



# SMART

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## GARDENING

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# GUIDE



 [smartgardening.com](http://smartgardening.com)

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# SMART GARDENING GUIDE

## YOUR GUIDE TO:

- Backyard Composting
- Worm Composting
- Grasscycling
- Drought-tolerant Landscaping
- Drought-tolerant Plants
- Healthy Soil
- Edible Gardening
- Sun and Shade Plants
- Integrated Pest Management
- Waterwise Irrigation



## SMART GARDENING BENEFITS

- Reduce
  - yard waste disposal
  - food waste disposal
  - greenhouse gases
  - water use
- Promote greener, healthier yards and gardens
- Improve soil structure and health
- Increase nutritional value of edible gardens



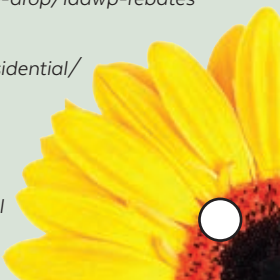
## RESOURCES

*Water Conservation Programs and Rebates*  
*Los Angeles Department of Power & Water:*  
[savethedropla.com/save-the-drop/ladwp-rebates](http://savethedropla.com/save-the-drop/ladwp-rebates)

*Be Water Wise rebates:*  
[socalwatersmart.com/en/residential/](http://socalwatersmart.com/en/residential/)

*Be Water Wise*  
<http://bewaterwise.com/>

*LA County PACE Program:*  
[pace.lacounty.gov/residential](http://pace.lacounty.gov/residential)



# BACKYARD COMPOSTING

Backyard bins are best if you have ample space and mostly yard debris (grass clippings, leaves, shrubs that require pruning).

**50% GREEN MATERIALS**



**50% BROWN MATERIALS**



**WATER  $H_2O$   
& AIR  $O_2$**

**INPUT**

- Input materials equal by volume
- Smaller decomposes faster
- Turn and water bin every 7 to 10 days

**3-6 MONTHS**



**OUTPUT**

- Add new materials as you go
- Remove from bottom of bin
- Use when it's brown, crumbly and smells like soil



## COMPOST OPTIONS:

- Backyard bins & tumblers
- Worm bin (vermicomposting)
- Open piles or burying
- Bokashi (ideal for cooked food, meat, and dairy, and small space constraints)



# BACKYARD COMPOSTING



## WHAT GOES IN:

### Green Materials (Nitrogen-Rich)

Fruit and vegetable scraps

Grass clippings

Garden trimmings

Tea leaves and bags

Coffee grounds and filters

Green leaves

Livestock manure

### Brown Materials (Carbon-Rich)

Wood chips and sawdust

Straw

Dry grass and weeds

Stale bread

Shredded paper and cardboard

Dry leaves

Nut shells

## WHAT TO KEEP OUT:

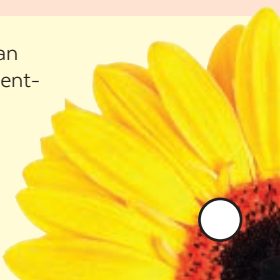
**Meat, dairy, pet litter or feces and animal byproducts** will attract vermin to your bin and decaying meat could contain pathogens that are harmful to humans.

**Diseased plants and pesticides** could create contaminated compost which could spread disease in your garden.

**Weeds and seeds** could remain active in your compost and germinate later when you transfer compost to your garden.

**Glossy or treated paper** may contain plastic that won't break down, chemicals you don't want in the garden, and slow down the process.

Backyard compost bins are an easy way to create your nutrient-rich soil amendment using yardwaste and food scraps.



# BACKYARD COMPOSTING

## TROUBLESHOOTING



### ODORS:

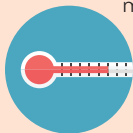
Store compost scraps in the freezer until ready for compost bin to eliminate mold, fruit flies and odors in the kitchen.



Odors in the bin are a sign that an anaerobic decomposition process is occurring. Turn the pile to increase oxygen. Decrease greens and moisture levels by adding dry, brown materials.

### TEMPERATURE:

Kill pathogens and speed up the compost process by maintaining a temperature between 130°-150°. Pile or bin temperatures above 150° can kill beneficial microorganisms.



**Increase temperature** by adding nitrogen-rich ingredients (greens) and more materials (larger pile). Cut scraps into smaller pieces to speed up decomposition process.

**Decrease temperature** by turning the pile to increase oxygen levels. Add brown materials to decrease heat. Add moisture if necessary.

### VERMIN:

To keep vermin away, do not compost meat products or processed foods, keep the bin securely enclosed, cover food scraps with a layer of “browns”, visit the bin and turn the contents frequently.

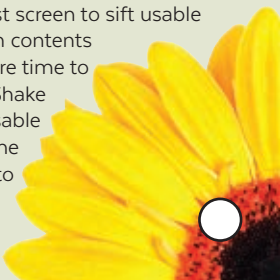


## HARVESTING COMPOST

Your compost is ready to use when it's dark brown, crumbly and smells like fresh-turned earth. It generally takes **2 to 9 months from start to finish**.



Use a compost screen to sift usable compost from contents that need more time to decompose. Shake the screen so usable compost falls through. Put the unfinished compost back into your compost bin.



# WORM COMPOSTING



## WHAT GOES IN:

Left-over, extra and spoilt vegetables

Fruit and vegetable peelings and flesh

Egg shells are excellent to balance pH in bin

Grains (oatmeal), rice, bread and potatoes with no heavy sauces or butter

Coffee filters, grounds and used tea bags

Garden soil (to add grit for digestion)

Small amounts of pesticide-free grass and garden clippings

Coconut coir, shredded newsprint and cardboard for bedding

## WHAT TO KEEP OUT:

**Meat, Dairy:** These are too high in protein for worms to metabolize and will attract vermin and pathogens.

**Pet litter or feces and animal by products:** Any items that may contain antibiotics, pathogens, or chemical additives should be avoided.

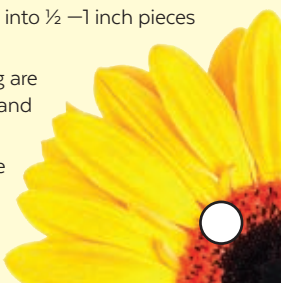
**Excessively wet food scraps:** Dry out waste from juicing before placing in bin.

**Citrus:** Small amounts of citrus are ok but avoid large amounts that will upset pH.

**Salt:** Avoid heavily salted foods (peanuts, chips, etc.) as they can be fatal to worms.

### TIPS:

- When feeding bin, cut food into ½ –1 inch pieces and bury scraps.
- Best worms for composting are Red Wigglers, Red Worms, and Red Tiger worms.
- ½ lb of worms will consume about ½ lb of food per day.



# WORM COMPOSTING

## TROUBLESHOOTING

### **BIN CONDITIONS:**

- Worms balled up, clustered in corner or dying? Check for overfeeding, moisture level, acidity.
- If the bedding is too moist, add more dry bedding. If too dry, add wet food scraps.



### **PESTS:**

Ants, mites, and smells are a sign that your worms are being overfed.

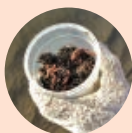
To reduce fruit flies:

- Freeze foodscraps for 24 hours to kill fruit fly eggs.
- Bury scraps and cover with cardboard, newspaper or another carbon-rich material.
- Place a small glass of vinegar in or near the bin.
- Put double-sided tape on the inside of the lid.



### **NEED MORE WORMS:**

Worms will double in population in about 4 months. New worms can also be added to existing bins.



## HARVESTING

- **Method 1)** Feed one side of tray for two weeks. When worms have migrated to that side, remove worm compost from the other end.



**Method 2)** Stop feeding finished trash and place new prepped tray with food underneath. Remove lid and leave in the sun for about an hour. Most worms will migrate to the lower tray to avoid sunlight, allowing you to remove the vermicompost with fewer worms in it. Remove top tray and place lid on new working tray.

Once harvested, mix the worm castings in with soil or use it to make worm tea. The microorganisms in worm castings help your plants become more resistant to disease and pests.



# GRASSCYCLING

Grasscycling is an easy way to naturally compost grass clippings. You will fertilize your lawn, help retain moisture and save water, and eliminate the production of greenhouse gases that are created when grass clippings are sent to the landfill.



The U.S. EPA estimates that a 5,000 square foot lawn can trap over 85 pounds of dust, dirt, pollen and mold from the air each year. A 2,500 square foot lawn can produce enough oxygen for a family of four.

## HOW TO GRASSCYCLE

- Use mulching mower and keep blade sharp
- Remove grass bag and close grass collection flap or door
- Set mower to proper height for grass type and never remove more than 1/2 the height

### SUGGESTED MOWING HEIGHTS:

**3/4"**

Fescue,  
Ryegrass and  
Buffalo Grass

**1 -1/2"**

Bermuda  
(common),  
Kikuyugrass,  
Dwarf Tall Fescue,  
St. Augusting,  
Zoysia,  
Blue Grammagrass

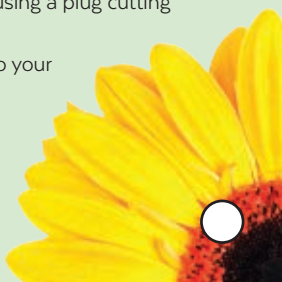
**2 -1/2"**

Bermuda (hybrid)  
and Seashore  
Paspalum



## MAINTAINING A HEALTHY LAWN

- Apply compost each spring to reduce water use and help hold fertilizer.
- Aerate your lawn regularly using a plug cutting aerator.
- Add 2 lbs. of earthworms to your lawn every 3-6 months.





# DROUGHT-TOLERANT

## LANDSCAPING

### TO CREATE DROUGHT-TOLERANT YARDS:

#### HYDROZONE

Group plants with similar water requirements together.

#### SELECT PLANTS

Grow drought-tolerant plants.

#### IRRIGATION

Use drip and smart irrigation direct to plant's root zone in the early morning. Harvest rain water using rain barrels.

#### IMPROVE SOIL

Add organic matter such as compost.

#### USE MULCH

Use mulch to maintain moisture.

#### REPLACE LAWN

Replace lawn with drought-tolerant plants.

#### NATIVE GARDENS...

- Reduce water use
- Are relatively easy to care for
- Provide food and habitat for butterflies, birds and other wildlife
- Can incorporate natural elements (rocks, bio-swales, native plants and succulents) to match the local environment



## RESIDENTIAL WATER USE

**4% CLOTHES WASHING MACHINE & DISHWASHER**

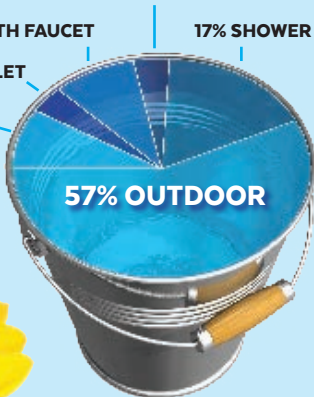
**9% KITCHEN & BATH FAUCET**

**17% SHOWER**

**4% TOILET**

**9% OVERWATERING**

**57% OUTDOOR**



# WATER-EFFICIENT IRRIGATION

## TIPS

Careful planting and efficient irrigation systems can reduce irrigation water use by 50% to 70%, resulting in an overall reduction in home water use of up to 25%.

### IRRIGATION TIPS

- Use drip irrigation for trees, shrub beds and areas of groundcover to minimize evaporation losses.
- Choose low-volume, low-angle sprinklers for lawn areas.
- Select sprinkler heads that fit the size and shape of the areas to be watered.

### IRRIGATION SCHEDULING TIPS

- Water in the early morning to minimize evaporation losses, wind drift and reduce the risk of developing fungal infections.
- Don't water on windy days.
- Water infrequently but deeply. If necessary, water for a short period, then wait for 15 - 30 minutes, then water again.
- Water near the root zone of your plants.
- Select controllers that allow you to adjust your watering schedule and include moisture sensors to account for seasonal variations.

### CONSERVATION TIPS

- Put plants that need a lot of water at the high point of your yard so the water can help irrigate other plants as it flows downhill.
- Use plenty of compost in your soil to improve the organic content.
- Use mulch around plants and along walkways to reduce soil moisture loss and reduce weed seed germination.
- Consider using low water-use ground covers, particularly in low traffic areas of your yard.
- Use rain barrels to collect rain water and reduce irrigation needs.



# DROUGHT-TOLERANT PLANTS



Evening Primrose



Desert/Apricot Mallow



Island Bush Poppy



Lavender



Big Berry Manzanita



Desert Willow



Natal Plum



Purple Sage



Hummingbird Sage



Red Bottlebrush



California Wild Rose



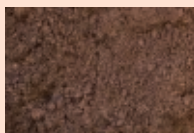
Rosemary

# HEALTHY SOIL

## SOIL TYPES

Healthy soil has good structure to allow air and water for nutrient uptake by plants, supports microbial activity and is resistant to pests, fungus and disease.

**SANDY** soil will not hold a ball shape. It feels coarse to the touch, and it will sift through your fingers as you open your hand. Sandy soil drains too quickly for plants to take up water through roots.



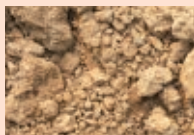
40%

**SILT** will form a loose, slightly slimy ball that will flatten somewhat as you open your hand. If left to dry, the ball will become compact but it will break down into a powdery substance if crumbled between your fingers. Silt holds water but erodes easily.



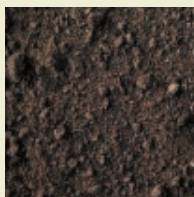
40%

**CLAY** soil will form a firm ball that will retain its shape after you open your hand. If you set the ball aside and let it dry, it will become rock-hard and difficult to break. Clay does not drain well, either blocks water or holds it, drowning roots.



20%

**LOAM** is the result of the mixed compositions. Loamy soil forms a soft ball that will crumble if you press it with your finger. When dry, the ball will break apart easily.



**TO IMPROVE ALL SOIL TYPES, ADD ORGANIC MATERIALS.**



# EDIBLE GARDENING

## SEASONAL PLANTS

Seasonal planting can vary depending on microclimates and sun/shade conditions of a particular space. Observe your garden and consult with your local nursery when planning your garden.

### COOL SEASON

#### late fall through winter

Lettuce, broccoli, cauliflower, peas cabbage, garlic, onions



### BRIDGE SEASON

#### end of winter and early spring

Radishes, beets, spinach, verdolagas (purslane), favas, and cilantro



### WARM SEASON

#### late spring to early fall

Tomatoes, peppers, melons, squash, beans, corn, cucumbers



### YEAR ROUND/PERENNIALS

Carrots, artichokes, Swiss chard, kale, thyme, rosemary, cane berries



### LOW IRRIGATION VEGETABLES

Eggplant, romaine lettuce, tepary beans (native crop), watermelon



## TIPS

- **Plant what you will eat:** Put effort into growing food that will be consumed before experimenting with new and interesting plants.
- **Give plants some space:** Pay attention to recommended spacing guidelines for seeds and seedlings to avoid overcrowding.
- **Save time and effort:** Install drip irrigation on a timer, maintain a thick layer of mulch, and remove weeds when still small.

### DROUGHT-TOLERANT PLANTS

[bewaterwise.com](http://bewaterwise.com)

[theodorepayne.org](http://theodorepayne.org)

[avr.cd.org](http://avr.cd.org)

[rsabg.org](http://rsabg.org)

[laspilitas.com](http://laspilitas.com)

[highcountrygardens.com](http://highcountrygardens.com)

[plantnative.org](http://plantnative.org)



# SUN AND SHADE PLANTS

## FULL SUN

- Tomatoes
- Squash
- Cucumbers
- Watermelon
- Eggplant
- Peppers
- Beans
- Yarrow
- Lavender
- Salvia
- Sedum
- Bee Balm
- Marigold

## FULL SHADE

- Mushrooms
- Mint
- Camellia
- Ferns
- Hosta
- Astilbe

## PART SUN

- Chives
- Cilantro
- Kale
- Salad Greens
- Swiss Chard
- Carrots
- Beets
- Potatoes
- Radishes
- Leeks
- Begonia
- Hydrangea
- Impatiens



# INTEGRATED PEST MANAGEMENT (IPM)

Integrated Pest Management (IPM) consists of identifying the pest and addressing the issue using one or a combination of four methods:

## CULTURAL

Use clean pruning shears, remove diseased plants, add beneficial fungi and bacteria

## CHEMICAL

Spray with worm tea, garlic, onion, vegetable oil, insecticidal soaps

## PHYSICAL

Handpicking, barriers, sticky or copper tape

## BIOLOGICAL

Introduce beneficial insects like ladybugs, praying mantis, trichogramma wasps, lacewings, tachinid, syrphid flies

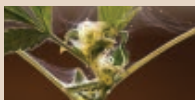
## COMMON PESTS



A) Aphids



B) Whiteflies



C) Spider mites



D) Mealy bugs



E) Tomato Hornworms and Cabbage Worms

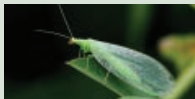
## BENEFICIAL INSECTS



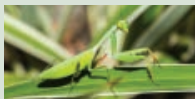
Syrphid Flies > A



Ladybug > A, B, C, D



Lacewings > A, B, C, D



Praying Mantis > A, B, C, D, E



Trichogramma Wasps > E



Tachinid > E

# INTEGRATED PEST MANAGEMENT (IPM)

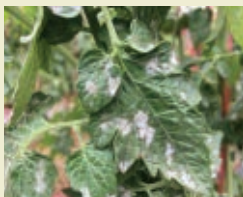
## COMMON DISEASES



**Mosaic virus:** Remove affected plants. Control pests such as aphids and leafhoppers, which spread virus.



**Damping off:** Ensure soil has good drainage, avoid overwatering. Remove and discard diseased plants.



**Powdery mildew:** Water the soil, not the plant. Apply copper fungicide.



**Verticillium wilt:** Rotate crops and avoid planting same crop in same location for five years. Prune affected parts of plant. Soil solarization in infected areas.



**Fusarium wilt:** Rotate crops and avoid planting same crop in same location for five years. Prune affected parts of plant. Soil solarization in infected areas.



**Blossom end rot:** Amend soil with calcium (bone meal, oyster shells, gypsum). Water evenly and consistently and apply mulch. Remove affected parts of plant.

