

Growing Edible Arizona Forests, An Illustrated Guide

Excerpt from *leafnetworkaz.org* Edible Tree Guide LEARN Values, Benefits and Characteristics

Climate Change

Potential Impacts of Climate Change on tree characteristics

Rain, temperature and other weather factors are being affected by shifts occurring in the climate. Tree characteristics and needs could change over time due to climate shifts. A discussion of potential climate changes, impacts, and strategies to adapt to these impacts, is provided at *Edible Trees and Climate, A Focus on Arizona.* This document is available at *leafnetworkaz.org* at LEARN – Climate Change. Scientists cannot predict exactly how climate will change, but the changes listed below could occur in Arizona and the Southwest, affecting where edible trees should be planted and their water needs.



Higher temperatures and lower rainfall could stress edible trees

POTENTIAL CLIMATE CHANGES IN ARIZONA AND SOUTHWEST

Heat and drought changes

 Higher average temperatures, increased droughts—including hotter drought periods and more wildfire due to heat and drought.

Precipitation changes

- Decreases in precipitation of 5% to 10% compared to earlier values, especially in April, May and June—months that are already very dry.
- Possible more extreme variability in rainfall, with longer periods with no rainfall and more extreme rainfall events when rain does occur.
- More rain than snow compared to past ratios, but thicker deeper snowfalls when it is cold.

Evaporation changes

- Higher evaporation rates.
- More water loss from soils.
- Possible decreased runoff to rivers and less recharge of groundwater.

Wind changes

 High winds during intense storms breaking limbs or uprooting trees; more dust storms.

Water demand changes

- Increased outdoor water demand due to heat, drought and less rain.
- More competition for graywater between individuals and municipal systems.
- More competition for stormwater flows.

Water supply changes

- Reduced surface water supplies flowing in the Colorado River, therefore lower flows to the CAP (Central Arizona Project canal) and reduced allocations to CAP water users.
- Possible rationing of municipal water supplies. Possible reduced groundwater recharge and higher groundwater pumping costs with deeper water levels.
- More rapid melting of mountain snowpack, shorter snowmelt period in the spring resulting in less runoff to landscapes and surface waters.

Additional effects on edible trees

- Stress due to lower rainfall and higher temperatures.
- Decreasing chill hours but not necessarily fewer freezing nights or less frost risk.
- Expanded range of insects that attack fruit trees.
- More competition for and reduced availability of conventional water supplies.
- Stress due to urban heat island effects in dense urban areas.
- Higher levels of the greenhouse gas CO2 potentially providing more "plant food."

Projected changes in USDA Cold Hardiness Zones

- The US Department of Agriculture (USDA) has projected changes in Cold Hardiness Zones through 2099 at https://climatetoolbox.org/tool/future-cold-hardiness-zones
- Allow the USDA website to access your location to see your current Arizona location and zone on the map. Go to the Choose Data heading to the upper left and select the time period and future emissions scenario you want to view to see how your zone could change.
- Select edible trees based on both current and projected potential changes in climate. The larger the elevation range an edible tree can grow at, the more resilient it could be in the face of projected changes.