Mohave County
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Tips for Successful Gardening in Mohave County Kingman and Golden Valley Areas

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Growing vegetables can be fun and profitable. Fun, because growing can add a new dimension to your life – an awareness of the wonderful world in your own back yard, profitable because you will provide highly nutritious vegetables directly to your table rather than from the store, at a fraction of the cost. Most vegetables start losing nutrients from the moment they are harvested, by growing your own you can enjoy maximum nutrients. The marvels of nature will have special meaning when you nurture a small seed into a colorful productive plant with your own hands. This accomplishment can be yours regardless of the size of your garden. Either a few plants or a large plot will be a rewarding experience for both young and old.

With the following directions you can be successful at growing vegetables.

Select a good location

Choose an area with plenty of sunlight. Most vegetables especially the fruitful type require at least 6 hours of sunlight daily. Leafy and root vegetables will tolerate partial shade. Don't plant gardens under or near trees or large shrubs – their roots will rob fertility and water from your vegetables. It is not recommended to plant vegetables in narrow shaded spaces between houses and walls.

A loose, fertile, level, well-drained soil is best. If heavy clays or very sandy soil is present, amend the soil with mulch or compost. If caliche is present it must be dug out and removed. Avoid areas that are crusted with alkali salts.

Where space is limited, grow in containers. A rich growing medium which you prepared or purchased at a garden store should be used in containers (pot, tubs, boxes, etc.).

A convenient water supply for irrigating is necessary.

Plan your garden layout

Planning ahead will help to avoid problems and complement your landscape. Make a sketch of the area you plan to use, width and depth, and mark the location with stakes or outline it with a garden hose. Also include any containers, or mini garden areas. If you planted a garden last year, be sure and rotate your vegetables. By doing this you will thwart plant-specific pests and diseases, and give your soil a break because different plants use more or less of certain nutrients. Decide on the vegetables you want to plant. Choose vegetables your family likes, and are suitable for growing in

your area. Look for varieties that say drought tolerant and disease resistant. If you are planting in small spaces or containers, look for dwarf, compact, or bush varieties. If you are buying transplants from a store or nursery, be selective in what you purchase. Select plants that are healthy, medium-sized, with vigorous roots and are pest free. Avoid plants that are wilted, yellow, spindly, too large, or those with spots on their leaves. Plants with fruit already set on them are not necessarily your best choice. You want young plants to extend their energy on a healthy root system for maximum production at maturity. Mark on your plan where vegetables will be placed, and leave room for proper spacing between plants. Spacing allotments are listed on vegetable seed packets, or on plant identification stakes. Check the chart for approximate planting dates at your elevation. Arrange plants according to harvest periods and growth characteristics. Planting vegetables that will be harvested at approximately the same time will save space.

Soil Preparation and Fertility

Soil provides nutrients and water for plants. Basically, Mohave County soils are alkaline; having a PH range of 7.5 to 8.5 and are salty along with being low in nitrogen and phosphorus, but do have adequate levels of potassium, sometimes in excess.

Typically our soils are low in organic matter, less than .05%, which will require composting for you to be successful. Organic matter makes the soil loose and easy to work. It improves nutrient and water holding capacity, drainage and aeration. Well rotted manures and mulches are the most common organic materials. Apply a layer of organic matter 2 to 3 inches thick 1 to 2 months prior to planting. Composted manure is easy to use and is generally free, but needs to be tilled into soil 6 to 8 inches.

Add fertilizer that contains both nitrogen and phosphorus and apply it prior to planting. These are the nutrients most needed by vegetables. Soils vary in fertility but a typical application would be 1 to 2 lbs. of 16-20-0 per 100 sq ft. and 3 to 5 lbs. of soil sulfur per 100 sq ft, to help with PH and sodium/salt exchange. During the growing season fertilizers may need to be added, this is called side dressing and generally involves a nitrogen (N) application. Opinions vary as to whether to add organic products or chemical fertilizers. Great gardens can be achieved with either. Soil bacteria and fungi must act on organic and chemical sources to change them into forms the plant can absorb. A major consideration is that organic products be applied in advance to allow time for the conversion and break down to plant food. Plants do not differentiate between the nutrients of either organic or chemical, but organic does improve soil tilth, water and nutrient holding capacity of the soil. The content of fertilizers is required by federal law with the three numbers appearing on the package indicating the percentage of nitrogen (N), phosphorus (P) and potash (K). Examples: 15-10-5 fertilizer contains 15% nitrogen, 10% phosphate and 5% potash: 21-0-0 fertilizer contains 21% nitrogen, but no phosphate or potash.

Table 1. Analysis of common fertilizers.

Fertilizer Name	Nutrient Analysis*
Ammonium phosphate	16-20-0
Ammonium sulfate	21-0-0
Urea	46-0-0
Triple superphosphate	0-45-0

* Refers to % nitrogen, phosphate, and potash in the fertilizer.

**Fertilizing Home Gardens in Arizona AZ 1020 Tom DeGomez*

When to Plant

Vegetables differ in their climatic requirements therefore making it necessary to know when to plant them in order to have a successful garden. Some vegetables will withstand cool even slight freezing weather. Others need warmer conditions to germinate and to produce. Generally vegetables are placed in two categories – cool season crops and warm season crops.

Cool-season vegetables include beets, broccoli, cabbage, carrots, lettuce, onions, peas, potatoes, radishes and turnips. They are hardy, frost tolerant and germinate in cool soil. They can be planted in winter or very early spring. For best quality these crops need to mature during cooler periods rather than in the heat of the summer. In the Kingman area, they may also be planted in late summer allowing the plants to grow into the cooler fall months. Cool season vegetables germinate when the soil temperature is between 40 and 50 degrees.

Warm-season vegetables include beans, cucumbers, eggplant, melons, peppers, pumpkins, squash, sweet potatoes and tomatoes. These do not tolerate frost and need warm temperatures to set and properly mature fruit. But if the temperature reaches above 95 degrees tomatoes will not set. The soil temperature needs to be between 50 and 60 degrees for warm season vegetables to germinate.

Elevation definitely plays a part in the success of growing vegetables. Since the Kingman area elevations range from 2000' to 4500' we have included a chart with suggested planting dates.

Planting Seeds

It is very important to plant seeds at their proper depth in moist soil. A general rule to follow is to plant the seeds at a depth about two times the diameter of the seed. Cover small seeds such as carrots and lettuce with no more than ¼ to ½ inch of soil. Cover large seeds such as corn, beans and peas with 1 to 2 inches of soil. After you have covered the seeds firm the soil over them by gently tamping the soil with your hand or the flat back of the hoe. This prevents rain or irrigation from washing away the seeds. After you have tamped seeds in, sprinkle the soil surface lightly. Water often enough to prevent crusting and drying around the seed. After plants emerge, watering should be less often but deeper. As soon as the plants emerge, you will need to thin them. Do this by pinching out the weakest seedlings. It is not suggested to pull the weak seedlings as you may disturb the roots of the remaining plants. By thinning out, or removing weak seedlings you will be rewarded by healthier, tasty, well formed produce.

Transplanting Seedlings

Transplant seedlings when they have two (2) true leaves (a total of 4 leaves). Moisten plants before you remove them from the containers. It is best to transplant on a cloudy day or in the evening. Dig all your holes so that the transplanted plant sets slightly deeper than it grew in the container. Get the seedlings off to a good start by using a starter solution of water-soluble fertilizer high in phosphorous like 0-45-0, 10-50-10, or 10-52-17. Mix fertilizer with water, following manufactures directions and dilute by 50%. Place about ½ cup in the bottom of the hole, allow it to soak in. After you carefully cover the roots and firm the soil around the plants, and another ½ cup. Protect plants for a few days from sun, wind, or cold if necessary. A one gallon plastic milk container works well, just cut off the bottom and about 2" of the top, and place it over the plant. When peat or fiber pots are set in soil be sure to add enough water to soften the pots. Put additional holes in pots before transplanting to insure root penetration. Remove any plastic or wooden bands from around the roots.

RULES FOR SEEDING:

Generally, the following vegetables are started in the garden from **seed**:

Beans	**Carrots**	**Lettuce**	**Onions**	**Pumpkin**	**Spinach**	**Sweet Corn**
Beets	**Cucumbers**	**Muskmelons**	**Peas**	**Radish**	**Squash**	**Watermelon**

- Make the garden attractive and easier to control insects, cultivate, and harvest, by driving two stakes into the ground at each end of the garden and affix a tight string between them. Shallow furrows suitable for small seeds can be made by drawing a hoe handle along the line indicated by the string. Moist soil is easier to work with.
- The number of seeds to sow per foot or hill is suggested in How to Plant and on the back of seed packages. Space the seeds uniformly in the row.
- Plant at proper depth. A general rule is to place the seed at a depth about two times the diameter of the seed. Cover small seeds with no more than ¼ to ½ inch of soil. Place large seeds such as corn, beans and peas 1 to 2 inches deep. Plant seeds deeper in sandy soils.
- Cover seeds and press the soil to prevent rain or sprinkler water from washing the seeds away.
- Irrigate by drip or sprinkling soil surface lightly. Water often enough to prevent crusting and drying around the seed. After plants germinate, watering should be less often **but deeper**.

RULES FOR TRANSPLANTING:

Generally, the following vegetables are started in the garden from **transplants**:

Asparagus	**Brussels Sprouts**	**Cabbage**	**Eggplant**
Broccoli	**Cauliflower**	**Peppers**	**Tomatoes**

- Start your own transplants or purchase varieties in containers that have root systems in tact. If buying from garden/nursery stores, insist on **recommended varieties**.
- Handle plants with care by thoroughly watering the plants and soil in their containers about an hour prior to transplanting. Transplant on a cloudy day or in the evening. Carefully remove plants from their containers, disturbing the roots as little as possible, keeping the soil around the roots.

Water with Care

Due to the lack of, or limited rain fall, watering is necessary in the Kingman area. Throughout the growing season, water consistently to keep soil moist (not wet) at the plant root zone. Excessive fluctuation of soil moisture adversely affects plant growth and quality, therefore a regular application of water is needed. Proper watering can be accomplished by watching the plant and the soil. Do not allow the plant to become stressed (wilted or slow-growing). On the other hand too much water, especially in heavy soils, will exclude air from the root zone, resulting in poor growth. When the soil becomes crumbly upon squeezing, it's time to add water.

Check the moisture depth by probing the soil with a stick, trowel, or rod. Most vegetables are shallow-rooted and absorb most of their water in the upper 24 inches of the soil.

METHODS OF IRRIGATION			
Four methods are commonly used for **irrigation**:			
Drip (trickle)*	**Furrow**	**Soaker Hoses**	**Sprinkler**
The emitter system involves a plastic hose that lies beside the crop row, dripping (trickling) water on the soil.	Delivers water alongside the plant rows. Keep water in furrow long enough for moisture to completely infiltrate the soil to the root zone.	Applies water through hose that lies beside the crop row.	Garden sprinklers apply water on both plants and soil and should not be used if the water is salty Not recommended in Mohave County
• For an in depth review and illustrations on design and use of a drip (trickle)* system for the Mohave Desert areas, please visit this website sponsored by the Conservation District of Southern Nevada: http://www.cdsn.org/images/dripguide1028.pdf			

Frequency of watering depends on many different things. A large plant needs more water than a small plant. A shallow-rooted vegetable (cabbage, onions, lettuce) needs to be irrigated more often than a deep-rooted vegetable (asparagus, tomato, watermelon). Coarse-textured soils (sandy loams) need to be irrigated more often than fine-textured (clay, or silt loams). Plants need to be watered more often during hot periods than in cool periods. In an average situation during warm weather, a good soaking of the soil every 5 days should give satisfactory results with established plants.
Four irrigation methods are commonly used – drip, furrows, soaker hose, and sprinkler.

The drip system or the soaker hose involves a plastic hose which lies beside the crop row, dripping water on the soil.

The furrow method delivers water alongside the plant row. Water should be kept in the furrow long enough for moisture to completely infiltrate the soil to the root zone.

Garden sprinklers are not recommended in the Kingman area due to wind, salinity and the hardness of the water. The salt and hard water film can cause leaf damage.

Plants growing in containers should be watched more closely for water needs because the roots are more confined and the temperature of the soil is more extreme. Make sure there are drainage holes in your containers and put about ½ inch of coarse gravel in the bottom of each container.

The furrow method or the drip system is recommended for our area.

Weeds

Weeds compete with vegetables for water, nutrients and light, and weeds often harbor insects and diseases. Two important ways to keep down weeds are cultivation and mulch. Cultivate with a sharp hoe or cultivator just as the weeds begin to emerge. Scrape and loosen the total soil surface around the plants without going to deep which could cut or damage the roots of the vegetable. Cultivation also helps aerate the soil and can be used to mix a side-dressing of fertilizer into the soil. Mulching is covering the soil around your vegetables with an organic material. Besides controlling weeds, the mulch will conserve moisture, regulate the soil temperature and keep vegetables cleaner. With mulch very little cultivation is needed. Good mulch materials are straw, peat moss, sawdust, wood chips, or paper. Place about one inch of mulch around and under your plants, close to but not touching the base of the plants. Then of course, there is the old standby, pulling weeds by hand.

Below are two important ways to keep weeds down and save time/effort:

- **"Mulching"** is to cover the soil around your vegetables with a protective material. This controls weeds, conserves moisture, regulates the soil temperature, and keeps vegetables cleaner. By mulching, very little "cultivation" is needed.

Materials used for mulching are:

Straw	Peat Moss	Saw Dust	Wood Chips	Paper

- **"Cultivating"** can be done with a sharp hoe just as the weeds begin to sprout. Scrape and loosen the total soil surface around the plants without going too deep, which would cut or damage the shallow roots of the vegetables. Cultivation will also help aerate the soil and can be used to mix a side dressing of fertilizer into the soil.

Chemicals for weed control are not generally recommended for use in home gardens.

Pest Problems

Problems with garden pests can be minimized by being prepared for them. Familiarize yourself with the common insects like; cut worms, aphids, white flies, squash bug, cabbage looper and tomato hornworm. Whenever possible select disease resistant varieties.

Harvesting

Most vegetables are at peak quality only for a short period. They should be harvested and used as soon as possible. Immature vegetables will not develop after harvest, and over-mature vegetables will be tough and lack the desired taste and flavor.

Chart of Suggested Planting Dates

This chart represents suggested planting dates. There may be variations depending on the weather and the possibility of being located in a micro-climate. Plant any time between the suggested dates.

Vegetable	Number of Days to Harvest	2000 – 3000' elevation	3000 – 4500' elevation
Asparagus	2 years	Oct 1 – Mar 1	Feb 15 – Apr 1
Bean, bush (early)	45-60	Mar 1 – Apr 1	Apr 25 – Jul 15
(late)	45-60	Jul 15 – Aug 15	
Bean, pole	60-70	Jul 15 – Aug 10	Apr 25 – Jul 15
Bean, lima	75-85	Mar 1- Apr 1	Apr 25 – Jul 15
Beets	50-60	Aug 25 – Apr 1	Mar 1 – May 15
Broccoli (seed)	55-78	Aug 1 – Dec 1	Apr 15 - Jul 15
Broccoli (plants)	35-48	Sep 1 – Feb 1	Jul 10 – Aug 20
Brussels Sprouts (seed)	78-100	Aug 15 – Oct 1	Jul 1 – Aug 1
Brussels Sprouts (plants)	48-70	Sep 1 – Feb 1	Jul 10 – Aug 20
Cabbage (seed)	55-85	Aug 1 – Dec 1	Feb 15 – Apr 15
Cabbage (plants)	25-55	Sep 1 – Feb 1	Jul 10 – Aug 20
Cantaloupe	73-88	Mar 15 – Jun 1	May 1 – Jun 20
Carrot	65-75	Aug 25 – Mar 15	Jul 15 – Sep 15
Cauliflower (seeds)	50-65	Aug 1 – Dec 1	Apr 15 - Jul 15
Cauliflower (plants)	30-45	Sep 1 – Feb 1	Jul 10 – Aug 20
Celery (plants)	90	Sep 1 – Feb 1	Jul 10 – Aug 20
Chard	55-60	Aug 15 – Apr 1	Jul 15 – Sep 15
Chinese Cabbage	65-70	Aug 15 – Jan 15	Jul 1 – Sep 15
Collard	50-80	Sep 1 – Jan 15	Jun 15 – Aug 1
Cucumber	52-63	Mar 20 – May 15	May 10 – Jun 15
		Aug 1- Sep 1	
Eggplant (seeds)	55-73	Mar 1 – Apr 1	Apr 1 – May 1
Eggplant (plants)	25-43	Apr 1 – May 15	May 1 – Jun 15
Endive	45-65	Sep 1- Feb 1	Feb 1 – Apr 1
Garlic (cloves)	140-150	Sep 1 – Jan 1	Feb 15 – Apr 10
Kale	55-60	Aug 15 – Feb 15	Feb 1- Mar 20
Kohlrabi	45-60	Sep 1 – Feb 1	Feb 15 – Apr 1
Leek	95-100	Sep 1 – Jan 15	Feb 15 – Apr 10
Lettuce (head)	65-86	Sep 1 – Feb 15	Feb 15 – Mar 15
			Jul 15 – Aug 15
Lettuce (leaf)	45-75	Aug 20 – Apr 1	Mar 1 – Apr 15
			Jul 15 – Sep 1
Muskmelon	65-90	Apr 1 – Jul 15	May 10 – Jun 15
Mustard	30-50	Sep 1 – Feb 1	Feb 15 – Jul 15
Okra	48-53	Apr 1 – Jun 15	May 10 – Jul 1
Onion (green bunch)	70-120	Aug 15 – Feb 1	Feb 15 – May 1
Onion (dry seeds)	90-180	Oct 15 – Jan 1	Nov 1 – Dec 15
Onion (dry sets)	80-100	Nov 1 – Feb 15	Nov 15 – Jan 15

Vegetable	Number of Days to Harvest	2000 – 3000' elevation	3000 – 4500' elevation
Parsley	70-80	Sep 1 – Jan 15	May 1 – Jun 15
Parsnip	105-120	Sep 1 – Jan 15	Mar 1 – May 1
Pea (fall)	56-70	Aug 15 – Sep 15	Jul 20 – Aug 25
Pea (spring)	56-70	Feb 1 - Mar 15	Feb 1 – Mar 15
Pepper (seed)	60-80	Feb 15 – Mar 15	Feb 15 – Mar 30
Pepper (plants)	25-40	Apr 1 – Jun 1	May 10 – Jun 1
Potato (Irish)	65-90	Feb 15 – May 1	Mar 20 – Apr 20
			Jul 25 – Aug 15
Potato (sweet)	90-100	May 1 – Jun 15	May 10 -25
Pumpkin	80-120	Apr 1 – Jul 15	May 15 – Jul 1
Radish	18-25	Aug 5 – May 1	Mar 1 – May 15
Rutabaga	90-100	Aug 20 – Apr 1	Mar 1 – Apr 1
Salsify	60-80	Oct 1 – Dec 1	Mar 15 – Jun 1
Spinach	37-70	Aug 20 – Mar 1	Feb 15 – Apr 15
			Jul 15 – Aug 15
Squash (summer)	42-57	Mar 15 – Jul 15	may 10 – Jul 15
Squash (winter)	70-105	Jul 1-31	May 10 – Jul 1
Tomato (seed)	62-90	Jan 10 – Feb 15	Mar 1 – Apr 1
Tomato (plants)		Mar 15 – Apr 15	May 1 – Jun 15
Turnip	35-57	Aug 15 – Mar 1	Mar 1 – Apr 15
			Aug 15 – Sep 15
Watermelon	78-100	Mar 15 – Jun 1	May 10 Jun 25

The University of Arizona has an extensive list of publications which also may assist you at

http://extension.arizona.edu

Click on Publications
Click on College of Agriculture & Life Sciences
Click on "Show Publications" button

Suggested reading: Damping Off, Growing Tomatoes Above 6000 Foot Elevation in Arizona, Managing Caliche in Home Yard, Soil Sampling & Analysis, Ten Steps to a Successful Vegetable Garden

The UA Mohave County Cooperative Extension web site: **http://extension.arizona.edu/mohave**

Desert Gardening for Beginners- Available at the Maricopa County Cooperative Extension
Arizona Master Gardener Press, 4341 E. Broadway Rd.Phoenix, AZ 85040-8807
602-470-8086

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