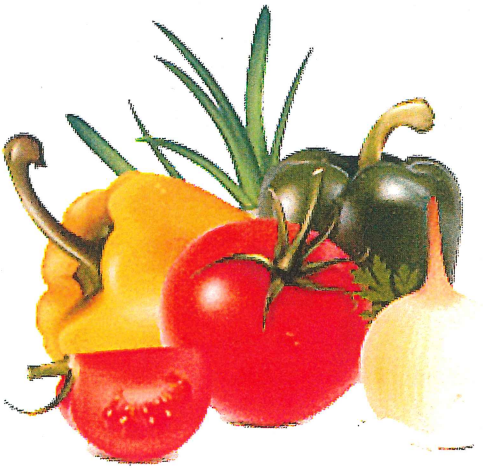
Heber Valley Gardening



"Let every Latter-day Saint that has land, produce some valuable, essential foodstuff thereon and then preserve it; or if he cannot produce an essential foodstuff, let him produce some other kind and exchange it for an essential foodstuff; let them who have no land of their own, and who have knowledge of farming and gardening, try to rent some, either by themselves or with others, and produce foodstuff thereon, and preserve it. Let those who have land produce enough extra to help their less fortunate brethren." Conference report April 1942

In late winter of 2010, Bishop Lacey asked if I would prepare tips about gardening to put in the printed program. This booklet is a compilation of those tips. Heber Valley presents difficulties in gardening because of its short growing season. Late spring frosts in June and killing frost as early as the last of August complicate things.

There are as many ways to garden as there are people. When I moved into my home in the late 70's, I purchased a tiller that came with a book entitled The Joy of Gardening written by Dick Raymond. He had written a number of books on gardening and hosted a garden show on public television. It became my gardening Bible. I have used it freely in this booklet when I referred to root cellars, storage of vegetables, pests, and wide row planting.

The individual who influenced me to become a gardener was my Uncle Woodrow Duke. He was the first person in the valley to grow marigolds, melons, and tomatoes. He would come and inspect his nieces' and nephews' gardens. "Your carrots are too thick, you need to thin them." "Your corn leaves are yellow; you're giving them too much water." "Get those lazy kids out here and get this garden weeded!" "How come you're not using a string and stakes so that your rows will be straight?" We thought he was pretty mean and demanding. Later we would learn that during World War II, his most disturbing experience was witnessing the starving women and children in Belgium. Woodrow was determined that his nieces and nephews would not suffer the same fate.

The best way to learn about gardening is to garden. If you fail, try again and do it differently. Ask questions about your problems with successful gardeners in your neighborhood and family. The extension service has information and brochures on gardening, lawns, trees, fruit

trees, landscaping, etc. Many are free and others can be purchased at a minimal expense. The internet, library, and nurseries are other sources of gardening information.

President Spencer W. Kimball said: "We encourage you to grow all the food that you feasibly can on your own property. Berry bushes, grapevines, fruit trees - plant them if your climate is right for their growth. Grow vegetables and eat them from your own yard. Even those residing in apartments or condominiums can generally grow a little food in pots and planters. Study the best methods of providing your own foods. If there are children in your home, involve them in the process with assigned responsibilities."(April Conference, 1976)

February

An inexpensive plant cover is an empty gallon milk jug. Cut off the bottom - there is a distinctive line so it is easy to get a clean cut. They can be put over small transplants such as cabbage, cauliflower, squash, and melons. Make sure the jug is anchored into the soil so it does not blow off. After a good soaking you can push the jug down firmly. For better protection, put dirt part way up the container. Soil is a wonderful insulator. Hardy plants like cabbage do well under this type of protection. If it gets really cold, squash, eggplant, and melon may freeze. Some people put the lid on the jug at night and then remove it during the day. One year I had more than 50 jugs in my garden. A neighbor came by and asked what was under all the milk jugs. My answer: "Milkweed, of course!" These milk jugs are easy to stack in a corner and throughout the winter months you can get a good supply.

What do you do with your empty #10 cans? Recycle them and use them in the garden. They are useful with melons to help them mature faster. Bury the open end into the soil deep enough that the can won't topple over. Gently lift each melon onto the top of the can. Melons need lots of heat and as the first sunlight of the day hits the can, the melons warm and growth is speeded up. It's like making the day longer! If you spray paint the cans black, they will absorb even more heat. By painting them, they won't rust and you can use them over and over.

March

Do the deer eat your tulips down to the ground every spring? This recipe for deer repellent is from Springhill Nursery.

2 cups water
3 - 4 cloves of garlic
2 eggs - includes the shells
2 teaspoons chili pepper
½ bar deodorant soap (dial, etc)

Shave the soap on a shredder then put everything into a blender and pulverize. Put a lid on a glass bottle and punch holes into the lid. Use a LARGE nail to make the holes. Pour the mixture into the bottle; it will be very thick. Shake the mixture on the ground around your tulips and on the plant itself. Do this when the tulip leaves are 2-3 inches out of the ground. If you do not use all of the mixture, it will thicken. To use again, stir the mixture well, add a little water, and heat in the microwave.

The best deer repellent for tulips is to plant daffodils instead! The deer won't touch them. Even if you plant a tulip in a cluster of daffodils, the tulip will be eaten but not the daffodils

April

Growing season refers to the number of days between the average killing frost in the spring (June 10th) and the first killing frost in the fall (September 10th). Although our growing season is 90 days, the actual growing days are 70 plus. Growing days are determined by the average MINIMUM temperature during the growing season. Other things such as latitude, altitude, length of day, rainfall amounts, wind, etc are factored in when determining growing days. Salt Lake City has 140 growing days.

When you purchase seed, notice the number of days to maturity. Most seed sold in the valley will produce in our short growing season. Get a jump start by planting and starting seeds at home or purchasing sets or young plants. Seeds and transplants need warm soil. If you buy plants from a nursery in April or May, warm the soil where your starts will be planted. This can be done by putting walls of water or plastic on the soil for about a week. Most plants will not grow if the soil is cold nor will seeds germinate.

What is a hybrid seed? It is two different plants that have been engineered and bred together to improve the plant. These seeds generally cost a little more, but yield stronger plants that mature quicker. They are more flavorful than non-hybrid plants. Their keeping quality is

better and they are more resistance to disease. Hybrids of tomatoes, peppers, melons, and corn are especially good. Remember that the seed is sterile and will produce vegetation only, there will be no fruit.

If you are going to start seeds indoors, you need to use a sterile soil-less mixture. This mixture prevents rot, is at the proper PH, and may have fertilizer already mixed in. I use the soil from my own garden and add a little peat moss, with good results. The plants require 12-16 hours of light with 8 hours of "sleep." Usually florescent lighting is used. If using natural light from a window, the plants get leggy and topple over if left to grow for a long period of time. Turning the containers frequently helps with this problem. Cool white florescent bulbs work fine for vegetable seedlings, whereas grow lights are best for houseplants. Start with the lights 2 to 3 inches above the plants and as they grow, raise the lights.

Kent Ellertson - cold frame

If you have a south back yard, consider making a cold frame against the back of your house. You can make the outside walls about 18 - 24 inches high by fastening clear fiber glass either on a wood frame or make a metal frame out of 1 inch tubing welded together. The top can be sliding glass doors obtained from builders who replace glass doors. Put hinges to the house so that the glass can be raised in the day and lowered at night when frost is expected Cold frames are great places for growing tomatoes. Visit with Brother Ellertson to see an example.

An inexpensive cold frame can be made by putting straw bales in a square or triangle, and place an old window on the top. A cold frame can extend your growing season by about two months, one in the spring and another in the fall.

Peas

Peas should be planted around the middle of April. This allows them to produce before the hot weather of July and August. Peas will still produce if planted later, just not as prolific. Peas come in many varieties, some being heat tolerant such as Lincoln. Plant every couple of weeks and enjoy fresh peas until late September. Peas were the favorite vegetable of Thomas Jefferson, who held an annual competition among his friends to grow the first peas of the season. The winner had

the privilege of inviting others in the group for dinner to celebrate their arrival. The invitations that were issued read "Come tonight, the peas are ready!"

Soil

Heber Valley has been blessed with good fertile soil, although it is heavy in clay. Clay soils are usually fertile, but prevent good drainage. They can not be worked as early in the spring as sandy soils. A soil high in clay shuts off the flow of air and water to the roots of the plant. Add organic matter to the soil such as hay, leaves, straw, green manures, pine needles, and grass clippings. Small openings are made by the organic matter, which allow air and water to penetrate the root system. It also enables the plant's roots to grow deeper.

Have you planted tulips or daffodils that come up and then did nothing? The soil was too heavy and they did not get enough air and nutrients. The same thing happens to seeds that are planted in soil that is heavy with clay. You need to add organic material into the soil for it to support vegetation.

Green Manure

What on earth is green manure? It isn't the barnyard kind that will be addressed later in this booklet with fertilizers. Any green plant spaded or tilled back into the soil is called a green manure. The usual ones are alfalfa, buckwheat, annual ryegrass, beans, and peas. Green manures add organic matter to the soil. They greatly increase the nutrients in the soil and improve the quality of either sandy or clay soil. Some vegetables take many nutrients from the soil and should be rotated to a different area in the garden the following year, corn for example. After picking all the beans and peas you want, till them under for best results.

Do you have a garden plot that is not used? Buckwheat can be grown until it blossoms, and then tilled under. Close to fall plant a covering of annual ryegrass. Sow at least three weeks prior to the first frost in the fall so that it has a few weeks to grow. The ryegrass will die and make a mat that will protect your garden throughout the winter. Make sure you plant annual ryegrass and not just rye. Rye is a grass and will begin to grow again in the spring. Do not let your garden plot go unprotected

through the winter! Cover your garden with grass clippings, leaves, straw, green manures, etc. If using ashes, only use wood and not coal ashes. Covering is important because earthworms are busiest in the fall and winter. You want to keep the worms close to the surface where they will work to add nutrients to the soil. If the soil is cold, the worms will go deeper looking for warmer soil. If you have a large garden and do not want to plant it all, fill the unplanted areas with manure crops to improve the soil.

May

A new transplant to Heber Valley who tried to raise popcorn commented, "My family grew it in Salt Lake so it should grow here." Not so! Popcorn requires 120 days to maturity! Remember, our growing days are in the mid 70's, not mid 100's. Gardeners are always pushing the limit to see what they can grow. If you don't freeze something in the spring, then you didn't plant soon enough. If you don't freeze something in the fall, then you didn't plant late enough.

This spring has been wet and cold, making it difficult to get our gardens tilled. Do not till when the soil is too wet. You end up with dirt clods, making hard work of tending the soil. How then do you tell when the soil is reading to work?

1. Pick up a clump of soil and knock it apart with a light tap. If the clump falls apart, the soil is dry enough.
2. Step on the soil. If your footprint is shiny, the soil is too wet.

There are three common mistakes most first time gardeners make. First is failure to adequately prepare the plot. If possible, till or plow in the fall. The frost breaks the soil down, making it easier to work come spring. Protect the soil as was explained earlier, especially over the winter. Second is not weeding soon enough. Many beginners wait for the weeds to grow so they can tell the difference between a plant and a weed. They've lost the battle already! Radishes can be planted with your small vegetables to mark where the seeds are sown. Radishes come up in 5 days, so begin weeding wherever they are not growing. This is days before either the seeds you planted or weeds will show at the surface. Block planting or wide rows will also keep the weeds down because the plants crowd them out. The third and most common mistake is overwatering.

How do you know how deep to plant your seeds? Look on the seed packet for instructions on when to plant, where, amount of sunlight needed per day, spacing between the plants and rows, and the depth. Fine seeds should be scattered on the soil or planted no deeper than ¼ to ½ inch and pressed down lightly. Larger seeds such as beans and peas are sown at a depth three to four times the diameter of the seed.

How closely should seeds be planted? An old saying is, "One for the birds, one to rot, and one to grow." If seeds are sown too shallow, the birds will eat them. If too deep, they will either rot or expend their seed strength attempting to grow further than Mother Nature intended.

Some seeds such as lettuce and carrots are difficult to plant because they are so small. Add the seeds to a container to which you have added soil or sand. Mix the seeds and soil thoroughly and broadcast the soil in the area prepared. Using a spice or herb container that has small openings is another way to plant small seeds. After planting most seeds need to be pressed down firmly. Do this by tamping over them with the back of your hoe or with your feet. Interesting . . . not only people, but seeds need pressure in order to grow!

Block planting and wide rows

Block planting is when all available space is put to work growing food. There are no walkways. It can be as large as you want, from three to twenty-five feet. The advantage of this method is it is easy to plant, just broadcast the seeds; of course after you've tilled and prepared the seed bed. Broadcasting is when you put the seeds in your hand and scatter them in the seed bed. Block planting is an inexpensive way to get a large harvest, especially if you buy seeds in bulk. There is very little weeding in this method because the plants shade the soil preventing the weed seeds from growing. Less water is also required in this method because the plants loose less water from wind and sun because they are so close. After harvesting the vegetables, till the entire crop under. Without a steady diet of fresh organic matter, soil becomes lifeless. Large blocks of planting are well suited to beans and peas, two vegetables helpful in putting nitrogen back into the soil.

Wide row planting is just a smaller version of block planting. Make the rows any width you prefer, but fifteen to thirty six inches is workable. Have the rows narrow enough so you can reach the vegetables from both sides of the walkway. One advantage of wide rows

is that you greatly increase the harvest. A member of the old ninth ward in Valley Hills, invited me to see her attempt at gardening. Between the fence and grass, she had planted one row with two watering furrows on each side. I asked her what she was growing. "Carrots" was her reply. "Looks to me like you're growing dirt," I responded. If you have a limited area for your garden, don't grow dirt! Utilize wide row planting to optimize your yield.

Another advantage to wide row planting is that very little weeding or watering is required. The plants are so thick they choke out the weeds and shade the soil. With the plants close together, the stronger ones mature quicker. Pick and use them first and the others will fill in. Where you have pulled a carrot or beet will make a hole which will aerate the soil and trap water. Your days of harvesting will be greatly increased in this method. Who wants an entire batch of carrots to be ready to eat all at the same time anyway?

Raised beds

Many of the problems associated with clay soil are eliminated with raised beds. After a rain or watering, the seedbed does not pack down because the water drains off. The soil is looser so root crops such as beets, turnips, and carrots grow rounder, longer, and/or straighter. The soil on the top of a raised bed can be as much as 10 degrees warmer than the soil at ground level. Because more area is exposed to sunlight, the bed is usually dry, thus making it warmer. Raised beds are a wonderful place to put tomatoes, melons, and cucumbers.

Raised beds are easy to irrigate and to weed. They help control traffic through the garden. Kids and even dogs seem to stay in the walkways and off the plants. Compressing the soil where plants are growing should be avoided during tilling, planting, watering, and harvesting.

Transplanting

You have been caring for your seeds for weeks indoors or have picked up some plants at the garden store and they need transplanted to the garden. Do not make the mistake of hurrying your plants into the soil before hardening them off. You can put your plants outside during the day and in the house or garage at night. The usual time to harden off the plants is about two weeks, although I never do it for that length of

time. The best time to transplant is on a cool, cloudy, windless afternoon or evening.

Always give the plants a good soaking in their containers before beginning. Wetting the roots keeps them from drying out during the transplanting process. Handle the plants as little as possible. Do not leave them on the ground to dry out while you go and do something else. If you put fertilizer with each plant, be sure the fertilizer is covered with a couple of inches of soil. Do not let the fertilizer come in direct contact with the roots.

You need to handle the plants gently making sure that the soil does not fall off the roots. Pinch off the lower leaves of the cabbage family and tomatoes. Trimming the bottom foliage relieves the shocked root system from supporting too much top growth. Remember to leave the top cluster of leaves on tomatoes. With less to support on the top, the root system recovers faster. Do not snip the center growth of lettuce or the cabbage family plants, if you do, the plants will not produce. Do not pinch leaves off eggplant, peppers, or any vine crop transplants unless the leaves are dead or broken.

Bury the plant by its roots in a prepared furrow or hole an inch deeper than it was in the container. Water generously. Do not be afraid that you are overwatering at this stage. You should almost drown your plants for a couple of days. Put milk jugs over your transplants to protect them from the sun and the wind, or in a wall of water. A different way to plant tomatoes transplants is to remove all the leaves except the very top. Bury the stem in a longitudinal furrow two to three inches deep. This allows the plant to develop roots along the entire length of the buried stem.

<u>Weeds</u>

Weeds want to do the same thing as your vegetables, grow and produce seeds. If you don't keep them under control, your plants cannot compete with them. Most weed seeds are very small and germinate near the surface of the soil. Their roots are very short in comparison to the roots of emerging vegetable seeds. To identify where your seeds are planted, scatter some fast growing radish seed. Once the radishes are up you can begin weeding the walkway even though there are no visible weeds.

It is wise to till your soil a couple of times in preparation for planting. This brings old weed seeds closer to the surface where they will begin growing. If you till again in a few days, the weeds are killed. If at all possible, you should work or till the soil just prior to planting, one more strike against the weeds! After your plants are up, you can take a rake and pull it across the wide rows. The weeds do not like to be disturbed and their root system has not developed yet. The vegetables can take the raking as their roots are much stronger and longer. Do not dislodge the soil deeper than ½ to ¼ inch. You can do this a couple of times to your crops. Some plants may be dislodged, but this method is useful in thinning plants. If you've ever thinned beets or carrots, you'll like this method better.

There are a variety of ways to plant corn. It can be planted in a row with the seed about 10 inches apart and four inches deep. You can make raised beds in your garden with a tiller and plant your corn on the raised surface. I do it the old fashioned way, three seeds to a hill and about two feet apart. Remember to plant at least four rows of corn for proper pollination. The pollen has to drop from the tassel at the top of the plant onto the silk of the ear of corn. If you have planted your corn too close, pollen will fall onto the leaves and little will make it to the silk. Sometimes the corn is planted so thick that it doesn't grow to its proper height causing the tassel to be small or not even formed. Many times because of the wind, the walkway gets more pollen than the ears. Often the first and last row of a plot of corn does not do well. If you planted two rows, you may not get the yield you expected. Corn needs other corn around to make sure it pollinates properly, but overcrowding thwarts growth and tassels never develop. The larger the plot of corn, the better the pollination will be. Remember to separate your regular corn from the super-sweet varieties, as they will cross pollinate and who knows what you will end up with.

Barbara Moulton plants her corn this way: Make the irrigation watering furrows 3 ½ feet apart. Plant the corn seed on each side of the furrows. (Barbara still likes the hill method of planting) This gets the water to the seeds or plants faster and gives a dry place to walk during irrigation. It also leaves an area to discard grass clippings down the center of the walkway. The space needed for this method of planting doesn't differ too much from the space needed to ensure that the corn rows are far enough apart.

What does it mean to plant seeds in a hill? This method is used for plants that have poor germination, so more seeds are planted to ensure that something comes up. After the plants come up only two or three of the strongest plants are left to grow. Melons, cucumbers, pumpkins, and squash are planted in hills. The soil does not need to be in a pile. Most of these crops need the hills to be six to ten feet apart. Hilling your plants is a different subject.

You've rushed the season and planted some of your garden. A frost is forecasted for the higher valleys of Utah. What do you do? If your plant is in a wall of water, make sure that the base is wide and shaped like a tepee with the opening tightly closed. If there is a hard freeze the water will freeze in the wall of water and the ice will act as an insulator and the plant will survive. If I plant really early, I put a milk jug over a plant and also a wall of water. There are frost protectors that can be purchased from garden shops, but many are available around the home. You can use milk jugs, grow caps, paper flower pots, tarps, newspapers, frost blankets, cardboard boxes, old tires, or a light blanket.

The Rocky Mountains are blessed with four seasons - Winter, Spring, Summer, and Fall - but not necessarily in that order! "Spring has sprung, the grass has riz' - I wonder what the white stuff is?"

Killing frosts are common in the Heber Valley the first couple of weeks in June. Many gardeners delay planting corn, beans, and potatoes until the 10th of June. Other gardeners plant Memorial Day weekend because it takes a couple of weeks for the plants to emerge. Gardeners are gamblers, and they take the risk of a June frost. If you want to grow tender crops such as melons, tomatoes, peppers, and squash, it is best to start the plants indoors or buy from a nursery. Their growing days are long and to get them to maturity, you have to start them in your garden before June. Make sure they are adequately protected. If a frost is forecast and you have already planted beans, potatoes, and corn you can protect them with a light covering of soil. With a shovel or hoe, carefully place dirt on the plant until it is completely covered. The soil acts as insulation to the plant. In a couple of days the plants will poke through the soil. Hardy vegetables such as peas, cabbage, onions, carrots, broccoli, etc. are ok with June frosts and can be planted before then. That is if the weather will cooperate!

One particular spring I covered my just emerging potatoes with soil to prevent them from freezing. About ten days later I had to cover them again, this time using a shovel. My neighbor, Chuck Hughes came over the next day and surveyed the situation. He asked "Lady, don't you know how cheap potatoes are in the store?" If you are a gardener, you will understand it is a challenge to get things to grow - and most times you win. If you're not a gardener, then store potatoes are just fine.

Even though your corn is lying frozen on the ground and completely brown, it will come back. Each corn plant has a growth point at the base of the plant. This growth point is under ground until the plant is 6 to 8 inches tall. The corn will come back if the growth point is insulated by the soil.

Scott Wright uses old tires that have been turned inside out to protect his melons and tender veggies. It takes a lot of strength to turn them, and I never was able to. Guess I'm still a Duke and not a "Turner!" You might want to wander down to his garden plot in early spring and see how Scott protects his tender crops. Make sure you securely anchor the coverings you use. Generally when it frosts there is not much wind, but Mother Nature loves making exceptions to the rule!

You've found some seed tucked away in your storage and know it has been there for many years. Is it viable and able to produce? Spread out 2 or 3 paper towels and wet them with a mister. Place 10 seeds on the paper and roll-up the paper and place inside a plastic bag. Put in a warm place such as the top of the refrigerator. After 4 or 5 days, unroll the paper and count how many of the seeds have sprouted. If you have 8, then the seed viability is 80%. If only a couple sprout, it would be best to discard the seed and get new. You can use old seed and plant the seed closer together than recommended. One spring I planted corn seed that was 15 years old. I put 6 seeds to the hill instead of the usual 3 and had a successful crop.

I use the above method for my cucumbers, squash, and melons when I have failed to start plants indoors or to purchase sets. After the seeds have started to sprout on the paper, I plant them in the garden. Do not plant them if you have not warmed the soil where they will be planted. When planting in early April or May, the soil has not had enough sunny days to get warm. Some people cover the area where they will be planting with black plastic, others put up walls of water. This method

can give you the extra time you need to grow those tender, long growing plants.

Another method used to increase the germination of seeds is to soak the seeds prior to planting, commonly done for peas, beans, and corn. Some seeds have very hard seed cases and germination is enhanced by putting the seed in the freezer overnight and letting the covering crack. This would be ideal for the hard seed of the four-o'clock flower that takes weeks to come up.

If small seeds are having difficulty germinating, there are a number of things that may have caused it. The seed really was too old. You planted them too deep, so they rotted or expended their energy. You planted them too shallow and made feed for the birds. You planted them in beautiful black soil with a high percentage of clay. Plants have a difficult time in clay as was explained earlier. Use the radish trick to increase the chances of the seed coming up. Another method is to take a rake that has fine short teeth or tines. Carefully rake over the area where the plants will be emerging, about ¼ of an inch in depth. This will break up the top of the soil and better germination will result.

Many of you have purchased garden seeds sealed in a #10 can. If you keep them in a cool dry place, they will keep their viability for many years. Better yet, place them in your freezer for indefinite storage. The seeds in the can are non-hybrid. This means you can let the plants go to seed, gather the seeds, and when planted they will produce fruit. Some plants take two years of growth to produce seed such as carrots that are bi-annual.

June

Hopefully with the few good days we've had, your garden is finally planted. The 10th of June has come and gone. This date is the last average killing frost for Heber Valley. It is possible to have frost after this date, but we cross our fingers and pray it won't happen. Many people think it is too late to plant once it is mid June. Early corn such as Sunglow (63 growing days) can be planted as late as the 1st of July. Any plant that has about 60 growing days will mature even if planted in early July.

Greens can fit in anywhere. You can plant them along flower beds, driveways, and most containers. They are perfect for spot planting. Some greens do not grow well in the heat so plant them in early spring and late summer. These include celery, endive, kale, lettuce, mustard, and spinach. If you have a shady spot, plant them there. Chard and collards don't seem to mind the summer heat. Successive plantings of salad crops ensure an extended harvest. Plant a small area about a foot square, then every few weeks, replant. I mix lettuce, radish, chard, carrots, beets, spinach, etc together and plant a salad patch.

Begin weeding as soon as you can identify the plants. I sow radish seeds with all my small seeds. Radishes germinate in only five days and become a marker to where the other vegetables are planted. They assist in breaking the surface of the soil, thus providing better germination for the seeds. Bugs also love radishes and will leave the other plants alone and dine on them. As you pull the radishes, they loosen the soil around the plants, giving them more oxygen and water. By now you are convinced that one of the best things you can do for your garden is to plant radishes, rather you eat any of them or not!

Another way to keep down weeds is mulches. Common mulches are grass clippings, straw, hay, and other organic matter. You should wait until the plants are above ground prior to adding mulch; otherwise, the covering will prevent the germination of the seeds. Mulches not only keep down the weed population, but retain moisture in the soil and add much needed nutrients.

"Grow all the food you possibly can. Also remember to buy a year's supply of garden seeds, so that in case of shortage, you will have them the following spring." Vaughn J. Featherstone - Ensign May 1976.

Beginning gardeners question what tools they will need. A shovel, rake, and hoe are a must. All can be purchased in different handle lengths, shape of blade, and weight of the implement. The handle of a hoe should be nose height to avoid bending which causes backache. A good weeding tool is the action hoe or cultivator. The blade looks like an upside down handle or stirrup. Weeding can be done quickly and is ideal for a large garden. Tools should be purchased with quality in mind. Look for tools that have replaceable parts, rust proof, easy to clean, and a means of hanging.

Other tools that are helpful, but not necessary are:
Garden spade - flat, squared off blade used for edging, digging holes, and working amendments into the soil. Garden fork - has four straight tines instead of a blade. It is used for aerating the soil, breaking up clumps of soil, and digging root crops and potatoes. Trowel - a hand tool used for hard to weed vegetables such as strawberries. A wagon, cart, or wheelbarrow is useful for hauling tools, weeds, soil, and harvested vegetables. Remember the sun screen, long sleeved shirt, long pants, broad brimmed hat, good sturdy shoes, and gloves.

Your garden is finally growing and looks lovely, but now the grasshoppers think it's a good place to take up residence. If your garden is next to weeds or close to an open field, you need to keep the vegetation down by mowing, cutting, spraying, etc. Without their habitat, the grasshoppers will move on.

Does the cabbage moth lay its eggs in your cabbage? Nothing is worse than cutting your cabbage open and finding layer after layer of eggs or worms. Finding little green worms in your cooked broccoli is a close second. I talked with a gardener once who sprayed his cole crops with an insecticide. Why? Isn't that the reason that we grow our own food, so we know it is organic and free of all the things in our food supply? I just let the bugs have their fair share. We are not bothered with many of the insects and bugs that can destroy gardens, maybe because of our cold climate.

There are natural ways to control bugs and insects. I cover my cabbage with nylon net and anchor it down so moths can't get in. No access to the cabbage, no eggs, and so no worms. There is a natural bacteria sold under the names of BT, Dipel, or Thuricide that can be used on cabbage moth, cut worms, and slugs. It comes in a powder or spray, and can be used on your crops right to the day of harvest. With most sprays and dusts, there is a waiting period and some are quite lengthy.

I have never been bothered with snails or slugs but there is a remedy for them. Get a pan that has a lip on it, such as a cake pan. Make a depression in the soil for the pan, smooth the soil to the edge, and put beer in, but not to the top. Good luck at the grocery store if you are the Bishop or Relief Society president! The snails are unable to climb out and are drowned. If you get worms on your tomatoes, they are large enough to see and easy to pick off.

July

If the mornings feel a little chilly, you're right! On the morning of July 5th there was ice on the wheel lines (the sprinklers that farmers use to irrigate their fields). It came very close to freezing the tender crops such as tomatoes, cucumbers, peppers, squash, and melons. The cold temperatures slow down the growth of plants because the average minimum temperature has dropped. Because of the cool nights, the time needed for a plant to mature increases.

Asparagus, rhubarb, and perennial onion are the first foods eaten from a garden. Since they come up year after year, they should be planted in an area where they are out of the way when you plow or work your garden. For those who managed to get their gardens planted between all the spring storms, you should be enjoying the fruits of your labor; strawberries, peas, broccoli, radishes, garden greens (spinach, chard, lettuce, beet greens.) If not, maybe your neighbor will share with you.

If you are interested in getting some perennial onion for your garden, contact Karen Mair. She can give you a start plus help with the information you need to grow them.

Supports for plants should be in place long before the plant requires it. Plants that grow tall without a support can be damaged by the wind and break or get uprooted. Peas prefer thin supports such as chicken wire or small stakes. Yields are higher when peas are supported. Place supports down one side of a single row, down the center of a wide row, or around the outside of a block planting. I plant my peas in a large block planting and do no staking, because the peas support each other. Climbing peas and pole beans do well on a high fence or long poles. Tomatoes and peppers do well in wire cages. I do not recommend that you use the small wire tomato cages sold in the stores. They are too small, and it is worth it to buy the larger ones. You can customize your wire supports by making them from farm fencing. Make sure you get the wire that will not rust.

There are many advantages to supporting vegetables:

1. They take up less space.
2. The plants are healthier because of better air circulation.
3. Overhead water dries faster, thus reducing the chances of Fungal diseases.

4. The fruit receives more sunlight and ripens quicker.
5. The fruit is cleaner and has a more uniform shape.
6. Less prone to rot and injury from soil dwelling insects.
7. Easier to harvest.

If the garden spot is extremely wet and a windstorm comes up, plants can be blown over and even uprooted such as corn, beans, tomatoes, and peppers. Hilling protects plants which are prone to being blown over. Using a hoe, pull the soil up until a good sized mound is around the base of the plant. Potatoes that have not been planted deeply enough will come to the surface of the soil. As they are exposed to the sunlight, their skins turn green and the potato is very bitter. Potatoes require frequent hilling as they grow. Even potatoes planted very deep may come to the surface because of the large quantity of potatoes that are growing beneath the plant. A roto-tiller can be used for hilling if your rows are wide enough.

There is nothing more satisfying to the soul, eye, and the stomach than a well cared for vegetable garden. With the onset of warmer night temperatures, the gardens have really grown. Remember that the most important factor in determining growing days is the average minimum temperature during the growing season. Salt Lake City is 10 to 15 degrees warmer at night than the Heber Valley. This explains why they have almost twice the growing days as we do here in this high mountain valley.

Squash and melon plants should be spreading and putting out blossoms. Most of these plants have both male and female flowers allowing for pollination. Occasionally a plant will only have flowers of one sex, making it impossible to get pollinated unless a nearby plant has the opposite sex. Melons, zucchini, and cucumbers have a small fruit beneath the female flower. The male plant does not have the small fruit and its flower is on a longer stem. The female flower starts to grow, but unless it gets pollinated, it dies. This explains why you may see a small withered zucchini or squash. Many plants rely on bees to pollinate and some years it can be hit and miss. Bees don't like to work in the heat, the cold, or the wet. Sometimes a plant will have many flowers but never set any fruit. You can play Cupid by using a small paintbrush to pollinate the flowers. Just remember which flowers are female and which are male.

If saving seeds from your melons to plant the next year, be careful. Melons are cross pollinators with other plants such as squash, and the seed may not be true to the parent plant.

Cucumbers are mentioned as being grown in vegetable gardens are early as 2,000 BC. The Romans planted them in baskets that were mounted on wheels so they could be moved around, "As the sun moved through the Heavens." When the days cooled, they were moved into cucumber houses made of oiled cloth.

August

A newcomer to the valley commented that he knew why the county fair was held. It signaled summer was almost over! Once the fair is over and it rains in August, there is a noticeable change in the air. The nights are cooler and the days shorter. Plants begin to shift into high gear to reach maturity prior to the killing frosts of September.

If you planted your garden before Memorial Day, you are now enjoying the fruits of your labor. That first home grown tomato was probably eaten this week. Corn is just a week or two away depending on the variety that was planted. How do you know when a vegetable is ripe and ready to harvest?

Harvest vegetables at their peak when they are still young and pick daily if needed. Eat or store immediately to prevent loss of moisture and vitamin content. Vegetables continue to ripen after they are picked; prevent further ripening by putting into a plastic bag, cool cellar, or refrigerator. Never wash vegetables before storing as this encourages rot.

Green beans - pick when they are thinner than a pencil.
Potatoes - fingerlings or "new" potatoes can be dug when they have finished blooming.
Greens - when they get 4 to 6 inches high, cut the tops, leaving their crown to re-grow.
Zucchini - should be picked when 5 to 8 inches in length. Good luck in giving away those that get larger!
Broccoli - cut when the head is well formed and before the flowers open. This will encourage side shoots. NEVER let the plant flower.

On Tuesday of last week (August the 24th), there was frost on the north side of the roofs and my compost pile. The average frost date for the Heber Valley is the 10th of September which is a short 10 days from today (29th). August frosts are not uncommon. During the 1970's, there were two years back to back when it froze on the 8th and 15th of August. In 1950 it snowed in the valley on the 4th of July. In the last 100 years, there has been two times the frost has held out until the 1st of October.

In the bulletin last week were ideas about harvesting our produce. Today I will focus on a few more.

Eggplant - pick when the skin is shiny. Overripe fruits have a dull skin and are horribly bitter.
Onions - allow the tops to bend over naturally. Leave in the ground and allow the foliage to dry. If the weather cooperates with you, leave the onions in the ground until the foliage rustles.
Garlic - when the leaves and stems begin to turn yellow, carefully dig the bulbs with a fork. Place them in the sun to dry.
Peppers - you can pick peppers when they are a dark green but if left on the plant a few more weeks, they will change colors, usually red or yellow.
Carrots - water the soil prior to pulling to prevent breakage or carefully ease out of the soil with a garden fork. Carrots can be wintered over by covering with a thick layer of organic matter such as hay or straw.

Carrots come in a variety of colors; orange, white, yellow, purple, or violet, although most of us are only familiar with the orange ones. The flowers, fruits, and leaves have been used as fashion accessories for hats and dresses. Their greenery was often used as a substitute for feathers. Carrots are said to have properties that improve your eyesight and makes your hair curly. Carrots are a rich source of vitamin A.

The onion is a vegetable of antiquity, grown by the Egyptians for food and used in mummification. In Ireland it was used to cure baldness. The onion was mixed with honey and rubbed on the bald spot until the spot turned red.

Tomatoes - don't yank them from the plant, use scissors. If still green, store out of direct sunlight at room temperature.
Green tomatoes will ripen on the kitchen counter.

Raspberries - pull gently, leaving the plug. If you have to force the fruit to come off, it is not mature. Eat promptly as raspberries are one of the least durable fruits. Washing softens the fruit more, so wash just prior to eating. Commercial raspberries are engineered to be firm, which aids in their transport and keeping qualities. These tend to be less sweet and not as soft as your home grown raspberries and strawberries.

Melons - when a cantaloupe is ripe it can be picked off the vine with little resistance. If you have to tug at it, it is not ripe. The underside of a watermelon will have yellow on it and develop a white spot. Once it gets cold in September, watermelon is through. Covering with frost blankets and using lights is futile as the cool nights prevent them from developing any further. Watermelon has a tough stem and needs to be cut with a knife. Unlike, cantaloupe, it does not fall from the vine when ripe.

<u>September</u>

Corn – When the ears are ready to harvest, the silk dries and becomes brown. Pull back the leaves and test for ripeness by pushing your thumb nail into a grain of corn. If the liquid runs clear, it is not ripe. If it is milky, then it is ready to harvest. If the liquid is thick, then it is overripe. Master gardeners say you should never pull back the leaves to check for ripeness, because the ear is now vulnerable to insects, bugs, and birds. A better way is to press down on the top of the ear. If the end is pointy and the husks are tight to the ear, it's not ready to pick. If the top of the ear is flattish and almost rounded, the ear is ripe. The husks will also be looser around the ear. Since you planted the corn at the same time, the ears will ripen within days of each other. At the bottom of the stalk are one or two ears that are referred to as "suckers." Many gardeners pick them off when they first emerge so the ears above will grow bigger. I allow the suckers to grow. They mature about ten days later than the other ears, thus prolonging the time of harvest. These ears will be small.

Eat or freeze corn within 24 hours of picking, before the seeds convert to starch. Super sweet varieties hold their sugar levels longer. If you have never experienced eating corn that has been picked and taken into the house with a waiting pot of boiling water, then you do not know what the expression "SWEET FRESH CORN" means. Corn is the third most important cereal crop in the world, after wheat and rice. Over five hundred byproducts are made from corn, with popcorn being the most enjoyable.

Many areas of Utah have had severe rain and hail storms this week. A garden can be destroyed in minutes from large hail and the gardener is helpless. There isn't anything you can do to protect it unless you have a very small garden and throw a tarp over it. The hail is come and gone in just a few short minutes.

Squash - Summer squash should be picked when small, 4 to 8 inches. If allowed to grow unchecked, their flesh becomes very soft. The plant thinks that the growing season is almost over, so it begins to produce seeds. Keep summer squash picked to ensure a continuous harvest until frost. Common summer squashes are crookneck, straight neck, and the many varieties of zucchini. Summer squashes have thin skins so they are easily frosted. They should be eaten when picked if possible. They will keep for a week in the refrigerator. Do not wash them until you are ready to eat them.

Winter squash is just the opposite of summer squash. You want it to get as large as possible. As the squash grows, the seeds consolidate into the center and the meat or flesh gets denser and thicker. Winter squash is mature when the foliage dies, the skin hardens, and/or the stem begins to crack. Or if grown in the Heber Valley, you've run out of growing days! Cold weather actually improves the taste of winter squash so they are allowed to stay in the garden for some hardening of their skins. Do not leave out in the garden too long, as they will begin to deteriorate. Winter squash can be stored for six months if put into proper storage. Common winter squash grown in this area are acorn, banana, butternut, hubbard, and spaghetti.

Pumpkins need planted, cared for, and harvested much like squash. If you want a perfectly shaped pumpkin, roll it gently every now and then to keep it from flattening on one side. Pumpkins should not be left out after a hard freeze. Cut the stem with a knife as you don't want the stem to break. If the stem breaks off, it will be a poor keeper. Depending on how you use your pumpkin, will depend on what variety you plant. There are small decorative ones, large ones for Halloween, and still other varieties for pies and cookies. When some of your pumpkins are softball-size, write the names of your kids or grandkids on them. Use a ballpoint pen and lightly break through the skin. It is quite exciting for them to discover their name on a pumpkin.

If you didn't protect your tender crops on the 5th and 6th of September - THEY FROZE! Some plants close to buildings were protected and did not freeze. Hopefully you covered your tender things so the season for your tomatoes didn't end.

Protecting your garden from an early September frost begins months earlier. Plant your garden as soon as possible or as soon as you dare in the spring. It is easier to protect the plants when they are small from a late June frost, than to protect them when they are fully grown. If your corn and beans routinely freeze before you can harvest them, get a variety with less growing days. Pole beans take an average of 10 to 14 days longer than their cousins the bush beans. Corn matures from 63 to 95 days, a whooping four weeks difference! Of course, the faster the corn grows, the smaller the ears will be. Super sweet corns take longer to mature than the regular varieties. By starting your seeds indoors or purchasing sets or plants from a nursery, gives you a good head start in the spring. Long growing plants will generally mature if started early and protected. If you are growing melons it is a must that you start in early spring. There are many things that you can do to minimize a September frost.

1. Watch the weather forecast. Sometimes it does not feel cold enough to freeze, but the weatherman says a cold front will hit the Wasatch back. DO NOT second guess the weatherman!
2. Cover! Cover! Cover! Avoid plastic, as it will protect from a mild frost, but actually adds to the damage of a killing one.
3. Use thin sheets or blankets, newspapers, cold frames, lights, frost blankets; the same things that you used to protect your plants in the spring. The advantage of using frost blankets is they can stay on the plant during the day. Water and sunlight go through the fabric unlike other coverings, which need removed daily.

4. Make sure that your coverings are well anchored so they don't blow off during the night. Clothespins are useful on wire cages and plant stems. Tuck the covering way under the plant. Use boards, rocks, and/or tools to hold the coverings in place.

5. Water your garden during the night of an expected freeze. The theory is the water prevents the plants from freezing.

SOMETIMES it works.

6. Global warming seems to be a reality in the Heber Valley. The old timers can remember when melons and peaches could not be grown and only two crops of hay were harvested instead of three.

7. Live in a place that has a longer growing season than the Heber Valley!

Alma 34:24 "Cry unto him over the crops of your fields, That ye may prosper in them."

The Heber Valley usually gets an early mild frost that kills the tender crops, and then enjoys weeks of beautiful Indian summer. There are many vegetables that survived the first frost: raspberries, strawberries, onions, salad greens, cabbage, beets, carrots, peas, etc. If you covered your tender crops you are still enjoying those home grown tomatoes. Although your corn may look frozen, the ears continue to mature and can be picked for a week to ten days after a light frost. The corn has to have been close to maturity for this to happen.

Remember to keep your garden well watered. If a plant is stressed because of lack of water, it is more susceptible to the cold and the frost. Most people have quit weeding by now, but pull those big weeds that have gone to seed. If you don't, you will be dealing with their babies next spring.

If you're like me, the tomatoes in the store taste like cardboard and I purchase very few during the winter months. About the last of September or early October, I cover my tomatoes with another frost blanket and put a light at the base of the plants. Make sure you have a wire cage around the light for protection to keep it from breaking. I have tomatoes until about the middle of November and then pick everything that is still on the vine. One year we ate our last tomato on the 31st of December. Turner suggested that we eat it the next day so we could say we had tomatoes until the next year. There was no way that tomato was going to last another minute!

<u>October</u>

What to do with all the food that you've grown?

1. Eat it fresh and share with family and neighbors.
2. Keep in the refrigerator for up to two weeks.
3. Preserve the food by drying, freezing, or canning.
4. Put in your garage in a cool corner, or in a cool dark closet.
5. Store in a root cellar.

If you are going to have a root cellar in your basement, the north east side of the house is usually the coolest. Many houses have porches and underneath them is an excellent location. The most important requirement for any root cellar is a steady temperature between 35 and 45 degrees. Make sure you have a solid door and if there are windows, black them out. Vegetables need to have good air circulation, so have adequate shelving to put your vegetables on. A root cellar works by keeping the warm air out! If you are interested in building a root cellar, there is abundant information at the library, nurseries, gardening stores, the extension service, and of course, the internet.

A root cellar has three distinct temperature zones. Zone one is the coldest and is next to the floor. The center is zone two and is a little less cold. The warmest spot is next to the ceiling and is zone three. Knowing which area to store your produce will help it keep longer.

Vegetable	Zone	Length of storage
Beets	1	3 – 4 months
Cabbage	2	1 – 2 months
Carrots	1	3 – 4 months
Garlic	3	6 – 8 months
Onion - thick Skinned	3	6 – 8 months
Onion - Bermuda Sweet	3	1 – 2 months
Parsnips	1	2 – 4 months
Potatoes	1	4 – 7 months
Pumpkin	2	2 – 3 months
Rutabaga	1`	3 – 4 months
Turnips	1	3 – 4 months
Winter squash	2	4 – 6 months
Tomato (green)	2	2 – 4 weeks

Information on how to store the above vegetables in a cellar:

Carrots, beets, rutabaga, and turnips - Trim the tops, but do not cut off the tips of these vegetables. Some people wash and dry them thoroughly before storing. I have had trouble storing them when I have washed them first. Let the dirt dry and brush it off with your hands or a stiff brush. Store in a plastic bag with holes punched in it. Another way is to store them in a box filled with moist peat moss or sawdust. I have tried this and had very poor success, whereas my neighbor down the street has had good results. Remember that larger fruits will store longer, so put the smaller ones to the front to be used first. Beets loose their flavor and texture when stored, plus they take forever to cook. They do better if frozen or bottled. If you have an extra refrigerator you can store these veggies there for a few months. These vegetables can also winter over in the garden with some organic matter on the top.

Cabbage should be wrapped in layers of newspapers and secured with a rubber band. Use quickly or make into sauerkraut.

Onions need to be sorted according to thick skinned or sweet as their keeping days are different. Again, the larger ones will store best, so put the smallest ones where they will be used first. Hang in a mesh bag suspended from the ceiling. Old nylon stockings make a good bag. Onions can also be put on shelving as long as it is slotted so the air can circulate.

Potatoes - Leave them in the ground for as long as possible, but before you wonder where they are under the snow. If the potato is cut during digging, uses it up immediately. Potatoes can be bottled or made into French fries and frozen. They do not store well if they have been cut. Potatoes need total darkness and good air circulation. Do not pile them too deeply.

Pumpkins - Handle them carefully. Pumpkins may appear tough but they bruise easily. Breakdown begins where there is any injury or bruising to the pumpkin. Use a sharp knife to cut the stems. If the stem breaks off, use first as it will not keep. Place on shelves for best circulation. Do not put on the floor.

Winter squash - See above about pumpkins as they need the same gentle handling. You can pile your winter squash for storage, but not too

deeply. They are the longest and best keeper of all the vegetables that are put into a root cellar.

Tomatoes - Put tomatoes that are close to maturity on a rack or counter. Cover them with a few sheets of newspaper.

Never put anything directly on the floor. The plant's surface will become moist where it touches the floor and begin to rot.
Place containers on boards to get them off the floor. If your shelving is strong enough, place the boxes there. Only store the best of your crops. If vegetables are bruised or cut, they will not improve by putting them into storage. Their best use is adding them to your compost pile or using them quickly.

Carrots, beets, parsnips, and turnips can be wintered over. Cover these vegetables with at least 12 to 18 inches of organic matter such as straw, grass clippings, and/or hay. Extend the mulch to the side of the vegetables another 12 to 18 inches. Be sure to mark where your veggies are so when they are covered with snow you can find them. Once the snow melts and it becomes warm, dig what is left. Otherwise they will begin to grow and produce seeds. Sometimes the mix of warm weather, cold weather, snow, and rain repeated over and over will cause the vegetables to rot in the ground.

November

Your garden is finally ready to be put to bed for winter. If you planted kale or Brussels sprouts, you can enjoy them even though they are covered with snow. If the weather is really wet and cold, onions are better off in storage.

Fall is the best time to work the soil in preparation of next year's garden. The frost will give the roots and grass a chance to decompose over the winter. If unable to plow or till in the fall, do as soon as possible in the spring. Refer to first of booklet where it was explained how to know when the soil is suitable for tilling.

Organic matter should be added to the garden in the fall. Till some under plus put a generous covering on the surface. Earthworms will do a lot of work during the next few months, but only if you do your part in giving them a nice blanket of organic matter.

The work of the garden is mainly over, but there are many things that should be done during the winter months. Make a resolution that you will plant a garden next spring, even if it is a very small one. First time gardeners start too big and with too many types of plants. Plant a couple of vegetables like potatoes, corn, and/or beans. They are easy to grow and to maintain.

If gardening for the first time, read up on gardening. Purchase a book, visit the library, quiz your neighbors, or surf the internet. Be prepared! If you are a long time gardener, resolve to grow something different.

Purchase gardening supplies for Christmas and birthdays. Buy child size tools and involve your children and grandchildren in raising a garden. The best Mother's day present I ever received was a shovel.

Record in your garden journal what varieties you planted, the date planted, when harvested, the last frost of spring and first frost of late summer. What grew well and what didn't. Keep a layout of your garden from previous years, since certain crops should not be planted in the same space the following year.

Make sure you have access to a seed catalog so you can browse through it on the cold winter nights that are to come.

Come, Ye Thankful People

"Come, ye thankful people come, raise the song of harvest home.
All is safely gathered in, ere the winter storms begin.
God our Maker, doth provide, for our wants to be supplied.
Come to God's own temple, come; raise the song of harvest home.

All the world is Gods own field, fruit unto his praise to yield, Wheat and tares together sown, unto joy or sorrow grown.
First the blade and then the ear, then the full corn shall appear.
Lord of harvest, grant that we, wholesome grain and pure may be."

Additional Information

Drip Irrigation Systems - Ben McNaughton

"Drip irrigation is the precise and slow delivery of water to plants' roots. With conventional watering systems, water is lost through run off or evaporation, or blown away by wind, or wasted on non-growth areas. Using drip irrigation, water is absorbed slowly into the soil, directly into the root zone, and no water is wasted on non-growth areas. By placing water just at the root zone of the plant you can water much less and not as often. This method causes the water to be pushed deeper into the soil and helps to promote the plants' roots to grow downward and not just laterally, as they would with shallower watering. Drip irrigation allows gardeners to deliver water only to the desired plan which helps to control weed growth and improve crop yields.

The very low flow of water from outlets on a drip system also enables you to water a much larger area from a single water source. Less water usage equals a larger single watering zone.

Another advantage of using a low flow drip system is that you do not need high pressure to supply the drippers and micro-sprinklers. Most drip systems are recommended to run at about 15 to 30 PSI (pounds per square inch). For comparison most houses have water pressure of anywhere from 40 PSI to 60 PSI. The benefit is that you do not have to worry about large pressure drops in your household water flow just because the irrigation system has turned on; for example you will not notice if the system goes on when you are in the shower! Because of this low pressure, drip systems can use tubing and other components that do not require glue, clamps or hard-to-connect components. In fact, most components of a drip system can be moved or reused." (quoted from http://www.dripirrigation.com)

Drip irrigation systems are fairly easy to install if you follow a few basic rules. Because these systems function at low pressure it is almost always necessary to use a pressure reducer at the water source. The drippers and micro-sprinklers used in these systems are susceptible to plugging making the use of filters imperative especially for those developing a system around a secondary water source. Finally the laws of physics must be followed. This means you can't develop a system that distributes more water than your source can deliver.

A variety of products are available when it comes to creating a drip irrigation system. The most commons systems utilize poly tubing, emitters and soaker hoses to deliver water. Starter kits are available at most home improvement centers and sprinkler supply outlets. Many of these sources will design a system for you if you agree to purchase the supplies from them. For those who are more adventurous the internet has a wealth of information on this subject.

Additional resources:
www.sprinklerwarehouse.com
www.dripworksusa.com
www.dripdepot.com
www.rainbird.com

How do you know when it is time to water your plants? Look at your plants in the morning. If they are wilted, it's a sign the soil has very little moisture left to provide for the plants. It's time to water! Plants often look fine in the morning, but begin to droop in the hot afternoon sun. Don't worry about getting water to them right then. Plants usually recover in the evening when the sun sets and overnight when the moisture moves up in the soil.
The leaves of your corn will curl and leaves of tomatoes will wilt to signal watering.

When is the best time to water your plants? Most gardeners agree that morning is the best time, but some people have irrigation turns at night. Nighttime watering and sprinkling keep the plants wet increasing the chance of fungal diseases. Midday watering uses more water because of evaporation. If your water is expensive, you would not want to water midday.

What is the best method to water your plants? Flood irrigation usually is the choice for those whose water is delivered through the city's system of ditches. For those who have gone from flood irrigation to sprinklers, it's easy to push the sprinkler one more turn and water the garden. One advantage for the use of sprinklers is you do not need to keep making furrows for the water. Many use culinary water, which can be expensive if the garden is large. If sprinkling your garden, raise the sprinkler off the ground. This will prevent damage to plants and enable the water to cover a greater distance. Drip irrigation is an excellent water saver, but may be a lot of work if

your garden is large. The system would have to be taken out for plowing and tilling.

A garden needs about an inch of water a week to grow well. The water needs to go deep into the soil, at least 4 or 5 inches. Not sure how much water your plants are getting? Take a shovel and dig down to where the soil quits being moist. Deep watering makes the plant roots reach deep into the soil to find water and shallow watering prevents this. With shallow watering the plants are accustom to finding moisture near the surface and require watering almost daily.

Potatoes

Potatoes are the fourth most important food crop after wheat, corn, and rice. They have been cultivated since 5,000 BC and had their origin in Peru and Chile. Spanish explorers brought the potato to Europe. Potatoes are often called "spuds." The name comes from the tool that was used to weed them. If your garden has been neglected or if starting a new one, potatoes are the best thing to plant. The crop may be small but the root system breaks up the soil and greatly improves it for the next year.

Potatoes are known as the famine food and for hundreds of years been used to feed the poor, the military, and the prisoner. During the 1840's, a blight devastated the Irish potato crop and 1 ½ million people perished. Potatoes are good keepers in a root cellar and a must in any garden.

A good potato crop begins with certified seed potatoes that are free of diseases and viruses. Do not use your left over potatoes to plant unless unable to get potatoes from a reputable supplier. If they are all you have and you can not get anything else, plant them. Small potatoes can be planted without cutting. Potatoes have "eyes" so make sure that when you cut them that there are at least two eyes to every cut piece. Cut them up a day or so before planting. This will allow the cut area to begin to heal and to dry, thus preventing them from rotting. You can purchase sulfur powder at a drug store and use to coat the cut surfaces. Put a couple of tablespoons of the sulfur in a brown paper bag, add the potatoes and shake. The powder will stick to the cut surface and will help prevent rot. When planting, press the potato firmly into the soil, with the cut part on the bottom.

You have a favorite potato that you purchased from the store but are unable to find it at a nursery. What to do? The potatoes in the store have been treated with a chemical so that they do not sprout. If you put them in a warm sunny room the anti sprout chemical wears down and they begin to sprout. Plant them the same as you would the ones purchased at a store.

There are a few things to remember when growing potatoes: Use certified potatoes, cut a few days before planting, plant deep as they will push to the surface. Remember to hill the plants with dirt to prevent them breaking through the soil. Sunlight causes the potato to turn green and be bitter. Water regularly, but do not overwater. New potatoes can be eaten after they have blossomed, but leave the ones to store until the foliage has died back. Dig very carefully with a fork or shovel and use the ones that get cut immediately. Potatoes benefit from fertilizers and like lots of compost. They need to be stored in complete darkness, cool, and with plenty of air circulation.

Fertilizers

Vegetables need 16 different nutrients in order to grow, many being found naturally in most soils. Nitrogen, phosphorus, and potassium are taken from the soil in large amounts and need to be replenished for the soil to stay productive. Rocks in the garden supply minerals to the soil, so leave those smaller than a tennis ball in the garden.

Nitrogen levels are generally low when your plants are pale and turn yellow. Some form of nitrogen should be added to your soil yearly. If you add too much nitrogen, your plants will grow fast resulting in lots of leaves with little or no fruit. Phosphorus is important because it stimulates root growth and is needed for plants that grow under the ground such as potatoes and carrots. Potassium deficiencies are hard to detect, but they usually show up as smaller plants and fruits. Many times the plant will fail to set fruit, and root crops will be misshapen.

A balanced or complete fertilizer is one that contains all three of the major nutrients. On bags of fertilizer are three numbers. The first number tells what percent of the bag is nitrogen. The second number tells the percentage for phosphorus, and the third number for potassium. If you have a 100 pound bag of fertilizer and the numbers read 5-10-10, you have 5 pounds of nitrogen, 10 pounds of phosphorus, and 10 pounds

of potassium. The other 75 pounds are fillers and are needed because these chemicals can not be handled in their pure forms. Good gardening books will tell you when, what kind, and the amount of fertilizer to use on individual plants.

Fifty years ago, the fertilizer used on gardens was animal manure. They are still good fertilizers, but harder to come by and much messier. If they are not fully dry, they are also very smelly. Manures are full of seeds and if not thoroughly composted or dried, you will be putting thousands of new weed seeds into your soil. Different animal manures are available, but cow and horse are the most commonly used. Asparagus needs to be planted in dry horse manure.

Composting

A good compost pile recycles vegetable scraps and other wastes from the garden and yard. If you have done your composting correctly, it decomposes the material quickly. The longer your compost pile sits, the less useful it will be to your garden. The nutrients will leach through the pile to the soil underneath. Do not add meats, fat, or bones to the pile as it will cause it to stink.

There are many different ways and sizes to make compost piles, and I refer you to the many books and sources of information available that were listed earlier. The basics to composting are as follows:

Choose a well-drained area, preferably shady and not far from the house. Most people use some type of wire to contain the pile, plus the wire enables the pile to have proper air circulation. Loosely place composting materials in the bottom of the container. These would be leaves, hay, straw, etc. Sprinkler an "activator" over this first layer.

An activator is a source of nitrogen and protein with ingredients that enable the micro-organisms and bacteria to break down the material. Animal manure used to be a widely used activator, but for most people is impractical. Alfalfa meal is a cheap and quick acting activator and is found at most garden or feed stores. If unable to find, look in the supermarket for "Litter Green" which is a cat litter made of 100 percent alfalfa meal. Also high protein dog food can be used. Besides alfalfa, good activators are barnyard manure, bone meal, cottonseed meal, blood meal, and good rich garden soil. Every time you add something to your compost pile, dust with a little activator.

Moisten your pile thoroughly. A compost pile will not work if it is too wet or too dry. If the weather gets really warm, you may have to sprinkle the pile every three to four days. Good circulation is a must. A good compost pile is a balance of thirds: one-third air, one-third material, and one-third moisture. If you have made your pile correctly, the temperature should reach 140 to 150 degrees in 2 to 3 days. About a week later the pile should be turned, with the drier materials being put into the center. After only two weeks the compost will be useable although not as composted if you let it work longer.

Animal pests

Nothing beats a secure fence for keeping out rabbits, woodchucks, raccoons, dogs, and cats. It will even help to control the traffic of neighborhood children who might otherwise get into the garden and trample the plants, or steal your watermelons!

Rabbits generally nibble the center bud of plants, such as broccoli, cabbage, or cauliflower, making the plants unable to produce. Some people sprinkle black pepper on their transplants. Since rabbits smell everything they eat, they will move on after having a sneezing spell. If you have a dog, the dog's barking will scare the rabbits away.

Raccoons can destroy a corn patch in one night. Once they have tasted your sweet corn, it is almost impossible to keep them out. Put moth crystals around the perimeter of your garden. Raccoons hate the taste of the crystals on their paws. You can also put creosote down as they don't like to dirty their paws. Some gardeners put cinnamon around the perimeter of their garden. The smell of a dog also helps. This summer was the first year that raccoons damaged our garden. Every night after that our dog was walked up the rows of the garden to put his scent on the walkways. Plastic bags that had been used as doggie do-do bags were hung on the fence posts. The raccoons did not come back.

Birds are nice to have near a garden because they eat many kinds of insect pests, but they too can become a problem. Crows and blackbirds dig up corn seeds and small plants. Wire mesh can be put over young plants to protect them from the birds until the plants are too big for the birds to uproot. At harvest time birds gorge themselves on berries, grapes, sunflower seeds, and corn. Mesh bags can be placed over your sunflower heads to protect them from pecking birds. Don't pull the

leaves down on your corn to check for ripeness, the birds have just been given a helping hand!

A good fence will keep out skunks since they will not attempt to climb it, although they will sometimes dig underneath. Skunks do have some redeeming qualities, because they eat insects, grubs, rats, and mice.

Field mice can be destructive by digging up large seeds before they germinate. Sometimes gardeners think they didn't plant properly or used a poor batch of seeds. If you mulch heavily, you may be making a good habitat for mice. The best control of mice is to let a cat earn his keep!

Conclusion

"Build ye houses, and dwell in them; and plant gardens, and eat the fruit of them." Jeremiah 29:5

There are many people who contributed to make this little booklet a reality. First, would be Bishop Lacey who asked me to put some gardening tips into the Sunday bulletin. Sue Davis typed them for the bulletin and drew the pictures to accompany the text. A number of people were given a copy and asked to add their tips and information. They were Ben McNaughton, Barbara and Melvin Moulton, Rachel Crane, Kent Ellertson, and Scott Wright. Andrea and Nathan Jarvis were most helpful when it came to the computer part of the project. Nathan did the covers for the booklet. He also answered questions when I couldn't figure out why my computer wasn't doing what it was supposed to do. Last of all, thanks to Uncle Woody who taught me how to garden and nurtured my love for gardening at an early age.

I challenge all of us to grow a garden and be obedient to the commandments that our prophets have given. Information is at our fingertips and we would be foolish if we did not avail ourselves of it. Many people in the ward would be happy to assist you with your questions concerning gardening.

Sister Turner