Lawnlessness:
Thinking Beyond Turf

Welcome! We are delighted to have you here at the UC Master Gardeners of Napa County -Las Flores Learning Garden, an Educational Botanical Garden in partnership with the City of Napa.

We are living in a time of scientific exploration. There have been major changes in agriculture-the way our food is grown and how we are being asked to live on this Earth. We are being called upon to think in new and different ways, to change our perspectives, and even our definitions of beauty. We've learned that how we live on this planet makes a difference and with big consequences if we don't get it right. So today, we are going to share with you some new possibilities for your yards and particularly your lawns, that will help us to live in harmony with nature and also make your yards beautiful….

Our topic today : Lawnlessness- Thinking Beyond Turf. We will be sharing ideas for helping you to be successful in losing your lawn and why and replacing it with plants that can be grown here in Napa more easily, with less water, less fertilizer, and less effort and more in harmony with nature.

UC Master Gardeners of Napa County

http://napamg.ucanr.edu/

Our mission: "To extend research-based knowledge and information on home horticulture, pest management, and sustainable landscape practices to the residents of California and be guided by our core values and strategic initiatives."

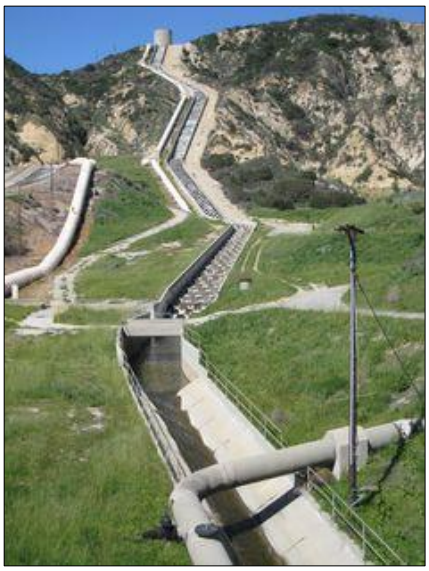
History of Lawns

Let's look at a little "Lawn History": Why is it that we have valued BIG, GREEN lawns in this country for so long? Lawns were introduced to the northeastern US in the late 19th century during the Gilded Age of Capitalists. A home with a large, lush, green lawn was a sign of success and wealth and it wasn't terribly hard to have a lush lawn in the northeastern US because rain is plentiful year-round.

History of Lawns

Unfortunately, this same idea of what is a beautiful yard was brought to the West Coast, and as you know, we have a very different climate here in the West, especially in California.

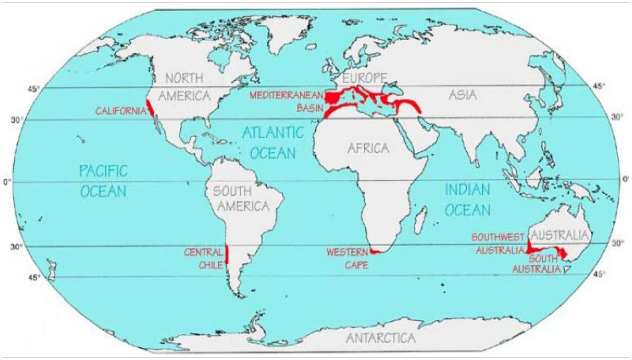
Los Angeles Aqueduct



In 1913, the Los Angeles Aqueduct was constructed allowing the residents in the LA basin to feel that water was abundant and would support these lush, green lawns. The movie industry would use homes with these gorgeous, but water demanding lawns as backdrops in their films to continue to communicate the idea of wealth, prosperity and probably happiness. So the idea spread….

Mediterranean Climate Zones

- Turf lawns don't do well in Mediterranean landscapes
- Hot Summers - Wet Winters
- Low water availability in summer



We share our particular climate type with four other small regions in the world - called a Mediterranean climate. You can see on this map where marked in RED, these regions are: California, the central coast of chile, the Mediterranean basin, the Cape region of South Africa, and southwestern and southern Australia.

These five areas are characterized by having mild and wet winters (when we're lucky!) and very long, dry summers and they are located near the western coasts of continents between 30' and 40' latitude.

All this becomes very important when we start thinking about lawns.

What is it that I like about having a lawn area?

Why do we love them and what do they do for our lives?
How does a lawn area contribute to the way you live in your house?

Why keep a lawn?

- Restful, soothing
- Place for kids and sports
- Place for pets outside
- Cushion for bare feet and backs
- Can act as fire break
- May fit with style of neighborhood

Here's a few that we thought of to add to your list. Let's keep this list that you generated in mind as we move through today's workshop, particularly as we begin to explore what kinds of lawn replacements you might be interested in.

Reasons for Removing Your Lawn

- ✔ Too much work: mowing, fertilizing, watering
- ✔ Never looks good
- ✔ Want a different look
- ✔ Gopher mounds

These reasons for liking and also, for wanting to get rid of a lawn, are an important piece of choosing what you want instead of turf grass. And we'll get into the kinds of plantings that match your different needs and interests.

Environmental Impact of Lawns

- ✔ **Water concerns**: shallow roots of turfgrass require lots of water to maintain green
- ✔ **Herbicides, pesticide, chemical use**
- ✔ **Pollution from gas leaf blowers & mowers**
- ✔ **Provides little to improve the health of the soil**

There are also some really important environmental reasons for Going “Lawnless” that we want to underscore before moving on.

Water Concerns

- Drought, drought, drought! Water restrictions
- Mediterranean climate
- Lawns use most of household water
- Overhead spray irrigation very wasteful – urban drool

Water scarcity
Shallow rooted turf grass requires a lot of water to keep green in CA, as much as 50% of household water use. Drought- leading to water restrictions; in our recent storms - water running down our curbs rather than restoring the ground aquifers; a Mediterranean climate with the absence of rain from April to November are all concerns for us. We can't afford to waste this precious commodity of water.
And the overhead watering of grass that is standard practice, does not deeply penetrate the soil. It evaporates into the air or runs down the storm drains, creating even more of a problem. Often the water running off a lawn area is filled with chemicals that then pollute our rivers and oceans.

Polluting gas leaf blowers & mowers

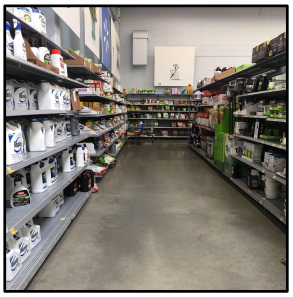
- Air and noise pollution
- Loss of soil and ground covers
- Health hazard
- Alternative:
  Use electric models

Gas Leaf Blowers and Mowers

The bane of many neighborhoods and often a health hazard is the noise, dust and air pollution from gas leaf blowers and mowers that are regular “visitors” to neighborhoods with lawns. Our soils actually like to be covered and protected by plants, leaves, and mulch. Blowers undermine nature’s ability to keep our soil covered and protected. When we plant a diverse selection of deeper-rooted plants, we can help build up the soil by allowing leaves to remain on the surface, and by adding other organic material, like compost, to the soil around those plants. We are headed in the right direction as the use of gas-powered machines are beginning to be restricted.

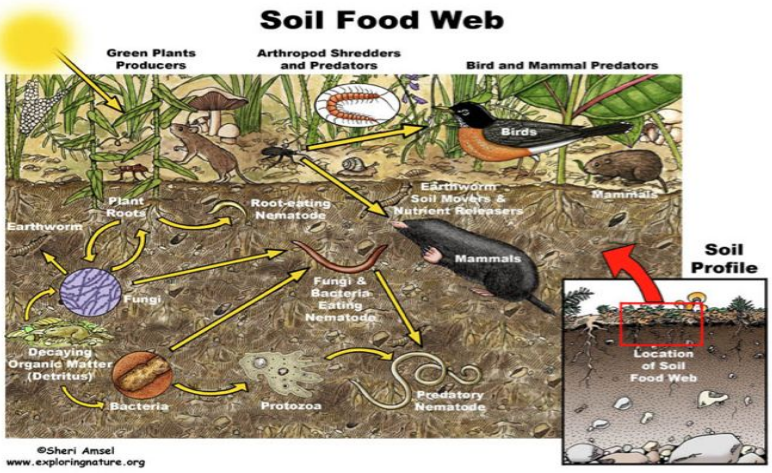
Herbicides, Pesticides, Chemical Fertilizers

- Kills weeds and bad pests, but also beneficial insects on our plants and microbes in the soil
- Requires a vicious cycle of continued and escalating use of chemicals
- Potential health hazard to humans, pets and wildlife habitats in water and soil
- Chemical fertilizers are often made from fossil fuels.



Herbicides, pesticides and synthetic fertilizers-
are another problematic habit we've gotten into as a country. We see them everywhere, lining the store shelves, and subsidized to the farmers by the government.
-They not only kill the bad pests and weeds, but have a detrimental effect on bees and other beneficial insects and microbes which make their homes in the soil. These creatures are the foundation for all of life on the planet.
These chemicals are also a health hazard to humans and pets (think air, water and soil pollution)
These chemicals can create a vicious cycle of use. They need to be continually used in order to maintain what we have been told is optimal for our yard and garden. These chemicals are expensive, not to mention, many are made with fossil fuels.
But….Herbicides, Pesticides, chemical fertilizers are not needed if you replace your lawn with native plants and grasses.
- BTW, When you do have problems with pests and diseases, please go to the UC IPM website to learn about the safest and most effective way to deal with these problems

Soil Health



"Soil health is defined as the continued capacity of soils to function as a vital living ecosystem that sustains plants, animals, and humans."

Source: U.S. Gov't National Resource Conservation Service

This graphic provides a "bug's eye" view of the life below the ground.

In just one teaspoon of healthy soil, there are billions of living organisms that make up the soil biome, AKA the soil food web, or the soil sponge.

Many of these organisms (and we are still learning about more and more of them that are being discovered) form collaborative relationships with the root systems belonging to healthy plants and the plants also benefit from the presence of these soil organisms. This underground "herd," as we lovingly call them, work the soil, keep it loose, feed the plants the mineral nutrients that they mine from the soil, and also sequester Carbon. This activity stops when chemical herbicides, pesticides and fertilizers are used killing or diverting the microbes from their important relationship with plants.

Healthy soil contains lots of **Carbon**. We think about Carbon being a problem but **we just have too much of it in the wrong place - our atmosphere rather than down in the soil where it belongs. The microbes in the soil** help sequester carbon in their working relationship with photosynthesizing plants. This mutually beneficial process is critical to help us reduce the effects of climate change.

Turfgrass has very shallow roots and does not sequester carbon like plants which have more significant and deeper root structures that store carbon and provide carbon sugars to the organisms in the soil. Many of the lawn alternatives are plants that have deep root systems.

It's really an amazing world under our feet! And these organisms have been there from the beginning.

"The soil is a living system. It's food is carbon that is mostly delivered via the plants roots through the process of photosynthesis. Remove the plants and the soil dies. Dead soil means no water absorption & retention. No water means the plants can't keep photosynthesizing and the system is degenerating"

8 Tips to Healthier Soil

- Increase Soil Organic Matter
- Use Compost, Not Chemicals
- Maximize Living Roots
- Minimize Soil Disturbance
- Keep Soil Covered
- Increase Plant Diversity
- Practice Judicious Water Use
- Reduce Energy

As gardeners, there are multiple ways that you can create healthier soil. We call our list, "8 Tips to Healthy Soil."

What Are Your Lawn Options?

Reduce lawn size

Replace with low-water turf alternatives

Plant ornamental grasses and water-wise native plants

Expand the hardscape, no more than 50% of area, but use permeable surfaces to fulfill *Cash for Grass* rebate

There are attractive ways to do it! Let's look briefly at the Cash for Grass program.

Cash for Grass

Turf Replacement Rebate Program

1. Call the **City of Napa Water Conservation Specialist** at (707) 257-9497 to schedule a brief Pre-Inspection visit to have the lawn area measured.

2. Following Pre-Inspection, await receipt of Notice to Proceed letter and pre-approved Application from the City. Do not remove lawn until you receive these documents.

3. Remove the lawn area and install your project according to the program Terms and Conditions. Find helpful resources in the Water Conservation section at cityofnapa.org/water.

4. Call the City of Napa Water Conservation Specialist at (707) 257-9497 to schedule a Post-Inspection visit. Post-Inspection must take place within 4 months of the Notice to Proceed.

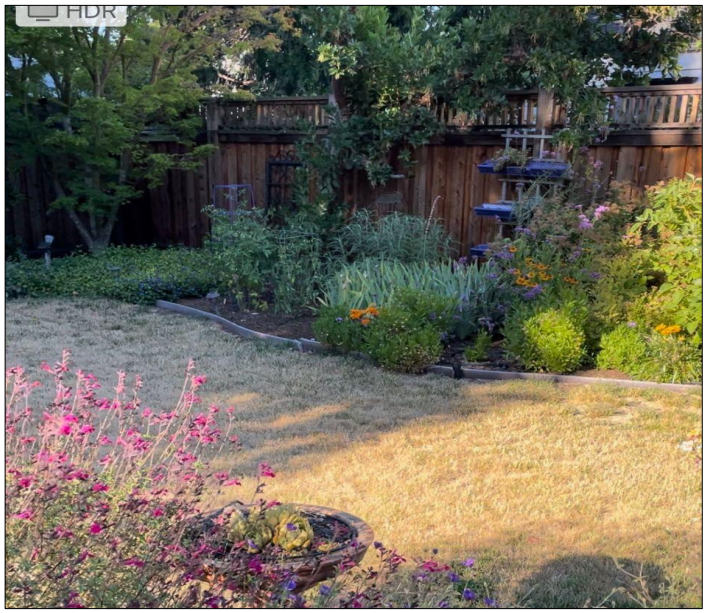
5. Provide at Post-Inspection your final completed Application and a list of plants and materials used in the conversion. Applicants must also complete IRS Form W-9. Check will be issued within 4 weeks.

Cash For Grass also available from the City of American Canyon, City of Calistoga, City of St. Helena, Town of Yountville

Cash for grass has been a very successful program
There are requirements to satisfy in order to get your rebate. Please check out the Terms and Conditions by going to **Cash for Grass Napa** where you'll find all the answers. You can also cash in on that parking strip through the rebate program called **Flip Your Strip.**
The most environmentally conscious way to prepare for your new low water-low maintenance area is to
Sheet Mulch.

Sheet Mulching

1. Prepare the Site - mow lawn short, then water
2. Lay Cardboard, overlapping 6-8”, water well
3. Cover with 2” Compost, water lightly
4. Lay irrigation lines, cap off sprayers but use main irrigation lines. Optional: add edging to create borders.
5. Mulch with 3-4” of bark or other natural material
6. The BEST part - Plant your plants
7. Add drip lines to the plants
8. **ENJOY!**



Let's Sheet Mulch a dead lawn!

Step #1

Mow short and
Water it

October last fall

Lay Cardboard

Step #2

Gather corrugated cardboard, lay them flat overlapping 6-8”

Water well

Corrugated boxes available from appliance shops, or your accumulated shipping boxes. We removed all tape and labels, but not necessary if you are willing to pick them out of your garden later after the cardboard decomposes. The worms will leave them as a reminder of your good work.
Overlap so no sun will shine on those weeds and grass underneath.

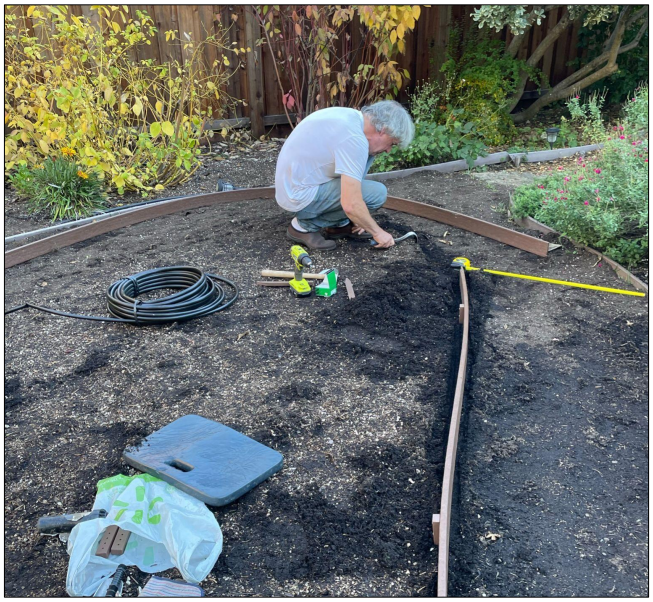
Cover with Organic Compost

Step #3

Spread at least 2” of compost over the entire surface

Water lightly

Local sources will deliver compost for a fee, OR purchase from Napa Recycling & Waste Services for $13 per cubic yard + tax. They will deliver within their service area for a fee. 0-10 cu.yds. is $75, 10-20 cu.yds. is $175, and prices go up from there depending on quantity. Can also pick up from the facility yourself.
In the fall take a tour of the facility when they announce their Open House.



Lay Out Irrigation Lines and Optional Edging

Step #4

Cap off irrigation sprayers, but tie into existing system with main hose line

Optional: Stake edging (metal or bender board) to create a perimeter

Cap off old sprayers, install risers to make your water delivery method accessible near the soil surface, and put on pressure fitted converters into the risers to attach the main hose line (black line coiled up on the ground in the photo).

Mulch, Plant & Enjoy!

Steps #5 - 8

5. Add 3”- 4” organic mulch
6. Cut holes in cardboard & plant
7. Add drip line to each plant
8. **ENJOY!**

So now your yard is prepped!
There are so many good choices to consider now and that brings us to our options.

Solarizing

1. Clear area of debris
2. May need to rough up the surface to open the turf
3. Rake surface smooth
4. Water well to 12” deep
5. Cover tightly with clear 1 - 4 mils plastic sheeting (avoid air pockets)
6. Let it work its magic for at least 4 - 6 weeks, or up to 8 weeks if necessary
7. Uncover and seed, sod, or plant

Solarizing is a non-chemical method for controlling soil-borne pests, plant pathogens, most fungal disease and many weeds, using high temperatures by capturing the radiant sun energy. First, mow short and water well, just like sheet mulching preparation.

Cover the area with clear plastic tightly to the ground for 4-6 weeks during our hottest periods (generally June through August) when the sun is most directly shining on the area. It heats up the top 2” deep between 108 - 140 degrees. 140 degrees is the temperature when bacteria dies. It heats up to 90-99 degrees at 18” deep. It’s important that you are trapping moisture in this process by pre-watering the area well before covering it.

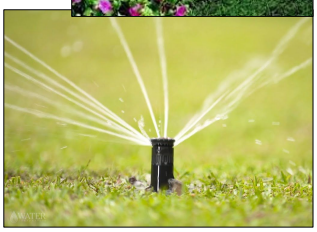
This method also breaks down organic material in the soil, which can result in the added benefit of releasing a variety of good nutrients such as nitrogen, which makes them more available to the plants you will install. Many beneficial soil organisms are able to either survive or recolonize the soil quickly after solarization. This can make the soil more resistant to pathogens when these good organisms increase their population.

Inline emitters laid in a grid can be above or below the surface.

Irrigation

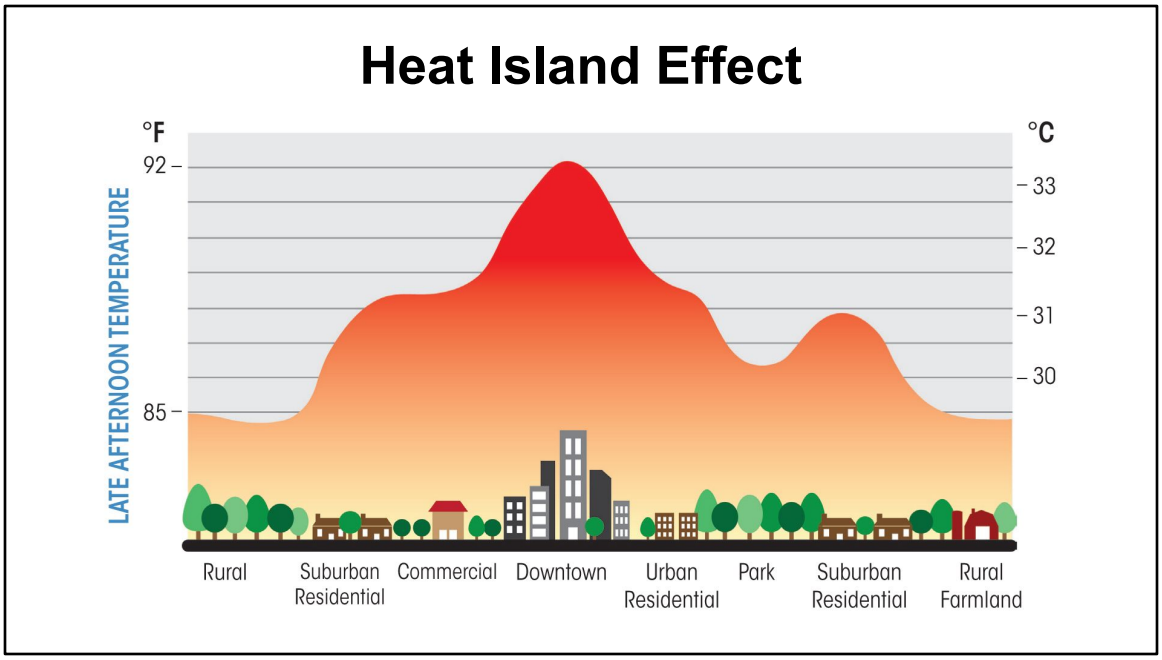
Rotor Sprinkler pulses heavy water drops.

Hand water for smaller areas



Consult with local water experts for the best system for your needs.

A similar irrigation grid as shown here in a raised bed, can also be placed a couple inches down in the soil as done here in the Las Flores gardens. Drip irrigation prevents water loss from evaporation.
In a large area of lawn, consider rotary sprayers that pulse with heavy water drops that fall to the soil surface instead of spraying mist into the air. Your current sprayers can be easily retrofitted to rotary sprayers. These will reduce water usage by 40%.
Hand water smaller areas
Plant in the fall to take advantage of winter rains.

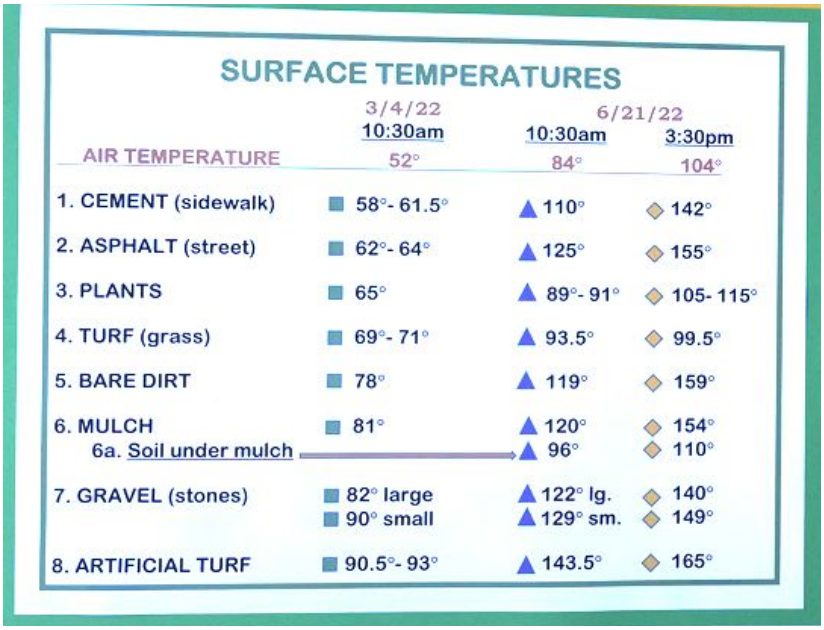


Why Plant a Living Lawn?

The Heat Island Effect can be easily felt on a hot summer day in downtown Napa, with the impermeable surfaces radiating heat and driving temperatures up. This is in contrast to rural areas, in parks or well planted yards, where lots of green plants, trees, and grasses keep the air cooler.

Plants are endothermic, meaning they absorb heat from the sun during photosynthesis and transpire moisture which is cooling.

This effect is important when considering what kind of landscape you want to have and its impact on your home, neighborhood, and our city.



Our Own Heat Island Test last year

On Third St. all within one block, we found a variety of surfaces in front of the homes. Using a temperature gun, on a cool 52* morning last March, we recorded these temperatures. This traditional turf we measured is not what we are suggesting today because it had very short roots that doesn't allow water to infiltrate or CO2 to be sequestered deep into the soil.

In March, the turf measured 70* and the temperatures went on up from there to the artificial turf at 92*. A 22* difference! In winter you may like to have something warm around your house,

But…

We went back on on June 21st and took the temperatures of the exact same surfaces at 10:30am (84* air temp) and again at 3:30pm (104* air temp). Note the temperature differences between green living plants and turf compared to the hotter surfaces. There's a 50* difference in the morning, and a 65* difference in the afternoon between turf to the hottest surface, artificial turf.

You may want to consider an **alternative grass,** and we have a variety of them to show you today. Plus, plant a tree, a variety of shrubs and other plants around the lawn area to cool your lawn area down.

What about Artificial Turf?

- "Realistic" and consistent appearance year-round
- Available in many different grass types and colors
- Lasts for avg. 15-20 years
- Low maintenance
- Companies sound environmentally friendly

Artificial Turf, or "Plastic Grass", comes from many suppliers with environmentally conscious sounding names, such as: "purchase green", "heavenly green", or Synlawn. They will pitch the realistic-looking appearance, long life, and low maintenance of their products.
But it is what they are **NOT** telling you that's important to hear before considering artificial turf as an option for your lawn replacement.

What is Artificial Turf?

- **Content:** Petrochemicals in blades
- **Safety**: PFAS, the "forever chemicals"
- **Infill Contents:** "Crumb rubber" and other materials
- **Maintenance:** Clean, Rinse, Brush
- **Cost - $ to $$$**
- **Human and Environmental Impact**
  - Kills all life in the soil detering soil & climate health
  - Creates its own Heat Island
  - Becomes landfill or must be reused in other lawns

Keep in mind the importance of soil life, plants and trees for the natural exchange and sequestration of CO2 in our environment to reduce the effects of climate change, let alone their cooling effect on our homes and cities.

1. **Contents**: Typically, the blades of artificial turf are made of polyethylene, polyester, polypropylene, nylon, or a hybrid of these different materials. The blades sit on layers of padding material, which receives an acrylic coating before being coated by other chemicals, such as polyurethane or latex. Let's look at what artificial turf is made of and its effect in our soil, water, and even our human health.

2. **Safety**: it's made with petrochemical ingredients in varying amounts. ALL are made with PFAS compounds (per- and polyfluorinated substances), the "forever chemicals", which are linked to cancer, decreased immunity and other serious health problems. They do not break down in the environment, they can move through soil and contaminate drinking water sources and build up in fish and wildlife. They can be inhaled, ingested, and absorbed through the skin and have been found in many animals and humans. There's a growing concern by medical researchers who are evaluating the cancers found in some professional athletes who played most of their careers on artificial turf.

There is an artificial turf product on the market that touts its bio makeup using soy, but it's only 19%-50% of its makeup, while the balance is petrochemical based. The infill contents can add to the total chemical makeup. (SynLawn)

3. **Infill**: Various materials are necessary to weigh down the plastic grass, help the blades

stand up, allow drainage, and create a bouncy feel.

The primary infill material has been “crumb rubber” (shredded recycled rubber tires). EPA testing found high levels of dangerous chemicals in this rubber including heavy metals, benzene, volatile organic compounds and other carcinogens. Athletes sustain more concussions and heat stroke on an AT field and they have 28% more lower leg non-impact injuries compared to playing on natural grass. A new infill made from pine trees has been developed to address these issues, but it will still be used under the plastic blades.

4. **Regular Maintenance: *Clean, Rinse, Brush* is** needed weekly or at least monthly. This entails raking or vacuuming up leaves, hosing off dust and pollen, then brushing it to refresh blades to stand up. It can stain from spilt beverages, pet urine, cooking oils, tree sap and other substances. AT will melt when exposed to 175-200 degrees of heat. Consider fire sparks or our wildfires, which burn at over 1,000 degrees.

There’s an artificial turf recycler nearby who specializes in the removal, refurbishing and reuse of AT, because there is no other option to discard it other than burying it in landfill where it will last forever.

5. **Cost**: AT runs anywhere from $2.00 - $5.00+ per square foot. So a 500 sq.ft. lawn could cost an average of $1,750. A turf cleaner to kill bacteria, viruses and to deodorize it is recommended, along with other maintenance items to keep it looking fresh, which will add to the full-term costs.

On a Positive Note: A growing number of US municipalities (including Yountville earlier this month) banned artificial turf from public areas!
Artificial turf still in use on NFL playing fields will be converted to natural grass by 2026 for the FIFA World Cup Soccer games here.

Napa Cash for Grass program does not allow Artificial Turf, but supports drought tolerant grasses and plants, along with permeable surfaces for a lawn replacement.

Our landscapes need to act more like sponges. Living grasses and plants help water infiltrate into the soil, cool our air, and sequester CO2 for a healthier environment!

A “Lawn” Option

Easy Maintenance

PROs

- Good water permeability
- No mow
- No desire to use for play, sitting, or walking on it

CONs

- Difficult to clean up any debris
- Radiate high heat in summer
- Does not contribute to soil and environmental health
- Visual appeal?

Here’s one more option we see popping up in Napa neighborhoods.

Now let’s look at the greener options.

UC Verde Buffalograss

UC Verde was planted adjacent to the Graduate School of Management in Sept. 2009 (at the wrong time but it worked anyway).

Photos: UC Cooperative Extension Website

UC Verde - UCD, June, 2010

UC Verde planting - UCD, September, 2009

UC Verde - UCD, February, 2011

You can see on the left the planting in September. And by June the following year, even though it was not planted at the optimal time, it had a successful outcome.
It is sensitive to frost and may become dormant in the winter but will revive with warmer temps.
Information link: UC Verde Buffalograss

UC Verde Buffalograss

https://ucverde.com/

- **Low Water Needs**: Save up to 75% as compared with other grass lawn selections
- **Reduces Mowing**: Mowing every 2-3 weeks for lawn; or leave natural
- **Extremely Durable**: Very tolerant of foot traffic and play
- **Low Pollen**: Allergy-friendly lawn; rated 1.0 on 0-10 OPAL pollen scale
- **No Chemicals Required:** No known diseases or pests
- **Summer Green**, can go dormant in winter with frost

UC Verde® is the ONLY buffalograss that was bred in California for California's unique climate, making it an ideal and sustainable lawn substitute.
Extremely heat loving, this warm season grass will use 75 % less water than tall fescue grass, which currently makes up the majority of residential lawns in California

***Bouteloua gracilis*, Blue Grama Grass**

Water requirements (low, drought tolerant): LOW 10-30% ETo; maximum 2x/mo once established

Traffic tolerance (tolerates kids and dog play, not walkable): Can be mowed or left as rough turf

Value to Wildlife (provides cover, nectar for pollinators, other): Variety of insects and birds

Habitat of Origin/Native Range/Climate Adaptation (coastal, Mediterranean, prairie, high desert...): Broad range throughout North America from Canada to the Southwestern US; In CA, found primarily in arid mountains in San Bernardino Co and San Diego Co.

Exposure: full sun/part sun/shade: Sun, Part shade

Life Cycle (perennial, years of life expected): Perennial, long-lived.

Growth habit (bunch, rhizome, other): Clumping, sod-forming

Mature Height (in inches): 0.5-2'hx2'w. Var. 'Blonde Ambition' grows 12-18"

Season Type (see below): Warm season. Summer dormant if grown dry.

Rate of Establishment (fast, slow growing, etc.): Quick to germinate, fast to moderate to establish due to deep root length (up to 2 meters). Full height in two years.

Any fertilizers, herbicides needed: None

Best planting time: Direct sow in late Spring or early Summer, .1" deep (just under soil surface, then firm into soil), 70 degrees.

Seeding rate per pound (1,000 sq.ft. lawn will need 4 lbs. seed):

% Purity / % Typical Germination rate: 96.36% pure, 84-97% germination. Germinates readily and quickly but grows rather slowly due to its extensive root system.

Cost - $ range per lb.: 1lb.=$48 plus shipping. (40,000 seeds per ounce, $7.96)
Summary Pros/Cons:
PROS: Native, low water and maintenance. Excellent to accompany a wildflower planting, to control erosion, or for a shaggy no-mow green space. On each slender 16-18" stalk, seed heads form at right angles with seeds on the underside like eyelashes, giving rise to one of its common names, eyelash grass. It is also known as mosquito grass because of the way the seed heads dance in the breeze, making a lively contribution to the late summer and autumn garden.
CONS: Clumping. Can be mowed for a lawn-like presentation, but a bit lumpy for a playing surface.
Often mixed with *Buchloe dactyloides* (Buffalo grass). Nearly identical foliage color and texture.
Creeping habit of Buffalo grass fills in between the blue grama clumps and evens out the surface for easier walking. (John Greenlee, The American Meadow Garden). Also, SOW IN LATE SPRING EARLY SUMMER.
Sowing: Direct sow blue grama seeds either in late fall or early spring. Plant the *Bouteloua gracilis* seed just below the surface of the soil, compacting the soil very firmly. Keep the soil lightly moist until germination.
Growing: Water seedlings regularly until they become established. Because of their extensive root system, the plants grow rather slowly. This plant grows best in average, well-drained soil, though it adapts to nearly any soil type including rocky, shallow soil and clay. It tolerates drought and cold temperatures extremely well. This plant may self-seed, and resists deer and attracts small birds. It makes an excellent choice for controlling erosion, as well as being ornamental throughout the autumn and winter.
Seed Saving: Collect the seed as soon as the seed heads begin to turn tan and dry; the seed should strip easily from the stem. Spread the seed out in a protected location until it has dried completely. Store blue grama seeds in a cool, dry place.
Other information:
According to legend, Native American children once made a game of looking for blue grama stems with an unusual three seed heads on them. The species name "gracilis" comes from the Latin word for "graceful." The genus name "Bouteloua" honors professor Claudio Boutelou, who taught agriculture at a university in 18th century Madrid.

Blue grama (*Bouteloua gracilis*)

Photo from the California Center for Urban Horticulture homepage

- Large Native range, from Canada to southern California
- A long-lived perennial grass, clumping and sod-forming,

  1 to 2 feet high and wide.
- Excellent with wildflowers, as meadow, or for lively movement and interest in the late summer and autumn garden. Superlative erosion control (roots up to 6 feet deep).
- For lawn-like appearance, seed densely and mow, or leave uncut for meadow.
- Stems carry flowers on one side only, with seed heads on the underside like eyelashes.
- Full sun or part shade, water maximum 2x/mo once established (WUCOLS Low, 10-30% of turf requirements).
- *Bouteloua* 'Blonde Ambition' has straw colored stems and blooms, and grows a bit taller.

And Blue grama (Bouteloua gracilis) is becoming very popular to mix with native plants. It has that lovely "banner" moving in the wind.

Creeping Red Fescue ‘Molate’

Festuca rubra ‘Molate’

Photos: WUCOLS

Creeping Red Fescue ‘Molate’

Also referred to as Molate Creeping Red Fescue, it is a variety of *Festuca rubra*, a native California grass found in coastal, near coastal, and the foothills of California. The Molate variety is native to the Point Molate area near Point Richmond. Being a bay-adapted variety it performs well in full sun in climates with a strong marine influence, such as Carneros. In hotter inland areas, such as up valley, it performs better in part sun or shade.

Often planted as naturalistic meadows, as pictured here, Molate can also be planted as a turf replacement in areas with light to moderate traffic. It uses 1/3 to 1/2 the water that warm season turf grasses (such as bermudagrass, and buffalograss) use and 1/8 to 3/8 the water that cool season turf grasses (such as some other fescues, Kentucky bluegrass, perennial ryegrass) use.

[It uses 10-30% ET_0, compared to 60% ET_0 for most warm season turf grasses (such as bermudagrass, and buffalograss; 1/6-1/2) and 80% ET_0 for most cool season turf grasses (such as some other fescues, Kentucky bluegrass, and perennial ryegrass; 1/8 to 3/8). Deficit irrigation is 40% and 60, respectively]

Creeping Red Fescue Molate is considered summer dormant but can be kept green in the summer with this low amount of irrigation.

One thing to consider is that the seeding rate for planting as a meadow is approximately 1/3 the seeding rate for a turf planting. Seed cost averages around $30 per pound. One pound can seed about 200 sq ft of turf or 850 sq ft of meadow. Germination is fairly typical at 7-14 days, but establishment is comparatively slow, taking up to two years. The best time to seed Molate is in the fall, around September or October.

photo sources: WUCOLS

Creeping Red Fescue ‘Molate’

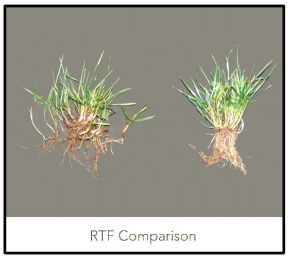
- Native to California
- Clumping; spreads 2 to 3 ft wide
- Height: 1-2 ft high or mow to 1.5-2.5” high
- As turf: low to moderate traffic tolerance
- As meadow: good for revegetating large areas
- Summer deciduous; evergreen with minimal summer irrigation (10-30% ET_0)
- Establishment from seed ~2 yrs
- Tolerates both sun and shade; inland better in part sun/shade
- Good under oaks
- Host to several butterflies & moths

A few highlights of Creeping Red Fescue ‘Molate’.
Again, it is native to California, specifically to the Bay Area.

- It is a perennial clumping grass that slowly spreads to about 2-3’ wide.
- It has a mature height of 12-24” but can be mowed to 1.5-2.5” high.
- As a mowed turf grass, it has a low to moderate traffic tolerance.
- In a meadow planting it is good for revegetating large areas or used as grass filler.
- Molate is summer deciduous without irrigation but remains evergreen with minimal summer irrigation (10-30% ET0; warm 60%, cool 80%)
- Establishment from seed is relatively slow at approximately 2 years.
- Tolerates both sun and shade but inland it is better in part sun/shade
- Good under oaks
- It hosts several butterfly and moth species.

Photos
Top: This is a sample box sowed on January 19th at the turf seeding rate. The seed germinated about one week later and hardened off over the course of a week. It has been outside with only minimal protection since late January.
Bottom left: You can also buy Molate in plugs like shown here.
Bottom right: This is a specimen planted from a plug like the one on the left about 1 1/2 years ago.

RTF (Rhizomatous Tall Fescue) Grass



Photos from rtf.com

RFT (Rhizomatous Tall Fescue)

Water requirements (low, drought tolerant): Higher than WUCOLS Moderate; 70%+ of regular turf requirement depending on conditions.

Traffic tolerance (tolerates kids and dog play, not walkable): Tolerant of traffic, play-able

Value to Wildlife (provides cover, nectar for pollinators, other): (Found no data)

Habitat of Origin/Native Range/Climate Adaptation (coastal, Mediterranean, prairie, high desert...)

Rhizomatous tall fescue found in Europe in 1991, developed and tested in trials in Europe 8 yrs, then in US

Exposure: full sun/part sun/shade: Full sun; tolerates shade up to 70% of the day (~3-5 hours of sun daily).

Life Cycle (perennial, years of life expected): (Found no data)
Growth habit (bunch, rhizome, other): Rhizomes, eventual deep roots
Mature Height (in inches): 3.5-4" Recommended mowing height is ~3" for weed and grub control and moisture conservation.
Season Type (see below): Cool season. Quick green-up. Heat tolerant.
Rate of Establishment (fast, slow growing, etc.): Sod: 3 months; Plant sod in spring or fall (not seed).
Any fertilizers, herbicides needed: Pre-emergent, post-emergent, and grub fertilizers, and broadleaf weed killers. States "Endophyte (beneficial fungus) enhanced for improved insect, disease and drought tolerance"
Best planting time: Temps around 65-75 degrees, early fall, to take advantage of rains.
Seeding rate per pound (1,000 sq.ft. lawn will need 8-10 lbs. seed; Overseeding will require 10-15lbs)
% Purity / % Typical Germination rate: Germinates in 7-21 days; 98% Purity, 80% Germination (Australia)
Cost - $ range per lb.: Seed: ~ $5/lb., 10lb for $55.81. Sod: ~ $1500 for 1000 sq.ft.
Summary
Pros: Lateral rhizome growth enables turf to fill in damaged areas. Deep roots (up to 6') reduces water requirements for well-established lawns. Cold and heat tolerance extends green period, depending on climate and weather conditions. Used up to 30% less water than

regular turf in a study done in New Mexico. Tolerates traffic, play.
Cons: Still uses a lot of water relative to native grasses. Requires fertilizers, weed and grub killers, overseeding, and other care.

RTF (Rhizomatous Tall Fescue) Grass

- Cool season, heat tolerant.
- Lateral rhizomes fill in damaged areas, “self-healing.”
- Deep-rooted once established (to 6’).
- Uses 70% of water requirements of other turf (WUCOLS High, 70-90% of turf).
- Sun/part shade. Needs 3-5 hrs of sun daily.
- Suitable for foot traffic and play.

RTF (Rhizomatous Tall Fescue) Grass



CA Native All Purpose Grass Seed Mix

- 6 CA Native Grasses
- All Perennial
- Extensive roots for erosion control
- For Sun and light shade
- Multi use: Turf, Slopes, Bioswales
- Some irrigation for summer green

Photos : Stover Seed

- **6 CA Native Grasses:** Stover Seed Co. proprietary blend - there are other companies with other combinations. Discussion of benefit of diversity
- **All Perennials:** Live year round, talk about summer dormancy
- **Extensive roots for erosion control:** Talk about value of varying root depth
- **For sun and light shade:**
- **Multi use: Turf, Slopes, Bioswales:** Erosion control, Roadsides, Medians, Parks
- **Some irrigation for summer green:** explaining "cool season" grasses. Info from Water requirements

The Grasses:

- **Molate Creeping Red Fescue:** ***Diane spoke about this earlier*** bunch grass w/ rhizomes
- **California Barley:** loose green**,** bunch grass, good mowing tolerance, Salt tolerant
- **Purple Needlegrass:** CA State Grass! Grows all over CA and all over in the Napa area. A bunch grass, interesting purplish seed panicles, extreme drought & heat tolerant.
- **California Brome:** quick establishing bunch grass, competitive with herbaceous weeds and is summer dormant
- **Tufted Hairgrass:** another bunch grass, densely tufted, fine texture, dark green does well under Oak trees
- **Thingrass:** rhizomatous bentgrass, fine texture, sun and has good tolerance for shade

CA Native All Purpose Grass Seed Mix

- **Suitable for foothill, valley & coastal CA**
- **Fast to establish, will need initial water and fertilizer**
- **Can be mowed or left natural**

Suitable for foothill, valley & coastal CA, so anywhere in Napa Co.
Also contains no invasive non-natives
Fast to establish,want to plant fall thru spring [not in summer]
Will need initial water & low Nitrogen fertilizer during first year to establish deep roots
Can be mowed or left natural [~12" high]

FACT SHEET:
Water requirements: will withstand prolonged periods of drought. If a summer green lawn is desired, then supplemental summer irrigation is necessary. If no summer irrigation is provided the grasses will become a dormant golden color and green up in the fall with rainfall. It is recommended that 4 – 6 weeks of supplemental irrigation is supplied through one summer season for the grasses to establish deep root systems.

Traffic tolerance: Recommended for use as a turfgrass & for parks

Value to Wildlife: can interplant with low growing, flowering plants for pollinators

Habitat of Origin/Native Range/Climate Adaptation: All CA Natives; suitable for foothill, valley & coastal CA.

Exposure: full sun and light shade

Life Cycle: perennial

Growth habit: mostly bunch & some rhizome

Mature Height: Can mow to 2+ inches, ~12" if not mowed.

Season Type : Cool season

Any fertilizers needed: Use of a low Nitrogen starter fertilizer when seeding is highly recommended. While not critical it is recommended to promote growth and increase establishment.

Best planting time: September through April, temp over 90 NOT recommended.

Seeding rate per pound: 1,000 sq.ft. lawn will need 5 lbs. seed. Lighter for overseeding.

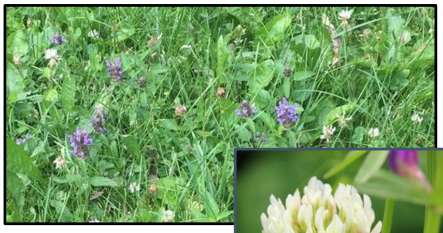
% Purity / % Typical Germination rate: 0.05% weeds; 85% Germination

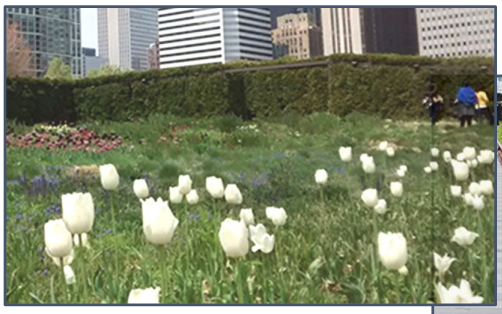
Cost - $ range per lb.: $36/pound or 5#/$136

Summary Pros/Cons: https://beelab.umn.edu/**bee-lawn**
https://www.hortmag.com/plants/**bee-lawn**
https://lowinputturf.umn.edu/other-fine-fescue-research-**university-minnesota-bee-lawns**
https://www.hortmag.com/gardens/**matrix-planting-garden-**design?utm_medium=email&_hsmi=245996327&_hsenc=p2ANqtz-_pFZAdRC4HKUDlGGP-5qShLsGlWfbhZQfDJPJ8Ih5r8Z3u4jDW7m9j2j2lx2eKdCT_QxeRadDPxjlgg4Csa_9loZFNng&utm_content=245992961&utm_source=hs_email

All Purpose Grass Mix … PLUS

- **Bee Lawn: interplant with low growing, flowering plants**
- **Matrix garden: a planned meadow**





<u>Bee or pollinator Lawns</u> interplant grasses with low growing, flowering plants that are mower tolerant like white clover,creeping thyme, self seal. I'm excited about this and am planning to convert my backyard grass area. This is a concept that we are starting to see in university research and respected publications like Horticulture Mag and Sunset

The Univ of Minnesota has been doing studies on how to convert your turf area. Cannot [please don't] use broadleaf weed killers and most insecticides.

Can overseed an existing lawn or remove your existing lawn; sheet much, solarize, sod removal, 20% acetic acid. Also try for a bit higher mowing height of about 3" If you

want an even less structured look try taller flowers.
If you have less traveled area of your yard; consider letting the grass get tall and let the taller flowers shine.
Other resources are the UC Davis Bee Haven and UC Berkeley Urban Bee Lab. These sources will have recommendations that will be more compatible with our climate. {this isn't Minnesota 😊}

Matrix gardens: are planned meadows. They rely on a foundation of shallow-rooted grasses plus deeper-rooted perennials. This began in Europe after WW2 and are now being seen in Parks and City plantings around the US. Choose plants that suit your site's conditions, whose growth patterns complement each other, plant them tightly, then surround them by groundcover or grasses. Can take a year or two, being alert to water the small plants and stop perennial weeds before they can take hold. After that, the main work for the gardener may be to thin out an overly successful group, replace a structural plant and move or cull excessive seedlings.

California Meadow Sedge, Sand Dune Sedge
Carex Pansa

Photos: Greenlee & Assts; CalScape.org

***Carex Pansa,* California Meadow Sedge, Sand Dune Sedge**

Water requirements (low, drought tolerant): Low (10-30% ETo)
Traffic tolerance (tolerates kids and dog play, not walkable): Walkable
Value to Wildlife (provides cover, nectar for pollinators, other): Native wildlife cover and habitat; butterflies, songbirds (seeds).
Habitat of Origin/Native Range/Climate Adaptation (coastal, Mediterranean, prairie, high desert...): West Coast of North America from British Columbia to California
Exposure: Full sun/part shade
Life Cycle (perennial, years of life expected): Long-lived in the right conditions
Growth habit (bunch, rhizome, other): Rhizomes
Mature Height (in inches): 6-12" and spreading.
Season Type (see below): Evergreen; not a grass, but can go tan if not irrigated in dry season.
Rate of Establishment (fast, slow growing, etc.): Moderate. Winter-spring planting can fill in by the end of summer if irrigated and fertilized per instructions.
Any fertilizers, herbicides needed: High nitrogen fertilizer (16-6-8 or similar) every 4 weeks while getting established, and occasionally as needed where foot traffic is high. Otherwise, none.
Best planting time: Plant plugs in Winter or Spring
Seeding rate per pound (1,000 sq.ft. lawn will need _____ lbs. seed): Seeds germinate unevenly; it's best to plant plugs or 2 ¼" pots 9" apart or closer if budget allows. SEE BELOW FOR PREPARATION.
% Purity / % Typical Germination rate: N/A

Cost - $ range per lb.: Prices for plants and installation vary.
Summary Pros/Cons:
Pros: Native, very low water and low to NO maintenance once established. Tolerates foot traffic. Can be mowed as lawn alternative and to thicken coverage, or allow to grow. Evergreen with summer irrigation 1-2x/mo. Established dense mat inhibits weed growth. Mow 2-3 times a year at a height of 3-4" to keep thick and lawn-like.
Cons: May be expensive and slower to establish than grass. Hand weed.

Note: "When planting C. pansa plugs for a meadow or lawn it is important that top 5-10 inches of soil is not severely compacted. This is often the case with new home sites after construction. In heavy clay soils, organic amendments and a little extra moisture will be required for successful establishment. Towards the end of the summer C. pansa is susceptible to occasional rust. This can be prevented by applying a light application of a soluble NPK fertilizer, mowing, and/or curtailing the irrigation. C. pansa grows more slowly and has a lower transpiration rate than turf grass. Occasional deep irrigation during the California dry season is necessary to keep C. pansa looking good and prevent dormancy. A Carex pansa meadow or lawn only needs a fraction of the water that it takes to support a thirsty transpiring grass lawn."

--David Amme , "PACIFIC DUNE SEDGE: The Sedge with the Other Name"
https://baynatives.com/plants/Carex-pansa/Carex-pansa-Amme.htm

California Meadow Sedge, Sand Dune Sedge
Carex Pansa 'Asilomar'

Sonoma State College Environmental Technology Center

Long Meadow Ranch Rutherford Gardens

Photos: David Amme, "Carex Pansa (Pacific Dune Sedge): The Sedge with the Other Name"

California Meadow Sedge, Sand Dune Sedge (*Carex Pansa)*

- Native to Western North America from British Columbia to California, found in dunes, wetlands, sandy and moist habitats.
- Evergreen, 6-12” high, spreads slowly by short rhizomes. Not invasive.
- Native lawn alternative, bioswale or rain garden, meadow, path through a meadow.
- For lawn, plant plugs or 2 ¼” pots 9” apart or closer for weed control and faster fill-in. (Seeds germinate unevenly.)
- Use high nitrogen (16-6-8) fertilizer until established, then as needed in traffic areas.
- Full sun, part shade.
- Low Water: 1x/mo once established (WUCOLS Low, 10-30% of turf requirements).

***Carex Praegracilis,* Clustered Field Sedge, Expressway Sedge**

Water requirements (low, drought tolerant): Low (10-30% ETo)

Traffic tolerance (tolerates kids and dog play, not walkable): Walkable, even okay for play; soft texture.

Value to Wildlife (provides cover, nectar for pollinators, other): Native wildlife cover and habitat; butterflies, songbirds (seeds).

Habitat of Origin/Native Range/Climate Adaptation (coastal, Mediterranean, prairie, high desert...):

Native to moist and seasonally wet meadows and riparian settings from Alaska and southern Canada through most of the continental US except in the Southeast.

Exposure: Full sun/part shade

Life Cycle (perennial, years of life expected): Long-lived in the right conditions

Growth habit (bunch, rhizome, other): Rhizomes

Mature Height (in inches): Varies, taller and more slender than *C. pansa*; 1-3' and spreading

Season Type (see below): Cool season sod-forming sedge. Evergreen; can go tan if not irrigated in dry season.

Rate of Establishment (fast, slow growing, etc.): Moderate. Winter-spring planting can fill in by the end of summer if irrigated and fertilized per instructions.

Any fertilizers, herbicides needed: High nitrogen fertilizer (16-6-8 or similar) every 4 weeks while getting established, and occasionally as needed where foot traffic is high. Otherwise, none.

Best planting time: Plant plugs in Winter or Spring

Seeding rate per pound (1,000 sq.ft. lawn will need _____ lbs. seed): Seeds germinate unevenly; it's best to plant plugs or 2 ¼" pots 6-12" apart.
% Purity / % Typical Germination rate: N/A
Cost - $ range per lb.: Prices for plants and installation vary.
Summary Pros/Cons:
Pros: Native, very low water and low to no maintenance once established. Tolerates foot traffic. Can be mowed as lawn alternative and to thicken coverage or allow to grow. Evergreen with summer irrigation 1-2x/mo.(every 2 to 4 weeks). Once established, dense mat inhibits weed growth. Can mow. Tolerates a wide range of soils. Pest-free.
Cons: May be expensive and slower to establish than grass. Can't use broadleaf weed killers, so sheet mulch lawn area for 6-12 months before planting. Then hand weed as needed. *C. praegracilis* has strong rhizomes that can spread into garden beds; use metal root barrier if control is needed, or hand-pull.

Often sold as Carex pansa. C. praegracilis: Taller, more slender, dark strong rhizomes.

Clustered Field Sedge, Expressway Sedge
(*Carex Praegracilis)*

- Native to moist and seasonally wet meadows and riparian settings from Alaska and southern Canada through most of the continental US except in the Southeast.
- Evergreen, 2-3.5’ High x 3.5’ wide, spreading by rhizomes. Moderate growth rate.
- Useful in poorly draining areas, in the spaces between pavers, and as a replacement for non-native lawn grasses.
- Soft texture, can be mowed. Walkable, but best to use pavers or paths for high traffic.
- Full sun. Low water, 1x/mo once established (WUCOLS Low, 10-30% of that required for turf.)
- Often mislabeled and sold as *Carex pansa*.

Very like Carex pansa but taller. Often mislabeled and sold as *Carex pansa*.

Kurapia

The slide on the left is a newly planted area (not two months ago) On the right is an established area. Note the center photo with the white flowers which the bees love! If you don't want to have the flowers, you can mow it, some say every two weeks.

'Kurapia'- Utility Groundcover

- Can be installed as plants or in rolls as sod
- Kurapia is green year-round in most CA locations except high elevation areas
- Once established watering is minimal
- Kurapia's sturdy structure makes it ideal for many uses:
  - o Covering lawn type areas
  - o Rooftops, commercial properties, and landscape areas.
  - o It can tolerate light foot traffic
  - **o Not recommended for heavy traffic areas like playgrounds or sports fields**
- *Kurapia, If left un-mowed and allowed to flower, will attract natural pollinators such as honeybees. This is remedied by mowing off flowers.*

Kurapia (*Lippia nodiflora*) - The Ultimate Drought- Tolerant Ground Cover

Kurapia is a highly versatile, drought tolerant ground cover that replaces traditional lawns, groundcovers, and erosion control plants. Kurapia establishes fast, is easy to control and can be mowed into a low cushiony turf. You may also let it bloom into a lush groundcover (white and pink available). Growth rate depends on amount of daylight hours, soil fertility & climate. We recommend planting Kurapia in **USDA Zones 7b and warmer**. **Find your zone here.**

Kurapia can be used for many landscaping designs, including:

- Extreme weather
- Heavy slopes
- Irregular watering
- Irregular pH, salinity
- Foot traffic

Kurapia's light water requirements and easy maintenance saves you money while behaving reliably year after year. **Kurapia is exclusively sold online and shipped directly to you.**

The California Center for Urban Horticulture at the University of California has been involved in researching the performance of **Kurapia** (*Lippia nodiflora*. It was developed for drought conditions and is tolerant of different soils and a range of temperatures. It grows quickly to establish ground cover but is sterile, so unwanted seeding does not occur. **For more information about its use, click *here*.**

Dymondia

Grey-green grass with silver undersides located in center.

Close up shows small yellow daisy-like flowers during summer bloom period.

Groundcovers can be used like this dense mat….covering a large area, keeping the ground cool, sequestering carbon, attracting pollinators, and giving you visual pleasure. This is a nice combination of ground covers that brings different textures and colors into the mix.

Dymondia

As a yard, or let it spill over a rock wall.

(*Dymondia margaretae; aka* silver carpet*)*

Dymondia makes a flat, very drought-tolerant, perennial and evergreen ground cover and good lawn replacement in dry zones. It is not a true grass but is in the aster family and has small, yellow, daisy-like flowers during summer. Takes heavy foot traffic and is often called living cement. Works well as a filler between flagstone, pavers, or stepping stones and other confined areas. Soil retention: Excellent on slopes and hills due to the large diameter and deep root system.

- Light: full sun, part shade
- Habit: 2 inches high, spreads slowly 1-2 feet to

- make a carpet-like ground cover.
- Water: very drought tolerant once established. Occasional water may be needed at higher temperatures. The deep roots act as water wells providing water to the plant as needed. The Dymondia carpet normally appears green/silver in color, but when roots are depleted and the plant needs water, the leaves curl, and their silver undersides are exposed to view. Water as needed in the silver-colored areas to uncurl the leaves and return to green/silver color.
- Cold hardiness: 20 °F
- Heat Tolerance: high
- Origin: South Africa
- Soil: Prefers well-draining soil; mix of 40% vegetative matter, 30% red lava sand and 30% river sand. Perlite can be added to the mix as needed and provides faster growing in flats and pots.
- More attractive to gophers than most grasses.

Use Water-wise Native & Ornamental Grasses

- Wide variety
- Sun or shade
- 6” to 3-4’ high
- Mostly clumpers

West Coast Bentgrass

Blue Fescue

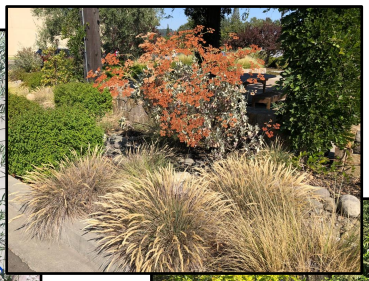
California Deergrass

Mendocino Feather Reed Grass

California has so many waterwise grasses available.
When using grasses, it’s important for you to decide how you want your yard to look and if you can mow the grass you choose.
Please take a look at the websites listed for recommendations and ideas.

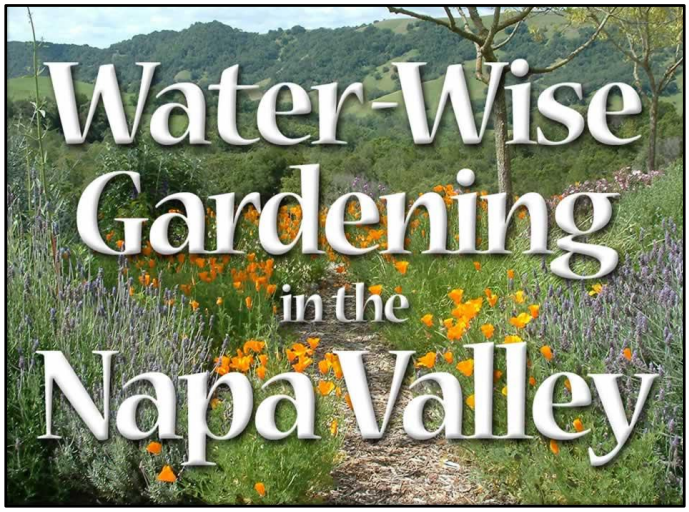
And Thousands of Grass-free Options

California has so many water-wise native options available, and the many plant options from climate-similar areas of the world.
When using grasses, it's important for you to decide how you want your yard to look and if you can mow the grass you choose.
Please take a look at the websites listed for recommendations and ideas.



The Choice Is Yours

napa.watersavingplants.com

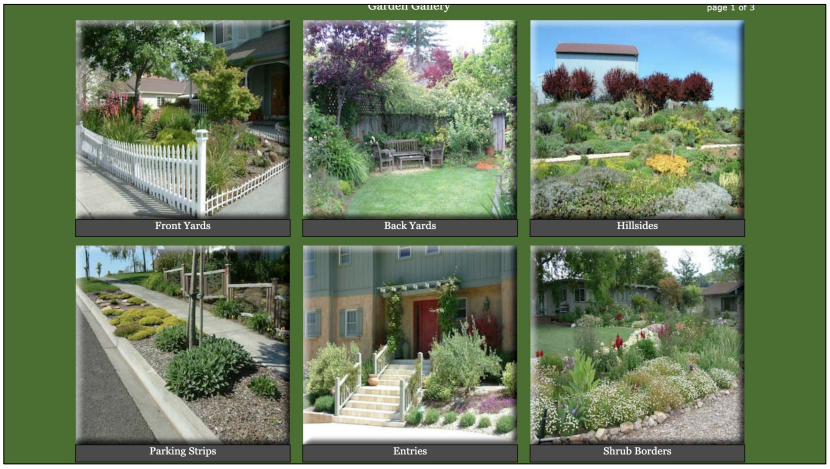


I encourage you to spend some time on this resource [Water wise Gardening in the Napa Valley]

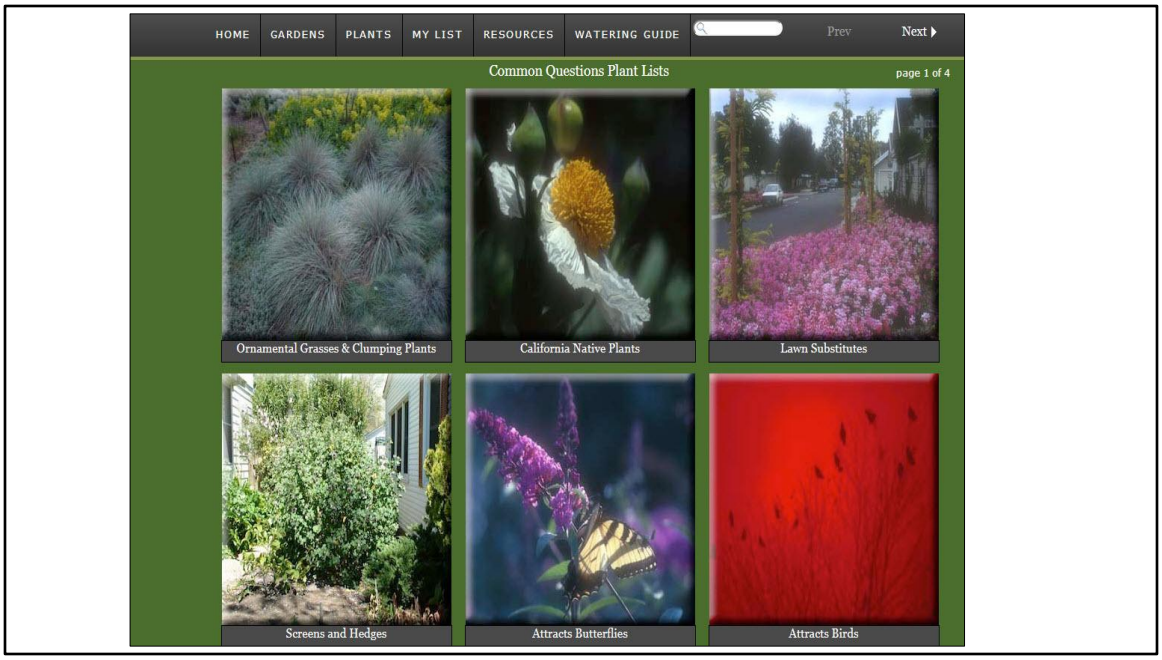
Water-wise Gardening in the Napa Valley

Garden galleries:

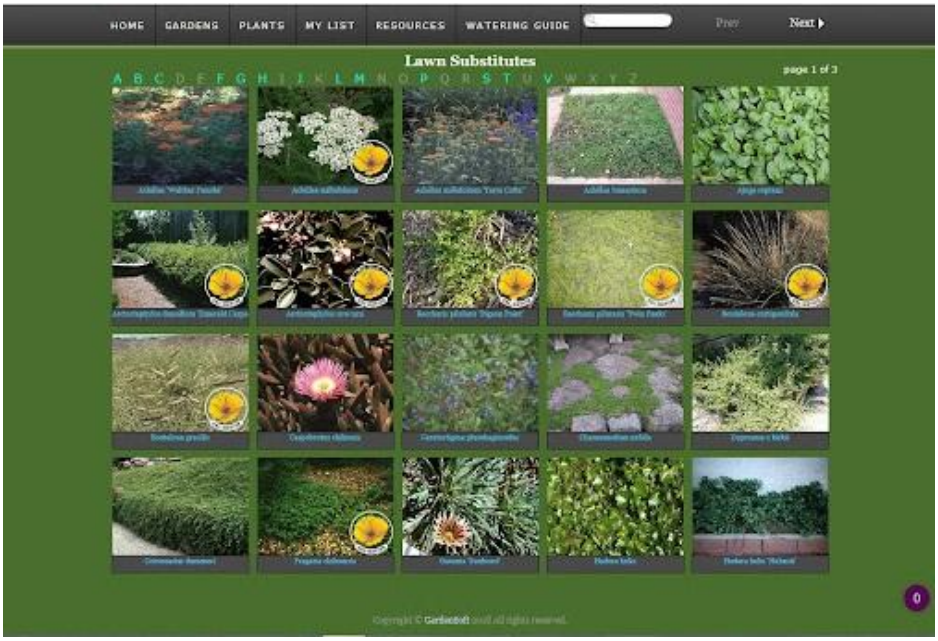
- Front Yards
- Back Yards
- Hillsides
- Parking Strips
- Entries
- Shrub Borders
- Walkways
- California Natives
- Mediterranean
- Theme Gardens
- Raised Planters



The website has garden galleries of full-color photos.
Check out the various ones…I'm sure one will be relevant to your needs

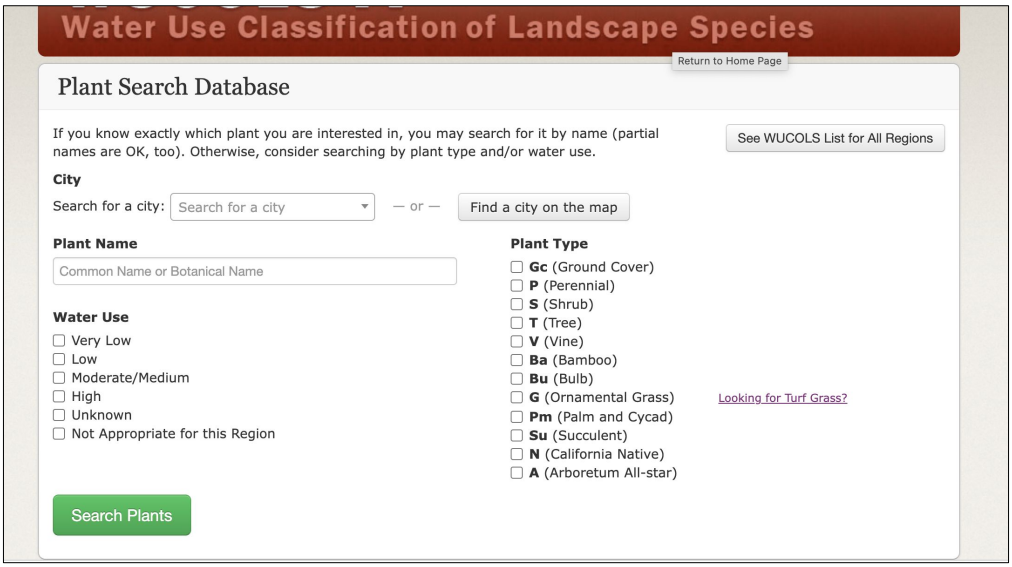


Check these plant lists for various needs, including lawn substitutes!



Here's the first of 3 pages of lawn substitutes. By selecting one, you'll find relevant planting info too

WUCOLS database



This is the WUCOLS plant search database page [WUCOLS database]
WUCOLS=*Water Use Classification of Landscape Species*

Online References

Websites- Lawn related

- https://www.cityofnapa.org/585/Cash-For-Grass
- https://www.lawntogarden.org/how-to-sheet-mulch
- https://napa.watersavingplants.com/gallery.php (Water-wise gardening in the Napa Valley)
- https://californialawnalternatives.com/pages/kurapia-utility-groundcover
- https://calscape.org/loc-California/cat-Grasses/ord-popular
- https://ccuh.ucdavis.edu/kurapia
- https://ucverde.com/
- https://ucanr.edu/sites/WUCOLS/Water_Requirements_for_Turfgrasses/
- https://waterwisegardenplanner.org/helpful-lists/
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The references on this slide and the next are arranged by lawn-related, plants, PDFs and books.

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Q & A

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