GOING TO SUSTAINABLE

Lowering Landscape and Garden Maintenance Including Better Ways to Water and How to Save Water

LOWERING MAINTENANCE

REDUCING MAINTENANCE IN THE PLANNING STAGES

Unfortunately, maintenance of the landscape is often assumed or overlooked during the planning and design phase of a project

1) Keep the planting design simple.
The more elaborate the plan and planting

-- Numbers of plants, variety of plants,
-- less than simple lines and shapes --

… the more maintenance is required.

For instance,

lawn areas need to be plotted so that mowing, edging and periodic maintenance can be accomplished easily.

-- Avoid tight angles and sharp corners.
-- wide angles, gentle, sweeping curves, and straight lines are much easier to mow.
-- Make certain each plant in the plan serves a purpose.

2) Select the right plant for the right place
We all know that there are “sun plants” for sunny spots and “shade plants” for shady spots.

And we don’t plant “sun plants” in shade nor do we plant “shade plants” in sun.

And some of us know that there are drought-tolerant plants that like dry soil and little water

-- and there are moisture-loving plants that like their feet wet.

And we don’t mix those up either.

Such “mix ups” result in everything from the obvious:

outright death of the plant involved

to a subtly stressed plant that shows various symptoms of “disease”

-- whether it’s an actual organism or a **physiological condition.**

Every time you push a plant beyond its natural adaptations, abilities, and tolerances, you invite problems and you invite higher maintenance

*When choosing the right plant, start with **THE BIG PICTURE:***

We have a Mediterranean climate.

Condition appropriate – shade, dry, wet, etc.

Use fewer very large trees that would create pruning/leaf removal/arborist bills.

-- smaller trees would be easier to deal with, as well as being more in scale with the house.

Use water conserving plants – we have a "DRY, Mediterranean climate"

See attached handout: **"PLANTS FOR A 'SUSTAINABLE" *-- LOW MAINTENANCE* – GARDEN ON THE CENTRAL COAST**

Use the **RIGHT SIZED** plants for the space…

3) Part of the right plant, right place "FIT" is…

the right SIZE plant.

Know the mature height and spread space for at least ¾ of mature size.

You'll get:

- Better Appearance overall
- Reduced clipping (= MAINTENANCE)
- Less diseases and pests due to better air circulation
- Improved flowering

4) similarly, know the Growth Rate

- Is it Fast, Medium, Slow?
- Fast-growing plants are often the highest maintenance.
- Fast-growing plants are often short-lived resulting in "double" maintenance (but they can "do the job" in some instances).

An ideal is to mix and balance some of each.

5) Avoid the Maintenance Trouble Magnets --

Some obvious (or maybe not) bad fits and red flags…

-- Surface roots (Brazilian Pepper, Liquidambar)

-- Too large for space
(Elm, Tam Juniper)

-- Fruit/leaf/twig/branch drop
(Olive, birch)

-- Brittle (Robinia, Gleditsia)

-- Pest/disease attraction (Monterey Pine, Roses)

6) If you plan to grow high-maintenance plants

-- such as roses, annual flowers, annual vegetables… Keep them to a small area for low maintenance.

As a whole… Keep a sensible reign on "hard-working" AREAS:

- Rose gardens
- Water features
- Orchard
- Vegetable garden

Plan for plants and features that you know you can handle.

7) Cover the ground

To prevent weeds…

- reduce watering
- "swallow" leaf litter
  -- hardscape
  -- groundcover

Not much lawn – if at all…

8) Keep lawn areas to a minimum (if any at all)

If you must have a lawn, use a *turf-type tall fescue*

In lieu of a lawn…

- Consider groundcovers (especially in the front yard), or
- hardscaping (concrete, rocks, brick, etc.)

MORE LATER …

IF YOU KEEP YOUR LAWN or plan for a lawn …

9) Include Mowing Strips

A "mowing strip" is a hard surface (e. g., concrete, brick).

10) Don't place plants in the lawn.

Group shrubs and trees in beds bordering the lawn. Especially don't put a tree in the middle of the front lawn.

Trees planted in the front landscape work best when placed to the sides.

-- These enframe the house as it appears from the street.

11) AVOID the cliché – the epitome of wrong plant in the wrong place:

the traditional, the ubiquitous

"Tree in Turf"

Trees don't like lawns and lawns don't like trees.

Not only is the pairing of lawn and tree hard on the lawn,

it's usually hard on the tree as well.

-- The tree shades the lawn,

-- the tree gobbles up water and nutrients that the
little grass plants need,

-- the tree makes it hard to mow and edge
and fertilize,

-- With the frequent watering lawns get, trees
develop a shallow root system… often surface rooting

-- Most trees struggle under the watering regime
that a lawn needs, often succumbing to various root rot diseases

-- it's a high maintenance combination

tricky mowing, edging, watering, fertilizing

12) Where soil drainage is difficult, plan to re-grade

-- or install French Drains or chimney drains (cisterns)
to improve drainage

-- or plant the area with poor drainage-tolerant plants.

13) Moderate slopes

to allow easy mowing, planting, walking,

efficient/effective watering

14) Improve the sun light levels in areas of too much shade

Thin out or remove trees to allow more sun

Don't plant MORE trees

A dilemma in north county where we like shade – during summer

15) Locate pathways according to "desire lines" –

"the preferred pedestrian access routes based on convenience of traveling from one location to another"

In other words, keep pathways *close* to straight

16) Hydrozone

Place your plants in groups according to the amount of water they need.

Lowest water use plantings

Little if any water once established
Do well with our rainfall

Moderate water use plantings

Some supplemental water

"Medit-watered"

winter supplemental water
summer entirely or mostly dry

High water use plantings ("oasis") --

KEEP THESE TO A MINIMUM

Annual flower beds
Vegetable gardens
Water-loving plants
Container gardens
Lawn ***(or eliminate)***

17) Use the most efficient AND EFFECTIVE irrigation systems and practices

A) MICRO-IRRIGATION (DRIP)

B) SPRAY

C) ROTARY

D) FLOOD

A) MICRO-IRRIGATION (DRIP)

best used for

small raised beds

container gardens

plants under native oaks (temporary)

specimen plants on slopes

temporary plantings that will do without water after established

-- This system is high maintenance

and although seemingly universally accepted, there are serious …

DISADVANTAGES OF DRIP --

MANY

-- This system is high maintenance
it requires constant monitoring

-- usually shoddy products

-- products are constantly being introduced, often disappearing after a few months

-- failed products become hard to replace or impossible to find or repair

-- small tubing often becomes clogged from hard water

**** *New designs include filters and self-flushing emitters*

-- Filtration often required (to help reduce clogging)
= $$$

-- the tubing is unsightly

-- tubing is often covered by mulch or plant foliage and

-- Can't see drip working (compared to sprinklers)

-- MOST GARDENERS might not realize a clog in the system or other maintenance issue until the affected plants begin to show signs of stress.

-- easy prey for wayward mowers and other garden tools
-- easy prey for kids and pets
-- easy prey for rodents
-- easy prey for vandalism.

more critical disadvantages:

-- provides no cooling effect during hot spells

-- does not wash off foliage as do sprinklers

-- for most efficient use, systems require pressure regulation (usually pressure reduction)

-- salt build up at perimeter of wetted area

such minerals aggravate most root-rot organisms

-- it's often necessary to run it long to provide "deep" watering and consequently creates a long-term low-oxygen environment

-- does not push oxygen into the soil

-- maintenance people are not familiar with drip system repair and maintenance

nor even simple scheduling – there are TOO many different systems

-- and less familiar are home-owners

-- Because the wetted area is much smaller when delivered by drip compared to sprinklers,

control is more critical in application of water to avoid plant stress

-- a recent evaluation of landscape drip irrigation systems revealed an average uniformity of less than 20% (> 70% is acceptable efficiency).

-- one peculiar disadvantage to drip systems –

-- gardeners often replace plants that have died at the end of a drip system tube by placing a new plant in the exact same place as the existing tube end – regardless of the type, needs, or eventual size of the new plant

AND POSSIBLY WORST OF ALL…

-- drip systems do not promote an extensive root system

one that is deep and wide and not shallow-rooted

the very type of system that allows a plant to be

truly drought-resistant in the long run

B) SPRINKLERS/SPRAY HEADS

best used for:

small to medium yard areas.

small to average lawns

plants along roadsides (to wash dust off)

shade gardens

non-windy areas

-- ideal for *weak* pressure systems.

-- dependable, requiring little maintenance.

C) ROTARY SYSTEMS

best used for:

largest areas

minimum 20-foot radius

up to 100 foot diameter.

especially slopes

D) FLOOD SYSTEM

best used for:

enclosed, level beds

orchards

row vegetable gardens

plants with water-sensitive foliage

not too sandy, not too heavy soils

18) AUTOMATE

For automatic systems you will need a controller with one "station" for each valve.

And each valve is one hydrozone.

If you have both lawn and shrub areas you should make sure the controller has 2 **OR MORE** "programs".

If you do automate –

Do appreciate the limitations of a “computer” and plan on do some thinking for yourself.

19) If you have a slope,

plan lower-water-demand plants at higher elevations, and

-- those that need more water at lower elevations.

-- The water from the higher areas will trickle down to your plants which demand more moisture.

ONCE THE PLAN IS DONE AND THE PLANTS ARE READY TO GO IN…

MAINTENANCE-SAVING PRACTICES

20) Start with Healthy Plants:

-- Look for plants with healthy foliage and make sure they are rooted firmly in the soil in the container or ball.

-- Check to see if the plants have plenty of live, light tan or white roots.

-- Avoid plants that are root-bound or with roots exposed on the surface or growing out the drain holes.

21) Plant at the RIGHT TIME

22) Install new plants when reliable rainfall is expected.

Late fall/early winter is the best time to plant
most things on the Central Coast

23) Build raised basins -- BERMS --

around newly-planted shrubs and trees for effective watering

24) Mulch:

use a 2"-6" deep layer of medium to coarse material

to reduce watering needs

to prevent mud splashing

to reduce or eliminate other fertilizing

to reduce **weeds**

speaking of weeds…

WEED MANAGEMENT

a. Know what a weed is. Weeds are pioneers. They are nature's way of covering disturbed and bare ground.

b. Don't disturb the ground. Except for actually planting new plants or cultivating for a new vegetable garden or flower bed, avoid breaking the surface of the soil.

That includes avoiding pulling, digging, tilling to remove weeds.

Yanking out even the tiniest weed makes two mistakes. It brings up weed seeds that have been accumulating at the deeper levels of your soil where they have been too deep to germinate. It also creates a disturbed bit of ground that new weed seeds blowing in find suitable for setting anchor.

Two additional notes:

weed pulling disturbs the roots of the desired plants nearby.

disturbing the soil disturbs the edaphon

c. Cover the ground. Mulch newly planted areas, vegetable gardens, orchards and annual flower beds.

The best mulch for smothering weeds is a semi-composted organic material of medium diameter particles (about ½-inch) that is applied four to six inches thick. Don't skimp.

Contrary to popular belief, geotextile fabrics (plastics, "landscape cloth") do not work well in the long run and actually lead to more weeds.

Plant living groundcovers to "finish" the landscape and garden. Use low, dense, mat-forming groundcovers to truly cover the ground completely.

Plant other plants (low, dense, spreading shrubs and/or full clumping perennials) densely enough to leave no room between them.

The idea is to cover the ground so thoroughly that no weed seeds can find their way to the ground. Those that do make it to the ground cannot make their way up. And those very few that do make it up can't compete well.

d. Water deeply and infrequently. When you do water, run the system or hose for enough time to provide a good amount of water that will train roots to go down deeply. This will prepare the plants for periods of infrequent waterings.

Watering infrequently allows the soil surface to dry out, hence providing no situation that encourages weed seed germination.

e. Hoe weeds. When weeds do come up in open ground, the best way to eliminate weeds for the long run is to "shave" them off with a sharp hoe. A Dutch or onion hoe is ideal; these have shallow but wide blades that work as does your razor blade.

Hoeing works on weed seedlings. The larger the weed, unfortunately, the more difficult it becomes to actually be able to scrape them off with a hoe.

Use the hoe as you would a razor, scraping toward you with the blade level from side to side against the ground and the handle tilted up enough to allow the sharpest part of the blade to cut at the base of the weeds.

It's important that you sharpen the hoe blade regularly with a fine rasping file. You keep your best kitchen knives sharp all the time; why not your hoe.

The soil is best hoed when pretty dry. The hoe doesn't cling to the soil and neither do the weeds.

Hoeing works for all young weeds. Young annual weeds (our most common type) once hoed, do not return.

Perennial weeds will re-sprout from storage roots, tubers, underground stems and the like. The resprouting does, however, use up the food in the storage organ, thereby weakening the plant and a second hoeing of these, within a week of their resprouting will rid the plant of its ability to photosynthesize (which puts more food back into the storage organ). With older perennial weeds, the storage organ will continue to send up a new sprout and your persistent hoeing will eventually totally exhaust the organ.

f. Snip off the awkward weeds. Where you have small weeds popping up in the mulch or in the lawn, use any sharp tool to cut them off at their very base. No need to pull, which would either disturb the mulch or interfere with the lawn. This technique also is the best method for removing weeds from containers in which you're growing other plants.

g. Mow weeds. Where seasonal weeds have grown too tall for a hoe to scrape them off easily, mow them down with a regular lawn mower. If they continue to grow, mow them again. Repeat.

This works best if you mow them early, before they get too tall. The idea is to keep them mowed until beyond their blooming period, if you have to, so that they never set seed and become a worse problem or at least a continuing problem. Annual weeds eventually give up and peter away.

Tall-growing perennial weeds also give up and fade away. Low-growing perennial weeds, however, are persistent – maybe even more vigorous -- under this process. Hoeing (early on, of course) and mulching are better methods for such low-growing weeds as oxalis, dandelions and many clovers.

h. Cut down the big stuff. Use a special tool called a weed cutter. It's used much as you would a golf club, swinging with an easy stroke back and forth through the stems of the weeds. For those of you who are power-inclined, get out your power weed whacker.

i. Mow your lawn high. If you need to reduce or prevent lawn weeds, set your mower blades to 3 to 4 inches high. A tall-growing lawn shades out weed seedlings and produces a healthier lawn overall that better competes with almost all weeds.

j. Avoid frequent fertilizing of your lawn. Lawns do best with a good organic fertilizer once or twice a year. More frequent fertilizing, especially with quick-acting fertilizers and especially in summer feed the weeds as well as your lawn.

k. Water your lawn infrequently and deeply. Frequent shallow watering encourages weed seed germination. An aside: frequent, shallow waterings also increase disease problems as well as create a less drought and heat tolerant lawn.

If you have a turfgrass lawn and plan to keep it…

25) Mow at the proper height

the optimum height to mow **TURF-TYPE TALL FESCUE** grass for water conservation is
3 to 4 inches.

(common mowing height is 2 inches and less)

However, the taller height promotes a deeper, more water efficient root system.

And taller grass acts like a living mulch, shading the ground, thus reducing moisture evaporation from the soil.

Also, grass that is allowed to grow taller grows slower; therefore, needing less water and mowing.

-- Contrary to popular belief

26) Apply fertilizer to the lawn at the proper time and in the optimum amount -- NOT TOO MUCH

Fertilize the lawn once in spring and
possibly again in fall

27) Fertilize plants properly and with the correct amount

most plants require minimal if any fertilizer –

SURPRISE

PLUS

too much stimulates overly soft lush growth that requires more water and is prone to pests and diseases

28) Periodically check your irrigation system

29) Water infrequently, deeply and thoroughly.

And speaking of **watering**…

WATERING

On average –

about **half** of the water used in a single-family home
goes into the landscape.

Plants need water …

As a raw material for **making simple sugars,**
in the process called photosynthesis.

They use it to **carry other things** through the plant, either dissolved in the water or carried by the flow,

Water also **fills out the cells and does much to form the shape** of the plant by keeping the cells plump.

Almost all of this water has to enter the plant through its roots.

AND each root cell needs <u>oxygen</u> to work

So, what the plant needs is a good supply of water at its roots.

AND oxygen in that water.

BASIC PRACTICES

HOW OFTEN?

Because soil texture, plant type and age, and weather are all **variable,**

following a fixed watering schedule year-round (or even all summer) is **NOT** the most efficient way to meet your plants' needs.

SO What FACTORS influence a realistic watering schedule?...

-- Soil texture (which we've already discussed)

-- Plant species

xerophytes, mesophytes

origins:

"Tropical/Subtropical"
"Desert"
"Mediterranean"

-- Plant size

for small plants consistency is more important than quantity.

You do not want the plants to go dry/wet/dry over and over again.

Up to a point -- BIG plants develop drought-resistance…

-- Plant age

water new seedbeds **by hand** for a week or two until their root systems get down past the 2 or 3 inch depth where they can reach the water from the drip system.

Water NEW plants…

-- Plant growth cycles

actively growing
resting/dormant

-- Mulched or not

type, quantity, and quality of mulch

Saves 750 to 1,500 gallons a month.

-- Root damage

may need additional irrigation until new roots grow to replace those that are destroyed.

-- Container factors

size
material
exposure

-- Weather

Water less often when it's:

Rainy
Cool/Cold
Humid
Cloudy
Short days, low sun

Can save up to 300 gallons each time.

Water more often when it's:

Windy
Hot
Dry

Regardless of how you apply the water, follow these basic rules:

1-8

1) Always check your soil for moisture and look at your plants before you water.

   To check the soil around new transplants and in **vegetable and flower beds**, dig down a few inches with your fingers or a trowel;

   if the top 1 to 2 inches are dry, you probably need to water.

   In lawns or around established trees and shrubs, use a soil sampling tube

   Leaves also can tell you when it's time to water. Most will look dull or roll in at the edges just before they wilt.

2) Water deeply and infrequently rather than shallowly and frequently.

   Frequent, light waterings will encourage shallow rooting, causing plants to suffer more during dry periods

   Deep waterings “train” roots to grow deeply

3) Apply enough to soak the entire root zone
   AND THEN SOME

   Thorough watering occurs just before a puddle appears on the surface of the soil and does not soak in.

4) Stop watering when runoff starts.

   Soils high in clay accept water slowly, often as little as 1/4 inch per hour.

   Same with compacted soils

   If water starts to pool or run off, stop irrigating, let the water soak in, and start watering again.

   Repeat on/off cycles until you apply enough water to wet the soil to 18-24 inches. This may take a number of cycles.

5) Don't saturate the soil for long periods.

   Over watering the lawn or garden, causes MORE harm than under watering.

   If the soil gets saturated, it has less space for critical oxygen,

   Take a long enough break between irrigation cycles to allow the free water to be absorbed.

6) Water in the morning,

   -- less water lost to evaporation than during the heat -- OR WIND -- of the day.
   Can waste up to 300 gallons in one watering.

   Do not use overhead irrigation in the evening

   "= Watering on a sunny day can burn plant leaves."

   300 gallons/month

7) Water at the drip line and JUST beyond

8) When in doubt, DON'T water.

REDUCE OR COMPLETELY ELIMINATE THE LAWN AREA

Lawns require A LOT of care.

Americans spend $27 billion a year on lawn care…

-- 10 times more than we spend on school textbooks.

The environmental effects from lawn care are fairly serious:

-- Excess fertilizer seeps through the soil and pollutes ground water; contributing to high phosphate levels in streams, lakes and rivers.

-- These high levels of phosphates contribute what is eventually a complete change in the aquatic and riparian environment.

-- Lawns can be chemical-dependent.

The tendency is to use artificially produced fertilizers, herbicides and pesticides. These can impact the environment in many ways that you may not be aware of and can cause harm to wildlife, pets and even your family.

-- Lawn mowers pump more pollution into the air in a one hour period than a car does over 1000 miles

-- Turf can be temperamental.

Soil quality can vary, rainfall is unpredictable. Even under ideal conditions -- and even if you pour on the chemicals -- you may have bad luck because of something that's beyond your control.

-- Grass clippings create a great deal of waste for the landfills.

-- Mowers, weed whackers, and leaf blowers have become a major source of background noise in many neighborhoods. The drone of lawn equipment contributes to an already noisy world.

-- And biggest issue…

-- They require large amounts of water --a natural (and increasingly scarce) resource.

According to a report in the journal “Environmental Management”:

-- some 40 million acres of America are covered in lawns

making turf grass our largest irrigated crop.

Assuming that all 40 million acres of lawn are watered and fertilized at recommended levels:

-- Americans pour as much as 238 gallons of water per person per day onto lawns during the growing season.

-- and 5-10 pounds of fertilizer per year…

THAT’S more than the entire country of India uses for its food crops

Lawns require an average of 10,000 gallons of water over the normal growing season.

On average, turf lawns use 25 gallons per square foot per year.

WHAT ARE THE ALTERNATIVES?

1. a natural soft “meadow” of drought-tolerant grasses and grasslike plants -- no mowing:

    Autumn moor grass (*Sesleria autumnalis*)
    Berkeley sedge (*Carex tumulicola*)
    European meadow sedge (*Carex remota*)
    Meadow moor grass (*Sesleria heuffleriana*)
        (… as well as the below three)

2. a semi-natural meadow of drought tolerant grasslike plants -- can be mowed and walked on:

    California meadow sedge (*Carex pansa*)
    Catlin sedge (*Carex texensis*)
    Valley meadow sedge (*Carex praegracilis*)

3. green, low groundcover for the “expanse of green”, many choices – see long list at end, including walk-on.

4. blooming groundcover for interest, many choices – see list

5. seeded clover and/or bird’s-foot trefoil

6. interesting plants and plantings, such as:

    Succulents
    Rock garden plantings
    “Mediterranean cottage”

    WHEN WELL DESIGNED versus just a “collection”

7. Additional or extended hardscaping – patio, courtyard

AGAIN **– WHEN WELL DESIGNED**

8. synthetic lawn! Today's new versions are not too bad

Aside from these 8 tit-for-tat alternatives,

often the best way to eliminate a lawn area is

to re-design the entire landscape.

Do it yourself or hire a designer/architect.

GROUND COVERS AS LAWN SUBSTITUTES

(green, fairly flat, some mow-able)

Small to medium coverage --

Carex praegracilis 'Laguna Mountain'*	CALIFORNIA MEADOW SEDGE
Carex subfusca*	RUSTY SEDGE
Chamaemelum nobile*	CHAMOMILE
Dampiera diversifolia	KANGAROO LOBELIA
Erodium reichardii	CRANESBILL
Festuca 'No Mow Fine Fescue Blend'*	FINE FESCUE BLEND
Festuca rubra 'Patrick's Point'*	CREEPING BLUE FESCUE
Fragaria chiloensis	ORNAMENTAL STRAWBERRY
Thymus x citriodorus*	LEMON THYME
Thymus herba-barona*	CARAWAY-SCENTED THYME
Thymus polytrichus 'Pink Chintz'*	WILD THYME
Thymus serpyllum*	CREEPING THYMES

Large areas --

Arctostaphylos uva-ursi	BEARBERRY
Baccharis pilularis 'Twin Peaks'	DWARF COYOTE BRUSH
Juniperus horizontalis 'Prince of Wales'	JUNIPER

** mow-able and tolerates some traffic*

COSTS OF A LAWN

Lawns are beautiful, but the cost – in actual dollars -- is high.

Fuel for power mowers, toxic emissions, fertilizers and pesticides,

-- water consumption and your weekend time are all part of the cost of lawn maintenance.

Sample costs:

If the lawn is 20' by 50', or 1000 sq. ft,

and is watered 10 min. once/day,

you will use about 8400 gallons/ month

at a cost of between....$15.00 to $40.00/month

$180.00 to $480.00/year

If the lawn is replaced with a groundcover planted 5' apart,

put on 1 gallon/hour and watered 4 hours/week,

the water use is 700 gallons per month.....

$1.25 to $3.34/month

$15.00 to $40.00/year

There's also the OVERALL COST…

A 20x50' lawn with an automatic system costs
(if you have it installed),
per year with 20 year life

1. Seed and topping
2. Sprinklers (Toro 570) & Timer + labor
3. Lawn mower (lasting 10 years)
4. Lawn maintained professionally
5. Water
6. Fertilizer and sprays

Total/year.....$1,500.00
Total/ 10 years.....$15,000.00

A 20x50' groundcover using an automatic system
(if you have it installed and maintained),
per year (ten year life).

1. Plants
2. Sprinklers
3. Professional Maintenance
4. Water

Total/year.....$480.00
Total/10 years.....$4800.00

A deck 20x50'
cheap redwood on the ground using treated wood joists and concrete piers,
per year (15 year life).

1. Materials and labor
2. Stain (done every 3 years)
3. Sweeping

Total/year.....$350.00
Total for 10 years.....$3500.00

Brick patio 20x50',
on sand, per year (30year life).

1. Bricks
2. Sand
3. Edging
4. Labor (yourself)

Total/year.....$120.00
Total for 10 years.....$1200.00

A BIT OF GOOD NEWS…

Laws that prosecute natural gardeners, commonly called “weed laws”,

-- are gradually being overturned as the benefits of these green oases are being acknowledged.

CONVERTING

While it does require some ‘up front’ money to convert grass to an alternative, it will save dollars in the long run.

The costs can vary greatly depending on existing conditions and desired landscape changes.

Estimates for a conversion typically range from $1.50 - $2.50 per square foot.

However, when looking at extra costs required for turf, such as water, fertilizer, mower upkeep, overseeding and other maintenance activities, you’ll realize about a 36-cent per square foot savings each year … and that doesn’t include time or labor.

With this in mind, you would have a payback within 4 to 7 years … not bad at all considering all of the benefits.

Here's how to convert:

The key to a successful conversion is to thoroughly kill the grass in the area you want to convert.

This helps minimize maintenance issues in the future.

Cover the grass with heavy cardboard and cover the cardboard with 6 inches of heavy mulch

1-3 months

Once your grass is dead, you have two choices.

1. you can scalp the grass close to the ground.

2. the most effective, is to remove three or four inches of dead grass with a tractor or sod cutter.

Both pieces of equipment can be rented or you may want to hire a landscape professional, depending on the amount of grass you are removing.

MANAGING GOPHERS

1. Take advantage of natural predators

Gophers are the main course for several kinds of other animals, particularly owls. Since the gopher regularly comes above ground to gather food, nocturnal predators such as owls are able to pick them off and owls are even known to feed primarily on gophers, sometimes several each night.

To encourage owls, build an owl house: Sink a 4 x 4 inch pole four feet into the ground and build a nesting box, to be attached at the top of the pole (to extend to 12 feet above ground level. The nesting box should be 16-24 inches on each side, with landing dowels, an entry hole 6 inches in diameter in front, several 5/8 inch drainage holes at the bottom together with a clean out panel, and four 3/4 inch air holes on the side.

If placed in the sun, as opposed to under a tree, a slanted roof should be provided on the top of the box, extending several inches over the front and back to give the owls shade. Care should be taken not to place the nesting box in an area of intense vehicle or foot traffic since owls will not visit such noisy sites. Although barn owls reside wherever people do, they need peace and quiet during daylight hours, which is their nap time.

See attached plan.

2. Use "gopher resistant" plants

As yet, there are no good studies on the non-preference of one plant over another but there is plenty of informal input on the subject. The plants listed below are "gopher-resistant" according to many home gardeners. That is, if other food is abundant, gophers will leave these plants alone. This does not mean that gophers never eat these plants -- only that gophers prefer other food if it's available.

Common name	Botanical name
Acer palmatum	Japanese Maple
Amaryllis belladonna	Naked Ladies
Arbutus unedo	Strawberry Tree
Begonia semperflorens	Fibrous Begonia
Buddleja	Butterfly bush
Callistemon	Bottlebrush
Ceanothus	California Lilac
Citrus limonia	Lemon
Dietes vegeta	Fortnight lily
Digitalis	Foxglove
Escallonia	Escallonia
Eucalyptus	Eucalyptus
Euonymus	Euonymus
Fraxinus	Ash
Grevillea	Grevillea
Heteromeles	Toyon, California Holly
Heuchera	Coral bells
Hydrangea	Hydrangea
Lantana	Lantana
Lavandula	Lavender
Michelia	Banana Shrub
Morus	Mulberry
Nandina domestica	Heavenly Bamboo
Narcissus	Daffodil
Nepeta	Catnip, Catmints
Nierembergia	Cup Flower
Nerium	Oleander
Penstemon	Penstemon
Persea americana	Avocado
Prunus armeniaca	Apricot
Punica granatum	Pomegranate
Rhaphiolepis	Indian Hawthorn
Rosmarinus	Rosemary
Salvia	Salvia
Vinca	Trailing Periwinkle

3. Use a "repellent" plant.

Of the many plants that have been recommended as gopher repellents, only one has actually shown some repulsive qualities: *Melilotus indica*, a somewhat weedy-looking legume that should be sown on the periphery of the property. It is somewhat toxic, so keep it away from pets, farm animals, and horses. It's available from S & S Seeds, Albright Seed Company and Peaceful Valley Farms.

4. Exclude them

For small areas it is possible to keep gophers out by putting in some sort of physical barrier, such wire fencing or hardware cloth of small mesh, metal or concrete barriers, etc.

If you want to install a barrier of this kind it should go at least two feet deep in the soil and be at least one foot above ground, so that gophers cannot climb over it. The underground fence should be of 1/4- or 1/2-inch wire mesh. They can be formed as "cages" for planting individual plants from containers or to surround the areas below entire raised beds.

Already-made "gopher cages" are convenient and useful for individual plants.

5. Trap them

Trapping is possibly the most effective method for managing gophers, especially on small areas (large areas require more persistence with traps). Commercially available gopher traps include the Macabee® (my favorite), the Victor® Gopher Getter, the Death Klutch®-1, and the box-type trap (e.g. Black Hole®). Instructions on setting are usually provided by the manufacturer.

Trapping can be the most time-consuming and difficult way to control gophers but it's the closest thing to guaranteed gopher control in a home garden.

The benefit to trapping is that you definitely know you've got the gopher.

The trap must be placed in the gopher burrow.

In order to be effective you are going to have to do some digging, and obviously if the gophers are in your lawn this cure could be worse than the critter in its effect on the appearance of the lawn. You need to dig down – carefully so as to not allow the tunnel to collapse -- until you expose a main tunnel, and place the trap delicately in the runway. Better results are with two traps, one facing each direction of the gopher run to intercept the gopher from whichever way he comes.

The best success is had when tunnels are left slightly open -- lodging a loose wad of weeds or sod into the opening allowing a slight window. The gopher, which absolutely abhors changes in its burrow, detects the light and comes back to fill the new window.

Some trappers close off the tunnel completely with a board or sod.

Traps should be attached to a stake with a wire or chain. Generally, 3 or 4 traps per 1,000 square feet are needed for trapping to be reasonably efficient.

You may have to experiment with trap type and placement.

Trapping is most effective when gophers are pushing up new mounds, generally in spring and fall. If a trap is not visited within two days, move it to a new location.

On large areas, it’s a good idea to place colored flags at set locations.

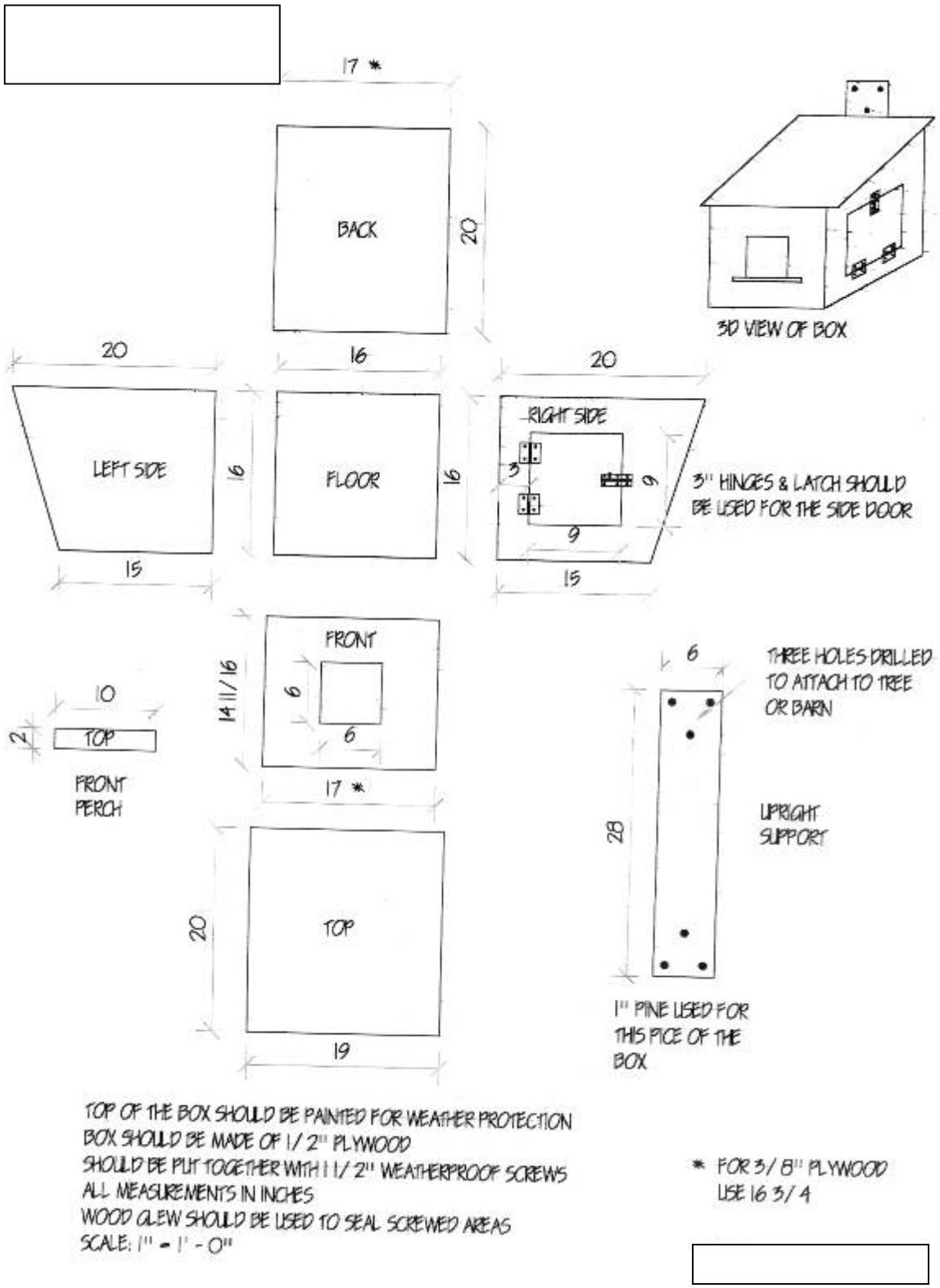
In spring and early summer when gophers are mating or when young may be present, it is a good idea to reset traps in the same location after the first gopher is caught.

When you do catch some gophers with the traps, do not handle them with your bare hands. Most rodents have parasites on them such as fleas that you do not want on you. Use gloves and place the dead animal into a plastic bag for disposal.

Just because you have eliminated all the gophers from your property does not mean that new ones won't move in very quickly. They are territorial, and once some ground is rendered free and clear of the competition new gophers may take over the vacated area, even moving into the burrow system left by a departed comrade. (By the way, the notion that leaving a dead gopher in its burrow to scare off potential new squatters doesn’t hold water because of this territorial imperative.)

Gopher management needs to be an ongoing process, particularly on large properties.

Barn Owl Nestbox Plans



Instructions for Building a Barn Owl Nest Box

Materials List:

One sheet of 4 x 8 x ½ inch plywood
One piece 1 x 6 x 28 inch pine (mounting board)
One piece 1 x 2 x 10" pine (perch)
Two 3-inch hinges
One 3-inch latch
One container of white wood glue
One box of 6 x 1 inch weatherproof screws
Eighteen 6-½ inch weatherproof screws
Brown paint

Tools:

Table or circular saw
jig saw
drill and bits
hammer
screw drivers
paintbrush
tape measure

Instructions:

- Cut out all pieces of plywood and pine using table saw or circular saw

- Take the front panel and trace the 6 x 6 inch opening on it. Drill a 1/4 inch pilot hole in one corner and then cut all the way around the square with a jig saw

- Take the right panel and trace the 6 x 9 door on it and follow same cutting instructions as above.

- NOTE: When starting to assemble the box ensure that the screws are set far enough back at the corners so that they do not run into each other. Pre-drill all screw holes with a 3/32" bit.

- Take the floor panel and run a bead of glue along two opposite sides

- Take the left panel and line the bottom panel flush with the floor panel on the glued side. Now take 4 - 1" screws and screw them in evenly along the left side into the floor panel.

- Repeat the same process for the right side.

- Run a bead of glue along the back edge of the floor panel and the back of the right and left side panels. Take the panel and place it flush with the floor and two side panels.

- Screw the back panel in place with 4-1" screws on each of the 1 bottom and 2 side seams.

- Install the front panel in the same manner as the back panel.

- Install the front perch using 3-1" screws and a bead of glue. Place it just below the front opening, centered side to side on the front panel.

- Take the mounting board and mark its center and screw it into the back panel, making sure that it is centered from side to side and top to bottom. This should give you an even amount of wood protruding beyond the back panel, top and bottom, for mounting.

- Install the two hinges on the bottom of the right side door and the catch section or the latch on the top. Mount the door onto the side panel so that it opens downward as illustrated. Install the bolt section of the latch on the side panel directly above the latch catch. Use the 6 x ½ inch screws for section.

- Install the top panel with the back touching the mounting board and an even amount of overhang on both sides. Use 4-1" screws on each seam.

- Paint the top panel (flat surface and particularly the edges) with brown paint for weatherproofing.

- Drill 5-1/4 inch holes evenly spaced in the bottom panel for drainage.

Recommended Site Characteristics for Barn Owl Nest Box Placement:

At least 25 acres of contiguous, good quality hunting habitat (pastures, hay fields, fields that have been fallow for at least 3 years, grassy marshlands) available within ½ mile radius of the nest box site (about 5% of the land area within this radius). Within a 5 mile radius an additional 200 acres of good hunting habitat for dispersing birds is preferable.

Several natural nesting and roosting opportunities (e.g. hollow trees, old barns, old bridges) within 2 mile radius.

Dense forest should not exceed 50% of the habitat in a 2 mile radius, to decrease risk of Great Horned Owl predation.

A low density of well-traveled paved roads within ½ mile radius.

Rodenticides are not used in and around buildings and nearby orchards and fields.

A reasonable expectation that the amount of foraging habitat will not decline over the next 5 years.

Notes on Barn Owl Nest Box Placement:

Boxes should be located in or on structures so that birds have unrestricted, year-round access. Avoid erecting nesting boxes on trees or telephone posts due to high predation risks (unless providing a predator baffle).

Preferably there should be little human disturbance around the nest box, although barn owls will nest in barns being used for regular and routine farm activities.

Boxes should be fastened on the outside or inside of farm structures at least 20 feet off the ground, preferably with the entrance facing directly to the outside and towards hunting habitat.

If affixed to the inside of a barn, a 6" by 6" hole should be cut in the side of the barn and the nest box attached so that birds fly directly into the box from outside.

Place the box so that the nest exit faces towards hunting habitat.

PLANTS FOR A 'SUSTAINABLE"
-- LOW MAINTENANCE –
GARDEN ON THE CENTRAL COAST

Low water use, minimal fertilizer needs, no special care

Large Trees --

Cedrus deodara	DEODAR CEDAR
Cinnamomum camphora	CAMPHOR
Gingko biloba	GINGKO
Pinus canariensis	CANARY ISLAND PINE
Pinus pinea	ITALIAN STONE PINE
Pinus sabiniana	GRAY PINE
Pinus torreyana	TORREY PINE
Quercus engelmannii	ENGELMANN'S OAK
Quercus ilex	HOLLY OAK
Quercus suber	CORK OAK

Medium Trees --

Arbutus 'Marina'	HYBRID STRAWBERRY TREE
Brachychiton populneus	KURRAJONG
Brahea armata	BLUE HESPER PALM
Butia capitata	PINDO PALM
Eucalyptus nicholii	PEPPERMINT GUM
Eucalyptus polyanthemos	SILVER DOLLAR GUM
Eucalyptus sideroxylon	RED IRONBARK
Calocedrus decurrens	INCENSE CEDAR
Cupressus arizonica	ARIZONA CYPRESS
Cupressus forbesii	TECATE CYPRESS
Geijera parviflora	AUSTRALIAN WILLOW
Gleditsia triacanthos inermis	THORNLESS HONEY LOCUST
Juniperus californica	CALIFORNIA JUNIPER
Juniperus scopulorum 'Tolleson's Blue Weeping'	BLUE WEEPING JUNIPER
Melaleuca linariifolia	FLAXLEAF PAPERBARK
Melaleuca styphelioides	PRICKLY MELALEUCA
Metrosideros excelsus	NEW ZEALAND CHRISTMAS TREE
Olea europaea	OLIVE
(only fruitless cultivars such as 'Majestic Beauty', 'Wilsoni')	
Pinus halepensis	ALEPPO PINE
Pistacia chinensis	CHINESE PISTACHE
Quercus chrysolepis	CANYON LIVE OAK

Small Trees

Acacia baileyana	BAILEY'S ACACIA
Acacia pendula	WEEPING MYALL
Acacia stenophylla	SHOESTRING ACACIA
Celtis australis	EUROPEAN HACKBERRY
x Chiltalpa tashkentensis	CHILTALPA
Cordyline australis	CABBAGE PALM
Cotinus coggygria	SMOKE TREE
Eucalyptus caesia magna	SILVER PRINCESS
Laurus nobilis	GRECIAN BAY LAUREL
Leptospermum petersonii	LEMON-SCENTED TEA TREE
Melaleuca elliptica	HONEY MYRTLE
Melaleuca ericifolia	HEATH MELALEUCA
Melia azedarach	CHINABERRY
Prunus lyonii	CATALINA CHERRY
Yucca aloifolia	SPANISH BAYONET
Yucca gloriosa	SPANISH DAGGER

Large Shrubs (or smallest trees) --

Acacia boormanii	SNOWY RIVER WATTLE
Acacia covenyi	BLUEBUSH
Acacia cultriformis	KNIFE ACACIA
Acacia iteaphylla	WILLOW ACACIA
Acacia fimbriata	BRISBANE GOLDEN WATTLE
Acacia merinthophora	ZIGZAG WATTLE
Acacia podalyriifolia	PEARL ACACIA
Acacia smallii	SWEET ACACIA
Acca sellowiana	PINEAPPLE GUAVA
Arbutus unedo	STRAWBERRY TREE
Arctostaphylos pajaroensis 'Paradise'	PAJARO MANZANITA
Banksia ashbyi	ASHBY'S BANKSIA
Banksia prionotes	ACORN BANKSIA
Callistemon phoeniceus	LESSER BOTTLEBRUSH
Calothamnus quadrifidus	COMMON NET BUSH
Ceanothus 'Julia Phelps'	CALIFORNIA LILAC
Ceanothus leucodermis	CHAPARRAL WHITETHORN
Ceanothus 'Wheeler Canyon'	CALIFORNIA LILAC
Cercocarpus betuloides	MOUNTAIN MAHOGANY
Ceanothus megacarpus	BIG-POD CEANOTHUS
Ceanothus rigidus 'Snowball'	SNOWBALL CALIFORNICA LILAC
Ceanothus spinosus	GREENBARK CEANOTHUS
Cercis occidentalis	WESTERN REDBUD
Cercocarpus betuloides	MOUNTAIN MAHOGANY

Chamaerops humilis	MEDITERRANEAN FAN PALM
Cistus ‘Anne Palmer’	SILVER PINK ROCKROSE
Comarostaphylis diversifolia	SUMMER HOLLY
Dendromecon harfordii	ISLAND BUSH POPPY
Dodonaea viscosa	HOPSEED BUSH
Elaeagnus pungens	SILVERBERRY
Eucalyptus ‘Moon Lagoon’	MOON LAGOON EUCALYPTUS
Grevillea crithmifolia	WHITE GREVILLEA
Grevillea ‘Ivanhoe’	BRUSH GREVILLEA
Grevillea lavandulaceae	LAVENDER GREVILLEA
Grevillea ‘Red Hooks’	HUMMINGBIRD BUSH
Grevillea ‘Ruby Clusters’	HUMMINGBIRD BUSH
Grevillea thelemanniana	HUMMINGBIRD BUSH
Hakea francisiana	GRASS-LEAF HAKEA
Hakea laurina	SEA URCHIN TREE
Heteromeles arbutifolia	TOYON
Ilex x altaclarensis ‘Wilsonii’	WILSON HOLLY
Ilex cornuta ‘Burfordii’	BURFORD HOLLY
Juniperus *(right sized cultivar for situation)*	JUNIPERS
Malosma laurina	LAUREL SUMAC
Melaleuca bracteata	WHITE CLOUD TREE
Melaleuca decussata	LILAC MELALEUCA
Melaleuca elliptica	GRANITE BOTTLEBRUSH
Melaleuca nesophila	PINK MELALEUCA
Melaleuca wilsonii	VIOLET HONEY MYRTLE
Myrtus communis	ROMAN MYRTLE
Nerium oleander	OLEANDER
Osmanthus fragrans	SWEET OLIVE
Pittosporum tenuifolium	KOHUHU
Pittosporum tobira	TOBIRA
Prunus lusitanica	PORTUGAL LAUREL
Punica granatum	POMEGRANATE
Rhamnus californica	COFFEEBERRY
Rhus integrifolia	LEMONADE BERRY
Rosmarinus officinalis	ROSEMARY
Vitex agnus-castus	CHASTE TREE
Xylosma congestum	SHINY XYLOSMA

Medium Shrubs --

Agave americana	CENTURY PLANT
Arbutus unedo 'Compacta'	DWARF STRAWBERRY TREE
Arctostaphylos densiflora 'Howard McMinn'	VINE HILL MANZANITA
Arctostaphylos 'Sunset'	HYBRID MANZANITA
Banksia baueri	POSSUM BANKSIA
Banksia baxteri	BIRD'S-NEST BANKSIA
Banksia oreophila	MOUNTAIN BANKSIA
Callistemon citrinus 'Violaceus'	PURPLE BOTTLEBRUSH
Callistemon viminalis 'Little John'	DWARF BOTTLEBRUSH
Carpenteria californica 'Elizabeth'	BUSH ANEMONE
Cistus 'Chelsea Bonnet'	CHELSEA BONNET ROCKROSE
Cistus laurifolius	WHITE ROCKROSE
Correa pulchella	AUSTRALIAN FUCHSIA
Correa reflexa	AUSTRALIAN FUCHSIA
Correa schlechtendalii	ROCK CORREA
Eremophila glabra	EMU BUSH
Eriogonum giganteum	ST. CATHERINE'S LACE
Galvezia speciosa	ISLAND SNAPDRAGON
Hakea scoparia	BROOM BUSH
Ilex cornuta	CHINESE HOLLY
Juniperus *(right sized cultivar for situation)*	JUNIPERS
Lavandula dentata	FRENCH LAVENDER
Leptospermum rotundifolium	ROUND-LEAF TEA TREE
Mahonia nevinii	NEVIN'S BARBERRY
Melaleuca wilsonii	VIOLET HONEY-MYRTLE
Myrtus communis 'Compacta'	DWARF MYRTLE
Nerium oleander 'Algiers', 'Casablanca', 'Morocco'	OLEANDER
Rhamnus californica 'Eve Case'	COFFEEBERRY
Rhamnus crocea	REDBERRY
Rhamnus ilicifolia	HOLLYLEAF REDBERRY
Ribes speciosum	FUCHSIA-FLOWERING GOOSEBERRY
Rosa rugosa	JAPANESE ROSE
Rosmarinus officinalis	ROSEMARY
Salvia apiana	WHITE SAGE
Salvia clevelandii	CLEVELAND SAGE
Salvia leucophylla	PURPLE SAGE
Salvia mellifera	BLACK SAGE
Salvia munzii	SAN MIGUEL MOUNTAIN SAGE
Teucrium fruticans	BUSH GERMANDER
Westringia fruticosa, W. 'Wynyabbie Gem'	COAST ROSEMARY
Yucca recurvifolia	PENDULOUS YUCCA

Small Shrubs --

Artemisia californica 'Montara'	CALIFORNIA SAGEBRUSH
Artemisia 'Powis Castle'	SILVERY SAGEBRUSH
Buxus microphylla	BOXWOOD
Cistus x pulverulentus 'Sunset'	SUNSET ROCKROSE
Cistus salviifolius prostratus	SAGELEAF ROCKROSE
Convolvulus cneorum	SILVER BUSH MORNING GLORY
Correa 'Dusky Bells' ('Carmine Bells')	AUSTRALIAN FUCHSIA
Dicliptera suberecta	HUMMINGBIRD BUSH
Eriogonum cinereum	ASHY LEAF BUCKWHEAT
Eriogonum crocatum	CONEJO BUCKWHEAT
Eriogonum grande rubescens	RED BUCKWHEAT
Halimium lasianthum	YELLOW ROCKROSE
Ilex cornuta 'Rotunda'	DWARF CHINESE HOLLY
Juniperus *(right sized cultivar for situation)*	JUNIPERS
Lavandula 'Goodwin Creek Gray'	GRAY LAVENDER
Maireana sedifolia	PEARL BLUEBUSH
Mimulus aurantiacus and hybrids	BUSH MONKEYFLOWER
Mimulus bifidus	STICKY MONKEYFLOWER
Mimulus longiflorus	BUSH MONKEYFLOWER
Mimulus puniceus	RED MONKEYFLOWER
Nandina domestica "Gulf Stream'	DWARF HEAVENLY BAMBOO
Nerium oleander "Petite" series	PETITE OLEANDERS
Pittosporum tobira 'Wheeler's Dwarf'	DWARF TOBIRA
Punica granatum 'Chico', 'Nana'	DWARF POMEGRANATE
Rosmarinus officinalis	ROSEMARY
Teucrium fruticans 'Compactum'	DWARF BUSH GERMANDER

Vines --

Distictis buccinatoria	BLOOD-RED TRUMPET VINE
Ficus pumila	CREEPING FIG
Gelsemium sempervirens	CAROLINA JESSAMINE
Hardenbergia comptoniana	WINTER WISTERIA
Parthenocissus tricuspidata	BOSTON IVY
Rosa banksiae	LADY BANKS ROSE
Rosa 'Mermaid'	MERMAID ROSE
Vitis californica 'Roger's Red', 'Walker Ridge'	RED CALIFORNIA GRAPE

Ground Covers --

Achillea tomentosa	WOOLY YARROW
Arctostaphylos ‘Emerald Carpet’	CREEPING MANZANITA
Arctostaphylos uva-ursi selections	BEAR-BERRY
Baccharis pilularis ‘Twin Peaks’	TRAILING COYOTE BUSH
Banksia blechnifolia	FERNLEAF BANKSIA
Banksia petiolaris	SAWLEAF BANKSIA
Banksia repens	TRAILING BANKSIA
Brachysema praemorsum 'Bronze Butterfly'	BRONZE BUTTERFLY
Carex flacca (C. glauca)	BLUE SEDGE
Ceanothus gloriosus ‘Anchor Bay’	TRAILING CEANOTHUS
Ceanothus griseus ‘Yankee Point’	TRAILING CEANOTHUS
Cerastium tomentosum	SNOW-IN-SUMMER
Drosanthemum	ROSEA ICE PLANT
Dymondia margaretae	WOOLY GAZANIA
Erodium reichardii	CRANESBILL
Grevillea ‘Austraflora Fanfare’	A. F. GREVILLEA
Grevillea juniperina ‘Molonglo’	TRAILING GREVILLEA
Grevillea lanigera prostrata	SEASHORE GREVILLEA
Helianthemum nummularium	SUNROSE
Hemiandra pungens	SNAKEBUSH
Juniperus horizontalis ‘Prince of Wales’, ‘Blue Rug’, ‘Icee Blue’	JUNIPERS
Juniperus sabina ‘Calgary Carpet’	CARPET JUNIPER
Lampranthus	ICE PLANTS
Lessingia filanginifolia ‘Silver Carpet’	SILVER CARPET ASTER
Myoporum parvifolium	TRAILING SANDALWOOD
Ribes viburnifolium	EVERGREEN CURRANT
Rosmarinus officinalis *prostrate types*	TRAILING ROSEMARY
Sedum *(many)*	SEDUMS
Thymus	THYMES
Trachelospermum asiaticum	ASIAN STAR JASMINE

Perennials --

Aeonium	AEONIUM
Agapanthus	LILY-OF-THE-NILE
Agave parryi, A. shawii	SMALL AGAVES
Aloe ciliaris	CLIMBING ALOE
Aloe saponaria	SOAP ALOE
Aloe striata	CORAL ALOE
Beschorneria yuccoides	AMOLE
Calandrinia grandiflora	ROCK PURSLANE
Carex buchananii	CURLY TOP SEDGE
Carex flacca (C. glauca)	BLUE SEDGE
Carex subfusca (C. teneraeformis)	RUSTY SEDGE
Carex testacea	ORANGE SEDGE
Carex tumulicola	BERKELEY SEDGE
Centaurea cineraria	DUSTY MILLER
Centaurea gymnocarpa	DUSTY MILLER
Centranthus ruber	JUPITER'S BEARD
Chondropetalum elephantinum	GIANT CAPE RUSH
Chondropetalum tectorum	SMALL CAPE RUSH
Clivia	KAFFIR LILY
Convolvulus sabatius	GROUND MORNING GLORY
Cotyledon orbiculata	PIG'S-EARS
Dasylirion longissimum	MEXICAN GRASS TREE
Dasylirion wheeleri	DESERT SPOON
Dianella caerulea	NEW ZEALAND FLAX LILY
Dierama pulcherrimum	FAIRY WAND
Doryanthes palmeri	SPEAR LILY
Dudleya	LIVE-FOREVER
Echeveria	HENS-AND-CHICKS
Elegia equisetacea	RESTIO
Eriogonum umbellatum	SULPHUR FLOWER
Euphorbia characias wulfenii	MEDITERRANEAN EUPHORBIA
Euphorbia myrsinites	MYRTLE SPURGE
Festuca cinerea	BLUE FESCUE
Furcraea	FALSE AGAVE
Helianthemum nummularium	SUNROSE
Hemerocallis	DAYLILIES
Hesperoyucca whipplei	CHAPARRAL YUCCA
Kniphofia	TORCH LILY, RED HOT POKER
Leymus condensatus 'Canyon Prince'	BLUE LYME GRASS
Limonium perezii	STATICE

Perennials – (continued)

Melica californica	CALIFORNIA MELIC
Melica imperfecta	COAST RANGE MELIC
Muhlenbergia dumosa	BAMBOO MUHLY
Muhlenbergia pubescens	SOFT BLUE MEXICAN MUHLY
Nolina parryi	SPOON GRASS
Opuntia	PRICKLY-PEAR, BEAVERTAIL, CHOLLA
Origanum 'Betty Rollins', 'Hopley's'	ORNAMENTAL OREGANO
Pelargonium 'Balcan'	BALKAN GERANIUM
Penstemon heterophyllus 'Margarita'	SKY BLUE PENSTEMON
Penstemon centranthifolius	SCARLET BUGLER
Penstemon spectabilis	SHOWY PENSTEMON
Phlomis	JERUSALEM-SAGE
Puya alpestris	PUYA
Puya berteroniana	GIANT PUYA
Salvia chamaedryoides	GERMANDER SAGE
Salvia spathacea	HUMMINGBIRD SAGE
Sedum dendroideum	TREE SEDUM
Senecio cineraria	DUSTY MILLER
Senecio mandraliscae	KLEINIA
Senecio vira-vira	DUSTY MILLER
Sisyrinchium californicum	YELLOW-EYED GRASS
Stipa gigantea	GIANT FEATHER GRASS
Yucca filamentosa	ADAM'S NEEDLE
Yucca recurvifolia	SOFT YUCCA
Yucca rostrata	SILVER YUCCA
Zauschneria californica	CALIFORNIA FUCHSIA

Bulbs --

Allium neopolitanum 'Cowanii'	FLOWERING ONION
Allium sphaerocephalon	DRUMSTICKS
Ammocharis coranica	GROUND LILY
Anemone blanda	GRECIAN WINDFLOWER
Anemone coronaria	POPPY-FLOWERED ANEMONE
Anemone x fulgens	SCARLET WINDFLOWER
Arisarum proboscideum	MOUSE PLANT
Arum italicum *(shade)*	ITALIAN ARUM
Babiana plicata	BABOON FLOWER
Babiana rubrocyanea	LITTLE WINE CUP
Babiana stricta	BABOON FLOWER
Babiana villosa	BABOON FLOWER
Chasmanthe floribundum	AFRICAN FLAG
Chlidanthus fragrans	PERFUMED FAIRY LILY
Crocosmia hybrids	MONTBRETIA
Cyanella lutea	FIVE FINGERS
Cyclamen persicum *(shade)*	CYCLAMEN
Dracunculus vulgaris	VOODOO LILY, DRAGON ARUM
Freesia	FREESIA
Freesia laxa	LAPEYROUSIA
Gladiolus alatus	SMALL GLADIOLA
Gladiolus cardinalis	WATERFALL GLADIOLUS
Gladiolus communis byzantinus	BYZANTINE GLADIOLA
Gladiolus debilis	SMALL PAINTED LADY
Gladiolus x hybrida	GLADIOLA
Gladiolus italicus	FIELD GLADIOLA
Gladiolus tristis	MARSH AFRIKANER
Homeria collina	CAPE TULIP
x Homoglad hybrids	HOMOGLADS
Hyacinthoides hispanica	SPANISH BLUEBELL
Ipheion uniflorum	SPRING STAR FLOWER
Iris xiphium	ENGLISH/DUTCH IRIS
Ixia hybrids	CORN LILY
Ixia viridiflora	GREEN CORN LILY
Lachenalia aloides	CAPE COWSLIP
Leucojum vernum	SPRING SNOWFLAKE
Moraea polystachya	PEACOCK FLOWER
Moraea villosa	PEACOCK IRIS
Muscari armeniacum	GRAPE HYACINTH
Narcissus *(see separate list)*	NARCISSUS, DAFFODIL
Nectaroscordum siculum	NECTAROSCORDUM

Nerine bowdenii	SPIDER LILY
Nerine sarniensis	GUERNSEY LILY
Ornithogalum arabicum	STAR OF BETHLEHEM
Ornithogalum narbonense	NARBONE STAR
Ornithogalum thyrsoides	CHINCHERINCHEE
Oxalis purpurea	CAPE SORRELL
Pancratium illyricum	ILLYRIAN LILY
Pancratium maritimum	SEA DAFFODIL
Ranunculus asiaticus	RANUNCULUS
Rhodohypoxis baurii	SPRING STARFLOWER
Schizostylis coccinea	CRIMSON FLAG
Scilla peruviana	PERUVIAN SQUILL
Sparaxis tricolor	HARLEQUIN FLOWER
Spiloxene capensis	PAINTED PEACOCK FLOWER
Sternbergia lutea	GOLDEN CROCUS
Triteleia ‘Queen Fabiola’	BRODIAEA
Triteleia hyacinthina	WHITE HYACINTH BRODIAEA
Triteleia laxa	PRETTY FACE, TRIPLET LILY
Tritonia crocata	FLAME FREESIA
Tulipa clusiana	LADY TULIP
Tulipa clusiana chrysantha	GOLDEN LADY TULIP
Tulipa clusiana ‘Lady Jane’	CANDYSTRIPE TULIP
Tulipa saxatilis	MIDDLE-EAST TULIP
Tulipa sylvestris	FRAGRANT WILD TULIP
Veltheimia bracteata *(shade)*	CAPE FOREST LILY
Watsonia borbonica *and hybrids*	BUGLE LILY

WEED MANAGEMENT

1. Know what a weed is. Weeds are pioneers. They are nature's way of covering disturbed and bare ground.

2. Don't disturb the ground. Except for actually planting new plants or cultivating for a new vegetable garden or flower bed, avoid breaking the surface of the soil.

That includes avoiding pulling, digging, tilling to remove weeds. Yanking out even the tiniest weed makes two mistakes. It brings up weed seeds that have been accumulating at the deeper levels of your soil where they have been too deep to germinate. It also creates a disturbed bit of ground that new weed seeds blowing in find suitable for setting anchor. An additional note: weed pulling disturbs the roots of the desired plants nearby.

3. Cover the ground. Mulch newly planted areas, vegetable gardens and annual flower beds.

The best mulch for smothering weeds is a semi-composted organic material of medium diameter particles (about ½-inch) that is applied four to six inches thick. Don't skimp.

Contrary to popular belief, geotextile fabrics (plastics, "landscape cloth") do not work well in the long run and actually lead to more weeds.

Plant living groundcovers to "finish" the landscape and garden. Use low, dense, mat-forming groundcovers to truly cover the ground completely. Some of the most effective weed-suppressant groundcovers include *Acacia redolens, Campanula poscharskyana, Cerastium tomentosum, Dymondia margaretae, Gazania rigens* (gray-leafed trailing), and *Thymus polytrichus* 'Pink Chintz'.

Plant other plants (low, dense, spreading shrubs and/or full clumping perennials) densely enough to leave no room between them.

The idea is to cover the ground so thoroughly that no weed seeds can find their way to the ground. Those that do make it to the ground cannot make their way up. And those very few that do make it up can't compete well.

4. Water deeply and infrequently. When you do water, run the system or hose for enough time to provide a good amount of water that will train roots to go down deeply. This will prepare the plants for periods of infrequent waterings.

Watering infrequently allows the soil surface to dry out, hence providing no situation that encourages weed seed germination.

5. Hoe weeds. When weeds do come up in open ground, the best way to eliminate weeds for the long run is to "shave" them off with a sharp hoe. A Dutch or onion hoe is ideal; these have shallow but wide blades that work as does your razor blade.

Hoeing works on weed seedlings. The larger the weed, unfortunately, the more difficult it becomes to actually be able to scrape them off with a hoe.

Use the hoe as you would a razor, scraping toward you with the blade level from side to side against the ground and the handle tilted up enough to allow the sharpest part of the blade to cut at the base of the weeds.

It's important that you sharpen the hoe blade regularly with a fine rasping file. You keep your best kitchen knives sharp all the time; why not your hoe.

The soil is best hoed when pretty dry. The hoe doesn't cling to the soil and neither do the weeds.

Hoeing works for all young weeds. Young annual weeds (our most common type) once hoed, do not return.

Perennial weeds will re-sprout from storage roots, tubers, underground stems and the like. The resprouting does, however, use up the food in the storage organ, thereby weakening the plant and a second hoeing of these, within a week of their resprouting will rid the plant of its ability to photosynthesize (which puts more food back into the storage organ). With older perennial weeds, the storage organ will continue to send up a new sprout and your persistent hoeing will eventually totally exhaust the organ.

6. Snip off the awkward weeds. Where you have small weeds popping up in the mulch or in the lawn, use any sharp tool to cut them off at their very base. No need to pull, which would either disturb the mulch or interfere with the lawn. This technique also is the best method for removing weeds from containers in which you're growing other plants.

7. Mow weeds. Where seasonal weeds have grown too tall for a hoe to scrape them off easily, mow them down with a regular lawn mower. If they continue to grow, mow them again. Repeat.

This works best if you mow them early, before they get too tall. The idea is to keep them mowed until beyond their blooming period, if you have to, so that they never set seed and become a worse problem or at least a continuing problem. Annual weeds eventually give up and peter away.

Tall-growing perennial weeds also give up and fade away. Low-growing perennial weeds, however, are persistent – maybe even more vigorous -- under this process. Hoeing (early on, of course) and mulching are better methods for such low-growing weeds as oxalis, dandelions and many clovers.

8. Cut down the big stuff. Use a special tool called a weed cutter. It's used much as you would a golf club, swinging with an easy stroke back and forth through the stems of the weeds. For those of you who are power-inclined, get out your power weed whacker.

9. Mow your lawn high. If you need to reduce or prevent lawn weeds, set your mower blades to 3 to 4 inches high. A tall-growing lawn shades out weed seedlings and produces a healthier lawn overall that better competes with almost all weeds.

10. Avoid frequent fertilizing of your lawn. Lawns do best with a good organic fertilizer once or twice a year. More frequent fertilizing, especially with quick-acting fertilizers and especially in summer feed the weeds as well as your lawn.

11. Water your lawn infrequently and deeply. Frequent shallow watering encourages weed seed germination. An aside: frequent, shallow waterings also increase disease problems as well as create a less drought and heat tolerant lawn.

SUSTAINABLE GARDEN & LANDSCAPE PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Ants	Prevention	Cultural	Mechanical/Physical
	Barriers of DE; Tanglefoot	*Sanitation; esp. check compost piles and mulches; turn compost piles regularly and keep them just moist*	*Repeated soaking or flooding of the nest will eventually discourage them*
	Biological	Last Resort	
	straw itch mite (Pyemotes tritici); anteaters also do the job nicely	*Mint and cedar oil; boric acid + sugar solutions as baits; drench of pyrethrum and IS directly into the nest area; use IS on their trails*	*Ants aren't just bad guys -- they're good guys as well: many kinds prey on caterpillars, esp. cutworms*
Aphids	Prevention	Cultural	Mechanical/Physical
	Control ants	*Avoid use of high-nitrogen fertilizers*	*Blast with a hard spray from the hose*
	Biological	Last Resort	
	Aphid parasitoids (many); Ladybugs (attract them); Green lacewings	*IS; Neem; Pyrethrum; Horticultural (Summer) & Dormant Oils*	*Use yellow sticky traps for monitoring populations; wait for native predators and parasitoids to do their work*
Black Sooty Mold	Prevention	Cultural	Mechanical/Physical
	Manage aphids, scale, mealybugs	*Prune to maximize air circulation within trees, shrubs*	*Wash off with strong blasts from the hose*
	Biological	Last Resort	
	See above		*Not an actual disease of the plant -- grows on the excretions of plant sucking pests*

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Bristly Rose Slug (Rose sawfly)	Prevention	Cultural	Mechanical/Physical
			Handpicking (squashing!)
	Biological	Last Resort	
	Green lacewings; ladybugs (attract them)	*IS; Neem; Pyrethrum; NOT BT*	*Monitor roses closely; this insect is NOT the caterpillar of a moth of butterfly -- it is the larval stage of a wasp*
Cabbage loopers ("worms")	Prevention	Cultural	Mechanical/Physical
	Use row covers	*Rotation*	*Handpicking*
	Biological	Last Resort	
	Mini-wasps (Trichogramma); Predaceous bugs	*IS; Neem; Pyrethrum*	
Camellia petal blight	Prevention	Cultural	Mechanical/Physical
	Avoid overhead watering; select early-blooming cultivars	*Remove and replace all mulching material; Sanitation →*	*Remove ALL buds & blooms for two straight years; do not compost them*
	Biological	Last Resort	
Caterpillars (various "worms")	Prevention	Cultural	Mechanical/Physical
	Use row covers where possible	*Rotation works for some*	*Handpicking*
	Biological	Last Resort	
	Mini-wasps (Trichogramma); Predaceous bugs	*BT; Pyrethrum*	

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Corn earworm	Prevention	Cultural	Mechanical/Physical
	Five drops of vegetable oil in silks at early wilt stage	*Grow healthy plants*	
	Biological	Last Resort	
	Parasitic nematodes (Steinernema riobravis)	*BT; AfMNPV (caterpillar virus)*	
Cutworm	Prevention	Cultural	Mechanical/Physical
	Barriers of DE; collars	*Control weeds*	*Handpicking*
	Biological	Last Resort	
	Mini-wasps (Trichogramma); Parasitic nematodes; Predaceous bugs	*Make a bait of 12% (by weight) BT and wheat bran or grape pomace -- circle plants*	*Night-feeding caterpillars*
Deer	Prevention	Cultural	Mechanical/Physical
	Fences; many repellants (some work, many don't)	*Use primarily deer-resistant plants, especially at landscape periphery*	
	Biological	Last Resort	
	Dogs		*Deer are creatures of habit and they are smarter than you think*

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Earwigs	Prevention	Cultural	Mechanical/Physical
		Sanitation; esp. check mulches regularly	*Handpicking; trap with layers or rolls of wet newspaper; trap with soy sauce and/or beer in containers set flush with the soil*
	Biological	Last Resort	
	Parasitic Nematodes	*IS*	
Fuchsia gall mite	Prevention	Cultural	Mechanical/Physical
		Select resistant cultivars	*Handpicking: remove damage as soon as seen*
	Biological	Last Resort	
	Predatory mites	*Neem (three applications)*	
Gophers	Prevention	Cultural	Mechanical/Physical
	Gopher-Stop™ cover crop; gopher cages and other chicken wire barriers		*Traps (several kinds; Macabee may be best)*
	Biological	Last Resort	
	Owls (attract with nesting boxes); snakes!; good dogs and cats		

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Grasshoppers	Prevention	Cultural	Mechanical/Physical
			Handpicking (gotta be quick)
	Biological	Last Resort	
	Nosema spore bait; Parasitic nematodes	*Neem*	
Hornworm, Tomato	Prevention	Cultural	Mechanical/Physical
		Rotation	*Handpicking*
	Biological	Last Resort	
	Parasitic nematodes; Mini-wasps (Trichogramma)	*BT; pyrethrum*	
Mealybugs	Prevention	Cultural	Mechanical/Physical
	Control ants; Quarantine	*Prune to maximize air circulation*	*Scrape off colonies*
	Biological	Last Resort	
	Green lacewings; Mealybug Destroyer (Cryptolaemus)	*IS; Pyrethrum; Horticultural (summer) oil; dormant oil (in winter)*	

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Mites *(including spider mites)*	Prevention	Cultural	Mechanical/Physical
	Quarantine	*Grow healthy plants; Mulch to keep soil moist, dust down*	*Hose off plants regularly, especially from the bottom to keep off dust and mites*
	Biological	Last Resort	
	Predatory mites; Green lacewings	*Pyrethrum; Neem; Horticultural (summer) and dormant (winter) oil*	
Oak root fungus *(Armillaria root rot)*	Prevention	Cultural	Mechanical/Physical
	Use resistant plants; grow healthy plants; quarantine new plants from suspicious sites	*Avoid excessive watering in summer; keep drip emitters from the immediate vicinity of the plant; keep mulches away from plants*	*Solar soil sterilization*
	Biological	Last Resort	
Peach leaf curl	Prevention	Cultural	Mechanical/Physical
			Pick off worst damage; hose off foliage with a "dusty" appearance in late spring/early summer -- these are the fungal spores
	Biological	Last Resort	
		Dormant spray: oil + lime-sulfur + copper -- apply 1. after leaf drop, 2. in January, and 3. at bud swell	

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Powdery Mildew	Prevention	Cultural	Mechanical/Physical
	Use resistant species and cultivars; grow healthy plants	*Provide plenty of sun and air circulation; Spray with kelp+fish as foliar feed during active growing season; Sanitation*	*Hose off plants early in the day*
	Biological	Last Resort	
		Neem; baking soda mix (1 rounded tablespoon baking soda + 1 tablespoon horticultural oil per gallon of water)	
Root Nematodes	Prevention	Cultural	Mechanical/Physical
	Quarantine and inspection; select resistant species and cultivars	*Use organic matter regularly; rotation -- particularly including a cover/green manure planting*	*Solar soil sterilization*
	Biological	Last Resort	
Root rots	Prevention	Cultural	Mechanical/Physical
	Avoid overwatering, esp. during summer; Solar soil sterilization	*Use plenty of organic matter*	
	Biological	Last Resort	

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Root Weevils	Prevention	Cultural	Mechanical/Physical
		Rotation	*Handpicking (at night)*
	Biological	Last Resort	
	Parasitic nematodes		
Rust *(emphasis on rose and geranium)*	Prevention	Cultural	Mechanical/Physical
	Use resistant cultivars	*Sanitation; remove mulches*	
	Biological	Last Resort	
		Sulfur; Neem	
Scale	Prevention	Cultural	Mechanical/Physical
	Control ants; Quarantine		*Scrape off adults with fingernail or stick*
	Biological	Last Resort	
	Green lacewings; Ladybugs (attract); Parasitoids (many); Predaceous bugs	*IS (after scraping off adults); horticultural (summer) oil; dormant oil (in winter)*	
Snails, slugs	Prevention	Cultural	Mechanical/Physical
	Barriers of DE (works only when dry), copper banding	*Sanitation; avoid overly coarse mulches*	*Handpicking (at night)*
	Biological	Last Resort	
	Decollate snails (Legal only in SB County)	*Iron phosphate*	*Trapping with shallow pans of beer (soda, fruit juice also work well) for monitoring snail/slug populations; empty and change them regularly*

PEST MANAGEMENT GUIDE

Pest or Disease	***Management Techniques***		
Sowbugs, pillbugs	Prevention	Cultural	Mechanical/Physical
		Sanitation	*Handpicking*
	Biological	Last Resort	
	Parasitic nematodes		
Squirrels	Prevention	Cultural	Mechanical/Physical
	Don't stack wood outside	*Control weeds in periphery areas*	*Traps -- bait with nuts, oats, barley; allow the squirrels to become used to the trap before actually setting*
	Biological	Last Resort	
	Dogs		
Thrips	Prevention	Cultural	Mechanical/Physical
	Biological	Last Resort	
	Predaceous bugs; Predatory mites; Ladybugs	*Neem; Pyrethrum*	*Monitor with sticky yellow traps*
Whiteflies	Prevention	Cultural	Mechanical/Physical
		Prune to maximize air circulation	
	Biological	Last Resort	
	Parasitoids (many esp. Encarsia); Whitefly destroyer (Delphastus pusillus); Green lacewings; Predaceous bugs	*IS; Pyrethrum; Neem -- 1. Spray early in the morning; 2. Spray THOROUGHLY; 3. Make 3 applications, seven days apart; 4. Change products*	*Monitor with sticky yellow traps*

Nine Sustainable, Earth-Friendly Pest Management Tools

Here are the products you are most likely to need for a landscape or garden. Note that many others are available and sometimes recommended but these are the safest and most effective for most home gardeners.

Name	*Use against*	*How it works; how long it lasts*	*How to use it*
BT Toxic primarily to caterpillars (larvae of moths, butterflies)	Many caterpillars -- the larval stage of moths and butterflies.	Bacterial toxin; caterpillars stop eating with an hour and die usually within 24 hours. Dissipates in 2 days or less.	Available as spray or dust. Apply late afternoon and reapply after rain. Mix with insecticidal soap for better coverage.
Diatomaceous earth (DE) Toxic primarily to soft-bodied insects, snails and slugs	Discourages aphids, mealybugs, thrips, and a good barrier against slugs, snails, some ants.	Sharp-edged diatom skeletons scratch insect exteriors, causing them to dry out.	More effective combined with pyrethrum. Use natural grade DE, not the kind used in swimming pool filters. Wear dust mask.
Horticultural oils (summer) Toxic to many insects and mites	Kills aphids, corn earworms, leafhoppers, mites, whiteflies.	Kills pests by suffocating them. No long-term effects.	Use highly refined summer oils. Do not apply to drought-stressed plants, or on hot, cold, or very humid days.
Insecticidal soap (IS) Toxic mostly to soft-bodied insects	Kills aphids, earwigs, leafhoppers, mites, whiteflies.	One of the safest insecticides. Fatty acids destroy the cellular membrane of insects on contact.	Mix with warm **soft** water and be sure to cover both sides of leaves. Can burn leaves during hot weather.

Nine Pest Management Tools (continued)			
Name	***Use against***	***How it works; how long it lasts***	***How to use it***
Iron Phosphate "Animal-safe" snail bait	For control of snails and slugs; use less than typical snail baits.	Attracts slugs and snails; metallic properties stop feeding activities within 8 hours and begin to die in 3-6 days.	Scatter in slug and snail prone areas. Breaks down into fertilizer after several days.
Neem Toxic to juvenile forms of some pests; also a repellent	Kills juvenile aphids. Repels whiteflies.	Affects growth hormones of some insects causing them to stop feeding. No quick knockdown but effect lasts about 1 week.	Apply liquid spray morning or evening when humidity is high.
Pyrethrum Toxic to a broad spectrum of pests	Controls most vegetable pests including flea, potato, and bean beetles.	A nerve toxin, often combined with DE. Very quick knockdown. Degrades rapidly.	Apply dust during cloudy weather or early evening. *AVOID SYNTHETIC VERSIONS (Pyrethroids).*
Tanglefoot Permanently sticky barrier	Ants and other crawling/climbing insects.	Stays sticky for at least six weeks. More a barrier than a "control".	Apply as bands on edges of raised beds.
Beneficial Organisms Biological control -- the "good guys"	There's a bio-control for almost everything.	Takes a while to reach appreciable management levels; many species last forever.	Release in areas of most intense pest infestation; provide special flowers or beneficial feeding formulas.

PLANTS THAT ATTRACT BENEFICIAL INSECTS

Achillea filipendulina	Fern-leaf yarrow	lw, lb, hf, w
Achillea millefolium	Common yarrow	lb, hf, w
Ajuga reptans	Carpet bugleweed	lb, hf
Aurinia (Alyssum) saxatilis	Basket of Gold	lb, hf
Anethum graveolens	Dill	lw, lb, hf, w
Calendula	Pot Marigold	lw, lb, hf
Carum carvi	Caraway	lw, hf, w, s
Ceanothus	California Lilac	hf, w, t, s
Chamaemelum nobile	Roman (perennial) Chamomile	lw, hf, w, s
Chrysanthemum parthenium	Feverfew	hf
Coriandrum sativum	Coriander	lw, lb, hf, w
Cosmos bipinnatus	Cosmos	lw, hf, w, s
Erigeron	Fleabane	lw, hf, w, s
Fagopyrum esculentum	Buckwheat	lb, hf, t
Foeniculum vulgare	Fennel	lw, lb, hf, w, s
Helianthus	Sunflower	lw, hf, w, s
Iberis amara/umbellata	Candytuft	lb, hf
Lavandula angustifolia	English lavender	hf
Limnanthes douglasii	Poached egg plant	hf
Lobelia erinus	Lobelia	hf, w
Lobularia maritima	Sweet alyssum	hf, w
Matricaria recutita	German (annual) Chamomile	lw, hf, w, s
Medicago sativa	Alfalfa	bb, db, mpb
Melissa officinalis	Lemon balm	hf, w, t
Mentha pulegium	Pennyroyal	hf, w, t
Mentha spicata	Spearmint	hf, s
Penstemon	Beardtongue	lb, hf
Petroselinum crispum	Parsley	hf, w, t
Phacelia tanacetifolia	Phacelia	t
Sedum kamtschaticum	Orange stonecrop	hf, w
Sedum spurium, S. album	Stonecrops	hf

Tagetes tenuifolia	Irish Lace marigold	lb, hf, w, s
Thymus serpyllum	Thyme	hf, w, t
Trifolium	Clovers	hf, w, bb
Vicia villosa	Hairy vetch	lb
Zinnia elegans	Zinnia	hf, w

Key:

bb = big eyed bugs
db = damsel bugs
hf = hover flies
lb = ladybugs
lw = lacewings
mpb = minute pirate bugs
s = spiders
t = tachinid flies
w = parasitoid mini-wasps

Instead of a Lawn

-- and other "bad plant" substitutes

Lawn Substitutes (green, fairly flat, some mow-able):

** mow-able and tolerates some traffic*

Small to medium coverage --

Acaena 'Blue Haze'	BLUE HAZE BIDI-BIDI
Arenaria balearica	CORSICAN SANDWORT
Carex praegracilis (C. pansa)	CALIFORNIA MEADOW SEDGE
Carex subfusca*	RUSTY SEDGE
Chamaemelum nobile*	CHAMOMILE
Dampiera diversifolia	KANGAROO LOBELIA
Dymondia margaritacea	DYMONDIA
Erodium reichardii	CRANESBILL
Festuca rubra 'Patrick's Point'*	CREEPING BLUE FESCUE
Fragaria chiloensis	BEACH STRAWBERRY
Herniaria glabra	GREEN CARPET
Pratia pedunculata	BLUE STAR CREEPER
Sagina subulata	SCOTCH "MOSS", IRISH "MOSS"
Thymus x citriodorus*	LEMON THYME
Thymus herba-barona*	CARAWAY-SCENTED THYME
Thymus polytrichus 'Pink Chintz'*	WILD THYME
Thymus serpyllum*	CREEPING THYMES
Trachelospermum asiaticum	ASIAN STAR JASMINE

Large areas --

Arctostaphylos uva-ursi	BEAR-BERRY
Baccharis pilularis 'Twin Peaks'	DWARF COYOTE BRUSH
Juniperus horizontalis 'Prince of Wales'	JUNIPER
Phyla nodiflora*	LIPPIA GRASS

Instead of a rose (or at least a traditional rose)

Most drought-tolerant, minimal-care roses:

Rosa banksiae *(species; yellow or white)*	LADY BANKS ROSE
Rosa californica *(species)* 'Elsie' *(selection)*	CALIFORNIA ROSE
Rosa californica 'Elsie' (selected form; single magenta-pink)	
Rosa chinensis 'Mutabilis'	BUTTERFLY CHINA ROSE
Rosa gallica officinalis	APOTHECARY ROSE
Rosa laevigata *(species)*	CHEROKEE ROSE
Rosa rugosa *(species)*	JAPANESE BEACH ROSE
Rosa wichuraiana *(species)*	MEMORIAL ROSE
Rosa x damascena bifera	ROSE OF CASTILE

Agnes (Rugosa, Saunders, 1922; light yellow)
American Pillar (Wichuraiana, climber)
Autumn Glow (Hybrid Rugosa, Lens, 1985; lavender pink, single)
Belle Poitevine (medium pink, mild fragrance)
Bizarre Triomphant (Gallica)
Blanc Double de Coubert (Rugosa, white, strong fragrance)
Cardinal de Richelieu (Gallica)
English Hedge (Hybrid Rugosa; medium, pink, single)
Francois Juranville (Wichuraiana, climber)
Gardenia (Wichuraiana, climber)
Hansa (Rugosa, medium lavender red; clove fragrance, tall)
Jens Munk (Hybrid Rugosa; medium pink; spicy)
Laurette (Hybrid Rugosa; medium pink)
Magnifica (Rugosa, Van Fleet, 1905; mauve, very spicy fragrance)
Mermaid (hybrid bracteata; single soft yellow)
New Century (Rugosa hybrid; pink blend, strong fragrance)
Pearl Sevillana (shrub; semi-double pearly white/cream)
Pink Surprise (Rugosa; medium pink single)
Pompom de Bourgogne (Gallica)
Pristine (Hybrid Rugosa; white-pink blend)
Robusta (Rugosa, Kordes, 1979; scarlet)
Rosalina (Hybrid Rugosa, Kordes; pink blend single)
Rose à Parfum de l'Hay (hybrid rugosa; medium raspberry red; strong fragrance)
Sarah Van Fleet (Hybrid Rugosa; medium pink, semi-double)
Schneeflocke (Snowflake, 1997; hybrid rugosa; white with pink edges)
Sir Thomas Lipton (Hybrid Rugosa; white; strong fragrance)
Starry Eyed (Rugosa, Moore, 1990; pink-rose, single)
Super Rugostar (Hybrid rugosa; pink-red)
The Hunter (hybrid rugosa; magenta; strong fragrance)
Thérèse Bugnet (Hybrid Rugosa; frilly pink)
Wild Spice (large rugosa hybrid; single white/blush, fragrant)
Wildberry Breeze (Hybrid Rugosa; mauve, strong fragrance)

Instead of a rose (or at least a traditional rose); continued…

Most colorful drought-tolerant shrubs for the Central Coast:

Alyogyne huegelii	BLUE HIBISCUS
Banksia speciosa	SHOWY BANKSIA
Bougainvillea	BOUGAINVILLEA
Calliandra haematocephala	PINK POWDER PUFF
Callistemon citrinus ‘Perth Pink’	PINK BOTTLEBRUSH
Ceanothus x delilanus ‘Gloire de Versailles’	CALIFORNIA LILAC
Chaenomeles	FLOWERING QUINCE
Chorizema ‘Bush Flame’	FLAME PEA
Crotalaria agatiflora	CANARY BIRD BUSH
Cytisus hybrids	BROOMS
Echium candicans	PRIDE-OF-MADERA
Erica verticillata	SPRAY-FLOWERED HEATH
Fremontodendron	FLANNEL BUSH
Grevillea ‘Long John’	LONG JOHN GREVILLEA
Greyia sutherlandii	GREYIA
Leucospermum cordifolium	NODDING PINCUSHION
Leucospermum reflexum	ROCKET PINCUSHION
Metrosideros collinus 'Spring Fire'	SPRING FIRE
Mimulus (Diplacus) hybrids	BUSH MONKEY FLOWER
Nerium oleander	OLEANDER
Polygala myrtifolia ‘Grandiflora’	SWEET-PEA BUSH
Prostanthera ‘Poorinda Bride’	POORINDA BRIDE MINT BUSH
Protea 'Pink Ice'	PINK ICE PROTEA
Prunus glandulosa	DWARF FLOWERING ALMOND
Psoralea pinnata	“KOOL-AID” BUSH
Punica granatum ‘Legrellei’, ‘Nochi Shibori’, ‘Tanyosho’	ORNAMENTAL POMEGRANATES
Spiraea cantoniensis ‘Flore-pleno’	DOUBLE BRIDAL WREATH
Spiraea x vanhouttei	BRIDAL WREATH
Tecoma stans	YELLOW BELLS
Tecoma x smithii	ORANGE BELLS

Instead of an apple, pear, citrus or other popular fruit

Fruits – and nuts -- requiring little care and minimal water once established:

Almond
Apricots
Black persimmon (*Diospyros digyna*)
Cactus Pear, Tuna (*Opuntia ficus-indica*)
Capulin, Mexican Cherry (*Prunus salicifolia*)
Chestnut
Chilean-guava (*Ugni molinae*)
Date plum (*Diospyros lotus*)
Fig
Filbert, Hazelnut
Jelly Palm (*Butia capitata*)
Jujube (*Ziziphus jujuba*)
Kei Apple (*Dovyalis caffra*)
Loquat (*Eriobotrya japonica*)
Macadamia (*Macadamia integrifolia, M. tetraphylla*)
Mulberry hybrids
Mulberry, Black (*Morus nigra*)
Nectarine
Olive (*Olea europaea*)
Peach
Persimmon hybrids
Pineapple guava (*Acca sellowiana*; "Feijoa")
Pomegranate
Prune
Quince, Chinese (*Pseudocydonia sinensis*)

Instead of a birch (pests, diseases, water guzzler, wind intolerant, hard water sensitive)

Upright, lacy, graceful trees:

* = white bark
** = weeping/pendulous

Acacia cognata/subporosa	RIVER WATTLE**
Acacia pendula	WEEPING MYALL**
Alnus cordata	ITALIAN ALDER*
Cedrus libanii atlantica 'Glauca Pendula'	WEEPING BLUE ATLAS CEDAR**
Cercidiphyllum japonicum 'Pendulum'	WEEPING KADSURA**
Cercidium floridum	BLUE PALO VERDE*, **
Geijera parviflora	AUSTRALIAN WILLOW**
Gingko biloba 'Princeton Sentry'	SENTRY GINGKO
Hoheria angustifolia	NARROW-LEAFED LACEBARK*
Hoheria populnea	LACEBARK*
Juniperus scopulorum 'Tolleson's Blue Weeping' (and 'Green')	TOLLESON'S WEEPING JUNIPER**
Leptospermum petersonii	LEMON-SCENTED TEA TREE**
Melaleuca quinquenervia	CAJEPUT*
Pittosporum phillyraeoides	WEEPING PITTOSPORUM**
Pyrus calleryana 'Capital'	CAPITAL PEAR
Tilia cordata 'Greenspire'	UPRIGHT ITALIAN TILIA
Quercus phillyraeoides	UBAME OAK**
Ziziphus jujuba	JUJUBE**

Instead of a weeping willow (water guzzler, pests, diseases)

Drought-tolerant, pest-free weeping trees:

Acacia cognata/subporosa	RIVER WATTLE
Acacia pendula	WEEPING MYALL
Callistemon viminalis	WEEPING BOTTLEBRUSH
Cedrus libanii atlantica 'Glauca Pendula'	WEEPING BLUE ATLAS CEDAR
Cercidiphyllum japonicum 'Pendulum'	WEEPING KADSURA
Eucalyptus nicholii	WILLOW-LEAFED PEPPERMINT
Geijera parviflora	AUSTRALIAN WILLOW
Gleditsia triacanthos 'Bujoti'	WEEPING HONEY LOCUST
Juniperus scopulorum 'Tolleson's Blue Weeping' (and 'Green')	TOLLESON'S WEEPING JUNIPER
Leptospermum petersonii	LEMON-SCENTED TEA TREE
Maytenus boaria (esp. 'Green Showers')	WEEPING MAYTEN
Morus alba 'Chaparral'	WEEPING FRUITLESS MULBERRY
Pinus densiflora 'Pendula'	WEEPING JAPANESE RED PINE
Pyrus salicifolia 'Pendula'	WEEPING SILVER PEAR
Quercus phillyraeoides	UBAME OAK
Sophora japonica 'Pendula'	WEEPING PAGODA TREE
Ziziphus jujuba	JUJUBE

Instead of a Liquidambar (water guzzler, surface-rooting, trashy)

Best drought-tolerant trees for autumn color on the Central Coast

Acer buergeranum	TRIDENT MAPLE
Acer circinnatum	VINE MAPLE
Acer tataricum ginnala 'Flame'	AMUR MAPLE
Acer truncatum	SHANTUNG MAPLE
Cercis siliquastrum	JUDAS TREE
Diospyros kaki	PERSIMMON
Fraxinus angustifolia 'Raywood'	RAYWOOD ASH
Gingko biloba	GINGKO
Koelreuteria bipinnata	CHINESE FLAME TREE
Pistacia chinensis	CHINESE PISTACHE
Prunus dulcis	APRICOT
Punica granatum	POMEGRANATE
Pyrus calleryana	FLOWERING PEAR
Quercus douglasii	BLUE OAK

Instead of a hedge (maintenance loaded, green waste and landfill)

Narrow, upright trees and shrubs for dense screening without sheering:

Buxus sempervirens ‘Graham Blandy’	G. B. BOXWOOD
Buxus sempervirens ‘Green Tower’	G. T. BOXWOOD
Calocedrus decurrens ‘Fastigiata’	COLUMNAR INCENSE CEDAR
Cupressus forbesii ‘Greenlee’s Blue Rocket’	BLUE ROCKET TECATE CYPRESS
Dodonaea viscosa	PURPLE HOPBUSH
Euonymus japonicus ‘Aureo-marginatus’, ‘Chollipo’, ‘Greenspire’	EUONYMUS
Gingko biloba ‘Princeton Sentry’	SENTRY GINGKO
Ilex crenata ‘Sky Pencil’	SKY PENCIL HOLLY
Ilex vomitoria ‘Will Fleming’	COLUMNAR YAUPON
Juniperus scopulorum 'Welshii'	WELSH JUNIPER
Juniperus chinensis ‘Blue Point’	BLUE POINT JUNIPER
Juniperus chinensis ‘Columnaris’	COLUMN JUNIPER
Juniperus chinensis ‘Spartan’	SPARTAN JUNIPER
Juniperus communis ‘Stricta’	IRISH JUNIPER
Juniperus scopulorum ‘Skyrocket’	SKYROCKET JUNIPER
Myrtus communis ‘Boetica’	IRISH MYRTLE
Pinus cembra ‘Arolla’	AROLLA STONE PINE
Pittosporum crassifolium	KARO
Pittosporum tenuifolium (esp. ‘Silver Sheen’)	KOHUHU
Rhamnus alaternus ‘John Edwards’	ITALIAN BUCKTHORN
Rosmarinus officinalis ‘Spice Islands’, ‘Tuscan Blue’	ROSEMARY
Trachycarpus fortunei	WINDMILL PALM

Other trashy, maintenance-heavy trees to avoid:

Acer negundo	BOX ELDER
Ailanthus	TREE-OF-HEAVEN
Fraxinus	ASH (most)
Ligustrum lucidum	JAPANESE PRIVET
Morus	MULBERRY
Paulownia tomentosa	PRINCESS TREE
Populus	POPLARS
Robinia	BLACK LOCUST
Schinus molle	CALIFORNIA PEPPER
Tamarix	TAMARISK, ATHEL
Ulmus	ELMS

Other water guzzlers to avoid:

Bamboos (many species)	BAMBOOS	Cyperus
	PAPYRUS, UMBRELLA PLANT	
Ligustrum	PRIVETS	
Liquidambar	SWEET GUM	
Magnolia grandiflora	MAGNOLIA	
Musa/Ensete	BANANAS	
Paulownia	PRINCESS FLOWER	
Rosa	ROSES	
Salix	WILLOWS	