

PLANTING SCHEDULE

REVISED FROM *SPRING HAS SPRUNG... BUT FROST STILL LIKELY*; TAIN BEDDES

Many aspects of gardening, including planting dates, have been accelerated this year due to the mild winter and early spring we have had. Determining when to plant a garden can be especially confusing in Utah's unpredictable and diverse climate where last-frost dates can vary by many days within just a few miles. Geographic characteristics of where you live can help in determining when to plant. When a yard is located in a populated area or on a mountain bench, it usually has a longer growing season. Other areas located at slightly lower elevations where cold air drains and cannot escape, have a shorter season. Additionally, urban and suburban areas are slightly warmer than surrounding areas due to heat from buildings and warmth generated by sunlight reflected from roads and other surfaces that increase temperatures.

Table 1. Average frost dates for various Utah locations.

City	Last	First	Frost-free Days
Alpine	May 20	Sep 30	136
Blanding	May 13	Oct 12	153
Cedar City	May 10	Oct 05	148
Delta	May 17	Sep 28	134
Farmington	May 05	Oct 10	158
Fillmore	May 16	Oct 04	140
Huntsville	Jun 11	Sep 09	89
Kanab	May 07	Oct 20	166
Lake Town	Jun 15	Sep 10	87
Logan	May 14	Sep 25	135
Morgan	June 6	Sep 11	98
Moroni	Jun 01	Sep 18	109
Ogden	May 01	Oct 24	176
Park City	Jun 09	Sep 01	92
Price	May 12	Oct 07	148
Roosevelt	May 18	Sep 25	130
Spanish Fork	May 01	Oct 13	165
St. George	Apr 06	Oct 28	205
Tooele	May 07	Oct 14	159
Tremonton	May 3	Oct 10	160

In addition to frost information, it is important to take into account the needs of the plants. Many vegetables grown in Utah fall into four basic categories. These categories can be helpful in determining when to plant each type of vegetables. Planting dates for vegetables in Utah vary from early spring until early summer, depending on which category plants belong to.

Hardy vegetables, including asparagus, broccoli, cabbage, onions, peas and spinach, can be planted as soon as the soil is workable in early spring. This usually ranges between 45 and 60 days before the average last frost. These same vegetables can be safely planted until the average last frost date.

Semi-hardy plants, such as beets, carrots, lettuce and potatoes, can be planted one to two weeks after the hardy group. These can be planted until the average last-frost date.

Tender vegetables, such as celery, cucumbers, corn and most beans, should be planted on the average last-frost date.

Very tender plants, such as squash, beans, melons, tomatoes, eggplants and peppers, should not be planted until at least a week after the average last frost. Even if frost does not occur before this time, these plants will not grow well and are more susceptible to disease until warmer weather.



Hardy vegetables such as this broccoli plant (left) can still be planted for a few more week in most areas. Plants in the very tender category such as this eggplant (right), still have a few weeks before they can be planted safely without some form of frost protection.

COMPANION PLANTING

REVISED FROM *COMPANION PLANTING: MYTH OR REALITY?*; MARION MURRAY

Companion planting is the technique of combining two (or more) plants for a particular purpose. This technique can be used for several purposes; the following are a few examples of some companion planting mechanisms.

Companion Planting, continued from previous page

Nitrogen fixation by roots of legumes (peas, clover) adds nitrogen to the soil, reducing the need for nitrogen fertilizer, which is helpful for vegetables like corn, tomato, or cabbage.

Nurse cropping by using tall or dense plants can protect tender plants through shading and wind breaking. Oats, for example, are used to help establish alfalfa by preventing weeds from establishing.

Pest suppression can occur through a variety of mechanisms:

- Some plants emit chemicals emitted that have pesticidal properties. For example, naturally occurring chemical compounds in the flowers and foliage of marigold can be lethal to Mexican bean weevil, and root compounds can be lethal to cabbage maggot larvae.
- Mixing plant species may cause an interference with visual or olfactory orientation of pests to their host plants.
- Mixing plant varieties of the same species circumvents insects' ability to adapt to natural plant defenses.
- Habitat planting for beneficial insects provide shelter and nectar for predators and parasitic insects such as syrphid flies, parasitic wasps, lacewings, and robber flies.



Onions planted next to broccoli help repel pest insects away from broccoli plants

Crop	Compatible
eggplant	beans, marigold
lettuce	carrot, radish, strawberry, cucumber
Onion Family	beets, carrot, lettuce, Cabbage Family, summer savory
parsley	tomato, asparagus
pea (English)	carrots, radish, turnip, cucumber, corn, beans
potato	beans, corn, Cabbage Family, marigolds, horseradish
pumpkins	corn, marigold
radish	English pea, nasturtium, lettuce, cucumber
spinach	strawberry, fava bean
squash	nasturtium, corn, marigold
tomato	Onion Family, nasturtium, marigold, asparagus, carrot, parsley, cucumber
turnip	English pea

Source: George Kuepper & Mardi Dodson. 2001. COMPANION PLANTING: BASIC CONCEPTS & RESOURCES. Appropriate Technology Transfer for Rural Areas. Horticultural Technical Note.

MULCHES

After planting, mulching the garden can provide many benefits, including:

- reduce moisture loss from soil
- reduce the growth of annual weeds and grasses by preventing germination or by smothering
- help moderate soil temperatures
- decrease the occurrence of soil-borne diseases that splash up onto plants
- some types can improve the soil structure
- help prevent soil compaction
- promote rooting near the surface
- decrease runoff and soil erosion

Types:

There are basically two types of mulches: organic and inorganic. Each type has benefits and drawbacks. Organic mulches can improve soil structure and add nutrients to the soil, but need to be replenished regularly since they decompose over time. Inorganic mulches do not supply nutrients but last longer. Select the type of mulch that best matches the desired physical, chemical, and visual effects. Also take into consideration costs and availability.

Table 2. Compatible plant associations.

Crop	Compatible
asparagus	tomato, parsley, basil
beans	most vegetables & herbs
beans(bush)	potato, cucumber, corn, strawberry, celery, summer savory
beans(pole)	corn, summer savory, radish
Cabbage Family	aromatic herbs, celery, beets, Onion Family, chamomile, spinach, chard
carrots	English pea, lettuce, rosemary, Onion Family, sage, tomato
celery	Onion & Cabbage Families, tomato, bush beans, nasturtium
corn	potato, beans, English pea, pumpkin, cucumber, squash
cucumber	beans, corn, English pea, sunflowers, radish

Mulches, continued from previous page

Inorganic:

Gravel, pebbles, and crushed stone. These materials are permanent and can get very hot during the summer months. They can control weeds and are best for permanent plantings such as foundation plants and can also be used for pathways in gardens.

Plastics (black and clear). Black plastic is very effective in preventing weed growth and holding water in the soil, but breaks down quickly when exposed to sun. It can also increase soil temperatures by 5 degrees during the daytime hours. Cutting holes in the plastic and burying it will help with drainage and decomposition issues associated with using black plastic mulches. Clear mulches allow more sunlight to penetrate to the soil. Clear mulches are less effective for weed control, but will increase soil temperatures (8 to 14 degrees compared to bare soil) more than black plastics and are best used in cooler areas. Muskmelons, tomatoes, peppers, cucumbers, squash, eggplant, watermelons, and okra are good candidates to grow using plastic mulches.

Landscape or woven ground cloth. Unlike plastic, these materials will allow water and air to move through them. They are good at controlling weeds, but some grasses might grow through the holes. To achieve better moisture, temperature, and weed control, add several inches of another mulching material on top of the fabric.

Rubber tires and artificial pine needles. The use of these materials is relatively new, and both their effectiveness as mulch and their color retention is still being evaluated.



Rubber tire mulches (as seen above) do not decompose, and unless scattered, may not need to be replaced.

Organic:

Grass clippings make excellent mulch for the vegetable garden. It is best to build up the mulch layer gradually using dry grass, instead of fresh clippings. Apply fresh clippings in thin layers (up to 1/4 inch thick) and allow each layer to dry

before adding more. The clippings dry quickly and additional layers can be added weekly. A few layers will stop weed seed germination. Do not place fresh clippings in thick piles, as they will mat, reducing water and air infiltration, stink, and may become hydrophobic. Additionally, do not use clippings from lawns that have been treated with herbicides or other pesticides in the past month.

Straw works well for vegetable gardens because it improves soil as it decays. Make sure the straw is weed free (seed free) when purchasing.



Straw mulch can help suppress weeds early on when seedlings are more vulnerable

Leaves. Good weed control using leaves can be obtained by adding 2 to 3 inches of chopped or shredded leaves. Leaves are usually abundant and easy to obtain and will improve soil structure and add nutrients.

Pine needles interlock and stay in place better than many other kinds of mulch. They also allow air, water, and nutrients to penetrate easily to the soil surface. Layer pine needles about 2 inches thick.

Wood chips contain bark and pieces of wood of various sizes and can make an attractive mulch. Good weed control can be obtained by adding about 2 to 3 inches of wood chips. Additional nitrogen will need to be applied to replace the nitrogen used by the wood chips as it decomposes.

Living mulches/ground covers are low-growing plants that spread quickly to form a dense cover. They add beauty to the landscape, and they can also solve many planting problems in difficult sites. Grass, ivy, periwinkle, and clover are examples of living mulches.

When to Apply:

Mulch should be applied right after seedling emergence or after transplanting. Apply mulch around established plants in early spring. The frequency of how often mulches need to be replenished will depend on the type of mulch material used; organic mulches like grass clippings and leaves decompose very quickly compared to inorganic mulches like gravel and plastic.

Biochar Project

BIOCHAR PROJECT CONTINUES IN UTAH

Biochar is a product made when organic solids are slowburned in the absence of oxygen in a contained system. This man-made technology of burning is called pyrolysis. Biochar is made like charcoal, but contains no petroleum, is made sustainably from biowaste products (herbaceous or woody crop residues, non-salvageable timber and slash, animal manure, and more), and is applied to soil for two benefits: long-term carbon storage and as a soil amendment.



Biochar (left) mixed with field soil (right)

The use of soil-applied biochar in agricultural settings has gained considerable interest in recent years. Research trials have shown that biochar can improve soil tilth, productivity, nutrient retention and availability to plants, water holding capacity, and soil aggregate stability. There is also evidence that some crops amended with biochar produce greater yields and develop resistance to soil borne diseases. Research results of the impact of biochar on soil vary widely between soil types, biochar production practices, and rates. Additionally, few projects have investigated biochar's effects on arid and alkaline soils like we have here in Utah.

Britney Hunter, an assistant professor and horticulture specialist for USU Extension in Davis County, is leading a 3-year project to test the effects of biochar on plant and soil health in Utah soils. In 2014, biochar feedstock (type of wood), optimal heating temperature for biochar production, biochar texture, and the best rate of biochar application were determined from evaluations in potted experiments.



Biochar potted experiment in 2014 in Kaysville, Utah.

This year, field and pot trials will be conducted using the 2014 results, for biochar in production of tomatoes and melons. Four sites located in Box Elder and Davis counties will be used for field trials evaluating what economic benefits can be achieved using biochar in vegetable production. Pot trials will be conducted at the Kaysville research farm to test whether adding biochar will prevent or reduce injury caused by a soil-borne pathogen (*Phytophthora* root rot).

Results from this study will be made available in a variety of methods including field days, at conferences like the annual Urban Small Farms Conference, articles in the Utah Pests and Vegetable IPM newsletters, and videos and fact sheets.

UTAH PESTS NEWSLETTER ARTICLE

Check out the great article in the new spring 2015 UTAH PESTS newsletter [What does a Warm, Dry Winter Mean for Insect Populations?](#) This article has helpful information on which insects might be a problem in vegetables this year.

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Editor: Bonnie Bunn, bonnie.bunn@usu.edu

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