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Becoming a Desert Gardener

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Page	Topic	Subtopic	Author (if other than Dr. Angela O'Callaghan)
1.	GETTING STARTED AS A DESERT GARDENER		
		Water	
		The Weather	
2.	THE SOIL		
		The Soil	
		Caliche	
		Organic Matter	
		pH	
3.	COMPOST		Aggie Roberts
		Building a Compost Pile	
4.	FERTILIZERS		
5.	RAISED BEDS		
		Building a Raised Bed	
6.	MULCH		
		Organic	
		Cloth	
		Plastic	
		Gravel	
	WATERING		
7.	NATIVE AND DESERT ADAPTED PLANTS		Aggie Roberts
		Herbaceous	
		Woody	
8.	HERBS		Aggie Roberts
	USING SEEDLINGS FOR A HEADSTART ON PLANTING		
9.	VEGETABLES		
10.		Vegetable Planting Guide	Clarita Huffman
12.	ANNUALS AND PERENNIALS		Aggie Roberts
		Fall and Early Spring Color	
		Spring and Summer Color	
		Perennials	
		Bulbs	
14.	FRUITS AND BERRIES FOR SOUTHERN NEVADA		Information from Bob Scott
16.	TURFGRASS MANAGEMENT IN THE DESERT		Bob Morris
17.	TREES		Aggie Roberts
18.	PALMS		M. L. Robinson
19.	PRUNING		Alex Shigo
20.	CONCLUSION		
Editorial Assistance			Vicki Paul

Getting started as a Desert Gardener

Water

The average rainfall in the Mojave Desert is four inches per year, and the humidity is usually below 30%. Since water is the first nutrient any plant (or animal) needs, it is important to create a garden with this in mind:

The desert is dry.

To succeed as a desert gardener, consider the following when choosing and growing plants:

The Weather

In Southern Nevada, the temperature will vary widely over the course of the year. A record temperature of 117° was recorded at McCarran Airport in July, 1942. On average, about ninety-seven days per year have temperatures over 100°. The record low winter temperature was 8° in 1937, but the average winter temperature is in the low 30°'s. (Data from the U. S. Weather Service). Plants that survive desert heat in other places may not survive the winter cold in the Las Vegas valley, and vice versa.

Wind gusts of 70 mph are not unheard of, which means that young plants may be dislodged if not protected.

THE SOIL

The first part of planting in any climate is preparing the soil, and the desert is a particularly difficult environment for growing plants. Because there is a small amount of vegetation and rainfall in the desert, soils here tend to be low in fertility and high in salts. Native and native-like plants have adapted to this setting over the years, but adapted plants require more soil nutrients and water, and lower levels of salts.

Removing Salts in Soils

If the soil can drain freely, then it may be possible to remove excess salt by leaching. Irrigate with a large amount of water to remove soil salt before planting. Often the soil is not well drained, so it may be necessary to add materials (like compost) that improve the soil's drainage capacity before applying water. Remember, however, that leaching will also decrease the soil's fertility, so it will be necessary to build up the nutrient level (by adding compost or fertilizer) before planting.

Caliche

"Caliche" is a term commonly used in Southern Nevada. It refers to a layer where soil particles are cemented together by lime. It may be a few inches or several feet thick, and acts like a hardpan, blocking drainage from plantings. It is also alkaline, which impairs the growth of many plants.

pH

pH is the measure of alkalinity or acidity. It ranges from 1 (most acidic) to 14 (most basic). A pH of 7 is neutral. Soil in Southern Nevada tends to have a high pH, 8.0 or higher. To reduce the pH, apply sulfur, obtainable from gardening suppliers, to the soil. Before planting, apply 15 - 20 pounds of sulfur per 1,000 square feet and till it six to eight inches deep. Do not apply to planted areas during hot periods. Applying ammonium sulfate is not an effective method to lower soil pH.

Organic Matter

One way to improve difficult soil conditions is to add organic matter. Organic matter improves the soil in many ways.

- It improves soil structure; helping drainage for salt removal.
- It is full of beneficial soil microorganisms.
- It moderates soil temperature.
- It holds moisture.
- It is a major source of soil nutrients.
- It can tie up chemicals, both beneficial and harmful.

Organic Matter to Use

- Peat Moss
- Mature Compost
- Potting Mixes
- Composted Bio-Solids (sludge)
- Forest Mulches (bark, pine needles, leaves), but use with compost.
- Composted Manure (if the soil has a high salt level, avoid dairy manure, which may also be high in salt)

COMPOST

Compost is decayed organic material that provides valuable nutrients to garden soil. Making a compost heap requires some work, but the final product is worth the effort.

When making a compost pile, be sure to use only plant wastes. Never add bones, grease, meat or plastic materials because these will not break down properly. Do not use eggshells or ashes , as they will raise the pH of the local soils. Avoid adding weed seeds or paper, plants that show signs of disease. Materials to compost are: leaves, straw, grass clippings, shredded bark, pine needles, coffee grounds, tea bags, produce waste, vegetable and fruit peels. Do not use any plant material that has been treated with an herbicide.

Building a Compost Pile.
[Note: *there are commercial compost makers available , but it is not necessary to use one of them to make compost successfully*.]
1—Locate pile in an inconspicuous spot.

2—Place a layer of coarse material such as straw several inches thick on the ground (for drainage).

3—Place a layer of material to be composted about three inches thick.

4—Place a layer of dry material like shredded leaves, wood chips, or shredded paper, about six inches thick over that.

5—Cover those layers with a one-inch layer of garden soil.

6—Water thoroughly.

7—Aerate the pile by using a fork or a shovel to mix it up every few days.

Repeat steps 3 through 7.

FERTILIZERS

Fertilizers may be in packaged form or obtained from the organic matter that gets worked into the soil. Packaged forms have the percentage of different elements on the label, eg. NPK = 20-20-20 (20% Nitrogen, 20% Phosphorus,.20% Potassium).

Element		Role	Deficiency	Notes
Nitrogen	**N**	**Leaves, proteins, and DNA.***	**Chlorotic (pale, yellow) leaves.***	**The first number on any fertilizer package.***
Phosphorus	P	Color, flowers, fruit and seeds.	Purple streaks or patches on leaves; bronzing.	The second number.
Potassium	K	Water transport, roots, whole plant vigor.	Browning of margins of older leaves.	The third number.
Calcium	Ca	Cell walls and many metabolic processes.	Blossom end rot (a hard black patch at the bottom) of tomatoes, tip burn of lettuce.	Desert soils have calcium; problems are often due to irregular watering.
Magnesium	Mg	Chlorophyll.	Space between leaf veins becomes yellow.	n/a
Sulfur	S	Several amino acids.	Patches of yellow develop on leaf.	Adding sulfur helps reduce soil pH.
Boron	B	Flowering and root production.	Various.	Mojave soils may be high in B. May see toxic symptoms.
Chlorine	Cl	Helps to reduce or prevent root disease.	Various.	Mojave soils tend to be high in Cl.
Copper	Cu	Chlorophyll enzymes activity.	Various.	n/a
Iron	**Fe**	**Many processes***	**Leaves become pale, even white.***	**Often due to high pH in soil.***
Manganese	**Mn**	**Chlorophyll.***	**Looks like iron deficiency***	n/a
Molybdenum	Mo	Needed for proteins.	Looks like lack of N.	n/a
Zinc	**Zn**	**Hormones and starch production.***	n/a	n/a

* = Deficiency problem in desert soil.

RAISED BEDS

In a “raised bed,” plants are grown in a bed that is higher than the surrounding ground. It may simply be a bed of soil piled up and made firm, but more often it is a structure deep enough to hold soil-mix to produce a root system.

Why a raised bed? When trying to produce fruits, vegetables or flowers, it may be easier to create a contained mini-garden than dig into highly compacted, alkaline soil and replace native soil with soil amendments.

Building a raised bed

First, determine how large it should be. The needs of the crop (carrots require enough depth to produce its root) and the gardener (raised beds require less bending) will influence the decision of how deep to make it. Make the bed narrow enough so the gardener can reach the middle of it comfortably. The length will depend on how much the gardener wants to grow.

The walls of the bed can be brick, wood, cement block, or anything else that is solid enough to hold the soil mix. Do not use “pressure treated” lumber when building a bed for fruits or vegetables. Make sure moisture can drain out.

Once the walls are up, fill the bed. There are commercial mixes available from nurseries, but it is possible to fill the bed using the following recipe:

1. Place a layer of sand almost ½ the depth of the bed.
2. Add a layer of rotted organic matter (see “Compost”) about as thick as the layer of sand.
3. Add fertilizer. This is to get the microorganisms in the compost active. Use a fertilizer containing nitrogen, phosphorus and potassium. It may be “organic” or “conventional” depending on your preference.
4. Mix all the above with a garden fork, a spade, or a rototiller.
5. Firm and level the soil. Don’t pack it. Water thoroughly.
6. Plant desired crops.
7. When irrigating, water thoroughly.
8. Fertilize when plants are growing most rapidly. The time to fertilize will vary with the season and crop.

MULCH

Straw or cloth mulch are the most common, but other materials such as paper may also be practical.

Organic Mulch To control weeds, moderate soil temperatures and conserve water, a layer of organic mulch is very effective. The soil temperature under a thick layer of straw may be 20° cooler than unmulched soil. These can be straw, hay, shredded bark, or any fibrous material. These break down slowly into organic matter, enriching the soil.

Note: Natives or desert adapted plants have developed or adapted to drier circumstances with low organic matter, hence could be susceptible to pest attacks under organic mulch.

When irrigating a plot mulched with fibrous material, make sure that the water goes through the mulch into the soil. Unless enough water is applied, organic mulches can act as sponges, keeping the water from getting to the roots.

Cloth Mulch Mulch cloth serves many of the same purposes as plastic mulch but is re-usable. It comes in a variety of meshes. Use instead of plastic.

Plastic Mulch Plastic mulch is not recommended. Weed cloth performs the same functions, and can be reused.

Gravel Mulch Gravel limits weeds and dust, but only use it as mulching material for native or desert-adapted plants. Since it accumulates and reflects heat, it can damage tender plants. The rocks may also physically damage stems of garden plants. They do not provide nutrients to improve the soil.

While they may seem like permanent mulches, they are not. Like any other mulch, they will ultimately need replacing. Over time, depending on the rock itself, it can degrade. With wind and dust, gravel will also move into the soil, or be washed away with heavy rains or irrigation.

In general, it is not a good idea to mix the mulch types. Do not place sheeting under gravel or organic mulches. As a rule, if organic mulch is used, then avoid gravel, and vice versa.

WATERING

The frequency and amount of water applied to the landscape depends on plants being grown, soil type and time of year.

1. Always make sure the landscape has drainage.

2. More frequent irrigation is necessary in the summer.

3. Non-desert adapted plants require more water than desert plants.

4. Water thoroughly. Make sure the plant's whole root zone is watered.

5. Sandy soils drain quickly and should be watered more often than heavy clay soils.

6. Check moisture levels by digging several inches deep next to plants.

NATIVE AND DESERT-ADAPTED PLANTS

Herbaceous

Common Name	Scientific Name
Basket of Gold	*Aurinia saxatilis*
Brittle Bush	*Encelia farinosa*
Butterfly weed	*Asclepias tuberosa*
Chuparosa	*Justicia californica*
Desert (or Globe) Mallow	*Sphaeralcea spp.*
Desert Marigold	*Baileya multiradiata*
Gaura	*Gaura lindheimeri*
Mountain Marigold	*Tagetes lemmoni*
Mexican Honeysuckle	*Justicia spicigera*
Penstemon	*Penstemon spp.*
Russian Sage	*Perovskia spp.*
Sierra Sun Drop	*Calyophus hartwegii*
Skeleton-leaf Goldeneye	*Viguiera stenoloba*
Stone Crop	*Sedum spp.*
Sunray	*Helipterum spp..*
Yarrow	*Achillea spp..*

Shrubs

Black dalea	*Dalea frutescens* “sorothamnus”
Butterfly Bush	*Buddleia spp.*
Creosote Bush	*Larrea Tridentata*
Lantana	*Lantana spp.*
Pea Bush	*Dalea pulchra*
Trailing Indigo Bush	*Dalea greggii*
Turpentine Bush	*Ericameria laricifolia*
Yucca	*Yucca spp.*
Texas Ranger	*Leucophyllum spp.*
Cassia	*Cassia spp.*

HERBS

Herbs are plants or plant parts valued for medicinal, savory or aromatic qualities. Whether used for flavoring, fragrance, medicine or tea, herbs are useful. They are among the most familiar plants in the garden. Given adequate light and good soil, they will produce well.

With good soil and adequate light and water, the following herbs will produce well under our desert conditions. Some herbs for specific situations are:

Kitchen garden	(*This can be a sunny raised bed near the kitchen door, a planter box or a part of a vegetable garden*.) Basil, chives, dill, sweet marjoram, mint, parsley, tarragon.
Ground cover for sun	Prostrate rosemary, lemon thyme
Ground cover for shade	Sweet woodruff
Perennial or shrub border	Lavender, scented geraniums, rosemary, tansy, yarrow, lemon grass
Rock garden	English lavender, thyme
Moist areas	Mint, parsley
Part shade	Chervil, costmary, lemon balm
Containers	Chives, sweet marjoram, mint, coriander

USING SEEDLINGS FOR A HEADSTART ON PLANTING

Although Southern Nevada is a desert, spring is often too cool for tender seedlings to get established outdoors before the summer temperatures rise. Planting seeds indoors produces flowers and vegetable plants that can be transplanted successfully. This is particularly important with some of the warm season vegetables, such as tomato, eggplant, watermelon and pepper.

Several weeks before the planting date suggested on the seed package, plant seeds in a potting mix. Several soilless mixes are for sale at garden centers that do not contain any disease organisms that could injure seedlings.

Once the seedlings have two or three sets of true leaves, they can be transplanted into a raised bed or a prepared garden bed.

VEGETABLES

Because of the challenges presented by high salt levels, high pH, and low amounts of organic matter in Southern Nevada soils, growing vegetables in this area is easier in a raised bed, where amendments such as compost increase the tilth and nutrient levels of the soil.

Vegetables may be almost any plant part:

- Tuber (swollen underground rhizome, e.g. potato)
- Root (carrots, beets)
- Bulb (swollen underground leaf, e.g. onions, garlic)
- Stem (asparagus)
- Above ground leaf (lettuce, cabbage)
- Pre-flower structure (broccoli, cauliflower)
- Fruit (tomato, pepper, cucumber, bean)
- Seeds (beans, sunflowers)

Vegetables fall into two general categories:

- *Cool season vegetables* are planted so that most or all of their growth is in the cool part of the year. They are the tubers, roots, bulbs, stems, leaves and pre-flower structures.
- *Warm season vegetables* are planted so that most or all of their growth is in the warm (but not the hottest) part of the year. These vegetables are usually fruits and seeds.

All plants, whether cool or warm season, will "shut down" most of their metabolism when the temperature is over 95°. They will continue to pull up water to stay alive, so water regularly, but they will not produce leaves, roots, flowers or fruits when the temperature is that high.

Cool season vegetables generally require less sunlight than warm crops, but do require at least six hours of sunlight per day. They need protection from the hottest afternoon sun.

When planting vegetables, like any other annuals, keep the seed bed evenly moist after planting. When the plants are established (have true leaves), apply a layer of organic mulch to maintain soil moisture and keep temperatures from varying too widely.

Cotyledons are the first leaves produced by a germinating seed. They often look different from the plant's adult leaves. Check seed packets; they often have a drawing or -picture of the cotyledons, to distinguish them from weeds.

High boron soils, like many found in the Las Vegas Valley, are tough on crops, but asparagus and beets have a high tolerance for boron.

VEGETABLE PLANTING GUIDE FOR SOUTHERN NEVADA, *Clarita Huffman, Master Gardener*

Note: Early August means the 2nd week of August.
** - Should be started in hotbed 8 weeks ahead of this date.*

COOL SEASON:

Artichoke – Early February through late March

Asparagus – Early February through late April,
then early September through late November

Beet – Early February through late March,
then early August through early October

Broccoli – Early through late February,
then early August through early October

Brussels Sprouts– Early through late February,
then early August through early October

Cabbage – Early through late February,
then early August through early October

Carrots – Early February through late March,
then early August through early October

Cauliflower – Early through late February,
then early August through early October

Celery* – Mid-March through early April,
then early September through early October

Chard-Swiss – Early February through Late March,
then early August through early October

Chive – Early February through mid-March,
then early August through early October

Collard – Late February through late March,
then early August through early October

Endive – Early February through late March,
then early August through early October

Garlic – Early September through early October

Horseradish – Early February through late March,
then early October through late November

Kale – Early February through mid-March,
then early August through early October

Kohlrabi – Early February through mid-March,
then early August through early October

Leek – Early February through mid-March,
then early September through early October

Lettuce-head – Early through late February,
then mid-August through late September

Lettuce-leaf – Early through late February,
then mid-August through late September

Mustard – Early February through mid-March, then early September through late October

Onions-dry – Early March through early April, then early August through late October

Onions-green – Early February through mid-March, then early August through early October

Parsley – Early February through late March, then early August through early October

Parsnips – Early February through late March, then mid-August through early October

Pea – Early February through mid-March, then early September through early October

Potatoes-Irish – Mid-February through mid-March

Radish – Early February through late April, then mid-August through early October

Rhubarb – Early February through late March

Rutabaga – Early February through mid-March, then mid-August through early October

Salsify – Early February through mid-March, then mid-August through early October

Spinach – Early February through late March, then early September through early October

Turnips – Early February through mid-March, then mid-August through early October

WARM SEASON:

Beans-bush – Mid-March through mid-April, then mid-June through mid-August

Beans-pole – Mid-March through mid-April

Cantaloupe – Mid-March through late June

Corn-sweet – Mid-March through late April, then mid-June through mid-August

Cucumber – Mid-March through mid-August

Eggplant* – Mid-March through mid-May

Muskmelon – Mid-March through late June

Okra – Early April through late June

Peanut – Mid-March through mid-May

Pepper* – Mid-March through early May

Potato-sweet – Early April through late may

Pumpkin – Mid-March through late June

Squash-summer – Mid-March through early July

Squash-winter – Mid-March through late June

Tomato* – Mid-March through late May

Watermelon – Mid-March through late June

ANNUALS and PERENNIALS

Annual plants complete their life cycles in a single season; seeds germinate and the plants grow, bloom, set seed and die within one year or less.
Perennials live and flower for more than one season.
The annuals and perennials do well if planted at the right time and given the proper maintenance.

Annual Flowers for Fall and Early Spring Color

Plant in September and October.

African daisy	Ornamental kale
Alyssum	Pansy
Bells of Ireland	Petunia*
Calendula	Phlox*
Coreopsis	Poppy
Dianthus*	Shasta daisy
Foxglove	Snapdragon*
Gazania*	Statice*
Hollyhock	Strawflower
Larkspur	Viola
Ornamental cabbage	Wall flower

Annual Flowers for Spring and Summer Color

Ageratum	Larkspur
Amaranthus	Lisianthus*
Asters	Lobelia
Black Eyed Susan*	Marigold
Celosia	Nasturtium (morning sun)
Coleus (shade)	Nierembergia
Columbine	Periwinkle (Vinca)*
Coreopsis	Petunia
Cosmos	Phlox*
Dianthus*	Primrose
Gallardia*	Salvia
Gazania*	Snapdragon
Geranium (morning sun)	Statice (morning sun)
Globe Amaranth	Stock
Impatiens (shade)	Zinnia

*May also be grown as a perennial.

PERENNIALS FOR THE LANDSCAPE

Asparagus fern
Black Eyed Susan*
Chrysanthemum
Coreopsis
Delphinium
Dianthus
Dusty Miller
Euphorbia rigida
Four o'clock
Foxglove*
Gaillardia
Gazania
Heliotrope
Lisianthus
Marguerite Daisy
Michaelmas Daisy*
Perubian Verbena
Phlox*
Santolina
Stock

*May be purchased as either an annual or perennial

BULBS

A bulb is dormant until it is planted, and will flower under the proper environmental conditions. Many flowering plants are called "bulbs", but many of them are actually other plant parts. Different parts are planted at different times for the best results.

Plant part and definition	When to plant	Examples
Bulb: Swollen leaf tissue, requires chilling to produce a flower. It will produce offshoots from the bulb year after year	Fall (from September to December)	Allium, anemone, Aztec lily, Calla lily, crocus, day lily, Easter lily, freesia, hyacinth, muscari (grape hyacinth), tulip
Corm: The enlarged fleshy base of a stem.	Spring (March through May)	Canna, gladiolus (plant in east after March 15)
Rhizome: a horizontal stem with upright shoots	Fall (from September to December)	Caladium, iris, oxalis
Root: the underground plant organ that transports water and nutrients from the soil to the plant.	Spring (March through May)	Sweet potato
Tuber: Swollen underground stem that stores starch.	Spring (March through May)	Potato, dahlia

FRUITS and BERRIES

Information from: Bob Scott, Master Gardener

			Notes/Recommended Root Stock
ALMONDS			Nemaguard
All-in-One	sf	500	
Nonpariel	pr	400	
Price: pollinizer for Nonpariel	pr	400	
Mission	pr	500	
Carmel: pollinizer for Nonpariel	pr	400	
APPLES			
Anna: sweet, crisp	sf	200	M7 (2/3 dwarf), or M111
Dorsett Golden: sweet	sf	100	M7, Mlll
Fuji	sf	<500	M7, Mlll
Gala	sf	500	M7, Mlll
Granny Smith: harvests late	sf	600	M7, Mlll
Pink Lady: late	sf	500	M7, Mlll
Yellow Newton Pippen:	sf	600	Mark dwarf, Mlll cooking apple
APRICOTS			Nemaguard
Blenheim (Royal)	sf	500	Dries well
Gold Kist	sf	300	
Katy	sf	400	
Moorpark	sf	600	Canning
GRAPES			Own root stock
Black Monukka Seedless	sf	100	
Flame seedless	sf	100	
Perlette	sf	100	Seedless
Thompson seedless	sf	100	
NECTARINES, WHITE			Nemaguard
Artic Star: early	sf	300	
Artic Glo: early	sf	500	
Goldmine: early August	sf	400	
Snow Queen: freestone, June			
NECTARINES, YELLOW			Nemaguard
Desert Dawn: May	sf	250	
Desert Delight: June	sf	200	
Liz's Late: August	sf	600	
Panamint: July	sf	250	

***sf** = self-fruiting; pr = pollinator required

****WCH** = Winter chilling hours required to set the crop. Lower WCH in Southern Nevada.

Nemaguard = Nematode resistant root stock

Fruits and Berries for Southern Nevada, cont.

			Root Stock
PEACHES (min. = 5 to 6 foot tree)			Nemaguard
Babcock: July	sf	250	
Tropic snow	sf	200	
Strawberry Free: freestone	sf	450	
Bonanza: freestone, June	sf	250	
Eva's Pride	sf	200	
July Elberta	sf	500	
Mid-Pride: freestone	sf	250	
Desert Gold: May	sf	250	
PEARS			All pears on pear root stock
Comice	sf	600	Shorter neck than Bartlett
Hood	sf	200	
Kieffer: blight resistant	sf	350	Takes heat, late to ripen
PEARS, ASIAN			
20th Century: August	sf	450	Stores well
Shinseiki	sf	450	Yellow skin
PERSIMMON			
Fuyu	sf	200	
Hachiya	sf	200	Fall harvest, tart until soft,fruit can be frozen
PLUMS, JAPANESE			Nemaguard
Beauty	sf	250	
Elephant Heart	pr	500	
Mariposa	sf	250	
Santa Rosa	sf	300	
Weeping Santa Rosa	sf	400	
PRUNES, EUROPEAN			Nemaguard
Sugar	sf	550	Fresh or canned
POMEGRANATES			On own root stock
Sweet Pomegranate	sf	100	
Wonderful	sf	100	Espalier or container
STRAWBERRIES			
Lassen			Plants last four years, handles alkali soils, warm winters
Shasta			Strong bearer, firm,
Sequoia			Handles alkaline soil
BUSH BERRIES			
Blackberries, Boysen			Winter: cover canes with straw
Thornless Logan			More tart than Boysen, canning and pie
Olallie			

TURFGRASS MANAGEMENT IN THE DESERT

Bob Morris, Area Extension Specialist

Most of Southern Nevada is located in the transition zone for growing lawn grasses. Both the warm season grasses like bermudagrass and cool season grasses like tall fescue do reasonably well. Hybrid bermudagrasses are preferred over the common seeded types.

Tall fescue maintains its green color all season long. Bermudagrasses must be overseeded in mid to late September with a cool season grass such as perennial ryegrass to maintain green through the winter.

The biggest objection to lawns in desert landscapes is water consumption. Anywhere from about 60 to 80 inches of water needs to be applied annually to lawns to keep them in an acceptable condition. Cool season grasses require more water than warm season ones. High nitrogen fertilizer use, mowing high and frequent irrigations all contribute to excessive water use in lawn grasses.

Irrigation and fertilization

- Irrigate lawns in the early morning hours before the wind and temperatures climb.
- Fertilize tall fescue three times each year: Labor Day, Memorial Day and Thanksgiving. Research has shown that lawns planted in tall fescue do well with this fertilizer program in combination with the use of a recycling mower. The Don't Bag It program focuses on the recycling of lawn clippings back into the lawn rather bagged for curbside pickup and wasted.
- Overseeded bermudagrass should be fertilized at least four times a year: Labor Day, Fourth of July, Memorial Day and Thanksgiving. Fertilizers applied to lawns should have a ratio of nitrogen: phosphorus: potassium of 3:1:2, with at least half of the nitrogen being in a slow release form. Iron should be present in the fertilizer.

Common lawn maintenance practices for a healthy and attractive lawn:

- Spring weed control.
- Spring aerating when needed.
- Power raking in the fall when needed
- Insect and disease control only when needed.
- Most weeds can be prevented in lawns by mowing to appropriate heights, regular applications of fertilizers and good irrigation practices.

Because desert climates have a lower disease and insect incidence than more humid climates, disease and insect control measures are needed less frequently.

TREES

When selecting a tree, consider the climate as well as the garden adaptability, and plant the proper way.

Planting

1. Dig a hole that is no deeper than the root ball and at least three times as wide.
2. Test the hole for adequate drainage by filling the hole with water. It should drain overnight.
3. Carefully remove the tree from the container and place it on undisturbed soil.
4. Tease the roots from the root ball surface. Spread them out in the prepared soil at the proper depth.
5. Backfill the hole using the soil removed from digging the hole.
6. Firm the soil lightly as the hole is being filled to remove air pockets.

Native Trees	**Deciduous Trees**	**Evergreen Trees**
Catclaw Acacia	Desert Sweet Acacia	Strawberry Tree
	Blue Palo Verde	Blue Atlas Cedar
Western Redbud	Desert Willow	Carob Tree
	Arizona Ash	Arizona Cypress
Desert Willow	Rio Grande Ash	Italian Cypress
Single Leaf Pinion	Thornless Honey Locust	Aleppo Pine
Native Mesquite	Mexican Palo Verde	Mondel Pine
Screwbean Mesquite	Chinese Pistache	Italian Stone Pine
	Mesquites	Holly Oak
	Purple Leaf Plum	Heritage Oak
	Chinese Elm	Swan Hill Olive
	Chaste Tree	

PALMS

M. L. Robinson, Area Extension Specialist

PLANTING

- Plant palms in late spring to early summer when the soil is warm and new roots can form quickly. Cold-hardy types, such as container-grown Windmill (Trachycarpus) and Mediterranean Fan (Chamaerops), are exceptions and can be planted any time.

- Palms need well-drained soils, but not pure sand. Add organic materials as mulch, not backfill, with native soil to help establish roots. Dig the hole only as deep as the root ball and three times as wide. Break up and aerate the soil to facilitate root production.

- Palms in turf should receive sufficient water from the turf irrigation after they are established. Do not spray water directly on the trunks of the palms, as it builds up salt and other mineral residues. To keep grass from growing too close to the trunks, group palms in mulched areas. Never use a weed eater next to the trunk, as it can undercut the trunk and roots.

- Watering is critical in the establishment period. Water palms immediately after planting. Form a saucer or soil barrier to the edge of the root ball to hold water. Keep the soil moist but not wet. Never let a root ball dry out because it is nearly impossible to rewet it.

IRRIGATION

Once established, (which may take a summer for smaller palms and up to two years with very large field-dug palms) irrigation and fertilization are essential. Deep watering, as needed, is good for growing and saves water. Palms grow well with drip and low volume irrigation, but roots need to be encouraged to grow out and away from near the trunk. Add emitters as the tree grows, each time moving further away from the trunk. Under ideal conditions, palms send out roots eight to ten feet from the trunk for water, nutrients, and oxygen. If room permits, set a four-foot diameter root area with emitters two to three feet apart.

FERTILIZATION

A good palm fertilizer is a 3-1-3 fertilizer, (NPK) with magnesium, manganese, and other micronutrients included. Never apply fertilizer on or next to the trunk, but broadcast it evenly on the ground under the canopy. Fertilize spring through later summer.

Do not apply large amounts of nitrogen late in the fall and winter. This promotes tender new growth, which could be damaged by cold.

PRUNING The natural shape formed by the fronds is round or oval, not upright as with palms that have been pruned incorrectly. Palms only produce about one frond per month. Palms are often over-pruned leaving few fronds. This is sometimes called "feather dusting" or "carrot topping". This ultimately causes the trunk to narrow or "pencil neck". Fan palms may hold dead fronds for many years. ***Unless fronds are a hazard, or present some problem, prune only yellow, dead, or diseased ones***. Over-pruning in the fall and winter leaves the bud exposed to cold and wind, and in the summer to hot, drying wind. Shaving and skinning trunks is unnecessary and unnatural, and may cause wounds that allow insects or disease to enter. Remove bloom spikes if they are a hazard, or if fertile seeds are coming up in the landscape. Never allow anyone to climb a palm using climbing spikes.

Washingtonian palm with full skirt and flower stalks

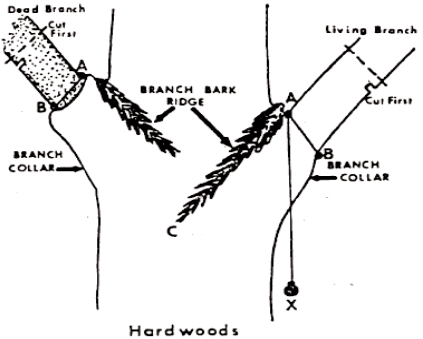
Incorrect pruning caused “pencil neck” in this palm

PRUNING

Proper pruning is an important way to maintain health and vigor in trees and shrubs. Remove broken or diseased limbs to keep pathogens from spreading throughout the plant. A householder may wish to remove a branch if it is interfering with a house roof or wall, for instance.

The following is a guide for basic pruning. Several books are available that give detailed pruning instructions.

- Make sure that the tools (saws, loppers, pruners, shears) are clean and sharp.
- In order to maintain the conical shape of conifers (pines, spruces, etc.) do not prune off the center leader. Otherwise, the tree will become unnaturally bushy at the top.
- Many shrubs look their best when allowed to retain their natural forms. Give them only a moderate yearly trim ("pinch back") to keep them bushy and a manageable size.
- Prune spring flowering shrubs in the spring, after they have finished flowering.
- Prune summer and fall bloomers in early spring.
- Have very large limbs removed by professionals.



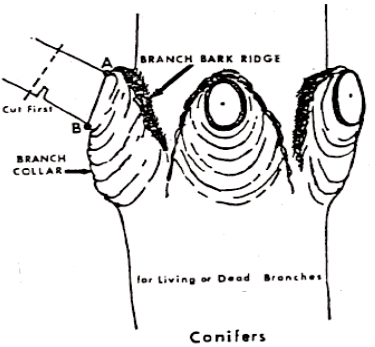
Hardwoods

NATURAL PRUNING STEPS

1. LOCATE THE BRANCH BARK RIDGE
2. FIND TARGET A – OUTSIDE OF BRANCH BARK RIDGE
3. FIND TARGET B – SWELLING WHERE BRANCH MEETS BRANCH COLLAR
4. IF B IS HARD TO FIND – DROP A LINE AT AX. ANGLE XAC = TO ANGLE XAB.
5. STUB BRANCH TO BE PRUNED
6. MAKE CUT AT LINE AB –

DO NOT

- CUT BEHIND THE BRANCH BARK RIDGE
- LEAVE STUBS
- CUT BRANCH COLLAR



Conifers

From: Dr. Alex Shigo, Northeastern Forest Experiment Station, Durham, NH.

CONCLUSIONS

Having little water, salty soils with low organic matter and extreme temperatures, Southern Nevada poses gardening challenges that do not exist in other areas. Many plants that thrive in other regions will be challenged here.

The intrepid gardener, one who is willing to work with nature and put in the extra effort, will find that success might not be easy, but is possible.

As a desert gardener, you might find yourself dealing with a few common desert gardening problems:

Tomato blossom end rot: Irregular watering causes a lack of calcium to the fruit. Keep the plants evenly watered.

Newly planted shrubs or trees do not become established: Poor drainage caused the plant roots to rot. Make sure the shrub or tree is planted in a hole at least three times as wide as its original container. Also make sure that the shrub or tree is adaptable to desert temperatures and soils.

Aphids: Common problem, but can usually be washed off with garden hose.

Books on Desert Gardening:

Western Garden Book, Sunset Publishing Corp., Menlo Park, CA
Plants for Dry Climates, M. R. Duffield and Warren Jones, Fisher Books, Tucson, AZ
Desert Gardening, George Brookbank, Fisher Books, Tucson, AZ
Low Water Use Plants, Carol Shuler, Fisher Books, Tucson, AZ

The University of Nevada Cooperative Extension's mission is to discover, develop, disseminate, preserve, and use knowledge to strengthen the social, economic,and environmental well-being of people.

If you have further questions, please contact our Master Gardener Help Line: 702-257-5555.

Happy Gardening!

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