



# How to Select Trees for Your Schoolyard

## General Guidelines

This guide complements our California Tree Palette for Schoolyard Forests<sup>SM</sup> and aims to assist school districts, landscape architects, and school communities in choosing suitable trees for their region and schoolyard environment that will thrive as temperatures rise due to climate change.

## Design Considerations

Selecting the right tree species for a schoolyard is critical, as trees are a long-term investment that require ongoing management in order to maximize the health, learning, and environmental benefits they provide. Considering factors such as site conditions, the climate of the region, and future climate shifts is crucial to ensure the trees thrive in the long term. In this guide, we delve into design considerations and provide information on positive and negative tree species attributes to take into account when choosing trees for your schoolyard.

Designing a schoolyard forest involves careful consideration of tree selection and placement. The following are important design considerations to create a thriving schoolyard forest.

### Select trees that suit the region

Select trees that are well-suited to the site's climate while considering the ecological diversity of the school site. Sunset's climate zone maps take into account length of growing season, rainfall, winter lows, summer highs, wind, and humidity, and are a good resource to use to select climate appropriate species.

### Consider climate change

Consider climate change impacts to your region when selecting trees given that most trees are long-term investments of a minimum of 40 years. In addition to using Sunset's climate zone maps, which look at the current climate, it is important to understand how climate will shift in the future to ensure that the tree species will survive and thrive long term. Joe McBride has published research on how climate change, resulting in increased temperatures, will impact the species composition of urban tree populations.



## Design a healthy forest system

Select trees to create a healthy forest system at the school site and at the same time build on the needs of the district and region for an overall forest system. Consider trees as an ecological and living system and not single objects. With that in mind, select a compilation of trees that will support each other as a system for the health and longevity of the forest.

## Consider site conditions

Consider site conditions and constraints that impact the schoolyard forest. For example, locate your forest where it will have access to irrigation but not be in conflict with overhead or underground utility lines.

## Plant trees in a contiguous patch

Plant trees in a large, contiguous patch whenever possible, with ample permeable ground.

## Strive for diversity

Consider a diverse selection of trees for a schoolyard, including natives, species that are less common, and a mix of species to increase long-term resiliency.

## Design to support learning and play

Select and place trees on site to create an environment that supports learning and play, including creating comfortable microclimates throughout the year. Consider trees that have play affordances or connect to the curriculum.

## Consider maintenance

Select and place trees on the site in a manner that is manageable for district maintenance staff. If some tree species are known to have shallow roots and/or more leaf drop, place them in unpaved locations, such as nature exploration areas, planting areas, and gardens. Edible fruit trees offer learning opportunities as well as healthy food for students to enjoy. However, fruit trees may require more maintenance than other schoolyard trees and must be selected and located appropriately to minimize pests and fruit drop on pavement. Consider fruit trees that produce fruit only during the school year and plant them away from pavement.



*This native California live oak tree is drought tolerant, climate adaptable, has a large stature, and provides myriad ecological benefits and curriculum connections.*

# Tree Attributes

Selecting the right tree species involves considering a range of positive and negative tree attributes. This list provides insights into factors to consider when choosing trees. It is important to note that some attributes require careful balancing of various factors, such as tree availability at nurseries, the goals set by schools and districts for their forests, and the unique local conditions. By considering these attributes, schools can make informed decisions to ensure the optimal selection of trees for their environments.

## Positive attributes

### DROUGHT TOLERANT

Select trees that are drought tolerant, able to adapt to less frequent rainstorms, and require minimal watering to thrive.

### CLIMATE ADAPTABLE

Select trees that are climate adaptable species that can also help a site with its needs, such as being good shade trees, being fire resistant, helping slow stormwater, and buffering against wind and other climate change challenges. We define *climate adaptable* as trees that are not only adapted to the current climate of the region, but also that will survive as the climate shifts.

### LARGE STATURE

Select trees that are large in stature at maturity for the greatest area of shade, ecological benefits, and carbon sequestration, provided there is adequate space and there are no overhead utilities.

### LONG-LIVED

As appropriate, select large, long-lived species that can provide greater benefits, such as larger shade canopies and more carbon sequestration over longer periods of time.

### ECOLOGICAL BENEFITS

Select trees that provide ecological benefits, such as habitat for wildlife and food production. Native species or trees from nearby ecological zones provide the best habitat.

### CARBON SEQUESTRATION

Select trees that provide carbon sequestration through fast growth, large ultimate size, and long life span.

### CURRICULUM CONNECTIONS

Select trees that provide curriculum connections, such as science, ecology, and history.

### PLAY VALUE

Select trees with high play value, such as trees that create sheltered spaces and provide interesting leaves, fruits, seeds, and other parts accessible to students.

### UNDERUTILIZED

While not always feasible, it is beneficial to incorporate tree species that are underutilized to enhance diversity in forest systems across the state.

### NATIVE

Including native trees can be beneficial because some have formed relationships with native wildlife.



Jeff Reimer

Leaves and acorns provide play and learning opportunities for students.

## Negative attributes

### TOXIC

Avoid trees that have dangerously high toxic ratings according to the [California Poison Control System](#). Trees with a 1 or 3 toxicity rating generally may be used in schoolyards as these ratings indicate dermal irritation and moderate illness effects from ingestion but are not life-threatening.

### FIRE PRONE

In areas that are susceptible to wildfire, avoid trees with loose, shedding bark such as eucalyptus trees.

### WEAK BRANCHES

Avoid trees with weak wood and low branch strength such as poplars and willows.

### INVASIVE

Avoid trees that are listed as invasive. With climate change this list is ever evolving, so we recommend checking with the [California Invasive Plant Council](#).

### HIGH WATER USE

Avoid trees that require high water use such as willows, unless your school is located on a high water table or adjacent to a creek.

### HIGH MAINTENANCE

Avoid trees that require an excessive amount of pruning and maintenance, especially when located near paved areas. Examples of trees that require more pruning and maintenance than most species include cottonwood, poplar, and eucalyptus.

### CALIFORNIA SCHOOLYARD FOREST SYSTEM

The California Schoolyard Forest System™ seeks to create schoolyard forests across PreK-12 public school grounds statewide to directly shade and protect students from extreme heat and rising temperatures due to climate change. This initiative was founded by Green Schoolyards America in partnership with the California Department of Education, the California Department of Forestry and Fire Protection, and Ten Strands.

For more information, visit: [greenschoolyards.org/ca-forests](https://greenschoolyards.org/ca-forests)



### AGGRESSIVE ROOTS

Avoid trees with aggressive roots that will conflict with utilities like underground water and sewer lines. Examples of trees with aggressive roots include poplars, willows, and silver maple.

### ALLERGEN PRODUCING

Many species of trees, grasses, and other plants can cause allergies, primarily during the spring season. Completely avoiding allergenic species may significantly limit tree selection options and may still prove ineffective due to the light nature of tree pollen, which can be carried by the wind for long distances. Therefore, we did not exclude trees that may produce allergies from our [tree palette for schoolyard forests](#). Instead, we entrust the decision-making process to the school districts, allowing them to determine the best course of action for their students.

### ADDITIONAL RESOURCES

- Green Schoolyards America. (n.d.). [California Tree Palette for Schoolyard Forests™](#).
- California Invasive Plant Council. (n.d.). [Home](#).
- California Poison Control System. (n.d.). [Non-Toxic and Toxic Plants](#).
- McBride, J. R., & Lacan, I. (2018). "The Impact of Climate-change Induced Temperature of the Suitability of Street Tree Species in California Cities." *Urban Forestry and Urban Greening*, 34, 348–356.
- Urban Forest Ecosystems Institute at Cal Poly. (n.d.). [SelecTree](#).

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