



## HOME VEGETABLE PRODUCTION IN SOUTHERN NEVADA

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### INTRODUCTION

Aside from the fact that we are more interested in eating them than in looking at them, vegetables have much in common with other herbaceous annuals. Like all plants, they require proper levels of fertility, water and sunlight. Most survive for only one growing season. Vegetables may come in a range of colors, aromas, tastes and even shapes. This variety can delight both the eye and the palate.

#### *Why bother growing vegetables?*

Gardeners often grow home produce because of its freshness and better flavor. They can choose varieties not found in supermarkets, and may expect better nutrition from homegrown produce. If they grow vegetables organically, they are assured that their produce is pesticide-free. Research has found that when children are involved in growing vegetables, they are more likely to eat and enjoy them. In addition, USDA's **MyPlate** demonstrates that eating vegetables is an important part of a healthy diet.



Heirloom tomatoes in many colors and varieties. Photo A.O'Callaghan, UNCE

### WHAT DO WE KNOW ABOUT VEGETABLES?

- They are not generally eaten for their sweetness, although they may have a fairly high sugar content.
- Although technically they may be biennials or perennials, most are *grown* as annuals.
- Most are herbaceous (non woody).
- They are good sources of nutrients.
- They can add color and variety to the landscape.

### EDIBLE PLANT PARTS INCLUDE:

- Roots – beets, carrots, sweet potato, turnip
- Tubers – Jerusalem artichoke, potato
- Bulbs – garlic, onion
- Stems – asparagus
- Leaves – lettuce, spinach, cabbage, chard
- Leaf petioles – celery, rhubarb
- Flower buds and stalks – broccoli
- Flower bud – artichoke
- Fruits – squash, tomato, chayote
- Seeds – sweet corn, peas, dry beans

Many flowers are edible, e.g. day lily and violets, but are not commonly eaten.

## FACTORS AFFECTING DEVELOPMENT OF VEGETABLES

- Amount and duration of light
- Nutrient levels
- Water (precipitation or irrigation)
- Day temperature
- Night temperature
- Space
- Competition for space, water, nutrients and light from weeds
- Insect predation
- Disease

## ORIGIN OF MANY COMMON VEGETABLES

Many of the vegetables we commonly grow originated in Eurasia. These include broccoli, carrot, eggplant, lettuce, pea, and radish, as well as cabbage, onions and spinach, among others.

Vegetables native to North and South America include sweet corn, tomatoes, peppers, squash and many beans.

## CREATING A VEGETABLE GARDEN IN THE SOUTHWEST

Before beginning a vegetable garden, it is necessary to ask a number of questions.

- *What are you interested in growing?* Select vegetables likely to succeed under the conditions found in the Mojave Desert. Plant vegetables at the time of year when they will perform best.
- *How much space is available?* Some plants can be grown successfully in very small areas, while others require room to spread.
- *What kind of soil improvements will be necessary?* Much of the soil in Southern Nevada is alkaline (basic), salty, with little native nutrition. Additions such as soil sulfur, compost and fertilizers are essential, and must be added at appropriate times.
- *Is there easy access to water?* No vegetable garden in the desert southwest will succeed unless it is regularly watered.
- *How many hours of direct or indirect sunlight does the area receive?* Most fruiting vegetables require a minimum of eight hours of direct sunlight and do better with more. Leafy vegetables will grow with

six hours of direct sunlight or more hours of dappled light. Excess light may cause plants to develop sunburn and water stress.

- *What is the level of time, strength & interest?* What could be more disheartening than seeing surplus vegetables rotting on the ground? One of the biggest causes of garden failure is that the garden was too large for the available resources (human and other) to consistently maintain the garden.
- *Will there be help?* Gardening requires some hard work to create tasty, healthful produce. Will there be enough people to consume all the produce?

Different plants have different needs, and not all vegetable varieties are well adapted to the desert southwest. Seed catalogs and packages often contain valuable information for vegetable success, as do books and magazines.

## THE GARDENER'S TOOL KIT

In Southern Nevada, soils are not easily plowed or roto-tilled.

In order to create a garden in native soil, several tools are essential.

- Digging implement (pick-axe)
- Large crowbar
- Rake
- Trowel
- Watering hose
- Cultivating equipment
- Yardstick, twine, permanent marker and stakes to line up and mark rows
- Putty knife or spatula
- Sturdy gloves

## TIMES FOR PLANTING

Vegetables are generally classed either as cool or warm season.

Cool season crops are generally grown for pre-floral organs, leaves, roots, stems, and tubers. They require at least 6 hours of sunlight daily and need to be protected from hot sunlight. In Southern Nevada, plant these vegetables from mid February through April and from mid August until the end of October.

Warm season vegetables are usually grown for fruit or seeds. They include tomatoes, peppers, melons, and squash. A minimum of eight hours

of direct sun is required for their fruits to grow and develop, but most of these plants do not grow well at temperatures above 90° F. In Southern Nevada, they can be planted from March until May.

### **BUSH VERSUS VINING PLANTS**

Fruit-producing vegetable plants, such as tomato and bean, may grow in either bush or vine form

- Bush types (also called determinate) have a predetermined general shape. Flowers, then fruits, develop at the end of a stem, after which the stem stops growing. The bulk of the fruit on these plants is produced at the same time. With less leaf cover to provide shade, they tend to ripen simultaneously. They can be harvested all at once, mechanically, making them important for commercial production, but this may be impractical for a home garden. The lack of leaf cover also makes them more susceptible to sunscald.
- After the stem of a vining (indeterminate) plant produces fruit, it continues to produce leaves, flowers, and fruit until the plant dies. Fruits produced on vining vegetables – tomatoes, pole beans, squash, cucumbers and melons – are shaded by leaves, and ripen over a longer period of time.

### **NUTRIENTS FOR VEGETABLE DEVELOPMENT**

Mineral elements are essential for proper plant development. Certain minerals are more closely associated with growth of different plant parts, for example:

<u>Plant Part</u>	<u>Nutrient</u>
Root	Phosphorus, Potassium, Boron
Stem	Potassium, Calcium
Leaf	Nitrogen, Iron, Magnesium, Molybdenum, Zinc
Flower	Phosphorus
Fruit	Phosphorus, Potassium
Seed	Phosphorus, Boron

In addition to the above, plant metabolism also requires the elements chlorine, manganese, sulfur, and copper. A good way to ensure that

necessary nutrients are present and balanced is to improve the soil.

### **MAKING SOILS MORE NUTRIENT RICH**

There are several methods that can be used to provide elements essential for plant growth.

1. Add compost – Compost is formed of decomposed plant materials. Decayed animal manure, blood or bone meal may sometimes be added to supplement the compost. Since plant materials form the bulk of compost, many or most of the nutrients needed for plant development are present. Thus, adding compost to the soil helps provide the element necessary for vegetable growth and development. Cooperative Extension has fact sheets on producing compost.
2. Improve soil pH – Several essential nutrients are unavailable when soils are too acid or too alkaline. In the desert southwest, where soils tend to be quite alkaline, phosphorus, iron, manganese and zinc may become deficient in plants. In this case, it is necessary to lower soil pH. This is usually done by the addition of sulfur. The amount of sulfur necessary to lower pH is determined by the amount of sand, silt, clay and organic matter in the soil, the original soil pH and the final pH desired. Contact UNCE for recommendations before applying sulfur.
3. Grow in raised beds – If growing in native soil would require too many inputs, building a raised bed may be the answer. This planter can be any size that is convenient to the gardener. It must be deep enough for roots to develop, a minimum of 8 – 10 inches, and should be only wide enough for it to be accessible from both sides (four to five feet). It can be filled with improved soil, e.g. 2/3 native soil and 1/3 compost. Once prepared, it should not be walked on.

A raised bed is usually built of wood or concrete block. If wood is used, it should not be pressure treated with compounds such as creosote, chloropentaphenol, or arsenical compounds. Zinc or copper cuprinol painted on wood can preserve it, and is safe for vegetables. Leachate from concrete block and

mortar may be the source of alkaline material and increase pH problems.

4. Add fertilizers – Balanced commercial fertilizers contain, generally in a soluble form, the major and minor elements required for growth and development. Many organic fertilizers, based on natural products such as fish emulsion or composted manure, are also available.

## **WATER**

As most commonly grown vegetables are large water consumers, so access to water is critical. Vegetables cannot be grown in Southern Nevada without irrigation. Rather than following a rigid irrigation schedule, planting beds should be kept regularly moist. They must neither dry out nor become flooded. Good drainage is critical to plant health. Raised beds improve drainage.

Some plant problems can be avoided with proper watering, such as blossom end rot of fruits, leaf tip burn of leafy vegetables, and fruit cracking.

Placing a layer of *mulch*, such as straw, shredded bark, or shredded newspaper on top of the planting bed will conserve water, keep soils cool and lessen weed seed germination.

## **OTHER VEGETABLE CONCERNS IN SOUTHERN NEVADA**

When temperatures are high and the sun is brightest, many vegetables need to be shaded in order to limit sunscald and tip burn. Tomatoes, although they are warm season fruits, can become scalded. Leafy vegetables are likely to develop a browning of leaf tips when sunlight and heat become too intense. During the warmest months, many gardeners use an awning of shade cloth, which prevents a percentage of the light from reaching plants. Nitrogen fertilizer should not be applied after flowering has begun or when fruit is ripening, as it may interfere with flowering and ripening. For good fertilization, hence kernel production, corn should be planted in multiple rows, not one or two long rows. Sweet corn and other corn (e.g. corn for corn meal) should not be

planted close together, as the sweet corn produced will taste more like the other variety.

## **CONCLUSION**

It is possible to have a successful vegetable garden in Southern Nevada, as long as the gardener follows a few guidelines.

*Correct choice of vegetables.* Find varieties that withstand the high sunlight and low humidity found in this area. Select vegetables that will be a welcome addition to the diet.

*Correct soil nutrition.* In an area where the soil is not fertile, compost or other nutrient sources must be added. Organic matter will also improve the texture of the soil, making it easier for plants to develop. Cattle manures are not recommended in this region, as they tend to have high salt levels.

*Correct moisture.* A garden needs frequent watering, but there must be good drainage in the planting bed to prevent root rot.

## **REFERENCES**

- Wein, H.C, ed. 1997. The Physiology of Vegetable Crops. NYC. CABI Pub.
- Pierce, L.C. 1987. Vegetables: Characteristics, Production and Marketing. NYC. John Wiley and sons.
- Maynard, D.N. and G.J. Hockmuth. 1997. Knott's Handbook for Vegetable Growers (4<sup>th</sup> ed.) NYC. John Wiley and sons.
- O'Callaghan, A.M. 2001. Becoming a desert gardener. Univ. of Nevada Coop. Ext. Special Publication SP-01-15.



Many pepper varieties will ripen to bright red.  
Photo A.  
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