Arizona Home Gardening

Agricultural Extension Service

To the Gardener . . .

"Arizona Home Gardening" is published to help you with your own garden problems. See your local County Agricultural Extension Agent for other information and assistance.

For your convenience, you'll find gardening information in this circular under the following headings:

On the Cover is shown Virgil Harman of Yuma County.

Appreciation is expressd to the County Agricultural Agents and others for helpful suggestions in the revision of this circular.

UNIVERSITY OF ARIZONA
College of Agricultural Extension Service
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Arizona Home Gardening

By Harvey F. Tate
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Fresh vegetables from the garden may supply much of the family's food needs. A fertile garden plot with proper handling can be made to yield a large quantity of vegetables in a year's time.

Of greater importance than the money value of a garden is its benefit in maintaining the health of the family. Fresh vegetables are the most important source of certain vitamins and minerals, and thereby, of course, are necessary for good health.

In most of southern and central Arizona it is possible to have fresh vegetables from the garden every month of the year. Select the crops which grow best during the different seasons. The fall, winter, and spring gardens are easiest to grow as the water requirements are less, and pests and weeds are easier to control.

The summer garden should include those vegetables which are tender to frost and grow best during the hot weather. A succession of varieties and plantings will give a much longer period of harvest.

Some vegetable crops are highly commercialized in certain areas of the state. This does not mean that they cannot be grown successfully in other areas at other seasons.

Planning the Garden

Locate the Garden Close To House

Locate the garden as near the house as possible. This will save much time in going back and forth to gather vegetables. It will enable even a busy housewife to do garden work at odd times. The garden needs full sunshine and should be placed where tree roots will not take away moisture and plant food from the vegetable crops.

Choose a well-drained site as level as possible. If there is a slope, a south slope is best. If there are strong winds during the growing season, locate the garden in a protected place, if possible.

There must be an irrigation ditch, well, faucet, or windmill close by to furnish a supply of irrigation water. Sufficient moisture keeps vegetables growing and gives them succulence and quality.

Select or Make a Garden Site

The ideal garden soil is a rich, mellow, sandy loam. Sandy loam soils are easily worked, warm up quicker in the spring, respond readily to fertilizers, irrigate and drain well, and are easy to keep in good physical condition. If such a soil is not available, select the best available and follow cultural practices that will improve the tilth and soil fertility.

Heavy clay soils are usually more fertile than sandy soils, but are harder to work and crops do not respond as readily to commercial fertilizers. Gravelly soils are usually deficient in organic matter.

The physical condition and productivity of all Arizona soils can be improved by generous applications of barnyard manures. Do not locate the garden in an area where the soil or water is high in alkali salts, or where the soil is known to be infested with root knot nematodes or Texas root rot.

Plan Crops Before Planting

No single gardening plan will suit all needs. Where gardening is tried on a year-round basis, it is necessary to have some kind of a plan to follow throughout the season. Keep in mind the following points:

1. The size of the garden will depend upon the number of people in the family and upon the method used in caring for the garden. It should be large enough to supply fresh vegetables for immediate use and an extra supply for canning, pickling, and storage. A small garden, well cared for, is better than a neglected large one.

2. Plant those vegetables liked best by the family so they will be eaten when put on the table. Don't plant half the garden to radishes or any other vegetable just because it is easy to grow. Plant an assortment of root crops, leafy vegetables, and such favorites as onions, potatoes, tomatoes, beans, and squash.

3. Perennial crops, such as rhubarb, asparagus, berries and herbs,

stands of which last several years, should be located on one side of the garden so that they will not interfere with the planting and cultivation of the annual crops.

4. Group together crops that mature during the same season so that after they are harvested the land can be prepared and sown to another crop.

5. If properly planned, one crop can be planted to follow another, thus keeping the entire garden busy the year around. Rotate crops so that one vegetable is not planted in the same place year after year. If the same vegetable is planted in the same plot for several seasons there is a possibility that soil-borne diseases will develop which will ruin the crop and perhaps others closely related.

6. Long rows are better than short ones because of the ease of cultivation and irrigation. Often the cultivating can be done when traveling to and from the field. If the cultivation is to be done by hand, the short rows with close spacing require less hand labor. A poor job of planning often leads to haphazard care and poor results.

7. A few simple tools of good quality are needed to keep the garden cultivated and free of weeds and pests. They are a garden rake, hoe, shovel, spading fork, trowel, and a small sprayer or duster. Keep these handy and ready for use when needed.

A well-planned garden in Maricopa County.

Preparing the Soil

Plow or Spade Garden Early

As already mentioned, the best garden soil is a rich, sandy loam. Too often such a soil is not available for the home gardener so he has to make the best use of the soil at hand. By careful management any average soil can be made to yield good crops. Sandy soils are well drained, easily worked, and warm up quickly in the spring.

Care should be taken not to plow or spade the soil while the garden is still too wet.

To determine whether the soil is dry enough to work, squeeze a handful into a tight ball, then break it apart with the fingers. If the ball crumbles it is safe to work the soil, but if the soil clings together and is sticky it is too wet. Sandy soils dry out more quickly than clay soils, also they are less damaged by working or tramping than are the heavier soils.

Organic Matter Needed To Produce Good Tilth

Coarse organic material, such as barnyard manure, cover crops, or sod, should be turned under several months before the garden is to be planted. If there is a heavy crop residue that cannot be turned under, or if it is infected with some plant disease, it should be raked up and burned.

A heavy application of organic material will greatly increase the water-holding capacity of sandy soils and make them more suitable for plant growth. Organic matter plowed or spaded into clay or heavy soils helps to prevent soil particles from running together and baking, makes the soil easier to work and more ideal for plant growth by improving both air and water penetration.

If there is any Bermuda or Johnson grass on the land, rake up and burn the roots and stems while it is being plowed or spaded. A few hours of extra work before planting will save many hours of weeding later in the season.

Just before the garden is planted, level the area with a harrow or rake to remove all rocks or debris that may be on the surface. The surface soil should be in a finely pulverized condition before planting to be sure the soil particles come in contact with the small seeds.

A good, level seed bed makes gardening easier.

Using Manures and Fertilizers

Manure Is the Basis Of Good Fertility

Plant-food for the garden may be supplied by manures and commercial fertilizers. Heavy applications of barnyard manures are the best basis for improving and maintaining the soil fertility in the home garden for they furnish plant nutrients as well as organic matter.

Commercial fertilizers are not substitutes for manures. Use them only to supplement plant foods normally present in manures. Manures have many good effects upon the soil which commercial fertilizers lack, and supplying only plant food is not enough to insure good crops.

Manure contains all the mineral elements that are in the food consumed by the animals. When manure is used in large quantities, minor-element deficiency seldom occurs. Best results are obtained with commercial fertilizer where there is plenty of manure or organic matter in the soil.

Before it is plowed or spaded, the garden should receive an application of barnyard manure at the rate of 8 to 12 tons per acre—100 to 150 pounds or 3 to 5 wheelbarrow loads per square rod (½ pound per square foot is approximately 10 tons per acre). Since manure is low in phosphorus, add 25 to 50 pounds of superphosphate per ton of manure—1 to 2 pounds per 100 pounds of manure. This should be broadcast over the manure and turned under.

It is best to apply the manure 6 to 8 weeks in warm weather or 3 to 5 months in cold weather before planting. Plow or spade it under 6 to 10 inches in depth and irrigate immediately so that the manure will rot and become incorporated with the soil. In the high elevations, the manure should be applied in the fall after the summer crops are removed.

A light to heavy application of barnyard manure should be applied each year, or after each crop is harvested, to replenish plant nutrients and to improve the physical condition of the soil. In some areas manures may be scarce, but a small application is better than none.

In using barnyard manures, the following points should be kept in mind:

1. Poultry, rabbit and goat or sheep manures should be used at one-half the rate of cow or horse manure.

2. Small quantities of fresh chicken or rabbit manure can be broadcast lightly over the garden without previous composting.

3. Barnyard manures may be used when they are fresh, if they are scattered over the garden area but not allowed to touch the growing plants.

4. On farms where several different kinds of manures are available, they should be mixed together —not used separately.

5. The best results may be obtained from applying small amounts of manure and supplementing with commercial fertilizer.

6. Manure may carry a lot of weed seeds which will grow unless the manure has been piled up and allowed to heat.

7. Manure containing very much straw may retard plant growth until the straw is well decomposed and plant nutrients are liberated.

8. Manures decay more rapidly when the soil is warm and moist.

9. For some crops, such as cucumbers, melons, tomatoes and pumpkins, rotted manure is applied in hills by mixing it with the soil in the bottom of the hole and covering with soil.

Increase Production With Fertilizers

Commercial fertilizers should be used in gardens to supplement the plant food in barnyard manure or other organic materials. In many areas, barnyard manure is expensive and difficult to obtain, therefore it is necessary to apply commercial fertilizers to get the best plant growth. On soils that are fairly fertile, commercial fertilizer only will be sufficient for a year or two, but such practice is not recommended because it results in a lessening of the organic matter in the soil.

Nitrogen is the plant food element that generally will give the greatest response in plant growth. However, phosphorus may be of equal value in growing vegetable crops if properly used. Most farmers will find that the same fertilizer used on field crops will be satisfactory for the home garden.

Some Fertilizers And Their Uses

The numbers associated with each fertilizer name indicate the percentage of nitrogen, phosphorus, and potassium in the material: Thus, 6-9-5 means 6% nitrogen, 9% phosphorus (P_2O_5), and 5% potassium (K_2O). Analysis is required by law to be on each tag or container.

In the following list, the rates of application are approximate and are based on rows 36 inches apart. The amounts should be varied for rows closer together and farther apart. For rates for smaller areas, refer to the table on page 11.

Mixed Fertilizers
6-9-5, 6-12-0,
8-12-0, 10-20-0

Any of these are good fertilizer for the home garden. They are best applied in bands at planting time, or broadcast before the beds are made. These fertilizers are made up of mineral salts and organic materials and can be used in larger quantities than mineral salts alone. Rate of use—200 to 500 pounds per acre.

Ammonium Nitrate
34-0-0

This is the highest total nitrogen fertilizer sold in solid form, but supplies nitrogen only. It must be used with care because an excess may cause burning of plants. Rate of use—50 to 100 pounds per acre.

Ammonium Phosphate
11-48-0

One of the best fertilizers to use in bands at planting time—2 inches to the side and 3 inches below the seed row. An excellent source of phosphate with enough nitrogen to get the seedlings started. Granular and easy to handle. Rate of use—100 to 150 pounds per acre.

Ammonium Phosphate
16-20-0

An excellent fertilizer for side dressing which supplies both nitrogen and phosphorus. Should be placed 2 or 3 inches deep so the phosphorus will be in the root zone. Granular and easy to handle. Rate of use—100 to 200 pounds per acre.

Ammonium Sulphate
20-0-0

Good for side dressing any crop needing nitrogen. It supplies nitrogen only. Stunted growth or yellowing is often a sign of nitrogen deficiency. Excessive amounts too close to plants will cause severe burning. Dissolves easily in water and moves with the water in the soil to the plant roots. Should not be used when quick action of nitrogen is desired in cold weather. Rate of use—100 to 200 pounds per acre.

Sodium Nitrate
16-0-0

Supplies only nitrogen. Excellent for side dressing leafy crops. Granular and easy to handle. Do not use in one area continuously unless large quantities of some organic material are plowed under. This is particularly true in heavy alkaline soils. Can be used when quick action of nitrogen is needed in cold weather. Rate of use—100 to 200 pounds per acre.

Superphosphate
0-20-0

Supplies only phosphorus. Should be applied in bands or broadcast before seeding. A good fertilizer to plow under with large applications of barnyard manure. Rate of use—in bands, 200 to 300 pounds per acre; broadcast, 200 to 600 pounds per acre.

Treble Superphosphate
0-44-0

An excellent source of phosphate. Phosphate fertilizers are not easily dissolved and do not move in the soil moisture to the plant; hence they must be applied where the roots can grow to them. Use in bands at the rate of 100 to 150 pounds per acre or broadcast 150 to 300 pounds per acre.

Depending on soil and climatic conditions, commercial fertilizers are generally applied in one of the following three ways:

1. By broadcasting evenly over the ground after plowing or spading, then thoroughly mixing with topsoil 2 or 3 days before preparing the ground for seeding or planting. Phosphate or mixed fertilizers are often applied in this manner.

2. By applying in bands 2 inches to the side and 3 inches below the seed row. This is the most efficient method of applying fertilizers. On large acreages it can be

done with special equipment, but for home gardens a furrow 3 or 4 inches deep on the side of the bed can be made with a hoe, and the fertilizer applied in the bottom of the furrow.

The furrow is then covered to resurface the bed and make a shallow furrow for the seed. Phosphates, mixed fertilizers, and ammoniated phosphates are best applied in this way.

3. By side dressing with a readily soluble nitrogen fertilizer. This method makes use of fertilizers supplying chiefly nitrogen, such as ammonium sulphate, ammonium phosphate 16-20, ammonium nitrate, and sodium nitrate, to stimulate vegetative growth.

The side dressing is made by broadcasting the fertilizer along the irrigation furrow, mixing with the soil by cultivation, and irrigating immediately to dissolve the fertilizer and carry it into the root zone of the plants.

Care should be taken to keep the fertilizer off the leaves of the plants, especially when wet. There is danger of burning the foliage, if these fertilizers come in contact with the leaves.

Uncommon Materials Used as Fertilizers

COMPOST is a mixture of manures, crop residues, leaves, grass and other organic materials that have been partly decayed. Usually the materials are placed in pits, trenches, or wide, flat piles with alternating layers of soil. Sometimes commercial fertilizers are added to hasten decomposition and to give a higher plant-food value to the finished product.

If the compost is kept moist, the material decomposes in a few months. It is similar to leaf mold and can be used as mulch or general fertilizing material.

PEAT MOSS is often used as a bedding material in chicken houses. As such this bedding material makes an excellent fertilizer for gardens, flower beds, and truck farms.

It should be worked into the soil several weeks before planting so the material will have time to decompose. It improves the soil structure and adds plant nutrients; peat moss alone contains no plant food.

SAWDUST alone contains very little plant food. However, if partly rotted sawdust is used as a bedding material for horses and cows, the resulting mixture can be used as garden fertilizer. Some commercial nitrogen fertilizer applied with this mixture will help make it rot sooner without depriving the soil of nitrogen.

Sawdust soaked with urine will decompose without robbing the soil of nitrogen; therefore, the addition of commercial nitrogen fertilizer is unnecessary in this instance because of the high nitrogen content of urine.

WOOD ASHES contain a small amount of potash, but ashes **should not** be dumped in garden areas because: (1) Arizona soils are not generally lacking in potash; (2) the use of ashes may make the soil too alkaline for best plant growth.

Fertilizer Amounts in Small Areas

Rate Per Acre	Corresponding Amounts of Fertilizer for Smaller Areas Approximate Amounts of Fertilizer Per 50 Feet of Row in Widths of						
	12 inches	18 inches	24 inches	30 inches	36 inches	42 inches	100 sq. feet
lbs.	oz.	oz.	oz.	oz	oz.	oz.	oz.
100	2	3	4	5	6	7	4
150	3	4.5	6	7.5	9	10.5	6
200	4	6	8	7	12	13.5	8
300	6	10	12	15	18	20.5	12
400	8	12	16	20	24	28	16
500	10	15	20	24	30	34.5	20
600	12	18	24	29	36	41.5	24

It should be remembered that the best results are obtained with commercial fertilizer where there is plenty of manure or organic matter in the soil

Approximate Weights of Some Commercial Fertilizers for Measuring Small Quantities

Fertilizer	Teaspoonful (heaping full)	Standard Cup (level full)	Pint
	Oz.	Oz.	Oz.
Ammophos 16-20, Ammophos 11-48	2/3	7	14
Ammonium Sulphate, Sodium Nitrate, Ammonium Nitrate	3/4	7.5	15
Superphosphates, Treble-Superphosphates	3/4	8	16
Mixed Fertilizers	1	8.5	17

Irrigating the Garden

Irrigate the Garden For Best Plant Growth

Irrigating home gardens is necessary in all sections of Arizona, except in a few small, dry-farming areas. In the areas where gardeners are able to get by in favorable years, a little supplemental irrigation water will increase the yields and insure a crop every year.

The amount of water required and frequency of irrigation depend upon the crop, climate, time of year, and soil conditions. Shallow-rooted crops require more frequent watering than deep-rooted crops. During cool weather and normal rainy seasons fewer irrigations are needed than during the hot, dry season.

In the lower valleys, less water is required for the late fall, winter, and early spring crops than for the late spring, summer, and early fall crops. In the high elevations vegetable crops are grown mainly during the late spring, summer, and early fall months, at which time summer rains often lessen the requirements for irrigation water.

The procedure for preirrigating and for irrigating the garden until the plants are well started will be almost the same within a locality.

The following outline should help in preparing an irrigation schedule for the home gardener:

A good irrigation will allow water to penetrate into the soil on both sides of the furrow. Note rows on the contour.

Preparing Garden Soil

Moisten the soil to a depth of one foot. Spade or plow the soil as soon as it has dried enough to work well. Irrigate thoroughly to moisten the soil to a depth of 4 feet. Water thus stored in the soil will eliminate much irrigation after the vegetables are seeded.

Irrigating to Germinate Seeds

If the seed is sown in a low bed, slowly fill the furrow with water until the bed is soaked through and the moisture has reached the damp soil below. If sprinkling is used, a fine spray is best, wetting the dry topsoil until it meets the moisture from below.

Irrigate lightly or sprinkle every day to keep the soil moist around the seed and to prevent crusting. During hot or windy weather the surface soil will dry out quickly and irrigation should be made as often as needed. Continue until the seedlings are well established.

A mulch of dried grass clippings, straw, or old burlap bags may be used over the bed or seed row to prevent evaporation and to hold the moisture to the surface. Remove the mulching material if it interferes with the seedlings as they begin to come up.

Irrigating Young Transplants

It is best to preirrigate the soil so the furrows or bed will be settled. The surface soil should be allowed to dry until it is in a good workable condition. Sandy or sandy loam soils can be worked sooner than heavier soils.

Set the transplants near the bottom of the furrow; then irrigate thoroughly. If the weather is hot and windy, either put a board or shingle on the southwest side of the plant to protect it during the hottest part of the day, or an inverted "V" of cardboard may be placed over the plants for a few days until they become established.

Irrigating Young Plants

After the young seedlings are up and thinned to a stand, frequent light irrigations should be continued. In 3 to 6 weeks the root systems will be fairly well established and the interval between irrigations can gradually be lengthened.

Irrigating Older Plants

Vegetables always should be kept in a vigorous growing condition and should not be allowed to suffer a check due to lack of water. Otherwise the edible quality may be poor. Regardless of how the water is applied, the soil in the root zone of the plant must be kept moist continuously because irrigation replenishes the water supply for plant use.

Root systems of different plants vary greatly and the soil should be moist to the depth of root penetration. The depth of moisture penetration can be checked by using a sharpened stick or iron rod. It will penetrate moist soil easily, but stops when it reaches dry soil.

The amount of water to be used and the frequency of irrigation will depend upon the kind of soil, the amount of organic matter it contains, and weather conditions. Heavy soils, such as clays, or soils containing large amounts of organic matter, will hold more moisture than light, sandy soils, low in

organic matter. The effect of weather is obvious; the warmer and drier the weather, the more irrigation will be necessary.

Irrigation may be done by furrows, sprinklers, or basins. Generally the water is applied in furrows between plant rows. The seeds are sown on low beds to make better use of irrigation water and to keep the lower plant parts out of the mud.

Planting on the flat and flooding is seldom done with vegetable crops. Flooding is used only in preirrigation for soil preparation. Sometimes on sandy or sandy loam soils, or on soils high in organic matter that do not bake, the seeds are sown in low beds and yard sprinklers are used to wet the surface to germinate the seed.

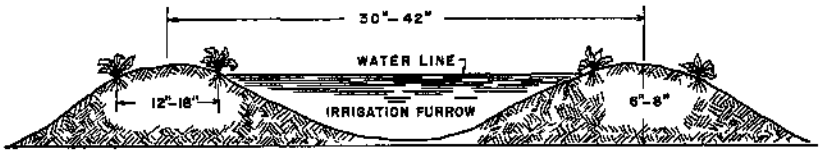
After the seedlings are started, the water is run in the furrow by the plant row. Where alkali salts are a problem, high centered beds are used to concentrate the salts in the center of the bed and above the plant row.

The seeds of such crops as beets, carrots, turnips, lettuce, spinach, Chinese cabbage, radishes, peas, beans, onions, chard, celery, endive, etc., are sown in two rows on low beds.

The beds vary from 24 to 42 inches from center to center, depending on the crop, space available, and whether hand or horse cultivation will be used. The seeds are sown near the edge of the bed, and water is run in the furrow until the bed is soaked.

Flooding the top of the bed should be avoided as it causes the soil to bake, and unless kept moist, seedlings are not able to come through. A similar bed may be

Use the type of seed bed best adapted to your soil conditions.



CROWN TYPE OF BED FOR LEVEL SOMEWHAT ALKALINE SOIL

FLAT BED FACILITATES CULTIVATION BETWEEN ROWS THIS TYPE SHOULD BE ADAPTED WHERE GARDEN IS LEVEL AND FREE OF ALKALI.

LOW BEDS MUST BE USED WHERE LAND IS SLOPING, OTHERWISE WATER WILL NOT REACH THE SEED ROWS.

used for seeding cabbage, broccoli and cauliflower, but often they are grown in single rows on the side of the bed.

If transplants are used, they are set on the side of the furrow. In either case as the plants grow, soil is worked toward the bed until the plant now is near the center of the bed. Sweet potato plants are set at or just above the water line and hilled-up as they grow larger.

Vine crops, such as cantaloups, watermelons, squash, honeydews, and cucumbers, are planted on beds 5 to 8 feet in width; the seeds are placed 2 or 3 inches above the water line on the side of the irrigation furrow.

Such crops as tomatoes, peppers and eggplant may be set in shallow furrows and soil gradually worked to the plants as the season progresses until a new furrow is established 6 to 8 inches from the plants. Water is run in the furrow immediately after the plants are set.

Water applied in the furrow does not move far laterally, but mostly downward. It is more economical to apply large amounts of water at one time than small amounts frequently. On heavy clay soils or where drainage is poor, care should be taken in watering so that the soil will not become waterlogged.

Seeding and Transplanting

Sow Seed at Correct Depth

Vegetable seed may be planted in a dry seedbed and "irrigated up," or planted in a moist bed. As a rule, seed should be sown deeper on a light soil than on a heavy soil, and large seed should be planted deeper than small seed.

The seed should be sown deep enough to keep it moist for good germination. Small seeds, such as beets, carrots, lettuce, onions, spinach, chard, endive, etc., should be covered ¼ to ½ inch deep. Large seeds, such as corn, beans, squash, melons, peas, cucumbers, etc., may be planted 1½ to 2 inches deep. The seed may be sown with a small garden seeder or by hand in a shallow furrow.

A broad, shallow furrow may be used for beets, carrots, lettuce, onions, and radishes. Cover the seed with finely pulverized soil and firm with the back of a rake or hand to prevent drying, to eliminate air pockets, and to force the soil particles in close contact with the seed.

It is difficult to estimate the amount of seed for a given length of row. Small seeded crops, such as lettuce and carrots, are seeded 3 or 4 times as heavy as needed for a good stand to allow for poor germination, damping off, and cut-

worms. Hardy crops, such as corn, squash, peas, and beans, are planted just a little thicker than needed for a stand. Beet and chard seeds are multiple and each one produces two or more plants.

Buy Good Seed Of Adapted Varieties

Always buy good seed from a reliable seedsman. A "reliable" seedsman is one who consistently supplies varieties true to name, free from disease, and of high germination. High quality, fresh seed is dependable; cheap seed is not dependable.

Unless the gardener is prepared to carefully select seed at home it will be safer to purchase high-grade seed from a reliable seedsman. **Never try to save seed of hybrid varieties of vegetables.**

The gardener should know or find out the varieties best suited to his needs and locality before buying. (See Table on page 36.) There is a great difference in varieties, and very often the success or failure of a garden depends upon the care in selecting adapted varieties.

Plan to have the seed required for planting early, mid-season, and late varieties of all vegetables that will produce more than one crop.

Care is important in planting the seeds. At left above is shown a good method of making the row. In the center picture, seeds are carefully being placed in the row. Covering the row with the rake is shown in the bottom picture.

Or make successive plantings of the same variety with the idea of extending the harvesting season. Each year some new or novel vegetables are listed in the seed catalogs. It is interesting to try some of the most promising ones, but do not depend upon these novelties for main garden crops.

Thin Plants Early

Do not delay thinning until the plants become badly crowded; the 3 or 4 leaf stage is about right. Young carrots and beets should be well established before thinning. Even spacing tends to hasten maturity of root crops. A rather thickly planted row may be harvested over a longer period.

Depending on soil fertility and variety, the following rules apply generally to spacing in the row: rootcrops—1 to 3 inches; leafy crops—4 to 8 inches; onions—2 to 3 inches; and beans—3 to 5 inches.

Grow Early Plants in Flats

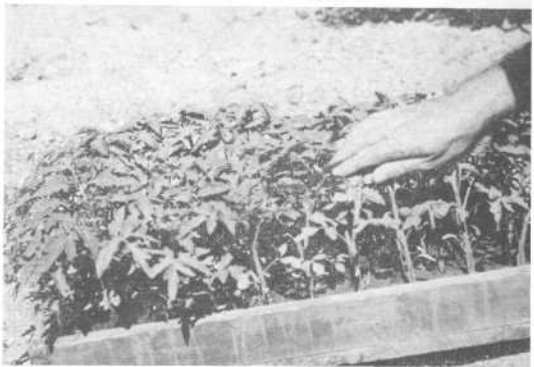
Seeds may be sown in flats or boxes and kept in a warm, protected place. Put 3 or 4 inches of soil in the container and firm it evenly with a board . A good potting soil can be made by using one-third good garden soil, one-third peat moss or pulverized manure, and one-third sand. The seed can be sown broadcast or in rows and covered one-half inch deep with fine soil.

A thin layer of washed sand on top will dry quickly after watering and often will prevent damping off. A burlap bag or sheets of paper may be placed over the flat or box to hold the moisture to the surface; however, the soil should be examined each day to determine if watering is necessary. As soon as the seedlings appear, the burlap bag or paper should be removed and the flat set in partial shade for a day. After this, give it as nearly full sunshine as possible.

When the plants have about four leaves they should be thinned to 2 to 3 inches apart each way; or the plants may be moved to other flats, to a coldframe, to individual pots, or to treated paper bands (3 inches in diameter and 4 inches tall). When the small plants are taken from the flats they should be **lifted** and not pulled, leaving as much soil on the roots as possible. Good spacing of the plants makes them stockier and promotes faster growth.

Tender vegetables may be seeded or transplanted 2 to 4 weeks before the danger of killing frost is past if the seed hill or transplant is protected by hotcaps or hot tents. These can be purchased from almost any seed house. After the danger of frost is over, the covers should not be removed suddenly as the plants are tender and may be

This is a flat of sturdy tomato plants that are ready to be set out in the garden.



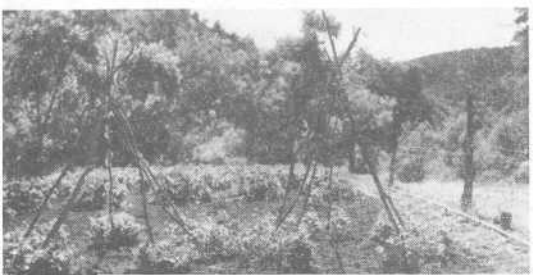
"Starter boxes" for tomato plants afford early protection.

injured by the intense sunlight. The cover should be removed gradually by tearing away part at a time and in a few days the plants will become hardened.

Starter Solutions Promote Early Growth

Any complete plant food that is highly soluble in water may be used as a starter or booster solution. These solutions furnish the plants with quickly available plant food and in this way stimulate quick pick-up after transplanting, rapid growth, and earlier maturity.

A method of growing pole beans.



These solutions are used mainly in growing young plants and setting plants in the field or garden, and are especially good on tomatoes.

Many different formulas may be used in making a starter solution. For the home gardener the following solutions are easy to make:

1. 1 ounce of 6-9-5 or 8-12-0 commercial fertilizer dissolved in a gallon of water. A fertilizer containing nitrogen is to be preferred.

2. ½ ounce of 16-20-0 ammoniated phosphate (Ammophos) dissolved in one gallon of water.

3. 1 ounce of ammonium sulphate dissolved in one gallon of water. This solution stimulates leaf growth but will not stimulate root growth as much as a more complete fertilizer.

IMPORTANT! All chemical fertilizers used for making starter solutions should be weighed; otherwise, plants may be damaged by solutions that are too strong. In plant beds, flats, or individual containers the solution should be poured on the soil around the plants, **not sprinkled on the leaves,** a day or two before the plants are set in the garden. Or solutions can be applied by pouring ½ to 1 pint of the solution about the roots of the plants as they are being set in the garden or field.

(See table on page 11 for weights of fertilizer in small quantities.)

Cultivating the Garden

Cultivation is primarily for the control of weeds that use plant nutrients and moisture needed by the garden. Weeds are easily killed when small, but to eradicate the larger ones, which often may cause damage to the crop, is more costly.

Cultivation loosens soils that tend to bake or crack easily. Sandy loam soils require little stirring to insure water penetration, but heavier soils should have the crust broken after each irrigation.

Shallow cultivation is best for most vegetable crops, as they feed mainly near the surface; deep cultivation will injure or destroy many of the feeding roots. See that the soil is not stirred over an inch or two deep away from the plant row.

Often fertilizer is mixed into the soil during cultural operations. For small gardens a hoe, rake, or wheel-hoe is satisfactory for stirring the soil. For larger farm gardens, horse-drawn implements equipped with knife-type blades or cultivator teeth are best.

Cultivate your garden to control weeds.

Gardening in Dry Farming Areas

Dry land gardening differs from irrigated gardening in that there is a need for protecting the area from wind by tree shelter belts and fences. Also more attention must be given to every detail which will

A good dry-land garden in Coconino county.

aid in moisture conservation.

The three principles in moisture conservation are:

1. Storing moisture in the soil before planting the crop.

2. Destruction of weeds with frequent shallow cultivation before they rob the vegetable plants of moisture.

3. Wider planting of the vegetable crops to give more feeding space per plant than under moist conditions.

Try These Helpful Suggestions

• Where there are no trees or hedges, other means such as snow fences or other barricades should be employed to trap snow on the gardens.

• The garden should be put into condition for seeding just as soon as the surface soil is dry enough to permit cultivation. A fine, firm seedbed is necessary for all small seeds.

• Vegetables should be planted as early in the spring as their frost hardiness will permit. Onions, lettuce, radishes, and parsnips should be sown **very** early, followed by carrots, beets, turnips, and chard. Corn, potatoes, beans, pumpkin and squash should be planted after the danger of frost is past. Cabbage and cauliflower plants should be started early in hotbeds or flats, to be transplanted in early spring.

• In dry land gardening it is absolutely necessary that vegetable seeds be planted in moist soil. If the topsoil is dry, push back the loose dirt before making the seed row. Plant in the moist soil, cover and pack the soil firmly. If water is available, moisten the seed row before sowing even though the soil is moist. Covering with burlap will hold the moisture to the surface and hasten germination; this material should be removed as the seedlings come through the ground.

• The best time to commence weed destruction is before the weeds appear above the soil surface. Weeds that never develop beyond the two leaf stage do not use much moisture. Frequent **shallow** cultivation is all that is needed to control weeds, maintain a soil mulch, and conserve moisture. Deep cultivation quickly dries out the soil.

• Control insect pests. Insect injury under drought conditions is more damaging than when there is a plentiful supply of moisture to help the plants recover.

Storing the Surplus

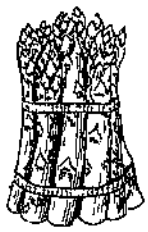
Storing of vegetables is one way to lengthen the season when crops cannot be used in the fresh state. Storage is necessary in areas where the winter temperatures are too low for the vegetable crops to grow or be left in the ground.

Root crops, such as beets, carrots, turnips, salsify, and possibly potatoes usually are stored in cool, damp cellars or in outdoor pits. Cabbage can be stored in straw-lined trenches or furrows. Parsnips should be left in the ground all winter. Pumpkins, squash, and sweet potatoes must not be bruised, and require a warm, dry place. Onions should have a cool, dry storage room or shed.

Cultural Suggestions for Individual Vegetable Crops

Asparagus

Asparagus is one of the best and most commonly grown vegetables.



It is grown in rows three feet apart. The soil should be deep, loose, and free from weeds. A heavy application of barnyard manure should be plowed into the soil; this should be supplemented with a phosphorus and nitrogen fertilizer. Asparagus is a heavy feeder and requires plenty of organic fertilizer and water.

The roots are set in trenches 10 to 12 inches deep with the roots spread laterally and covered with 2 or 3 inches of soil. As the shoots grow, the soil is worked around the plant until the furrow is filled.

No shoots should be cut during the first growing season. Cut only 3 or 4 weeks in the second season, but in the succeeding year, cut stalks clean for 10 weeks. In the southern part of the state some fall cutting may be done, but it will reduce the spring crop.

At the end of the harvest season the tops should be allowed to grow as much as possible. When they have died in the fall, they should be cut and disked under as green manure. Asparagus is a good

source of Vitamin C and fair in A and niacin.

Beans

Beans should not be planted until the soil has warmed up and the danger of frost is passed. Green beans are of two general classes known as pole beans and bush beans. Both of these come in the green-podded and wax-podded varieties.

In the lower elevations the bush kinds do best for early spring plantings, as they are ready for use before hot weather. In these areas the pole and bush kinds can be planted in midsummer and harvested during the cool fall months. Lima beans are not as easily grown in the lower elevations as snap beans; in the higher elevations both kinds can be grown all summer.

Beans are planted 2 to 3 inches apart in the row. For best quality the beans should be grown rapidly; this requires a good soil and frequent irrigations. Too much water and an excessively rich soil may cause too much vine growth and a light set of beans. Clean, shallow cultivation is best and should cease when the blossoms appear.

Stringless Greenpod, Tendergreen, and Brittle Wax are the most common bush varieties. Kentucky Wonder is the best pole bean. Green beans are a good source of calcium.

Beets

Beets are best grown during the cool season. Successive plantings should be made in order to have a continuous supply of tender roots. Beets are of best quality if harvested before reaching 2 inches in diameter. Do not sow too thick as the beet has a multiple seed. For even shaped beets the young plants should be thinned to 2 or 3 inches; the thinnings can be used for greens.

Curly top, a disease carried by leafhoppers, may limit production in some districts. Late plantings escape the attack of the leafhopper and a good crop can be grown. Thick planting to shade the ground is about the only control measure. Cultivation should be frequent and shallow.

Early Wonder and Crosby's Egyptian are the varieties found in most home gardens. Detroit Dark Red has fine quality, short tops, and is the best variety for canning. Beet leaves are an excellent source of Vitamin A.

Broccoli

Broccoli is fairly easy to grow and can be harvested over a long season. In the lower valleys the seed is sown in August and September and the seedlings transplanted in September and October. The culture is the same as for cabbage. The sprouts or heads are harvested before the blossom buds

open. Broccoli is a constant supply of greens.

Italian Green Sprouting is an excellent variety for Arizona. This vegetable is an excellent source of Vitamin C and A, also the minerals, phosphorus and calcium.

Cabbage

Cabbage is best when grown to maturity during the fall, winter and early spring months in the lower elevations, and during the summer months in the high elevations. The seed may be planted in the field, but for home gardens it is generally considered best to grow transplants in seedbeds. From 6 to 10 weeks will be required to grow good, thrifty transplants.

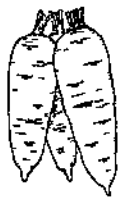
When the plants are 4 to 6 inches in height, they should be set in the garden row and watered immediately. The plants are set 15 to 24 inches apart in the row depending upon the size of the mature head.

Cultivation should be shallow and frequent when plants are small; later on, just enough to prevent the growth of weeds. Cabbage will stand considerable cold, but cannot be kept very long in late spring when the weather becomes warm. Golden Acre is the best early maturing variety; Copenhagen Market is medium early and Danish Ballhead is the best late maturing variety. Cabbage is an excellent source of Vitamin C.

Carrots

Carrots are one of the best cool-weather crops. They do well in a wide variety of soils but develop their best quality when grown rapidly in rich soil. The long type should be used on sandy or sandy loam soils; and on heavier soils, the half-long types.

The seedbed should be well prepared as the seeds germinate and push through the soil slowly. Carrots are at their best when about 1 inch in diameter at the top. Successive plantings at 4- or 5-week intervals will lengthen the harvest season. Thinning from 2 to 3 inches in the row will make smoother roots and hasten maturity. They are easily stored over winter.

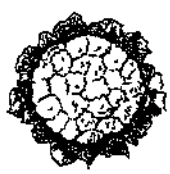


Imperator is the most popular commercial variety but Red Cored Chantenay and Nantes are favorites for home gardens. Carrots are an excellent source of Vitamin A, also calcium and phosphorus.

Cauliflower

Cauliflower will stand more frost, but is injured by hot weather. Planting time and culture are the same as for cabbage, except that it does not withstand adverse conditions as well as cabbage. The soil must be rich and irrigated thoroughly so that the plants will grow vigorously and produce large heads.

On the improved varieties it is not necessary that the leaves be tied over the center of the plant so that the head will be blanched when mature. Aphids are the worst insect pest of cauliflower and should be controlled early. Even a light in-

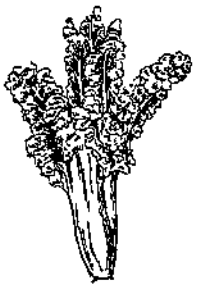


festation will lower the quality of the head. Early Snowball is a good variety adapted to commercial planting and home gardening.

Cauliflower is an excellent source of Vitamin C and the protein in cauliflower is of good biological value.

Chard

Chard is one of the best leafy green vegetables. It withstands frost and hot weather. Chard is a heavy feeder and should be planted on a rich soil. In some parts of Southern Arizona a seeding in early fall and spring is necessary as the plants tend to go to seed. The young plants are thinned to 8 to 10 inches.



As the outside leaves become a good size, they can be harvested and harvest can be continued throughout the season. When the plants become too large for table use, they make an excellent green for poultry.

Lucullus is an excellent, hardy variety of the green type. Rhubarb is a new red variety that is gaining in popularity with home gardeners.

Collards

Collards are a hardy green vegetable of the cabbage family. Cultivation is about the same as for cabbage. They do well on poor soil and will stand very cold weather. Georgia or Creole are the most common varieties. Collards is an excellent source of Vitamin C and A, and calcium.

Chinese Cabbage

Chinese Cabbage is an excellent salad or pot vegetable. It is at best quality and easiest to grow during the fall and winter months, requires a rich soil, and should have frequent, light irrigations.

Seeds germinate readily and young plants should be thinned to 8 to 10 inches apart in the row. Plants form large, loose to hard heads, depending on the coolness of the weather at maturity. Plants are high in vitamin content. Wong Bok is the variety commonly grown by home gardeners.

Celery

Celery requires a rich, moist soil, well supplied with organic matter. It is a crop that is more difficult to grow than the average garden vegetable, but gardeners who are willing to give it the proper care and attention can raise a fine crop.

The seeds germinate slowly and the young plants are slow to develop. In Southern Arizona celery should be grown during the cooler months of the year. The seeds should be sown in flats or seedbeds in April and May. The transplants will be ready to set in the garden or field between September 1 and 15. The crop will be ready to harvest in February and March.

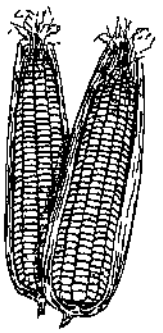
As celery is a shallow-rooted plant, it needs frequent irrigations to keep the surface soil moist all during the growing season. The green varieties, such as Giant Pascal, are the only ones used in this state. Plant in soil free of nematodes.

Corn

Corn should be planted on rich land and cultivated the same as the field crop. Plant it in blocks of two or more rows to insure good pollination. Plant as soon as the danger of frost is over. Successive plantings about two weeks apart will lengthen the harvesting season.

In the high elevations and for early corn, plant the early maturing varieties, such as Seneca 60. The main crop should be of the midseason or later varieties, such as Golden Cross Bantam or Ioana, as the ears are longer and of very good quality.

Mexican June is a field corn, but is a good, all-purpose variety for southern Arizona.



Golden Cross Bantam and Ioana are the best varieties of sweet corn, provided the soil is rich or is given a heavy application of fertilizer and plenty of irrigation water. Seneca Chief is another variety that is being grown by home gardeners.

Frequent, light irrigations and shallow cultivations are best because corn is a heavy surface feeder. Corn responds well to liberal applications of nitrogen fertilizers.

Sweet corn should be harvested in the milk stage and used immediately. If stored it should be kept in a cool place. The sugar content is lost rapidly after harvest, especially at high temperatures. Sweet corn is a fair source of niacin.

Corn earworms and flea beetles are the most destructive pests.

Cucumbers

Cucumbers are practical only in larger gardens where space is available, unless grown on a trellis or fence. The seed should not be sown until the soil warms up in the spring. It is a good plan to apply well-rotted manure under the row or hill.

In rows the plants are thinned 8 to 10 inches apart; the hills spaced about 4 feet each way with 3 or 4 plants per hill. Frequent, light irrigation is best. The plants require frequent, shallow cultivation until the vines fill the space between the rows or hills, then the large weeds can be pulled by hand.

If the fruit is all harvested before turning yellow, the vines will continue to bear for a longer period of time. Colorado and similar types are the best slicing varieties. Chicago Pickling and National Pickling are the best pickling varieties.

Eggplant

Eggplant is a hot-weather crop and should not be set out until all danger of frost is passed and the ground has become warm.

The plants should be started in paper pots and later set out in the garden. Set the plants 18 to 24 inches apart in the row. The fruit is best if harvested when 4 to 6 inches in diameter, but it is edible from the time it is one-third grown. All mature fruit should be removed from the plant so it will continue to bear.

In harvesting, leave the calyx and a small portion of the stem on the fruit. The plants should bear from midsummer to frost. Black Beauty is the most common variety grown in home gardens

Endive

Endive is a good salad crop. It is grown in the same manner as leaf lettuce. It should be thinned from 6 to 10 inches in the row. The hearts may be blanched by tying the tops when the plants are 10 to 12 inches high. In a week or ten days the entire plant can be harvested. Green Curled is one of the best varieties. Endive is an excellent source of Vitamin A.

Garlic

Garlic is propagated by seperating the mature bulbs into small bulblets or cloves. These are set out during the winter and early spring in rows 12 to 15 inches apart and 2 to 3 inches apart in the row.

The general culture is the same as for onions. The mature garlic bulbs are dug after the tops begin to die. When they are gathered, the tops can be braided together and the "rope" hung in a shed to cure. Large White Improved is the best garlic.

Kale

Kale is a hardy, cool-season crop of the cabbage family that will stand a lot of cold weather. It should be sown in rows and thinned 6 to 8 inches apart in the row.

The culture is the same as for cabbage. When small, the entire plant may be cut close to the ground or when larger the leaves may be pulled as needed.

This vegetable is high in vitamins A and C, and calcium. Dwarf Green Curled or Dwarf Blue Curled are the best varieties for home gardens.

Kohlrabi

Kohlrabi is another member of the cabbage family. The round edible portion is somewhat like a turnip. The seeds are sown in rows and thinned 4 to 6 inches in the row. Leaves are 8 to 10 inches long and bulbs are 2 to 3 inches in diameter. The bulbs are harvested when they are 1 to 2½ inches in diameter; otherwise, they become tough and fibrous very rapidly.

White and Purple Vienna are the only popular varieties. The White is mild flavored, early and excellent for home and market gardens. Also, it is the variety commonly used for forcing.

Leek

Leek belongs to the onion family, but has only a mild onion flavor. It does not form a bulb, but it should be cared for and used the same as green onions. The seed can be sown in place or transplanted. The plants should be thinned 3 to 5 inches apart in the row.

Soil should be banked up around the plants to blanch the lower part.

Leek is used principally in soups and stews. Large American Flag is the most popular variety.

Lettuce

Lettuce is the most popular salad crop and should be grown in every home garden during the time of the year when conditions are favorable. It is a cool-season crop and cannot be matured during hot weather.

For home gardens, a succession of plantings 3 to 4 weeks apart should be made to insure a continuous supply. The seed should be sown thickly in single or double rows, on slightly raised beds where it is to mature.

When the plants are about 2 inches high, they should be thinned to 12 inches apart in the row for head lettuce. Leaf lettuce is thinned 8 to 10 inches.

Lettuce requires a fairly rich soil and a well pulverized seedbed. The seed should be planted uniformly one-quarter to one-half inch in depth.

The seedbed must be kept moist continuously until the plants are up. Avoid flooding the seed row. Land to be planted to lettuce should receive a heavy application of barnyard manure.

Lettuce will respond readily to commercial fertilizers — treble superphosphate at the rate of 150 pounds per acre, 1 pound per 100 foot row, applied two inches below and two inches to the furrow side of the seed row. After thinning and until maturity, the plants can be side dressed with any readily available nitrogen fertilizer, ½ pound per 100 foot row, as needs are indicated by the plants.

Black Seeded Simpson and Grand Rapids are the best varieties of leaf lettuce and are adapted to all sections of the State. In Southern Arizona, Imperial 152, Great Lakes, Premier, and A 36 are the best varieties of head lettuce for fall planting. For spring harvest Imperial 615, Great Lakes, Premier and A 36 are the varieties most commonly planted. In the higher elevations Imperial 44 and the strains of Great Lakes are the most popular head lettuce varieties.

Cantaloup

Cantaloup and other muskmelon require a high temperature and plenty of sunlight for the development of high-quality fruit. For this reason the spring and summer months in Arizona are well suited for the growing of this crop. Cantaloups are an excellent source of Vitamin C and A and are ready for use when citrus fruit is scarce and high in price.

Melons require a rather fertile soil and may be seeded in rows or hills. Well-rotted barnyard manure should be applied in furrows under the rows or in hills before planting the seed. The seed should not be planted until danger of frost is over. For earlier planting use hot caps or some other form of protection.

Sow 8 to 10 seeds per hill, space the hills 4 to 6 feet apart. Or seed in rows 6 feet apart. Plant the seed on the south or west slope of ridge. After the fourth leaf develops, thin the plants 3 to 4 in each hill, or 8 to 12 inches apart in the row.

The vines should be trained away from the irrigation furrow. Frequent irrigations are necessary when the vines have nearly covered the ground, from fruit set until harvest. For home use ,harvest in "full slip," or when the fruit turns yellowish and a crack forms around the base of the stem where it is attached to the fruit.

Imperial 45 is the most popular commercial variety. Hale's Best, Perfecto, and Hearts of Gold are the varieties most commonly grown in home gardens.

Honeydew

The Honeydew is a medium to large, smooth, white melon with green flesh. When ripe, the white turns to a cream color and the blossom end softens. The melons may be stored in a cool place for several weeks if picked while still firm.

Casaba

The Casaba is a late melon that does not ripen until September and which will continue to improve in flavor if left on the vine until the fruit is soft. The hard, ripe fruit can be stored in a cool, dry place for 6 to 8 weeks.

Jap Melon

The Jap Melon is one used widely in the mid and high elevations. The rind is yellowish brown with dark green spots. The flesh is orange in color and of excellent quality. The melon can be stored only a few days.

Mustard

Mustard is a hardy, cool-weather vegetable grown in much the same manner as spinach. The plants should be spaced about 6 inches apart in the row. Successive planting will give a longer harvest season.

Mustard is a high vitamin vegetable. Southern Giant Curled and Tendergreen are the most popular varieties.

Onions

Onions, one of the more important garden crops, can be grown in a small space. They require a fertile, well-drained soil. Green or bunching onions can be grown either from seeds or sets over a season extending from early fall to spring in southern Arizona.

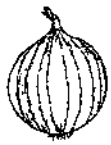
The season to plant seed for dry or bulb onions in this area extends from November to January. It should be closely checked with local conditions in each community. If planted too early the plants are likely to go to seed instead of forming bulbs. If sets are used, avoid the larger sizes as they are apt to seed prematurely.

In northern Arizona the seed may be sown in hotbeds in early spring or transplants set out as soon as severe freezing has passed. Plants grown for transplanting should be moved when about the size of a pencil and before the bulb starts to form. If the bulb has formed, the plant may go to seed. On transplants the tops should be trimmed to 6 inches and the roots to 1 inch in length.

Onions require plenty of moisture, especially from the time growth starts in the spring until

harvest. Frequent, shallow cultivations are necessary. When the bulbs approach maturity, soil may be crowned over them to prevent sunburn. Continuous growth is necessary to prevent the formation of doubles.

Dry onions should be left in the field until the bulbs are mature and the tops begin to die. When the outer skins of the onions are dry and the tops begin to die naturally, they may be pulled and placed in rows with the tops partially covering the bulbs to protect them from the direct sun. When dry remove the top by cutting it one-half inch from the bulb.



The onions may then be placed in slatted crates or open mesh sacks and put under shelter for further curing. Stack the crates or sacks so that air can circulate freely on all sides and underneath. The time for curing may vary from 3 to 4 weeks, depending upon weather conditions. After the bulbs are thoroughly cured, store in a cool, dry place where there is plenty of ventilation.

Bunching and young Crystal Wax are the most popular green onions. For dry bulbs, the White Sweet Spanish, White Grano and Crystal Wax are the best white onions; Yellow Sweet Spanish, Babosa, and Yellow Globe Danvers are the most common yellow onions.

Okra

Okra is one of the good, warm-season vegetables and should not be planted until the danger of frost is over. To get a good stand, soak the seed for 24 hours and plant only the swelled seed.

The plants should be spaced 18 to 24 inches in the row. The young tender pods should be picked every 2 or 3 days. Do not allow pods to mature or the plants will stop bearing.

In picking okra, avoid injuring the tip of the stem where new pods are formed. Okra can be used in soups or as a cooked vegetable. White velvet and Clemson Spineless are the common garden varieties.

Parsley

Parsley is a hardy, cool-season crop that is used as a garnish and for seasoning soups. The seeds are slow to germinate. When up and established, they are thinned to 3 to 4 inches in the row. The outer leaves may be used when large enough, and the plant will continue to bear for several months. Moss Curled is about the only variety grown in home gardens. Parsley is an excellent source of vitamins A and C.

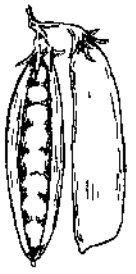
Parsnips

Parsnips require a long growing season. The seeds germinate slowly and the roots are slow in maturing. A rich, deep soil is necessary as the roots grow 12 to 15 inches. On heavy soils the stand is poor and the roots are crooked. Radish seed may be used to mark the row to permit early cultivation.

The roots may be left in the ground and harvested as needed. Freezing improves the quality. Grown mainly in the middle and high elevations, Hollow Crown is the only variety of importance.

Peas

Peas are a cool-season crop and are easiest grown during the fall, winter or early spring months in southern Arizona. The vines will stand considerable frost, but the blossoms and young pods are very tender. The seed should be planted in single rows 1 to 2 inches in depth and the rows should be 18 to 24 inches apart. The seed may be planted in moist soil with no further irrigation until the plants are up. It is well to treat the seed to prevent damping off. If the plants do not make good growth, side dress with a nitrogen fertilizer.



Peas should be harvested when the pods are well filled and before they become hard. For best flavor and quality use immediately. If the peas must be kept for a short time, leave them in the pod and store in as cool a place as possible. In southern Arizona Laxton's Progress, Giant Stride, and Morse's Market are the most popular varieties; in higher elevations Thomas Laxton, Telephone and Bliss Everbearing are found in most home gardens.

Potatoes

Potatoes should be included in every farm garden, but should not be grown in small, city gardens where space is limited. In southern Arizona potatoes can be grown both as a spring and a fall crop. In northern Arizona only a summer crop is possible. Plant only good seed potatoes, get certified seed if possible.

The small potatoes may be planted whole, but the larger ones should be cut into pieces weighing 1 to 2 ounces having one or more eyes. The seed should not be cut until just before planting. The planting should be done a few weeks before the last frost in the spring.

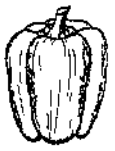
In irrigated sections, the seedbed should be filled with moisture before the potatoes are planted. The seed pieces should be dropped 10 to 15 inches apart in the furrow and covered with 4 or 5 inches of soil. As a rule no irrigation is necessary until the plants are a few inches high. At this time, furrows may be made and the soil gradually hilled up around the plants as they develop.

To irrigate, a small stream of water should be turned in the furrow between the rows and allowed to run until the bed on which the plants are standing is soaked through. The plants should be irrigated often enough to keep the soil around the roots moist at all times. Under dry land conditions the seed pieces are planted 5 to 6 inches in depth in moist soil.

The crop should be dug when the vines have partly died and the skin on the potatoes does not "feather." Early potatoes can be dug as soon as they are large enough to use. Potatoes must be fully matured for storage. Bliss Triumph and Pontiac are the popular early varieties; Katahdin and Pontiac are best for late potatoes.

Peppers

Peppers are divided into two main classes—the large sweet type used for salads and cooking and the small hot-flavored varieties which are used green, ripe, or dried for flavoring. They produce best during the hot summer months. The culture is about the same as for tomatoes, although they require a more fertile soil.



The seeds are sown in flats and in about 8 weeks are ready to transplant. The plants are set 15 to 18 inches apart in single rows. Soil should be worked to the plant as the season progresses so that by harvest time the roots are covered several inches deep.

The salad peppers are harvested as they mature; the hot varieties are allowed to stay on the plant until all are ready to be gathered and then are picked at one time. The latter kind may be strung on strings and hung up until dry and brittle, then they can be stored and used as needed.

Anaheim Chili and Red Chili are the common hot varieties. California Wonder, World Beater, and Pimento are the popular varieties of sweet peppers. Green peppers are an excellent source of Vitamins A and C.

Radishes

Radishes are one of the quickest crops to mature and one of the easiest to grow. They should be grown on rich soil and irrigated frequently for quickest maturity and best eating quality. They are a cool-season crop. Only a few feet of a row should be planted at one time, but successive plantings should be made every 2 or 3 weeks.

The seeds germinate quickly and are often used to indicate rows where slow germinating seeds, such as parsnips and carrots, have been sown. Scarlet Turnip, Scarlet Globe and Crimson Giant are the varieties commonly grown in home gardens and for commercial plantings.

Rhubarb

Rhubarb is a hardy perennial vegetable that does best in the cooler areas of Arizona. It is grown for the large leaf stock. Rhubarb requires a deep, rich soil, high in organic matter. A heavy application of barnyard manure should be worked into the soil before planting.

Generally the plants are propagated by cutting an old crown into several pieces, leaving at least one eye or bud on each piece. Where deep freezing occurs, the plants should be set out in the spring; in the milder areas fall planting is best. The planting should be made on one side of the garden. The plants should be spaced 3 to 4 feet apart. Each fall the plants should be heavily mulched with barnyard manure for protection and to furnish plant food.

The soil should be kept moist by light, frequent irrigations. In cultivating, care should be taken not to injure the crown. Forcing boxes may be used over each plant to get long stalks early in the spring.

To allow plants to develop a strong root system, no harvesting should be done the first season. Full harvest should not be expected

until the third season. Do not allow the plants to go to seed. Crimson Winter and Victoria are the popular varieties.

Salsify

Salsify or vegetable oyster is a slow growing, cool-season crop that is handled much like parsnips. The plants should be thinned to about 2 inches in the row. In most areas of the state the roots may be left in the soil and harvested as needed. It is grown mainly in the higher elevations. Mammoth Sandwich Island is the only variety grown in Arizona.

Spinach

Spinach is one of the best garden greens due to its high nutritive value and should be grown in every home garden. It is a cool-season crop. It goes to seed readily in warm weather.

Spinach is grown best on slightly raised beds. The seed can be sown in wide bands or broadcast on top of the beds. Successive plantings should be made to provide a long harvesting season. The entire plant should be harvested by cutting near the ground when it is large enough. If the large plants are harvested first, the young plants will develop. Younger plants will stand more frost than older ones.

Apply a nitrogen fertilizer to make the plants grow rapidly. Prickly Winter and Bloomsdale Long Standing are the best varieties for home gardens. Spinach is an excellent source of Vitamins A and C.

Squash & Pumpkins

Squash and pumpkins have many different kinds of fruit forms. Squash of some variety should be planted in every farm garden. Squash are divided into two groups —summer squash, or those harvested when young; and winter squash, or those harvested in the late summer when fully mature.

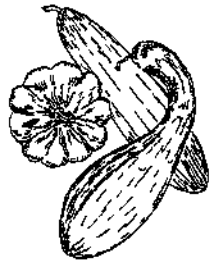
The first group has yellow, green and white fruits, and as the plants are of the bush type, they require relatively little space. The culture is the same as for cucumbers or cantaloups. For an early harvest the plants may be started under hot caps. They should be thinned to one in a hill. The fruit is harvested when about half grown or before the rind hardens.

Winter Squash are of the vine type and the culture is about the same as for watermelons. The fruit is left on the vine until it is fully mature, or until the rind hardens. The fruit will stand some frost, but should not be allowed to freeze. The mature squash can be stored several months in a cool, dry place. The yellow-fleshed ones are highest in vitamin content.

Pumpkins are grown in the same way as winter squash. The small pie pumpkin is excellent in quality. A small bush type pumpkin is now developed for the small garden. Some of the larger pumpkins, like Connecticut Field, are of high quality for making pies. The Cushaw is very hardy, but is not as good in quality. Other large pumpkins are used mainly for stock feed.

White Bush Scalloped, Early

Prolific Straightneck, and Black Zucchini are the most popular summer squashes. Banana, Hubbard, and Table Queen are the main varieties of late squashes. Small Sugar, Connecticut Field, and Crookneck Cushaw are the popular varieties of pumpkins.



Sweet Potatoes

Sweet Potatoes are limited to the warmer areas under 4000 feet elevation. The plants are sensitive to frost.

The sweet potato plant is propagated from sprouts grown by placing small sweet potatoes in a hotbed and covering with 3 or 4 inches of soil. When the sprouts are about 8 inches long, the sprouts are pulled from the bedded potato and set in the garden. Several crops of sprouts may be produced if the bed is kept moist. The sprouts are planted 12 to 15 inches apart on raised beds 3 feet apart.

The plants should have light, frequent irrigations on sandy soils. The vines should cover the entire surface of the soil by midseason.

Sweet potatoes should be dug when they are fully mature and the vines begin to turn yellow. If the vines are injured by frost, they should be cut off immediately and if the potatoes are not dug, a little soil should be mounded over the hill. In the warmer areas, the potatoes can be left in the ground for several months.

After digging, the potatoes should be placed in a warm, dry room or cellar and allowed to cure or "sweat." After curing they are stored in a cool, dry place for several months.

The best edible condition is reached after the potatoes have been in storage for several weeks. Porto Rico, Red Velvet, and Nancy Hall are the popular yam type potato; Yellow Jersey is the most popular of the dryer type potato.

Tomatoes

Tomatoes are so generally used and liked that they are a "must" vegetable in every home garden whether large or small. The tomato is a warm-season plant and requires a fairly long season for full development. It does best in a good loam soil, high in organic matter, which does not dry out rapidly.

For early tomatoes in the low elevations the plants should be started in flats or hotbeds 6 or 8 weeks before transplanting in the garden. When the seedlings have the first rough leaves, they should be transplanted in separate containers or thinned to stand 2 or 3 inches apart in the flat or hotbed.

The plants will be stockier and hardier if they are not forced too much; forcing results in spindly, leggy plants. Such plants should grow rapidly if the soil and temperature are warm. If the soil and temperature are cold, growth will be held back and if there is danger

of frost the plants should be covered.

If transplants are not used or the acreage is large, the seed may be sown in beds on the warm side of the row, then covered with hotcaps. Such plantings can be made about 3 weeks before the danger of frost is over.

For home gardens the very early variety, such as Victor, is planted 2 feet apart. Early to midseason varieties, such as Earliana, Morse's 498, and Pennhart, are planted 3 feet apart. Late, large growing varieties, such as Marglobe, Pearson, Stokesdale, Rutgers, and Stone, are spaced 4 feet apart.

The rows should be spaced from 4 to 5 feet apart. The plants should be set on one side of the furrow and the vines trained on the dry bed. Staking is common where space is limited and where fruit rots spoil many of the tomatoes.

Frequent irrigations are necessary for continuous growth of tomato plants and a good fruit set.

Earliana, Morse's 498, Pearson, Rutgers, Marglobe, Stone, and Victor are the more common varieties grown in different parts of the state. The tomato is a good source of Vitamins A and C.

Watermelons

Watermelons require more space than most vine crops and should not be grown in small gardens. They require a growing season of at least four months. They are usually planted in hills 6 to 8 feet apart each way. The plants respond well to nitrogen fertilization.

Watermelons can be grown under dry land conditions by allowing plenty of space between the hills and thinning to one strong plant in each hill. Under irrigation the vines should be watered frequently, especially during fruit set and maturity.

Watermelons do not cross with cantaloups, squash, and pumpkins, but will cross with stock melons and citrons. The eating quality of such melons will not be affected, but the seeds should not be saved for future planting. Klondyke, Striped Klondyke, Peacock, and Stone Mountain are the most popular varieties. The quantity of watermelon eaten makes it a good source of Vitamins A and C.

Turnips

Turnips are a hardy, cool-weather crop that can be grown most anywhere in the state. They should be grown rapidly and harvested before getting too large. For a continuous supply make successive plantings. The tops or "greens" are very rich in vitamins A and C, also calcium and iron. The seeds germinate readily and should be thinned from 2 to 4 inches apart in the row. Purple Top White Globe is the best home garden variety.

Other Information

Planting Data

Vegetable	Planting Distances: Depth to plant in inches	Horse cultivation, rows	Hand cultivation rows	Plants in row	Days to Maturity	Seeds or plants per 100 feet of row
Artichokes	½-1	4-6 ft.	3-4 ft.	3-6 ft.	1 yr. from pl.	20 plants
Asparagus	6-10	6-10 ft.	2-3 ft.	12-18 in.	2-3 yrs.	100 plants
Beans, bush	1-2	2½-3 ft.	1½-2 ft.	3-4 in.	60- 80 days	½ pound
Beans, pole	1-2	3-3½ ft.	1½-2 ft.	12-15 in.	75- 90 days	¼ pound
Beet	½-1	2-3 ft.	1½-2 ft.	2-3 in.	50- 70 days	2 ounces
Broccoli	½	3-3½ ft.	2½-3 ft.	18-24 in.	90-110 days	50 plants
Brussels Sprouts						
Seeds	½					
Plants	2-3	2½-3 ft.	2-2½ ft.	18-24 in.	100-120 days	50 plants
Cabbage	½	2½-3½ ft.	2-3 ft.	15-24 in.	90-120 days	65-75 plants
Carrot	½-1	2-3 ft.	1½-2 ft.	2-3 in.	60- 90 days	1 ounce
Cauliflower	½	2½-3½ ft.	1½-2 ft.	14-18 in.	100-120 days	50 plants
Celery	¼	3-6 ft.	1½-3 ft.	4-8 in.	120-150 days	200 plants
Chard	1-2	2½-3 ft.	1½-2 ft.	6-10 in.	60- 90 days	2 ounces
Corn	2-2½	3-4 ft.	2½-3 ft.	12-18 in.	75- 90 days	¼ pound
Cucumber	1-2	4-6 ft.	4-6 ft.	3-5 ft.	60- 90 days	½ ounce
Eggplant	½-1	3-3½ ft.	2½-3 ft.	24-30 in.	100-120 days	50 plants
Endive	½	2½-3 ft.	1½-2 ft.	4-6 in.	90-120 days	½ ounce
Garlic	1-2	2½-3 ft.	1½-2 ft.	2-3 in.	5-6 months	400-600 cloves (2 lbs.)
Horseradish	3-4	3-4 ft.	2-2½ ft.	15-20 in.	90-120 days	70 roots
Kale	½-1	2½-3 ft.	1½-2 ft.	10-12 in.	50- 70 days	¼ ounce
Kohlrabi	1-1½	2½-3 ft.	1½-2 ft.	4-8 in.	70- 80 days	¼ ounce
Leek	1	2½-3 ft.	1½-2 ft.	4-8 in.	90-120 days	½ ounce
Lettuce, head	½-¾	2-2½ ft.	1½-2 ft.	12-14 in.	90-120 days	½ ounce
Lettuce, leaf	½	2-2½ ft.	1½-2 ft.	6 in.	40- 60 days	½ ounce
Muskmelon	1-2	4-7 ft.	4-7 ft.	3-6 ft.	90-120 days	½ ounce
Okra	1-2	3-4 ft.	2½-3 ft.	18-24 in.	75-100 days	1 ounce
Onion, seeds	1-2					
Onion, plants	2-3	2-3 ft.	1½-2 ft.	3-4 in.	90 days-8 mos.	1 ounce
Parsley	½-1	2-3 ft.	1½-2 ft.	6-8 in.	80-120 days	¼ ounce
Parsnip	¼	2½-3 ft.	1½-2 ft.	3-5 in.	100-120 days	¼ ounce
Peas	1-2	2½-3 ft.	1½-2 ft.	4-6 in.	60-100 days	¾ ounce
Pepper	½	2½-3 ft.	1½-2 ft.	15-18 in.	90-120 days	65 plants
Potato, sweet	4-6	3-5 ft.	3-5 ft.	12-18 in.	100-160 days	80-100 plants
Potato, white	4-6	2½-3 ft.	1½-2 ft.	12-18 in.	100-120 days	10 pounds
Pumpkins	1-2	6-10 ft.	6-8 ft.	6-10 ft.	90-120 days	1 ounce
Radish	½-1	2½-3 ft.	1½-2 ft.	1-2 in.	40- 60 days	1 ounce
Rhubarb	3-4	3-5 ft.	3-5 ft.	2-4 ft.	2-3 yrs.	25-50 plants
Rutabaga	1-1½	3-3½ ft.	2½-3 ft.	3-4 in.	100-120 days	¼ ounce
Salsify	½-1	2½-3 ft.	1½-3 ft.	2 in.	60- 90 days	2 ounces
Spinach	1-1½	2½-3 ft.	1½-2 ft.	2-4 in.	45- 75 days	1 ounce
Squash, winter	1-2	3-10 ft.	3-10 ft.	3-5 ft.	90-120 days	1 ounce
Squash, summer	1-2	4-5 ft.	4-5 ft.	2 ft.	60- 90 days	1 ounce
Tomato	½-1	3-6 ft.	3-4 ft.	3-6 ft.	90-120 days	35-40 plants
Turnip	1-1½	2½-3 ft.	1½-2 ft.	2-3 in.	90-120 days	½ ounce
Watermelon	1-2	6-10 ft.	6-10 ft.	4-6 ft.	80-120 days	1 ounce

Vegetable Varieties for Arizona

(Best Varieties for Freezing are shown by *)

VEGETABLE	SOUTHERN ARIZONA	NORTHERN ARIZONA
ARTICHOKE	Green Globe	Green Globe
*ASPARAGUS	*Mary Washington	*Mary Washington
*BEANS, bush	*Stringless Greenpod, Brittle Wax, *Tendergreen	*Stringless Greenpod, Brittle Wax, *Tendergreen
BEANS, pole	Kentucky Wonder, Kentucky Wonder Wax	Kentucky Wonder, Kentucky Wonder Wax
*BEANS, lima	*Fordhook Bush, Pima-Hopi	Henderson Bush, *Fordhook Bush, Pima-Hopi
BEANS, edible soy	Bansei, Giant Green	Bansei, Giant Green
BEETS	Early Wonder, Crosbys Egyptian, Detroit Dark Red	Early Wonder, Crosbys Egyptian, Detroit Dark Red
*BROCCOLI	*Green Sprouting (Calabrese)	*Green Sprouting (Calabrese)
*BRUSSELS SPROUTS	*Long Island Improved	*Long Island Improved
CABBAGE, early	Golden Acre, Copenhagen Market, E. Jersey Wakefield	Golden Acre, Copenhagen Market, E. Jersey Wakefield
CABBAGE, midseason	Marion Market	Marion Market
CABBAGE, late	Danish Ballhead, Red Hollander	Danish Ballhead, Red Hollander
CANTALOUP	Hale's Best 36, Perfecto Improved, Imperial No. 45	Hale's Best 36, Perfecto Improved, Hearts o' Gold
*CARROTS	*Imperator, *Nantes, Red Cored Chantenay	*Imperator, *Nantes, Red Cored Chantenay
*CAULIFLOWER	Early Snowball, *Super Snowball	Early Snowball, *Super Snowball
CELERY	Giant Pascal	Giant Pascal
CHARD	Lucullus, Rhubarb	Lucullus, Rhubarb
CHINESE CABBAGE	Wong Bok	Wong Bok
COLLARD	Cabbage or Heading, Georgia or Creole	Cabbage or Heading, Georgia or Creole
*CORN	*Golden Cross Bantam, Ioana, Mexican June, *Seneca Chief	*Golden Cross Bantam, Ioana, Stowell's Evergreen, Seneca 60
CUCUMBERS, slicing	Colorado, A. & C., Straight 8	Colorado, A. & C., Straight 8
CUCUMBERS, pickling	Chicago Pickling, National Pickling	Chicago Pickling, National Pickling
EGGPLANT	Black Beauty, New York Improved	Black Beauty, New York Improved
ENDIVE	Green Curled Ruffec	Green Curled Ruffec
GARLIC	Large White Improved	Large White Improved
KALE	Dwarf Blue Curled, Dwarf Green Curled	Dwarf Blue Curled, Dwarf Green Curled
KOHLRABI	Purple Vienna, White Vienna	Purple Vienna, White Vienna
LEEK	Large American Flag	Large American Flag

Vegetable Varieties for Arizona — (Cont.)

VEGETABLE	SOUTHERN ARIZONA	NORTHERN ARIZONA
LETTUCE, leaf	Black Seeded Simpson, Romaine	Black Seeded Simpson, Romaine
LETTUCE, head, spring	Imperial 615, Great Lakes	Imperial 44, Great Lakes, Premier
LETTUCE, head, fall	Imperial 152, Great Lakes, Premier, A36	Only one season
MUSKMELON	Casaba, Honey Dew, Crenshaw	Casaba, Honey Dew, Crenshaw
MUSTARD	Southern Giant Curled	Southern Giant Curled
OKRA	White Velvet, Dwarf Green, Clemson Spineless	White Velvet, Dwarf Green, Clemson Spineless
ONION, green	Bunching, Crystal Wax	Bunching, Crystal Wax
ONION, dry	Yellow or White Sweet Spanish, Yellow & White Grano	Yellow or White Sweet Spanish, Yellow or White Grano
PARSLEY	Moss Curled	Moss Curled
PARSNIP	Hollow Crown, Short Thick	Hollow Crown, Short Thick
*PEAS, spring	*Improved Laxton, Giant Stride	*Improved Laxton, Bliss Everbearing, Telephone
*PEAS, fall	*Improved Laxton, Little Marvel, Dwarf Alderman	Only one season
PEPPERS, hot	Anaheim Chili, Floral Gem	Anaheim Chili, Floral Gem
PEPPERS, sweet	California Wonder, World Beater, Pimento	California Wonder, World Beater, Pimento
POTATO, early	Bliss Triumph, Pontiac	Bliss Triumph, White Rose
POTATO, late	Katahdin, Pontiac	Katahdin, Pontiac
POTATO, sweet	Porto Rico, Red Velvet	Porto Rico, Red Velvet, Yellow Jersey
PUMPKIN	Small Sugar, Crookneck Cushaw	Small Sugar, Connecticut Field, Crookneck Cushaw
RADISH	Scarlet Globe, Scarlet Turnip, Icicle	Scarlet Globe, Scarlet Turnip, Icicle
RHUBARB	Not generally adapted	Crimson Winter, Victoria
SALSIFY	Not generally adapted	Mammoth Sandwich Island
SPINACH	Prickly Winter, Long Standing Bloomsdale	Prickly Winter, Long Standing Bloomsdale
SQUASH, summer	White Bush, Zuchini, Early Prolific Straightneck	White Bush, Zuchini, Early Prolific Straightneck
SQUASH, winter	Banana, Table Queen	Banana, Hubbard, Table Queen
TOMATO	Morse's 498, Pearson, Marglobe, Victor, Pennheart	Morse's 498, Pearson, Marglobe, Rutgers, Stone, Victor
TURNIP	Purple Top White Globe, Golden Ball, White Egg	Purple Top White Globe, Golden Ball, White Egg
RUTABAGA	American Purple Top	American Purple Top
WATERMELON	Klondyke, Striped Klondyke, Blue Ribbon, Peacock	Klondyke, Striped Klondyke, Stone Mountain, Peacock

Vegetable Planting Dates

Vegetable	Zone 1 10-1000 ft. El.	Zone 2 1000-2000 ft. El.	Zone 3 2000-3000 ft. El.
Artichoke	Feb. - April	Feb. - April	Feb. 15 - April
Asparagus	Oct. 1 - Feb. 1	Oct. 1 - Mar. 1	Oct. 1 - Mar. 1
Beans, bush	Feb. 1 - Mar. 1	Feb. 15 - Mar. 15	Mar. 1 - Apr. 1
Beans, bush	Aug. 1 - Sept. 1	July 25 - Aug. 15	July 15 - Aug. 15
Beans, pole	Aug. 1 - Sept. 1	July 15 - Aug. 15	July 15 - Aug. 10
Beans, lima	Feb. 1 - Mar. 1	Feb. 15 - Mar. 15	Mar. 1 - Apr. 1
Beans, edible soy	Mar. 1 - May 1	Mar. 15 - June 1	Apr. 1 - June 1
Beet	Sept. 15 - Mar. 1	Sept. 1 - Mar. 15	Aug. 25 - Apr. 1
Broccoli	Sept. 1 - Jan. 1	Sept. 1 - Dec. 1	July 25 - Oct. 1
Brussels Sprouts	Sept. 1 - Jan. 1	Sept. 1 - Dec. 1	Aug. 15 - Oct. 1
Cabbage, seed	Sept. 1 - Nov. 20	Aug. 15 - Dec. 1	Aug. 1 - Dec. 1
Cabbage, plants	Oct. 1 - Dec. 1	Sept. 15 - Jan. 1	Sept. 1 - Feb. 1
Cantaloup	Dec. 1 - Apr. 10	Feb. 15 - Apr. 1	Mar. 15 - June 1
Carrot	July 15 - Aug. 15 Sept. 1 - Jan. 1	Sept. 1 - Mar. 1	Aug. 25 - Mar. 15
Cauliflower	Same as cabbage	Same as cabbage	Same as cabbage
Celery, seed	July 15	Mar. 1 - June 1	May 1 - July 1
Celery, plants	October 15	Aug. 15 - Oct. 15	Aug. 1 - Oct. 15
Chard	Sept. 1 - Jan. 1	Sept. 1 - Mar. 1	Aug. 15 - Apr. 1
Chinese cabbage	Sept. 15 - Dec. 1	Sept. 1 - Jan. 1	Aug. 15 - Jan. 15
Collards	Sept. 15 - Dec. 1	Sept. 1 - Jan. 1	Sept. 1 - Jan. 15
Corn, sweet	Feb. 15 - Mar. 1	Feb. 15 - Mar. 15	Mar. 15 - Apr. 1
Corn, sweet	July 20 - Aug. 30	July 20 - Aug. 20	July 15 - Aug. 15
Corn, Mexican June		June 20 - July 20	July 1 - July 5
Cucumber	Dec. 1 - Apr. 1	Mar. 1 - Apr. 1	Mar. 20 - May 15
Cucumber		Aug. 15 - Sept. 15	Aug. 1 - Sept. 1
Eggplant	Jan. 15 - Apr. 1	Feb. 1 - Apr. 1	Apr. 1 - May 15
Endive	Sept. 1 - Dec. 1	Sept. 1 - Jan. 1	Sept. 1 - Feb. 1
Garlic	Sept. 1 - Dec. 1	Sept. 1 - Dec. 1	Sept. 1 - Jan. 1
Horseradish	Not adapted	Not adapted	Nov. 1 - Feb. 1
Kale	Sept. 1 - Dec. 1	Sept. 1 - Dec. 1	Aug. 15 - Feb. 15
Kohlrabi	Sept. 1 - Dec. 1	Sept. 1 - Dec. 1	Sept. 1 - Feb. 1
Leek	Sept. 15 - Dec. 15	Sept. 1 - Jan. 1	Sept. 1 - Jan. 15
Lettuce, head	Sept. 20 - Nov. 20	Sept. 1 - Jan. 1	Sept. 1 - Feb. 15
Lettuce, leaf	Sept. 20 - Jan. 1	Sept. 1 - Mar. 1	Aug. 20 - Apr. 1
Muskmelon	Dec. 1 - Apr. 10	Feb. 15 - Apr. 1 July 1 - Aug. 1	Apr. 1 - July 15
Mustard	Sept. 15 - Dec. 15	Sept. 1 - Jan. 1	Sept. 1 - Feb. 1
Okra	Mar. 1 - Apr. 15	Mar. 1 - June 1	Apr. 1 - June 15
Onions, green	Sept. 15 - Jan. 15	Sept. 1 - Feb. 1	Aug. 15 - Feb. 1
Onions, bulb, seed	Sept. 15 - Jan. 15		
Onions, sets, dry		Nov. 1 - Feb. 1	Nov. 1 - Feb. 15
Onions, seed, dry		Oct. 15 - Jan. 1	
Parsley	Oct. 1 - Jan. 15	Sept. 1 - Jan. 1	Sept. 1 - Jan. 15
Parsnip	Not adapted	Sept. 1 - Jan. 1	Sept. 1 - Jan. 15
Peas, fall	Sept. 10 - Sept. 20	Aug. 15 - Sept. 15	Aug. 15 - Sept. 15
Peas, spring	Jan. 20 - Feb. 15	Oct. 15 - Dec. 15	Feb. 1 - Mar. 15
Peanuts	Mar. 10 - Apr. 20	Mar. 20 - May 1	Apr. 15 - May 15
Pepper, seed	Nov. - Jan.	Feb. 1 - Mar. 1	Feb. 15 - Mar. 15
Pepper, plants	Jan. 1 - Mar. 15	Mar. 1 - Apr. 1	Apr. 1 - June 1
Potato, Irish	Sept. 1 - Feb. 15	Feb. 1 - Mar. 15	Feb. 15 - May 1
Potato, sweet	Mar. 1 - June 20	Mar. 1 - June 1 Feb. 15 - Mar. 15	May 1 - June 15
Pumpkin	July 15 - Aug. 15	July 1 - Aug. 1	Apr. 1 - July 15
Radish	Sept. 1 - Apr. 1	Sept. 1 - Apr. 15	Aug. 15 - May 1
Rhubarb	Not adapted	Not adapted	Oct. 1 - Mar. 1
Rutabaga	Sept. 15 - Jan. 15	Sept. 1 - Feb. 1	Aug. 20 - Mar. 1
Salsify	Not adapted	Not adapted	Oct. 1 - Dec. 1
Spinach	Sept. 15 - Feb. 1	Sept. 1 - Feb. 1	Aug. 20 - Mar. 1
Squash, summer	Dec. 15 - Apr. 10	Feb. 1 - May 1	Mar. 15 - July 15
Squash, winter	July 15 - Aug. 15	July 1 - 31	July 1 - 31
Tomato, seed	Nov. - Jan.	Jan. 1 - Mar. 1	Jan. 10 - Feb. 15
Tomato, plants	Jan. - Mar. 15	Feb. 15 - Mar. 15	Mar. 15 - Apr. 15
Turnip	Sept. 15 - Feb. 1	Sept. 1 - Feb. 1	Aug. 15 - Mar. 1
Watermelon	Dec. 15 - Apr. 1	Feb. 15 - Apr. 1	Mar. 15 - June 1

Vegetable Planting Dates — (Cont.)

Vegetable	Zone 4 3000-4500 ft. El.	Zone 5 4500-6000 ft. El.	Zone 6 Above 6000 ft. El.
Artichoke	Mar. - April	Not adapted	Not adapted
Asparagus	Feb. 15 - Apr. 1	April 1 - 30	Apr. 15 - May 15
Beans,bush	Apr. 25 - July 15	May 15 - July 1	May 25 - June 15
Beans, pole	Apr. 25 - July 15	May 15 - July 1	May 25 - June 15
Beans, lima	Apr. 25 - July 15	May 15 - July 1	May 25 - June 15
Beans, edible soy	May 15 - July 1	May 25 - July 1	Not adapted
Broccoli	Apr. 15 - July 15	Apr. 1 - July 15	Not adapted
Brussels Sprouts	July 1 - Aug. 1	June 1 - July 1	May 15 - June 15
Cabbage, seed	Feb. 15 - Apr. 15	March 15	April 1
Cabbage, plants	Mar. 15 - May 1		
	July 10 - Aug. 20	May 1 - June 1	May 15 - June 15
Cantaloup	May 1 - June 20	May 15 - June 15	May 25 - June 10
Carrot	July 15 - Sept. 15		
	Mar. 1 - May 10	May 1 - July 15	May 15 - July 1
Cauliflower	Same as cabbage	Same as cabbage	Same as cabbage
Celery, seed	Feb. 1 - Mar. 1	Feb. 15 - Mar. 15	Not adapted
Celery, plants	May 15 - June 20	June 1 - July 15	Not adapted
Chard	July 15 - Sept. 15	July 1 - Aug. 1	
	Feb. 15 - Apr. 30	Mar. 1 - Apr. 10	April 1 - June 10
Chinese cabbage	July 1 - Sept. 15	June 1 - July 15	May 15 - June 15
Collards	June 15 - Aug. 1	June 1 - July 15	May 15 - July 1
Corn, sweet	May 10 - July 15	May 25 - July 1	June 1 - 10
Corn, Mexican June	May 10 - July 15	May 25 - June 15	Not adapted
Cucumber	May 1 - June 15	May 15 - June 15	June 1 - 25
Eggplants (plants)	May 1 - June 15	May 15 - June 15	June 1 - 20
Endive	Feb. 1 - Apr. 1	Apr. 15 - June 15	May 15 - June 15
	Aug. 1 - 25		
Garlic	Feb. 15 - Apr. 10	April (cloves)	Not adapted
Horseradish	Feb. - Apr.	Feb. 15 - Mar. 15	April - May
Kale	Feb. 1 - Mar. 20	Feb. 15 - Apr. 10	April - May
	Aug. 1 - Sept. 15		
Kohlrabi	Feb. 15 - Apr. 1	Apr. 15 - May 15	May 15 - June 1
Leek	Feb. 15 - Apr. 10	April	Not adapted
Lettuce, head	July 15 - Aug. 15	July 1 - Aug. 1	June
Lettuce, leaf	Mar. 1 - Apr. 15	Mar. 15 - Apr. 15	May 1 - July 1
	July 15 - Sept. 1	Aug. 1 - Sept. 15	
Muskmelon	May 10 - June 15	May 15 - June 15	Not adapted
Okra	May 10 - July 1	May 15 - June 15	June 1 - 10
Onions, green	Feb. 15 - May 1	Apr. 15 - May 1	May
Onions, bulb, seed	Mar. 1 - Apr. 20		
Onions, sets, dry	Feb. 15 - Apr. 15	Apr. 1 - 15	Apr. 15 - June 1
Parsley	May 1 - June 15	Apr. 1 - 15	May
Parsnip	Mar. 1 - May 1	Apr. 1 - May 20	April - May
Peas, fall	July 20 - Aug. 25		
Peas, spring	Feb. 1 - Mar. 15	Feb. 15 - Apr. 15	May 1 - June 1
Pepper, seed	Feb. 15 - Mar. 30	Mar. 1 - Apr. 1	Apr. 1 - 15
Pepper, plants	May 10 - June 1	May 10 - May 25	May 15 - June 1
Potato, Irish	Mar. 20 - Apr. 20	May 10 - June 1	May 15 - June 1
	July 25 - Aug. 15		
Potato, sweet	May 10 - 25	May 15 - 20	Not adapted
Pumpkin	May 15 - July 1	May 20 - June 15	May 25 - June 10
Radish	Mar. 1 - May 15	Apr. 1 - June 15	May 15 - June 15
	July 15 - Sept. 15		
Rhubarb	Mar. 1 - Apr. 20	Mar. 1 - Apr. 1	April
Rutabaga	Mar. 1 - Apr. 1	Apr. 1 - May 15	May 1 - June 1
Salsify	Mar. 15 - June 1	Apr. 1 - May 15	May 1 - June 1
	Aug. 1 - Sept. 1		
Spinach	Feb. 15 - Apr. 15	Apr. 1 - May 15	May 1 - June 1
	July 15 - Aug. 15		
Squash, summer	May 10 - July 15	May 1 - July 1	May 15 - June 15
Squash, winter	May 10 - July 1	May 15 - July 1	May 15 - June 10
Tomato, seed	Mar. 1 - Apr. 1	Mar. 1 - Apr. 1	Apr. 1 - 10
Tomato, plants	May 10 - June 15	May 1 - June 1	May 25 - June 10
Turnip	Mar. 1 - Apr. 15	Apr. 1 - May 15	May 15 - June 1
	Aug. 15 - Oct. 1		
Watermelon	May 10 - June 25	May 1 - June 1	Not adapted

Dates of Killing Frost in Spring and Autumn and Length of Growing Season; General Arizona Data

Station	County	Elevation	Length of record (years)	Average date of last killing frost in spring	Average date of first killing frost in autumn	Latest date of killing frost in spring	Earliest date of killing frost in autumn	Average length of growing season (days)
Ajo	Pima	1,770	29	Jan. 21	Dec. 21	Mar. 13	Nov. 11	335
Alpine	Apache	8,500	27	June 25	Sept. 11	July 27	July 25	78
Ashfork	Yavapai	5,160	30	May 10	Oct. 14	June 6	Sept. 24	158
Benson	Cochise	3,523	43	Mar. 30	Nov. 7	May 11	Oct. 8	222
Bisbee	Cochise	5,350	47	Mar. 26	Nov. 22	May 4	Oct. 19	241
Buckeye	Maricopa	980	49	Mar. 10	Nov. 20	Apr. 20	Oct. 22	255
Camel Back	Maricopa	1,350	22	Feb. 16	Dec. 6	Mar. 31	Oct. 31	293
Canelo	Santa Cruz	5,225	27	May 2	Oct. 17	June 4	Sept. 24	169
Casa Grande	Pinal	1,400	29	Mar. 8	Nov. 18	Apr. 10	Oct. 8	254
Chandler	Maricopa	1,213	21*	Mar. 19	Nov. 19	Apr. 23	Oct. 30	245
Clemenceau	Yavapai	3,460	16*	Mar. 24	Nov. 10	Apr. 21	Oct. 3	231
Clifton	Greenlee	3,465	35	Feb. 26	Nov. 26	Apr. 20	Nov. 4	272
Cochise Stronghold	Cochise	4,219	40	Apr. 16	Nov. 3	May 14	Oct. 12	206
Douglas	Cochise	3,930	40	Apr. 8	Nov. 6	May 11	Oct. 19	213
Fairbank	Cochise	3,862	16*	Apr. 21	Oct. 25	May 23	Oct. 2	187
Flagstaff	Coconino	6,907	49	May 30	Sept. 29	June 28	Sept. 9	122
Florence	Pinal	1,500	34	Mar. 8	Nov. 20	Apr. 16	Oct. 17	240
Fort Apache	Navajo	5,200	32*	May 10	Oct. 15	June 5	Sept. 26	158
Fort Mohave	Mohave	604	30*	Feb. 12	Dec. 7	Apr. 9	Oct. 8	298
Fort Valley	Coconino	7,300	35	June 17	Sept. 18	July 9	July 27	94
Fredonia	Coconino		9	May 27	Oct. 13	June 6	Oct. 5	139
Gila Bend	Maricopa	737	41	Feb. 20	Dec. 3	Apr. 18	Nov. 2	286
Globe	Gila	3,525	42	Mar. 29	Nov. 13	May 12	Oct. 5	229
Grand Canyon	Coconino	6,866	37	May 20	Oct. 7	June 25	Sept. 16	141
Heber	Navajo	6,484	12*	June 5	Oct. 1	July 6	Sept. 10	118
Holbrook	Navajo	5,069	54	May 1	Oct. 18	June 11	Sept. 22	170
Jerome	Yavapai	4,742	45	Mar. 31	Nov. 21	May 15	Oct. 18	234
Kingman	Mohave	3,326	38	Apr. 11	Nov. 9	June 4	Sept. 24	212
Lewis Springs	Cochise	4,029	22	Apr. 15	Oct. 18	May 21	Sept. 28	186
Marinette	Maricopa	1,150	25	Mar. 3	Nov. 28	Apr. 20	Nov. 4	270
Mesa Experiment Farm	Maricopa	1,245	45	Mar. 8	Nov. 23	Apr. 23	Oct. 21	260
Mohawk	Yuma	538	40	Jan. 19	Dec. 19	Feb. 26	Nov. 13	334

Natural Bridge	Gila	4,990	45	Apr.	14	Nov.	10	May	30	Oct.	3	211
Nogales	Santa Cruz	3,839	37	Mar.	30	Nov.	15	May	2	Oct.	14	229
Paradise	Cochise	5,436	30*	Apr.	25	Oct.	20	May	15	Sept.	27	178
Parker	Yuma	350	47	Mar.	3	Nov.	15	Apr.	12	Oct.	6	257
Patagonia	Santa Cruz	4,044	16*	Apr.	14	Oct.	26	June	1	Sept.	20	195
Payson	Gila	5,500	31	May	23	Oct.	11	June	17	Sept.	22	142
Phoenix Weather Bureau	Maricopa	1,108	48	Feb.	7	Dec.	6	Mar.	31	Nov.	5	302
Pinedale	Navajo	6,500	27	June	2	Oct.	9	June	29	Sept.	21	129
Portal	Cochise	6,000	17	Apr.	27	Oct.	26	May	26	Sept.	24	182
Prescott	Yavapai	5,320	45	May	17	Oct.	10	June	16	Sept.	15	145
Red Rock	Pinal	1,864	18*	Feb.	25	Nov.	27	Apr.	25	Oct.	30	275
Roosevelt	Gila	2,175	35	Feb.	9	Dec.	10	Apr.	22	Oct.	15	303
Sacaton	Pinal	1,280	35	Mar.	10	Nov.	15	Apr.	22	Oct.	22	250
Safford	Graham	2,900	42	Apr.	10	Nov.	2	May	7	Oct.	6	206
St. Johns	Apache	5,650	37	May	6	Oct.	11	June	11	Sept.	13	158
Salome	Yuma	1,875	35	Mar.	10	Nov.	22	Apr.	17	Oct.	19	257
San Rafael	Santa Cruz	4,780	16*	Apr.	13	Nov.	2	May	9	Oct.	1	203
San Simon	Cochise	3,609	29	Apr.	5	Nov.	8	May	6	Oct.	12	218
Seligman	Yavapai	5,219	37	May	19	Oct.	7	June	18	Sept.	8	140
Snowflake	Yavapai	5,644	40	May	24	Oct.	3	July	3	Sept.	6	132
Springerville	Apache	6,862	32	May	27	Oct.	2	June	27	Sept.	12	129
Superior	Pinal	3,000	10*	Apr.	5	Nov.	11	May	12	Oct.	11	220
Tempe No. 2	Maricopa	1,159	17	Feb.	15	Nov.	25	Mar.	31	Oct.	31	282
Tombstone	Cochise	4,550	43	Mar.	27	Nov.	21	May	12	Oct.	21	239
Tucson, Univ. of Arizona	Pima	2,423	49	Mar.	20	Nov.	16	Apr.	24	Oct.	16	242
Wellton	Yuma	225	19	Mar.	7	Nov.	18	Apr.	8	Oct.	28	256
Wickenburg	Maricopa	2,072	34	Apr.	1	Nov.	17	Apr.	28	Oct.	22	231
Willcox	Cochise	4,190	42	Apr.	27	Oct.	28	May	31	Oct.	2	184
Winslow	Navajo	4,848	37	Apr.	30	Oct.	20	June	2	Sept.	27	172
Young	Gila	4,400	22*	May	7	Oct.	15	June	17	Sept.	18	161
Yuma Citrus Station	Yuma	181	23	Jan.	23	Dec.	19	Feb.	27	Nov.	13	330
Yuma Date Orchard	Yuma	125	24	Mar.	2	Nov.	22	Apr.	17	Nov.	4	265
Yuma Weather Bureau	Yuma	141	64	Jan.	6	Dec.	25	Feb.	18	Nov.	23	353

Sources of above data: U. S. Weather Bureau, Climatological Data, Arizona Section and Arizona Experiment Station Bulletin No. 197.
*Records through 1940.

Disease-Resistant Varieties

Vegetable	Disease	Resistant Variety	Remarks
Asparagus	Rust	Mary Washington	Disease not bad in Arizona
Beans	Nematode (Root Knot)	Alabama No. 1, State	Pole type, good quality when young
Beans	Rust	Kentucky Wonder Resistant	Good quality
Beans	Mosaic	Top Crop, Rival	Good quality, heavy yield
Beans	Mosaic Powdery Mildew	Logan, Ranger, Florida Belle, Contender, Wade, Rialto	Plant these varieties where mosaic and P. mildew are a problem.
Cabbage	Yellows Fusarium Wilt	Jersey Queen, Resistant Golden Acre, Marion Market, Globe, Wisconsin Ballhead, Red Hollander	Yellows not widely spread in this state
Cucumber	Mosaic	Niagara, Ohio MR17	Slicing varieties
Cantaloup	Powdery Mildew Mildew	Imperial No. 45 No. 6	Resistant to Form No. 1 Resistant to Form No. 2
Potato	Mild Mosaic	Katahdin, Chippewa, Pontiac	Varieties produce well
Pumpkin	Curly Top	Cheese group, Cushaw group, Tennessee Sweet Potato group, Big Tom	Cushaw only ones used widely in this state
Spinach	Mosaic	Virginia Savoy	Goes to seed quickly in the spring—use as fall crop
Sweet Corn	Wilt	Golden Cross Bantam, Marcross, Spancross	Excellent, general purpose varieties
Squash	Curly Top	Marblehead, Vegetable Marrow Varieties	Disease very common. Marblehead has been grown successfully
Tomato	Fusarium Wilt	Marglobe, Pritchard, Pan American, Southland, Rutgers	These are medium early to late varieties. All have been tried under Arizona conditions.
Watermelon	Fusarium Wilt	Klondyke R7, Blue Ribbon	Both varieties good for commercial or home garden plantings.