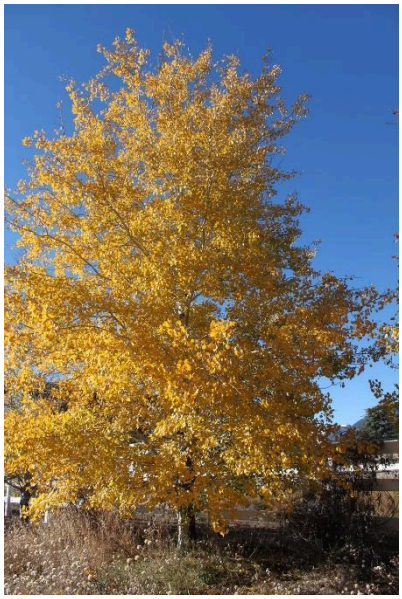
Trees Enrich our Lives; Let's Return the Favor
by Cindy Murray



Cottonwood



Blue Spruce



Aspen

Cottonwoods are good for windy areas, but may shed numerous small twigs.
Colorado Blue Spruce make gorgeous focal points for large yards and parks.
Bit by the bit Aspen trees are becoming scarcer at the lower end of the altitude scale, likely due to our climate becoming drier and warmer.
Photos credit: Cindy Murray

It's painful to think how insipid, even dreary, our lives would be if Northern Arizona had no trees. Obviously without pines, aspens and junipers, the area would be much less scenic; forest-dwelling wildlife would be absent; and without shade trees, our neighborhoods, wildlands, and streets would be significantly hotter.

But there's a lot more to it than that. Let's dig a bit deeper:

- Through transpiration, tree roots and sapwood transport water, both deep and shallow, from the ground to the leaves, where it takes a vital role in photosynthesis. Here, some of the moisture is released back into the atmosphere, thereby cooling the tree through evaporation, much akin to the cooling effect humans experience through sweating. Ultimately, the water returns to earth as precipitation and is often deeply absorbed, replenishing local water tables. How's that for efficiency?
- During the summer, trees may absorb 70%-90% of the sun's energy. As few as three trees placed near a residence may reduce the amount of energy needed for air conditioning. Moreover, strategically placed trees around homes, streets, and highways reduce traffic noise and unsightly views.

- Double or single rows of trees serve well as windbreaks, living snow fences and wildlife habitats. Wind-tolerant species include Norway and Colorado spruce, European white poplar, juniper, chokecherry, male cottonwood, and crabapple.
- Trees absorb detrimental gases like nitrogen oxide, ammonia, sulfur dioxide, and ground-level ozone, while leaves filter out harmful particulates.
- When trees absorb carbon dioxide during photosynthesis, some of the carbon remains within the wood, leaves, and roots. Crucially, carbon stored within wood isn't released back into the atmosphere until the tree dies and decomposes. Indeed, trees are masters at carbon sequestration, offering us cost-effective strategies to combat climate change. (And let's not forget that one of the by-products of photosynthesis is oxygen.)
  We are well aware of the stresses inflicted upon our trees in these times of ever-increasing periods of drought, heat waves, and other environmental hazards. But what can we do about it?
- If you're planning to add trees to your property, be aware of the eventual height and spread for each variety under consideration, as well as its moisture requirements and susceptibility to cold and heat. Most trees need a minimum of six hours of direct sunlight each day. However, some trees like aspen may no longer thrive in certain regions (even parts of Flagstaff) due to increasing heat, disease, and drought.
- Remember that newly planted trees, including drought-tolerant ones, need regular irrigation for the first four or five years. If you're in a windy zone, stake your trees perpendicular to the wind, three feet away from the trunk on each side. Tie with a soft material, not wire, and leave a bit of slack. Remove the stakes once the tree has become strong but still supple. Young spruces may not need staking.
- When trees are exposed to extended periods of extreme heat, transpiration goes into hyperdrive, where water is lost faster than the tree can absorb it. In time, this will be lethal. We can, however, prevent this through best irrigation practices and watching for signs of heat stress, which include wilting leaves, drooping branches, browning leaf tips, and branch dieback. To encourage deep root growth, it is best to slowly and deeply irrigate where the roots are actively absorbing water--along and a bit outside the dripline, not up close to the trunk. Frequent, shallow irrigation may encourage shallow root growth, resulting in weak root structure. Several drip irrigation heads are recommended for young trees, but our own mature trees flourish when we employ a low-pressure portable sprinkler that we move to several select sites around the tree. Also, spirals of soaker hoses will slowly and efficiently release water.
- To conserve soil moisture in summer, add a 2-4-inch layer of organic mulch.
- My husband and I fertilize our fruit trees each spring, but we have never fertilized our native trees.

Like most human beings I have an innate love of trees, and I could go on for pages listing their contributions to mankind. Let's reciprocate by ensuring they receive the proper care and sustenance they deserve.

Cindy Murray is a biologist, elementary tutor, and Master Gardener. Gardening questions can be sent to CoconinoMasterGardeners@gmail.com or submitted to the Master Gardener Hotline: 928-773-6115.