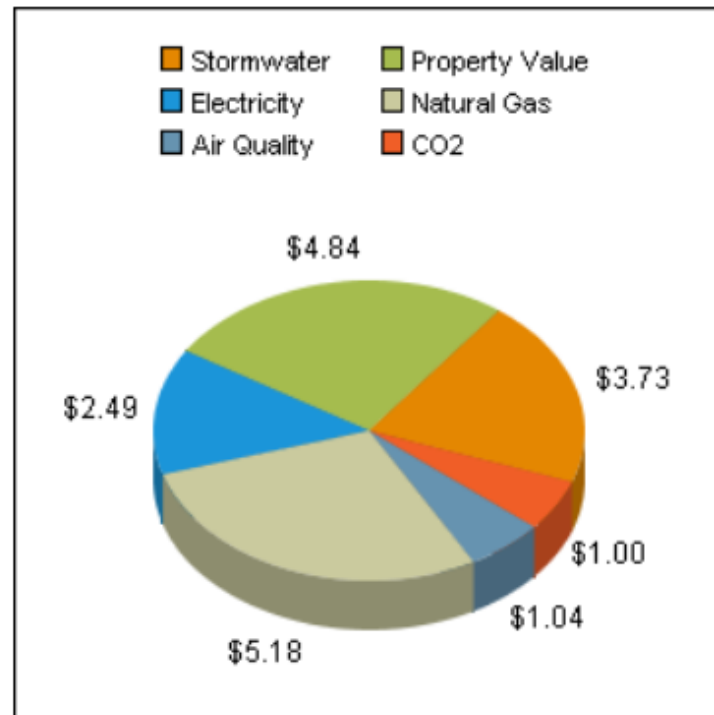
Property Value

Energy

Air Quality

CO2

About the Model



Breakdown of your tree's benefits
Click on one of the tabs above for more detail

This 4 inch Ohio buckeye provides overall benefits of: \$18 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 9 inches, it will provide \$58 in annual benefits.



Ohio buckeye
Aesculus glabra

Overall Benefits

Storm Water

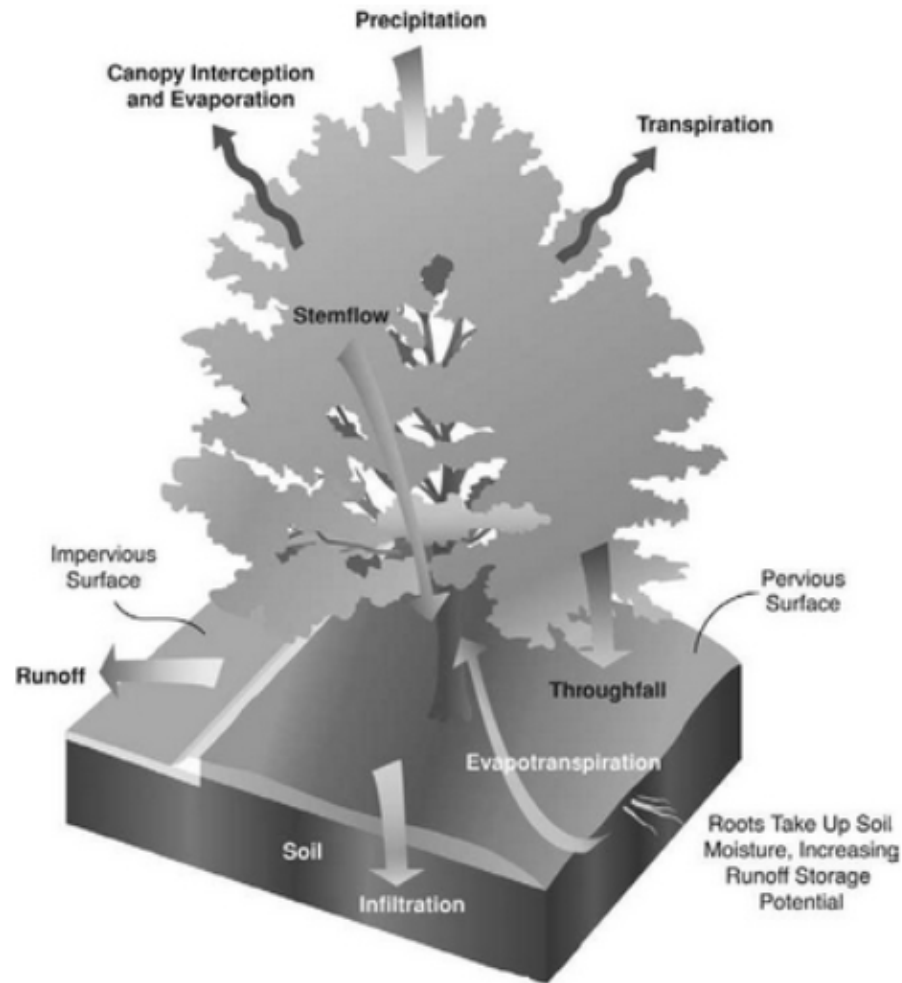
Property Value

Energy

Air Quality

CO2

About the Model



Your 4 inch Ohio buckeye will intercept 138 gallons of stormwater runoff this year.

Urban stormwater runoff (or "non-point source pollution") washes chemicals (oil, gasoline, salts, etc.) and litter from surfaces such as roadways and parking lots into streams, wetlands, rivers and oceans. The more impervious the surface (e.g., concrete, asphalt, rooftops), the more quickly pollutants are washed into our community waterways. Drinking water, aquatic life and the health of our entire ecosystem can be adversely effected by this process.

Trees act as mini-reservoirs, controlling runoff at the source. Trees reduce runoff by:

- Intercepting and holding rain on leaves, branches and bark
- Increasing infiltration and storage of rainwater through the tree's root system
- Reducing soil erosion by slowing rainfall before it strikes the soil

For more information visit: [The Center for Urban Forest Research](http://www.cufor.org/)

Overall Benefits

Storm Water

Property Value

Energy

Air Quality

CO2

About the Model



Located in front of a park or other vacant land, this 4 inch Ohio buckeye will raise the property value by \$5 this year.

Trees in front of single family homes have a greater property value benefit than those in front of multi-family homes, parks or commercial properties. Real estate agents have long known that trees can increase the "curb appeal" of properties thereby increasing sale prices. Research has verified this by showing that home buyers are willing to pay more for properties with ample versus few or no trees.

This model uses a tree's Leaf Surface Area (LSA) to determine increases in property values. That's a researcher's way of saying that a home with more trees (and more LSA) tends to have a higher value than one with fewer trees (and lower LSA). The values shown are annual and accumulate incrementally over time because each tree typically adds more leaf surface area each growing season. The amount of that increase depends on the type of tree – some add more, some less.

The 4 inch Ohio buckeye you selected will add 50 square feet of LSA this year. In subsequent years it will add more, and the property value will increase accordingly.

For more information visit: [The Center for Urban Forest Research](http://www.cufor.org)

Overall Benefits

Storm Water

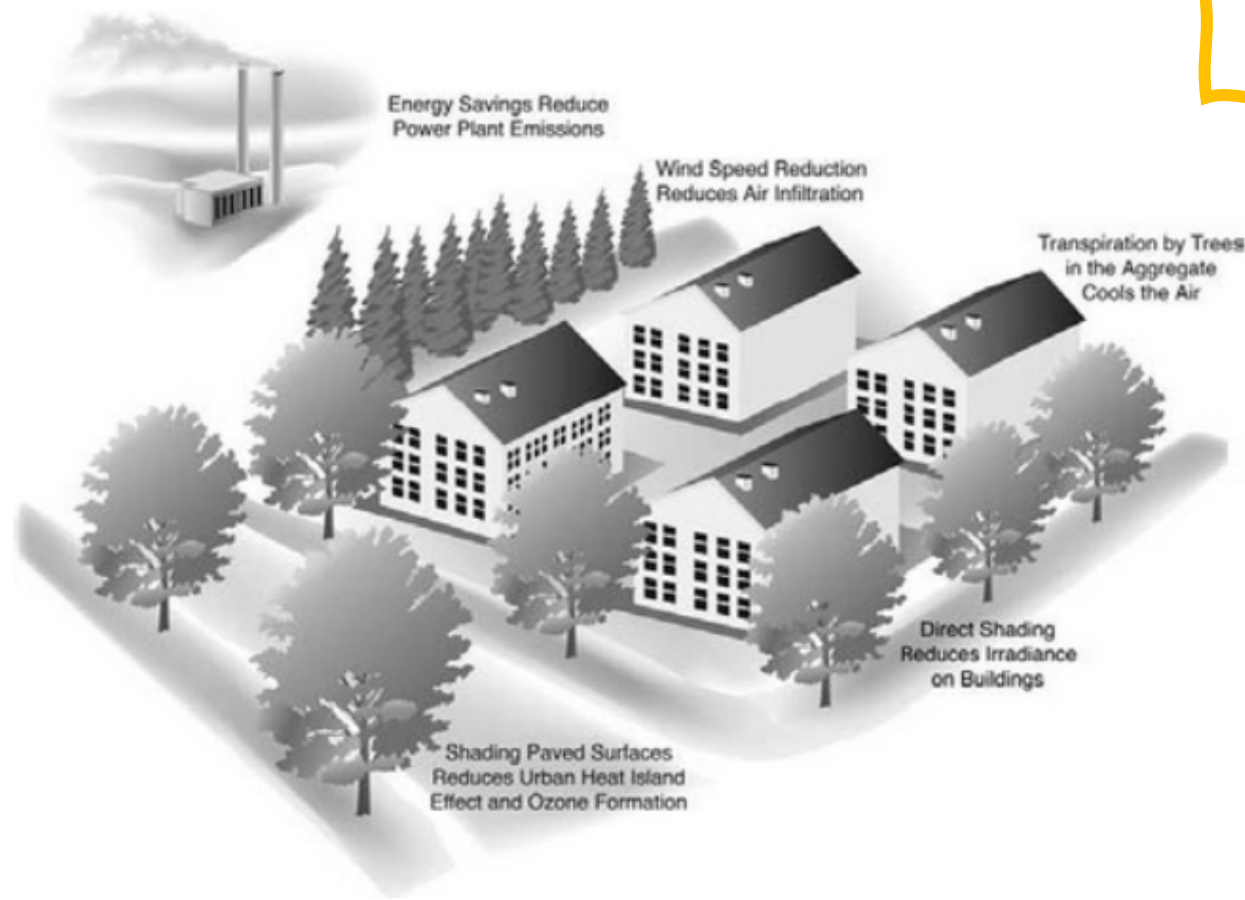
Property Value

Energy

Air Quality

CO2

About the Model



Your 4 inch Ohio buckeye will conserve 33 Kilowatt hours of electricity for cooling and reduce consumption of oil or natural gas by 5 therm(s).

Trees modify climate and conserve building energy use in three principal ways (see figure at left):

- Shading reduces the amount of heat absorbed and stored by buildings.
- Evapotranspiration converts liquid water to water vapor and cools the air by using solar energy that would otherwise result in heating of the air.
- Tree canopies slow down winds thereby reducing the amount of heat lost from a home, especially where conductivity is high (e.g., glass windows).

Strategically placed trees can increase home energy efficiency. In summer, trees shading east and west walls keep buildings cooler. In winter, allowing the sun to strike the southern side of a building can warm interior spaces. If southern walls are shaded by dense evergreen trees there may be a resultant increase in winter heating costs.

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Storm Water

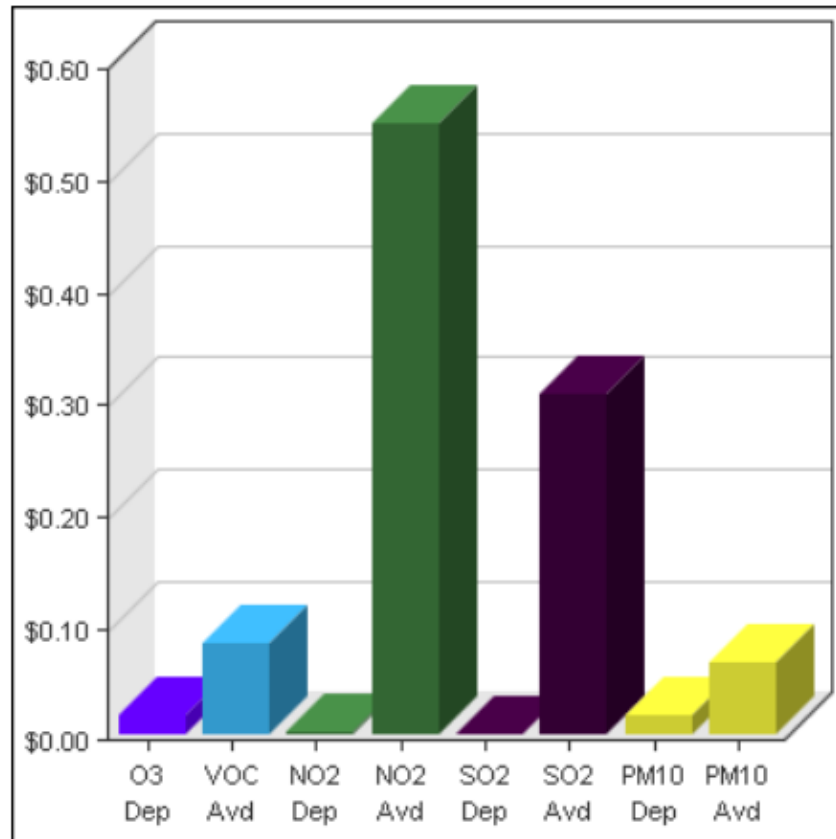
Property Value

Energy

Air Quality

CO2

About the Model



“Dep” stands for deposition. This is your tree absorbing or intercepting pollutants. “Avd” stands for avoided. This is your tree lessening the need for creation of these pollutants in the first place by reducing energy production needs.

Air quality benefits of your 4 inch Ohio buckeye shown in the graph at left.

Air pollution is a serious health threat that causes asthma, coughing, headaches, respiratory and heart disease, and cancer. Over 150 million people live in areas where ozone levels violate federal air quality standards; more than 100 million people are impacted when dust and other particulate levels are considered “unhealthy.” We now know that the urban forest can mitigate the health effects of pollution by:

- Absorbing pollutants like ozone, nitrogen dioxide and sulfur dioxide through leaves
- Intercepting particulate matter like dust, ash and smoke
- Releasing oxygen through photosynthesis
- Lowering air temperatures which reduces the production of ozone
- Reducing energy use and subsequent pollutant emissions from power plants

It should be noted that trees themselves emit biogenic volatile organic compounds (BVOCs) which can contribute to ground-level ozone production. This may negate the positive impact the tree has on ozone mitigation for some high emitting species (e.g. Willow Oak or Sweetgum). However, the sum total of the tree’s environmental benefits always trumps this negative.

For more information visit: [The Center for Urban Forest Research](#)

Overall Benefits

Storm Water

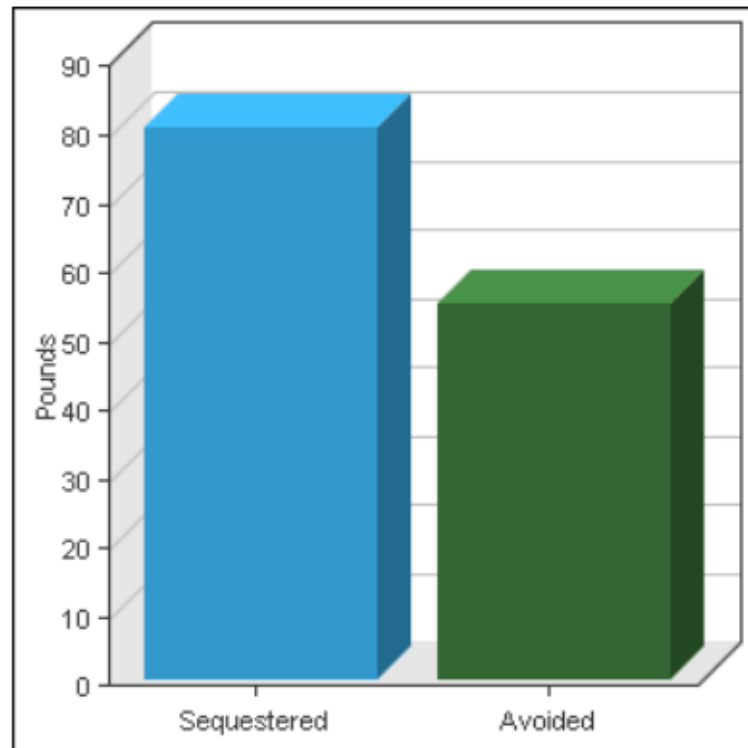
Property Value

Energy

Air Quality

CO2

About the Model



This year your 4 inch Ohio buckeye tree will reduce atmospheric carbon by 135 pounds.

How significant is this number? Most car owners of an "average" car (mid-sized sedan) drive 12,000 miles generating about 11,000 pounds of CO2 every year. A flight from New York to Los Angeles adds 1,400 pounds of CO2 per passenger. Trees can have an impact by reducing atmospheric carbon in two primary ways (see figure at left):

- They sequester ("lock up") CO2 in their roots, trunks, stems and leaves while they grow, and in wood products after they are harvested.
- Trees near buildings can reduce heating and air conditioning demands, thereby reducing emissions associated with power production.

Combating climate change will take a worldwide, multifaceted approach, but by planting a tree in a strategic location, driving fewer miles, or replacing business trips with conference calls, it's easy to see how we can each reduce our individual carbon "footprints."

For more information visit: [The Center for Urban Forest Research](http://www.cufor.org)

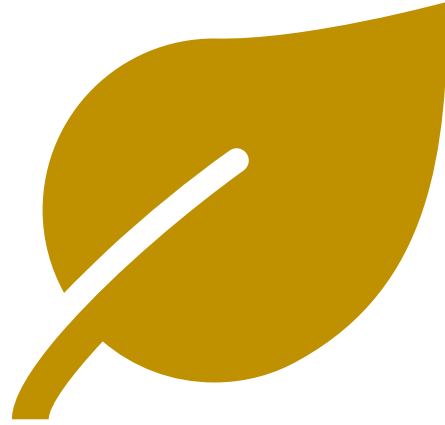
www.treebenefits.com



National Tree Benefit Calculator

Beta

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economic and ecological benefits of your tree.*



Fun with leaves

NATURECRAFT

LOOK WHAT I DID WITH A LEAF!



MORTEZA E. SOHI

MAKE A SCENE!

Don't limit yourself to designing only one animal at a time. Once you have some experience making leaf animals, you may want to try something on a larger scale, like this underwater scene.



www.k6art.com/2012/11/28/leaf-collage-photography/

K-6 Art Leaf 'Collage' +
Photography





Growing a Jeweled Rose

play learn grow

www.growingajeweledrose.com/2019/09/leaf-animal-collages.html



Growing a Jeweled Rose

play learn grow

www.growingajeweledrose.com/2019/09/leaf-animal-collages.html

www.fubiz.net/2016/03/02/delicate-animals-illustrations-made-from-pressed-leaves/

Delicate Animals Illustrations Made
from Pressed Leaves

Helen Ahpornsi



The background of the entire image is a photograph of a large crowd of people at a sporting event, mostly wearing red clothing. In the center, the OSU mascot Brutus is visible, wearing a red and white striped jersey with "BRUTUS" on it, and pointing upwards with both hands. A white text box is overlaid on the image.

[Go.osu.edu/WestFestTrees](https://go.osu.edu/WestFestTrees)

Go out and enjoy the outdoors!



Look for healthy and sick trees!



Go Bucks!

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