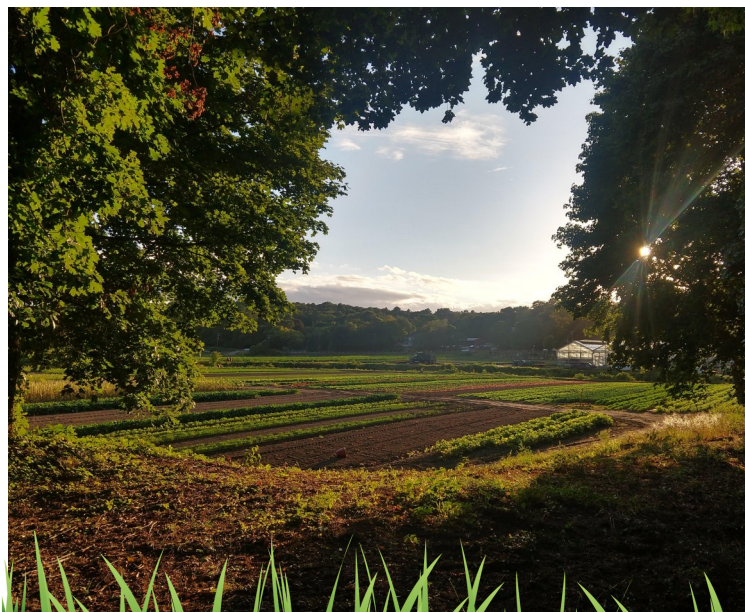




The Weber State Sustainability Office Presents

A Guide to a Sustainable Garden & Kitchen





Hello there!

This guide was originally supposed to just be a recipe book for sustainable food. It quickly evolved into this guide to help provide a better understanding of sustainability and the current problems we face in the world.

However, contrary to the problems, there are many actions that humans are taking to try and provide a better planet for the generations to follow. This guide will help highlight some of the active solutions currently in the works, as well as some we hope to see in the next few decades. Along side the global solutions, we have provided several actions that we can take at our own homes to become more sustainable in our own garden and our kitchen.

I would like to thank many people for their help with this. Jennifer Bodine and the rest of the sustainability office for helping to open the door to sustainability for me. My friends Alec and Tori for being so supportive and helping to keep me motivated through this production. Last but not least, my mother Sharon, for always being there for me and supporting me. Thanks all!

Cayden Quayle

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WEBER STATE UNIVERSITY

Energy & Sustainability Office

What is sustainability?

Sustainability is an important term for everyone on our planet earth. It is crucial to both the individual, as well as the group as we progress further into the 21st century. The most quoted definition comes from the UN World Commission on Environment and Development: “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹

There are many different components of sustainability such as waste, energy, climate, transportation, consumer, food, and more. However, we can take a step back from these to look at the main components of sustainability. There are three main pillars of sustainability: Environmental, Economic, and Social Sustainability.²

Environmental Sustainability focuses on all of earth’s environmental systems and the goal of keeping natural resources replenished at a rate which humans are consuming them.

Economic Sustainability focuses on humans and the ability for them to maintain their independence and have access to the resources they require. These resources are those such as financial, medical, nutritional, and other resources needed.

Social Sustainability focuses on universal human rights and necessities that should be available and attainable by all people. This is to help keep themselves, their families, and their communities healthy and secure. This includes the universal rights that ensure personal, labor, and cultural rights respected and protected.

All three pillars are important. The contents of this resource guide will primarily focus on environmental and some economic issues and actions. I will dive into issues we are currently facing regarding food sustainability, but I will also go in-depth on different actions and practices we can take at home.

These actions we take will not only help reduce our carbon footprint, but will also help us to eat healthier and follow a more sustainable diet. This guide will also be a collaboration of student, faculty, and community provided sustainable recipes.



Food Sustainability

Food Production, Food Waste, and the Population

Food sustainability is about generating food at a productivity level that is enough to maintain the human populations. Sustainable food production is fundamentally grounded on the availability of fertile land, water, nutrients, and an adequate climate.³

When we try to improve food sustainability, we are also making an effort to eat healthier, support locally grown food, reduce food waste, treat livestock better, maintain or improve soil/water quality, protect biodiversity in our ecosystems, as well as provide all people with access to an affordable, nutritious diet.



Overview of the Problems

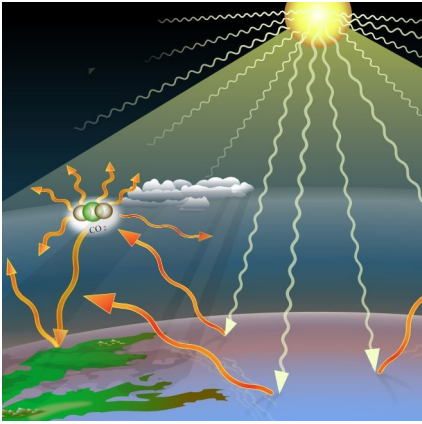
Unfortunately, the reality of climate change is upon us. Climate change describes a change in the average conditions – such as temperature and rainfall – in a region over a long period of time. NASA scientists have observed Earth's surface is warming. Many of the warmest years on record have happened in the past 20 years. Greenhouse gases are trapping heat in the earth's atmosphere, producing warming seasons and an amped-up water cycle. As we saw in 2020, there were record heat waves along with intense droughts, which are the perfect conditions for wildfires.

In 2020 alone, Australia marked its hottest, driest year on record. California recorded its own worst fire season. In South America, a quarter of the world's largest wetlands were also consumed by flames. Not only is the world experiencing fires, but polar ice melted, temperatures soared, and a record number of storms made landfall in the United States.⁴

According to NASA⁵, our atmospheric carbon dioxide has increased to 415ppm, our global temperature has raised 2.0° F since 1880 with 19 of the 20 warmest years on record occurring since 2001. The Arctic Ice reached an all-time minimum in 2012 and has been declining at a rate of 13.1% per decade (based on 1981-2010 average). The Ice Sheets in Antarctica are currently losing 428 billion metric tons per year. The Sea Level has, on average, increased 3.3mm per year. Along with these statistics, we are also seeing soil degradation, forests destroyed, acidification of our oceans, and much more.

What upsets so many people, is that we know exactly why this is happening, and we've known for more than a hundred years. Humans are the problem. We emit greenhouse gases (fossil fuels and other sources), agriculture and deforestation, and increase livestock farming. Listed on the next page is a brief breakdown of each problem and how it is bad to the environment.

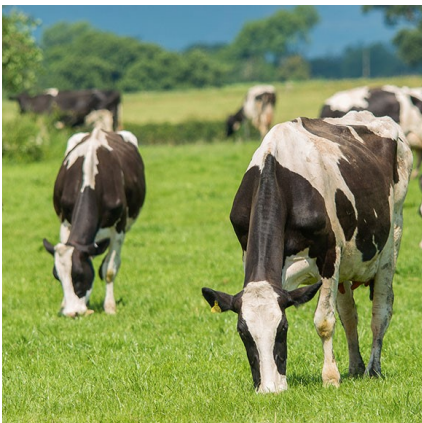




Greenhouse Gases – Many of the gases we emit act like glass in a greenhouse, trapping the sun's heat and stopping it from leaking back into space. These gases are primarily carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and various fluorinated gases. Carbon dioxide is the most common gas produced by human activity (burning of fossil fuels, destroying forests, etc.) and is responsible for 64% of man-made global warming.⁶ Other gases aren't emitted as much; however, they trap heat much more efficiently than carbon dioxide. Methane is responsible for 17% of man-made global warming, nitrous oxide for 6%. Burning coal, oil, and gas produces carbon dioxide and nitrous oxide, while livestock produce large amounts of methane.



Poor Agriculture Methods & Deforestation – We, as humans, trade enormous greenhouse gas emissions for food to feed the planet. From clearing land to farm, and farming itself, accounts for about 21% of global emissions.⁷ As we remove forests, the trees and plant life sequestering carbon dioxide are removed, thus that gas being released back into the atmosphere. Methane is produced from livestock and rice production. Nitrous oxide is produced from fertilizing and the burning of croplands. Current tillage methods negatively impact soil, disrupt soil structure, accelerate surface runoff, and increase soil erosion.⁸ This can lead to overall less crop yield, releasing carbon dioxide into the atmosphere, or eventual abandonment of the land.



Increased Livestock Farming – Livestock and their byproducts account for at least 32,000 million tons of carbon dioxide a year. Methane is the primary product of livestock emissions, and cows produce 150 billion gallons of methane per day. If cattle were their own nation, they would be the world's third-largest emitter of greenhouse gases.⁹ Additionally, humans on average over consume animal protein by 36% higher than necessary. In the United States and Canada, the average adult consumes more than 90g of protein per day, while on average adults require 50g of protein each day.

It's currently projected that the world's population is expected to increase by 2 billion in the next 30 years, from 7.7 billion to 9.7 billion by 2050.¹⁰ With this estimated population increase, there is also an expected food increase by ~70%. With that increased food need, that means we could expect to see more land (or forests) removed for farming, about ~150 million ton increase of meat production¹¹, and the associated greenhouse gases that come from these changes.

Food Waste – Roughly a third of the world’s food is never eaten, which means land and other resources used and greenhouse gases emitted in producing it were unnecessary. In the United States, there were 35.2 million citizens that faced food insecurity.

Food insecurity is defined by the USDA as a situation of “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.” In 2020, there was 80 million pounds of food wasted, which equates to more than \$161 billion. While it is estimated that 70.3 million pounds of food could feed 35.2 million people for a year.¹²



In lower income countries, some of the food waste isn’t intentional. In those countries, food waste is often caused by lack of refrigeration, lack of storage facilities, poor packaging, and poor transportation. However, in the United States, food waste is found further along the supply chain. Food spoilage is one of the biggest reasons people throw out food.¹³ More than 80% of Americans discard perfectly good food because they misunderstand expiration labels. Rejection or discarding food based on aesthetic looks is also common among retailers and customers. Restaurants provide too much food in hopes of avoiding an unhappy customer, or the customer ordering too much food. At home, we can overestimate how much to cook during the week and end up tossing the unused food due to spoilage or forget about leftovers.

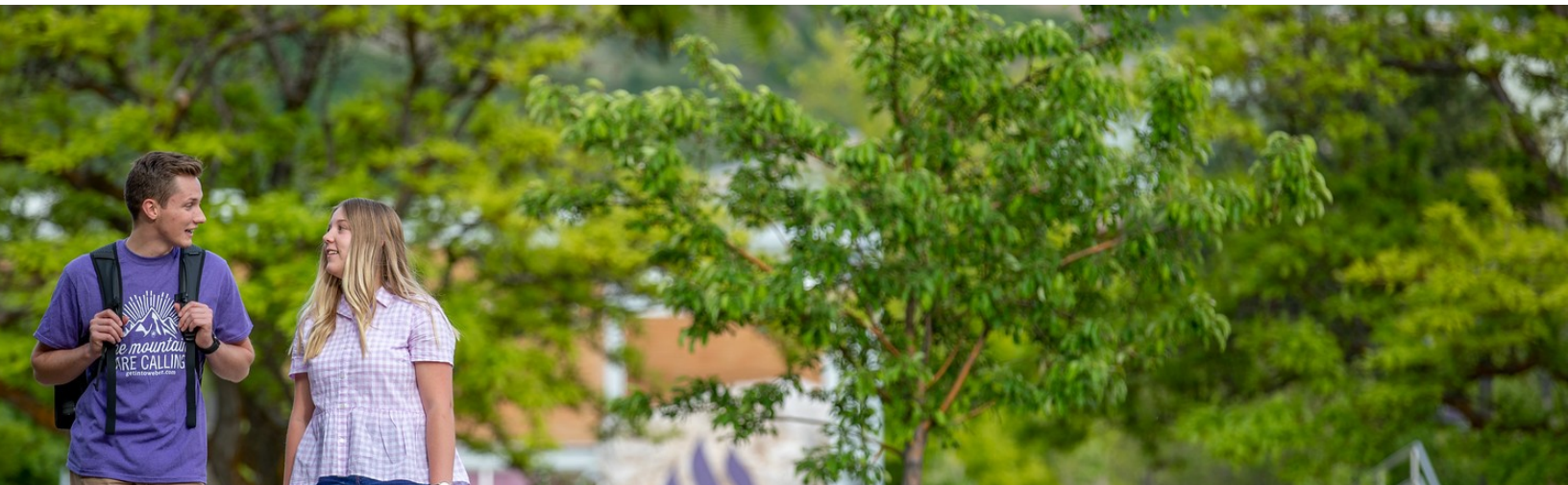
Aside from all these problems we are currently facing in the world due to climate change, there are many steps the world is taking to help fix these issues. There are many things I will further include that I hope to see happen in the next 35 years towards a more sustainable planet. As well, I will include many steps that we can take in our own lives to improve sustainability in our own garden and kitchen.

Solutions & Actions

Weber State University

In 2009, Weber State University and many other colleges joined the American College and University President's Climate Commitment (ACUPCC).¹⁴ This commitment is a pledge to reduce greenhouse gas emissions until a state of carbon neutrality is achieved for each signatory institution. Weber State's vision is to achieve carbon neutrality by 2040 by initiating and pursuing programs that address energy consumption through demand reduction, energy efficiency, conservation, and exploitation of alternate energy sources.

All the students, faculty, and staff have been engaged in this effort both on and off campus. Since 2009, Weber State has excelled in their accomplishments. In 2019, the Princeton Review selected WSU as one of the schools in the U.S. "that demonstrate notable commitments to sustainability in their academic offerings, campus infrastructure, activities and career preparation." By 2019, WSU has reduced its Scope 1 emissions by 29%, Scope 2 emissions by 23%, and Scope 3 emissions by 6%. Some of the most recent accomplishments was the addition of a solar panel parking area, as well as beginning to transition campus vehicles to electric vehicles. Weber State has accomplished a lot in their goals, and you can check the [Sustainability Plans & Reports](#) section for all updates.



The United States & the World

There are many countries and organizations striving to get climate change issues under control. Some of those include the U.S. Environmental Protection Agency, NOAA Education, NCAR, NCDC, the United Nations, the FAO, and many more.

In the United States alone, the Biden administration has many plans for addressing climate-change.¹⁵ The United States hopes to ensure 100% clean energy and reach net-zero emissions no later than 2050. We aim to reinforce our infrastructure so that our buildings, water, transportation, and energy can withstand the impacts of climate change. With the influence the United States has, we hope to rally the rest of the world to meet the threat of climate change. We hope to act against fossil fuel companies and other polluters that profit over people and knowingly harm the environment. Lastly, our country will make a historic investment in clean energy and supporting our future and environmental justice.

In 2015, the Paris Agreement was created and signed by 196 parties. The Paris Agreement is a legally binding international treaty on climate change that has the goal of limiting global warming to well below 2 (preferably 1.5) degrees Celsius.¹⁶ The agreement works by having countries submit their ‘nationally determined contributions’ (NDCs) by 2020. These NDCs share the country’s plan of action they will take to reduce their greenhouse gas emissions to reach the goals of the Paris Agreement. The Agreement also provides a framework for financial, technical, and capacity building support to countries who needed it. With this Paris Agreement, countries established an ‘enhanced transparency framework’ (ETF). Starting in 2024, countries will report on the actions taken and progress in climate change mitigation, adaptation measures, and support provided or received. Since the creation of the Agreement, it has already sparked low-carbon solutions, a greater awareness in more countries, as well zero-carbon solutions becoming competitive.





KIGALI in Action

One of the biggest solutions for combating global warming is by improving refrigeration and reducing food waste. By improving refrigeration, it will reduce atmospheric carbon dioxide by 89.74 gigatons.⁹ Refrigerants, specifically chlorofluorocarbons (CFCs) and hydro-chlorofluorocarbons (HCFCs), were once major culprits in depletion of the ozone. Fortunately, they have been phased out since the late 1980s. However, their replacement chemicals, hydrofluorocarbons (HFCs), have minimal effects on ozone. Unfortunately, the HFCs' capacity to warm the atmosphere is 1,000 – 9,000 times greater than carbon dioxide. In 2016, officials from more than 170 countries gathered in Kigali, Rwanda, to negotiate a deal to address the problems of the HFCs.

Like the Paris Agreement (2015), the Kigali Amendment worked with many countries to address this issue; however, unlike the Paris Agreement, the Kigali Amendment is mandatory. The world began phasing out HFCs, starting with high-income countries in 2019 and then expanding to low-income countries in 2024-2028. The United States originally took little action regarding the Kigali Amendment. President Biden plans to embrace the agreement in his first 100 days.¹⁷

Agricultural & Food Solutions for the Future

There are many solutions we hope to see unfold over the next 35 years in terms of agriculture and reducing food waste. The US Department of Agriculture is taking many steps to create modern solutions to the challenge of climate change. Maintaining farmland through sustainable tillage methods, planting cover crops, practicing permaculture, practicing regenerative agriculture, practicing silvopasture (integration of livestock grazing and forestland), better irrigation practices, and much more.

I'm not going to break down all the individual practices, but in summary they are all methods of maintaining soil health and keeping nutrients available while limiting chemical fertilizers. This includes actions that help break monoculture farming (growing one thing), but instead brings in a better balance of plant life that help recycle and acclimate nutrients to keep soils healthier. By maintaining soil health for a longer time, it also slows the need of de-forestation for new farmland.

We hope to see more of a worldwide transition to plant-based diets between now and 2050. A 2016 study by the University of Oxford modeled the climate, health, and economic benefits of this transition.¹⁸ Business-as-usual emissions could be reduced by as much as 70% through adopting a vegan diet and 63% for a vegetarian diet. Along with emissions reduction, this model calculates a global reduction in global mortality of 6-10%. I know 6-10% doesn't seem like much, but that health impact could translate into trillions of dollars in savings.

We also hope to see reduced food waste throughout the world. In 2015, the United States set a food-waste target, aligned with the Sustainable Development Goals.¹⁹ In the same year, France (Italy shortly after) passed a law forbidding supermarkets from trashing unsold food and requiring that they pass it on to charities or animal feed or composting companies instead. There are also entrepreneurs around the world that are capitalizing on wasted food. There are a lot of places in the supply chain that can impact food waste; along with plant-rich diets, if at least 50% of food waste is reduced by 2050, avoided emissions could be equal to about 26.2 gigatons of carbon dioxide.⁹ With those savings and actions in reducing waste, we can also anticipate helping to provide more to those experience food insecurities.

PROJECT DRAWDOWN®

Many of these solutions and actions have been summarized for us by [Project Drawdown](#). Founded in 2014, Project Drawdown is a nonprofit organization that seeks to help the world reach a point where the levels of greenhouse gas in the atmosphere stop climbing and eventually decline. In the book, *“Drawdown, the Most Comprehensive Plan Ever Proposed to Reverse Global Warming”*, the authors highlight and order the best actions/solutions the world can take to reduce global emissions. With the help and support of various Ph.Ds, MS's, MBAs, MDS's, and many other climate advocates, they have pooled their resources and knowledge together to help provide these solutions to us.

There are many things that I hope to see change in the next few decades that allows future generations to have the possibility to experience a beautiful and healthy planet. Even though we may not think that we can make a difference, an individual action, multiplied by millions, creates global change. If we all act and become more sustainable in our own lives, then not only do we improve our own lives, but we become examples to those around us. This is our only planet, and we need to take care of it while it takes care of us.





Sustainable Gardening: Tips & Actions



Home Gardening

Home gardening has always been a part of my life. When I was a child, I would spend countless days in my grandfather's garden cleaning the cherry tomatoes off the plants until I could not find anymore. I would have to earn my keep and help in the garden or help my grandmother in her flower beds. Now that I am older, I always look for a space to garden. Having a space to garden has even become a criterion when moving to a new home.

There is just something extremely satisfying to me about being able to grow my own crops and bring them into the kitchen for cooking - experimenting with growing different crops and incorporating them into different recipes. It has always been a goal of mine to be as self-sustaining at home as I can be, and gardening has helped me towards that step.

Not only does gardening help us to be more self-sustainable, but it also helps us to reduce our own food waste and appreciate the food that we are growing. When we grow our own food then we are more likely to make sure it goes to use. That includes incorporating it into more recipes, preserving it, or even donating the extras to those in need.

Sustainable gardening²⁰ itself includes many different aspects, all that cause no harm to the earth and the inhabitants in the garden. Instead, sustainable gardening is a great way to benefit the earth, the organisms, and ourselves. Sustainable gardening brings together multiple different gardening tricks, such as companion planting, planting with a purpose, releasing beneficial insects, composting, and much more.



Don't have the space to garden?

That's okay!



Container Gardening – Container gardening is growing crops in different containers, planters, or even buckets. The biggest thing to make sure is that your containers are getting enough water (since they can dry out faster than the ground), but also having good drainage so your roots don't rot. Container gardening work best for tomatoes, peppers, root veggies (potatoes, onions), green beans, and lettuce.

Raised Bed Gardening – The soil at Weber State's Community Garden is way too rocky to have normal in ground gardening. So, we practice raised bed gardening! Raised bed gardening is an extremely popular style of gardening as well. It involves building a raised bed with wood, metal, or plastic, and filling that space with soil. Not only does it help with limited space, but it also limits bending over as much and is easier to keep weeds under control. I'll talk more about raised bed gardening in a few pages.



Vertical Gardening – Vertical gardening is such a cool idea because you can literally do it anywhere! It's a little bit harder to setup, but overall a fun little project. You can either buy a vertical gardening-setup online, or you can construct your own and get creative. Your limitations are going to mostly be weight, as you don't want to grow anything that is too heavy. This type of gardening is perfect for fresh herbs or various greens.



Hanging Gardening – Hanging gardening is very similar to vertical gardening, but this type of gardening works more with hanging planters. Not only can you use your hanging baskets for gorgeous flowers, but you can also associate in some vegetables. Generally, you won't want to plant any root vegetables (unless the pot is deep) or any heavy plants (melons). Tomatoes, peppers, cucumbers, spinach, herbs, and squash would all grow well in a hanging basket.

Window Box Gardening – There are many different planter boxes that can fit over a railing or over your window ledge. Most commonly you see planting flowers, but never assume that if you see a place growing flowers that you can't also plant garden crops instead! Similarly, to some of the other container planting, you can grow tomatoes, peppers, cucumbers, squash, and other smaller crops. Depending on the size & sturdiness of the planter box, you can even grow some bigger crops such as carrots or smaller melons.



Edible Landscaping – I am going to touch more on this subject in the *Permaculture* section, but this is also an extra way of growing some extra edible food in your current garden space. Instead of planting ornamental shrubs or flowers, consider planting some edible ones such as blueberry bushes, dwarf fruit trees, perennial strawberries, and so much more.

I hope that some of these examples can spark your curiosity and get you to try out one of these new methods.

There are a few things that you need to be aware of with any of these gardening options. **Light and water.** You could add soil in there, but with most of these container garden methods you'll be bringing in bagged or bulk soil that is already in a good condition and doesn't often need to be worked on.

When it comes to **light**, it's all about getting enough for your plants to flourish. In Utah, it is generally best to make sure our crops are facing South or West, or don't have any obstructions such as trees or a house. Due to Utah being north of the equator, this is generally a safe way to make sure your plants are getting enough light. However, if your garden is covered and shaded for most of the day then you can still get away with planting some of the cool season/low light crops such as kale, broccoli, cauliflower, cabbage, beets, radishes, brussels sprouts, and many other greens.

When it comes to **watering**, it can vary depending on what you're growing, as some crops require more water than others. A good rule of thumb is to make sure your soil has good drainage so your soil doesn't get waterlogged and suffocates the roots or causes root rot. Plants in containers generally tend to dry out faster than the ground, but you can always check by placing your finger 1-2 knuckles deep to check for moisture.

Resources:

- [Different Gardening Methods - Morningchores.com](http://Morningchores.com)
- [Different Gardening Methods \(Pros & Cons\) - MIgardener.com](http://MIgardener.com)
- [Sun or Shade: Choosing Plants for Your Garden - Millcreekgardens.com](http://Millcreekgardens.com)
- [Watering Chart for Vegetables - almanac.com](http://almanac.com)
- [Vertical Garden Guide - getbusygardening.com](http://getbusygardening.com)
- [Guide to Container Planting - thewellessentials.com](http://thewellessentials.com)
- [Best Plants for an Edible Landscape - thespruce.com](http://thespruce.com)



Raised-Bed/Box Gardening

Tips & Tricks, and Build Guide

As mentioned in the previous section about the various ways to garden, box gardening is extremely popular among gardeners. Box gardening allows you to garden anywhere, provide more food in less space, have fewer weeds, easier pest control, soil accessibility, and you do not have to bend over as far to care for your garden.

There are a lot of different things to think about when you are building a new box garden such as size, material, location, soil, and what to plant.

Let's start with the **size** of the bed. The height can range from 6" to as tall as you want, however do remember that the deeper the bed then the more soil you'll need to fill it with. A good-sized garden bed has a depth of 10-12", allowing more space for your plants' roots to grow, and more soil to retain moisture.



These beds are taller, so less bending, but only have a depth of 6-8" depending on the wood.



While these beds are on the ground, they have a depth of 12", allowing more space for plant roots.

Now let's talk about the **material** you can construct your raised bed with. In the past, I have always made mine out of 2x4" pieces of wood stacked and structured together to make it about 12" tall. However, you can make your raised beds from aluminum, lumber, recycled plastics, galvanized steel, and even repurposed tires! See the images below!

You've got your plans for the height and material for the bed, next let's think about a **location** for your garden bed. Previously, I talked about optimizing the sunlight for our plants and you'll want to do the same with this raised garden bed. Most vegetables need to receive at least 6-8 hours of full sun each day, and the more sun, the better. So, make sure to place your bed in a spot that can get sunlight.

Alternatively, if your space doesn't have a lot of sunlight, you can look to get some of the cool season crops or low-light crops that grow decently in the shade. When setting up your bed, you'll also want to avoid any areas that are low, wet areas that could inhibit your soils drainage. Another easy tip is to make sure you have easy access to a hose for convenience when watering.

There is nothing more satisfying to me than to get my hands in a big pile of **soil**. The organic smell, the texture, and the purpose of the soil always makes for a fun day working in the garden. Like I previously mentioned, box gardening has an advantage regarding soil. You don't have to mess around with too rocky soil, or too much clay, as you get to fill in your newly built garden bed with rich soil.

Based on the size of your bed, then you'll have to get soil to meet the needs. You can use a [Soil Calculator](#) to help calculate how much you'll need. A good proportion of soil for your bed is 60% topsoil, 30% compost, and 10% potting soil.



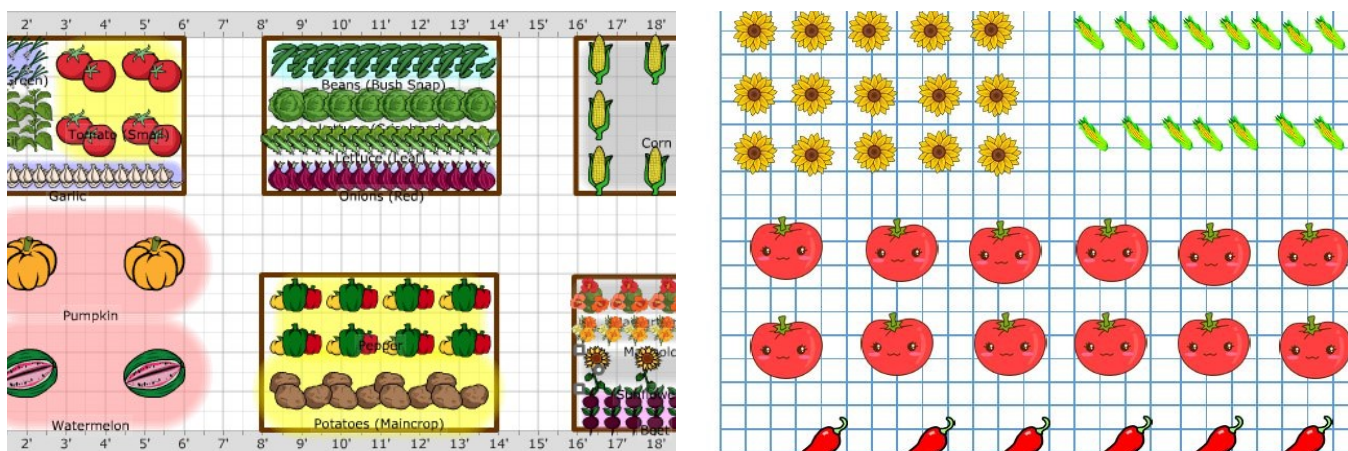
Pictured above is a bulk material yard, where you can purchase topsoil, compost, mulch, decorative rock, and other gardening & landscaping material. There are many in Weber/Davis county.



Two examples of different materials to build a box garden bed with. On the left we have metal, and on the right we have plastic.

Throughout my years gardening, I keep changing **what to plant** so I can experience new foods, observe different species growth cycles, and learn how to garden better. Deciding what to plant is going to be different for everyone but given where we live then there is sure to be some overlap. The best thing to do is to think about what your normally like to eat and think about what crops could go with that.

If you are big on salads, think about growing tomatoes, lettuce, cucumbers, and carrots. If you are big on cooking, plant onions, peppers, potatoes, and herbs. You aren't limited to anything as well, the space is yours to experiment with! You can also use this helpful [Kitchen Garden Planner](#) to help plan out your space.



Two examples of garden plans that you can do. On the left we have someone's garden plan online, and on the right is my own garden plan from 2020. I measure out a grid based on square feet to help me visualize my space.

Resources:

- [Soil Calculator - gardeners.com](#)
- [Kitchen Garden Planner - gardeners.com](#)
- [50+ Free Raised Bed Garden Plans & Ideas - epicgardening.com](#)
- [Expert Tips for Raised Garden Beds - eartheasy.com](#)



Easy-to-Grow Crops

For Northern Utah

Raising and growing plants isn't always easy, and I understand that. I've met a lot of people who claim, "*I don't have a green thumb; I kill everything I try to grow.*" I'm sure to some extent they have a hard time growing plants, but it always depends on the type of plant. I'm sure you're thinking, "*But you're a botany student, of course you can say it isn't that hard.*" You're right, but I've only studied a small part of botany and I'm here to help you grow the best crops that you can!

I am going to list below some of the easier plants to grow in Northern Utah. If you don't think that you have much experience in the garden, then I encourage you to go with some of these listed below. I am also going to include a few pieces of information about each plant, including the time (season) to plant & harvest, sun conditions, and watering conditions.

Lettuces (*Latuca sativa*)

Varieties - Great Lakes, Iceberg, Salinas, Summertime, Butterhead, or Bibb

Planting Time - Seeds mid-April thru mid-May (soil temperatures of 40°F or greater)

Harvest Time - As little as 6 weeks, pick the outer leaves (which encourages inner leaves growth). You can harvest the whole head when they are a good size (about the size of a youth soccer ball).

Sunlight - Full sunlight (Spring & Fall), they are more of a cool season crop and don't do well in warmer temperatures of 75°F+

Watering - 1-2" per week, trying to keep evenly moist

Cucumbers (*Cucumis sativus*)

Varieties - Marketmore, Spacemaster, Sweet Success, Armenian, Pickling, Japanese

Planting Time - Seeds late-May (soil temperatures of 65°F or greater) or transplants mid-late May (after last frost)

Harvest Time - 50-70 days (5-7 days after flowering), pick when they are 6-9" long (generally)

Sunlight - Full sunlight

Watering - 1-2" per week, make sure the soil has good drainage

Tomatoes (*Solanum lycopersicum*)

Varieties - Too many to list, my favorites are Sun-sugar and Beefsteak

Planting Time - Seeds late-May (soil temp of 60°F or greater), transplants mid/late-May (after last frost)

Harvest Time - Depends on the type, generally a month after flowering.

Sunlight - Full sunlight

Watering - 1-2" per week, watering deeply and infrequently while trying to maintain an even moisture

Onions (*Allium cepa*)

Varieties - Utah Sweet Spanish, Fiesta, Walla-Walla, Sweet Sandwich

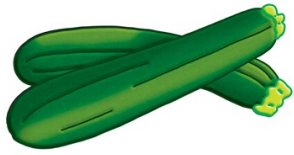
Planting Time - Transplants late March or April, or start in Fall for winter onions.

Harvest Time - Depends on the type, green onions can be harvested early but bulb onions can be harvested once their top leaves fall over (remove and dry for 2-3 weeks).

Sunlight - Full sunlight

Watering - Deep watering about every 6-7 days.

A favorite of Weber County gardeners!



Zucchini/Squash (*Cucurbita sp*)

Varieties - Butternut, Buttercup, Acorn, Pink Banana

Planting Time - Seeds & transplants mid/late-May

Harvest Time - About 50 days after planting, generally harvested immature before the skins toughen, when fruits are fully colored.

Sunlight - Full Sunlight

Watering - 1-2" per week, watering deeply and infrequently while trying to maintain even moisture.



These are just some of the many plants that you can grow in Utah. For more plants and information, refer to the [Fruit, Vegetable, and Herb](#) growing guide provided by USU Extension. You can also look to the [Utah Farmer's Almanac](#) for planting dates.

Resources:

- [Fruit, Vegetable, and Herb Guide - extension.usu.edu](http://extension.usu.edu)
- [Utah Farmer's Almanac: Planting Calendar—almanac.com](http://almanac.com)
- [Testing Soil Moisture—gardeningknowhow.com](http://gardeningknowhow.com)
- [Top 10 Plants that Grow Best in Utah - myallgreen.com](http://myallgreen.com)



Cover Crops

There are a limited number of things we can do with our garden in the off-season. I normally take the time to plant bulbs for next year, clean up some of the area, or add on to the garden. However, in our goal of becoming more sustainable means improving our soil to be more fertile for the future. Cover crops are a way to do that and should be viewed as a long-term investment to the soil's health. A cover crop is a plant that is used primarily used to slow erosion, improve soil health, enhance water availability, smother weeds, help control pests and diseases, increase biodiversity, and bring a host of other benefits to your garden.²¹

There are many different types of cover crops, but the first thing to do is to identify your main reason for wanting to add them. Are you looking to add nitrogen to your soil, provide weed control, break up your hard soil, or what? Listed below are some of the different types of cover crops and some of the benefits that they offer.

Nitrogen Fixers

Legumes such as red clover, crimson clover, vetch, peas, beans, and alfalfa.

- Legumes possess nodules on their roots that form symbiotic relationships with soil-dwelling bacteria. The bacteria take up atmospheric nitrogen and convert it into a usable form for plants, which is then exchanged with the legumes for carbohydrates.

Quick Growers & Easily Compostable

Cereals such as annual rye, wheat, oats, ryegrass, barley, and sorghum.

- These plants grow quickly which means that they are easily harvested, composted, or tilled back into the soil. Doing this provides a great nutrient source of organic matter.
- Also called “Green Manure Crops.”

Weed Inhibitors & Clay Breakers

Broadleaf plants such as buckwheat, mustard, turnips, daikon radish, and oilseed radish.

- These plants tend to shade out competitive weeds and inhibit germination of weeds. The brassicas (mustard, turnip, radish) have long taproots that can break up hard soils.

There are many different kinds and combinations that you can use these cover crops for. For example, you can plant some low growing covers at the base of your vegetables to conserve moisture and add nitrogen. Or you can plant a crop in the fall for fall/winter protection. You can check out this [Cover Crop – Organic Gardening guide](#) for more info or this [Sustainable Agriculture Cover Crop guide](#).

Understanding Soils

Not just dirt!

Soil is an important part of gardening; however, it can be quite extensive and overwhelming. Understanding soil can help multiple aspects of gardening, from understanding what to grow (or problems you're having) or optimizing your watering schedule. I want to provide you with a brief understanding of the different parts of soil, how to determine your soil type, and what that means.

There are three main particles in soil – Sand, Silt, and Clay. Sand particles are the largest, followed by silt, and then clay. An easy/fun way to check your soil is to get a mason jar and fill it 2/3 full of water, then add enough soil to nearly fill the jar. Shake it up and leave it in a spot where it won't be disturbed. Give it several days to allow the different particles to separate. You can measure the height of each layer then divide it by the total measurement of all three layers.

Example. Sand layer is 2" high, the total is 2.75". Then we can calculate $2" / 2.75" = 73\%$ sand

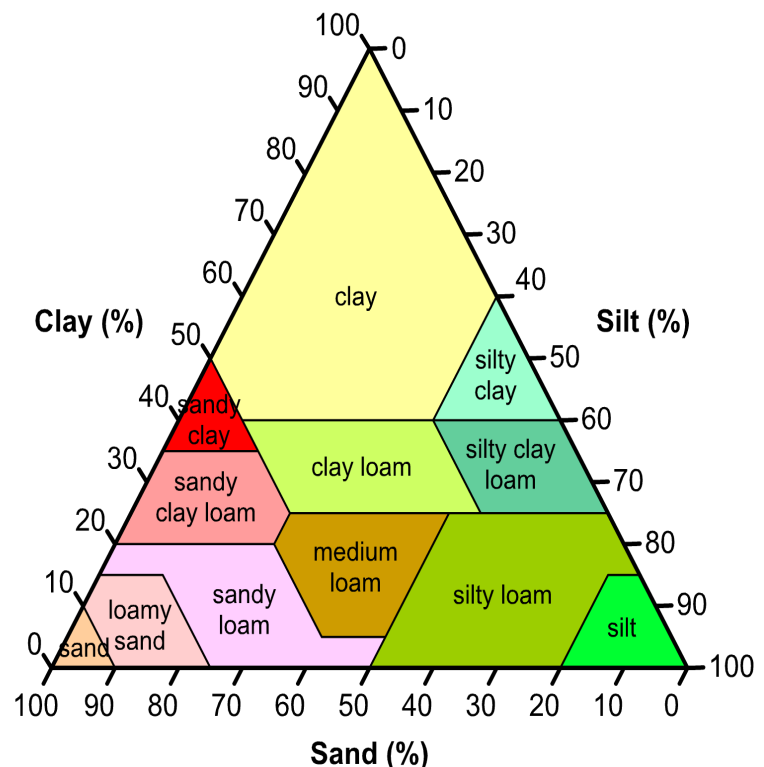
Once you've found a good estimate for your soil, you can take this information into a soil textural triangle to identify what type of soil you have. From there, it is easier to help make any changes to the soil if needed.

Listed below are some of the soil types and how you can improve them.²²

Clay Soil – Clay soils drain poorly and tend to retain water well. However, clay particles are very rich in nutrients (clay particles are negatively charged, and most nutrients are positively charged, so they “stick” to the clay particles). You can add in clay breaker cover crops, add in organic matter regularly and deeply, or aerate the soil.

Loamy Soil – Loamy soil is the perfect type of soil. It doesn't drain the water too fast, but just enough to not easily get waterlogged. It also contains a good amount of nutrients. A loam soil is a mixture of varying amounts of clay, sand, and silt.

Sandy Soil – Sandy soil drains water quickly, and through that it leaches nutrients out of the soil (sand is not a charged particle, so no “sticking”). You can add organic matter (compost), mulch, or grow green manure cover crops. Add at least 2" of organic matter each year.



Silty Soil – Silty soil is somewhat in the middle regarding clay and sand. It drains well but retains some moisture. It is higher in nutrients than sand, but not clay. It is still recommended to add some organic matter to help prevent erosion.

Water Conservation

Water conservation is defined as the reduction of water usage and the protection of water from pollution. About 70% of the Earth's surface is covered by water though only 1% of that water is usable for human consumption. Water is a requirement for life; thus, water conservation is a way to preserve life as we know it.²³

There are many steps we can take to conserve water in our own lives. I was always encouraged to take shorter showers, not leave the sink running, and be overall cautious about my water usage. All those actions are important and are good to have in our water conservation ethics.

By using less water, it will reduce the volume of water that is taken from natural habitats such as rivers, lakes, and aquifers. Also, by using less water we are using less energy because of the energy needed to pump water from a source, purify it, and distribute it to our homes and business.

As I mentioned previously when discussing current problems, water overconsumption can be caused from multiple factors. Agriculture, livestock raising, food waste, and energy waste are all broad examples. For this section of the guide, I am going to be talking about conserving water in our own gardens. Some consider our outdoor watering to be half or more of all water used in cities, including watering of lawns, gardens, golf courses, and other landscaped areas.²⁴

Listed below are some tips to conserving water in your garden, provided by the [Daily Gardener](#).



Applying Mulch – Mixing in mulch or shredded bark to your flower beds or garden will help reduce evaporation as well as discouraging weeds from growing (competition for water).



Spreading Compost – Along with spreading mulch, you can also spread a layer of compost over your garden. Compost contains a lot of organic matter, primarily humus (not the dipping kind), which can absorb water. Along with water absorption, compost contains many nutrients, improving the quality and health of your soil.



When to Water – Something that is always argued about is when to water your plants? Avoid watering in the heat of day, as that leads to the highest amount of water evaporation. I generally prefer to water in the morning while taking care of the rest of the chores.

It generally tends to be the cooler part of the day and the heat of the day will help to prevent fungal infection as if you watered in the evening. It is also a good tip to look at the weekly forecast, so you can change your water schedule based on any forecasted rain or droughts.



Planting Drought Tolerant Plants (Xeriscaping) - There are several drought tolerant plants that you can grow in Utah (several listed in the Index). Drought tolerant plants, or 'xeric' plants are those that have adaptations that allow them to tolerate high temperatures and retain water better.

An example of some of these are cacti and other succulents. However, there are many plants that are drought tolerant, and you can incorporate them into your landscape to help limit water usage.

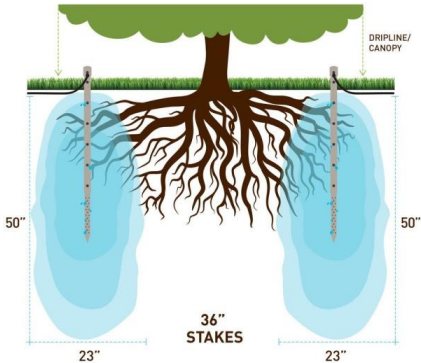


Smart Watering Techniques – Sprinklers are good for large areas, but they can use up a lot of water and are not well targeted. You can use a hose to water specific areas. The USU Extension program CWEL (Center for Water-Efficient Landscaping) offers a free evaluation of your lawn, sprinkler system, and will provide a custom irrigation schedule for your lawn.

Check out the [Water Check Program](#). Drip irrigation is also a fantastic and efficient way to water your landscaping beds, garden, and container plants. It involves a series of tubes that run to key points along the ground and waters a select amount. You can read this [Drip-Irrigation-Basics](#) guide or check out any home improvement/garden center for kits to start. Plus, imagine how much water you can save if you combine xeriscaping and drip irrigation!



Understanding Your Soil – Definitely refer back to the section about soil to figure out how to identify your soil and how it can also help with your plants. Regarding water conservation, the type of soil can help prevent overwatering. Clay soils need watering less often but require heavier watering when you do. Sandy soils need more watering. A good way to check is to dig down about 6-8” with a shovel and check for moisture.



Training Your Plants – You can train your plants’ roots, whether that be your lawn or your garden/flower plants. By watering less frequently, but deeper watering, you encourage your plants’ roots to dig deeper in search of water. This encourages deeper roots which can lead to better nutrient/water uptake. Additionally, it helps improve drought resistance by having that larger surface area of roots.

Resources:

- [USU Water Check Program - cwel.usu.edu](http://cwel.usu.edu)
- [Drip-Irrigation Basics - rainbird.com](http://rainbird.com)
- [Water-Wise Utah Tips - waterwiseutah.org](http://waterwiseutah.org)
- [13 Essential Tips for Conserving Water—thedailygardener.com](http://thedailygardener.com)

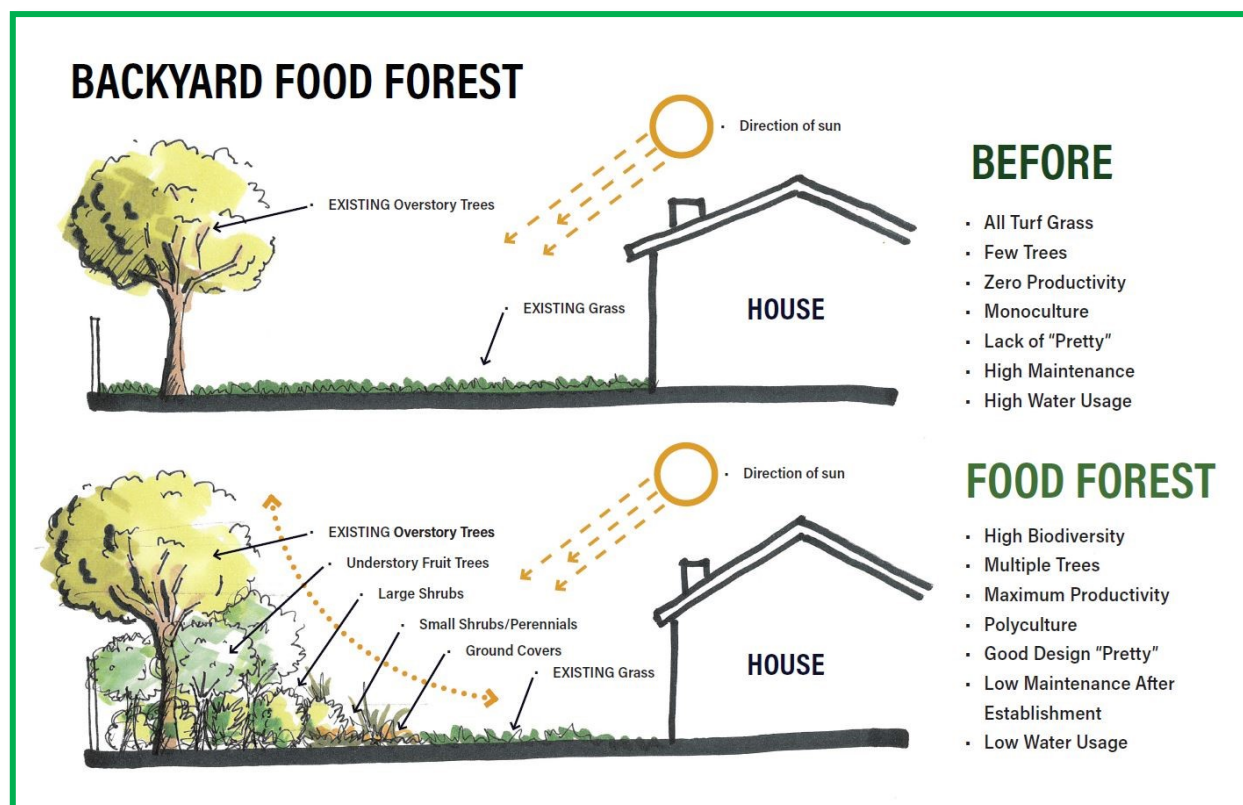


Permaculture

Permaculture is a way of involving ecology and agriculture to create systems that limit external work. It involves working with nature that includes land, resources, people, animals, and the environment in a way that is mutually beneficial for all participants. This involves putting the shape of the land, and the shape of the plants into an efficient use. There are some basic ideas we can take while shaping our yard into more of a permaculture area.

Optimizing Your Space – It is too often seen in yards that people are not using their space to the fullest. Planting one tree, or a couple shrubs, with nothing else around it is a bad example of using your space. Instead, we can optimize the space we have and the varying sizes of plants to best fill our yards/gardens to allow an easy to care for, beneficial space for all those included.

A big idea with permaculture is planting in an ‘order of size’ based on the plants, the space you have, and the sunlight. For example (reference the picture), say the back of your yard is on the northern most part and we’re going to expect sunlight from the south. At the very back of your space, you can plant taller trees, followed by smaller fruit trees, followed by large shrubs, then small shrubs/perennials, followed by ground covers, followed by your lawn. By working in unison with the sun’s direction, and the space given to you, you can follow this descending design to optimize your space.



In this example, you can see how the various sizes of plants are ordered in a way to not block out sunlight from the next subsequent plants. This allows for efficient planting and getting the most out of your space.

Planting with Purpose – Many of the plants we can put in our yard or gardens can be more than just a pretty flower. There are many plants that we can, in turn, utilize for our own benefit. Aside from planting a garden, we can plant fruit trees, herbs along our flower beds, aromatic plants, plants that make a good compost, and much more. Some examples are listed below:

- *Comfrey* - nutrient accumulator, mulch maker, medicinal
- *Serviceberry* - edible (us & birds)
- *Grapes* - vining, decorative plant, edible (us & birds)
- *Apples* - edible, compostable, attracts wildlife
- *Sunflower* - edible, decorative, self-reseeding, birdseed, mulch
- *Lavender* - decorative, insect repellent
- *Perennial Strawberries* - edible, groundcover
- *Currant* - edible, attracts wildlife
- Much, much more!

Resources:

- [What is permaculture? - permaculturenews.org](http://permaculturenews.org)
- [How to Start a Permaculture Garden - grycycle.com](http://grycycle.com)
- [A Beginner's Guide to Permaculture Gardening - the ecologist.org](http://theecologist.org)
- [The Principles and Benefits of Permaculture - advice.manomano.co.uk](http://advice.manomano.co.uk)



Xeriscaping

Xeriscaping is the practice of designing landscapes to reduce or eliminate the need for irrigation. According to the Standard-Examiner, Utah is the second driest state in the nation and most of our residential water goes to outdoor irrigation.²⁵

The goal for xeriscaping is to not have you go and tear up your entire lawn, but you can first start by looking at areas in your yard that don't see a lot of use. Either that corner spot of the flower bed that doesn't get a lot of water, or the parking strip that you must manually water with a hose. Some common examples are side yards, parking strips, house corners, and even some spots in the front yard.

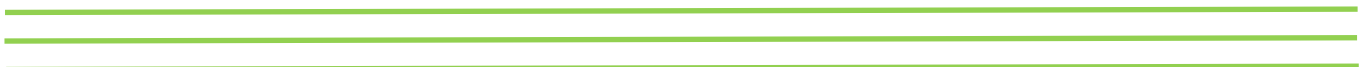
Once you've started looking at an area you want to change, the next step is to choose plants that you want to integrate. You can go to any local nursery and work with one of the experts to find plants that do well in the spots you've chosen. Included in the index will be a list of water-wise plants for the state of Utah.

Check out the index for that list!

With this, you can start looking at how your sprinklers are setup and located. Sprinklers can easily be capped or replaced with drip systems to accommodate your newly formed water-wise plans. Removing any grass can be very easy, and there are multiple methods of doing so. My recommendation is by laying 8-12 layers of newspaper over the area you want to kill the grass, and then wet the water. This will suffocate the grass and won't allow any light, so after about 2-3 weeks the grass will be dead, and you can work on your xeriscaping.

Resources:

- [Water-Wise Plants for Utah - waterwiseplants.utah.gov](http://waterwiseplants.utah.gov)
- [How to get started with Xeriscaping—loveyourlandscape.org](http://loveyourlandscape.org)
- [5 Ways to Xeriscape on a Budget - resourcecentral.org](http://resourcecentral.org)



Composting

Composting is defined as the biological degradation process of heterogeneous solid organic materials under controlled moist, self-heating, and aerobic conditions to obtain a stable material that can be used as an organic fertilizer. In other words, it is how we can go about recycling and re-purposing our brown and green waste through the decomposition process to provide us with a rich fertilizer for our plants and soils.

Composting has been used for thousands of years, and it has been known that the Ancient Romans, Greeks, and other Middle Eastern civilizations practiced composting. They often used manure from animals, street sweepings, and other organic matter in their compost piles.

It is important that we utilize the composting process in our own space, as it will help us to cut down our own waste as well improve the soil conditions for our gardens. By tossing in our expired crops, our grass clippings, or our extra scraps from the kitchen, then all of that can be broken down and repurposed back into our garden or flower beds. We can even practice composting in a smaller scale by taking our scraps from the kitchen, or scraps from our houseplants and mixing them into a home worm-tea composter. Following any of these composting methods will help us limit our waste by reusing it in other aspects. It helps us appreciate what comes from our garden, and we can in-turn support our garden by making this effort.

Below are a couple of resources to help you compost at home! Included in these guides is what to add/avoid in your bins, different structures to make, as well as other tips to make sure you are getting the most out of composting.

—> Follow [this guide](#) for composting for your garden!

—> Follow [this guide](#) for composting in your kitchen!



The Weber State Sustainable Clubs put on a composting guide this previous year, there are many different ways to compost. You can do it in 5-gallon buckets, or large buckets, or even construct a space with extra pallets.

Gleaning

Gleaning is the art of collecting leftover crops from farmers' fields after they have been harvested. We can also glean crops that we missed out on or have extra from our own personal gardens. In my personal garden, I always seem to grow too many tomatoes and cucumbers than I can actually eat. I do not always want to make tomato sauce or pickle the cucumbers, but I feel bad for letting them go to waste. There are plenty of places in Weber County that will gladly take the extra crops and can get them to those in need. These places are listed down below.

Weber Cares Pantry

Ogden Campus
Shepherd Union,
Room 402
(801) 626-7737

The Lantern House

269 W 33rd St. Ogden,
UT 84401
(801) 621-5036

Catholic Community Services

2504 F Ave. Ogden,
UT 84401
(801) 394-5944

The Salvation Army

2615 Grant Ave.
Ogden, UT 84401
(801) 621-3580

Hope Resurrected Church

2279 Jackson Ave.
Ogden, UT 84404
(801) 399-3721

Griffin Memorial Church

2424 E Ave. Ogden,
UT 84401
(801) 399-1444

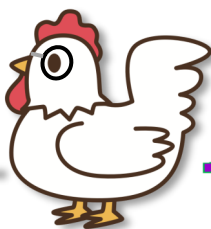
Please call ahead to any of the organizations or food pantries to confirm that they are receiving donations at that time. You can also check out our previous [Fall 2020 Gleaning Guide](#) that was posted around local garden centers.





A Sustainable Kitchen

- Actions & Recipes





Weber Cares Food Pantry



The Weber Cares Food Pantry is in the **Shepherd Union, room 402**. The Pantry has strived to increase healthy eating options, decrease food insecurity, and increase students' ability to stay in school and finish their degree. The Weber Cares Food & Resource Pantry provides free food to the WSU community to ensure food is not a barrier to academic success.

Throughout the pantry's existence, the staff have supported many food drives, accommodated online ordering in a pandemic, and helped to provide to those in need. The Weber Cares Pantry will provide up to 2 bags of food & resources each week to help WSU students and community members get through their academics.

The Pantry has a lot of items donated to them to help provide students with food and nutritional options. Some of the common items that they receive are pastas, rice, canned soups, boxed meals, potatoes, canned beans, tuna, canned fruit, and various small snacks.

[Connect to their website!](#)

Planning & Cooking Your Meals

Cooking at home is cheaper and usually much healthier than eating out. You also have more freedom to use foods that are fresh, locally sourced, fair trade, or sustainably farmed. There are many reasons/benefits as to why you should cook your own meal; you'll always know what you're eating, you can save money by purchasing what you'll need, you'll reduce the temptation of eating large, high-calorie meals, and it's also a great bonding experience for you and your family.²⁶

Restaurant food is typically lower in nutrients and higher in fat, sugar, and salt. The reason for this is to give off that taste experience, not catering to your health goals. However, by cooking your own meals you can ensure that you are cooking healthy, adhering to your nutritional goals, and know everything that went into that dish.

Because you're in control of what you're eating, you can ensure that the food you are eating is sustainable. You can make sure the food you buy is grown locally (or your own yard) or raised sustainably. There are many organizations (seafood for example) that ensure their seafood is top-quality and sustainably sourced, such as OceanWise and Aquaculture Stewardship Council.

Please refer to the recipe portion of this guide for sustainable recipe tips, or you can check out [MyPlate](#) to start planning some recipes that fit your needs.

| FIGHT FOOD WASTE MEAL PLANNER AND SHOPPING LIST | | |
|--|------------------------------|--------------|
| MONDAY | AMOUNT NEEDED FRUIT & VEG | ALREADY HAVE |
| TUESDAY | BREAD & CEREALS | |
| WEDNESDAY | DAIRY & FROZEN | |
| THURSDAY | | |



By using a meal planner (left) it helps us plan out meals, so we can purchase what we need without purchasing excess. Saving on money and cutting back waste. Meal prepping for the week (right) is a good way to eat healthy.

Resources:

- [MyPlate Meal Planner - myplate.gov](https://myplate.gov)
- [Meal Planner & Shopping List - ozharvest.org](https://ozharvest.org)
- [Beginner's Guide to Meal Planning - thekitchn.com](https://thekitchn.com)

Meatless Mondays

As much as switching to a plant-based diet can benefit us and the environment, however it is not something you need to do cold turkey (pun intended). Meat has been a staple in the American diet for centuries and has been a long outstanding part of tradition. That's not something you can just cut out of your diet that easily. However, there is a good way to transition into consuming *less* meat throughout your weekly meals. Starting with Meatless Mondays is a good way to slow down meat consumption. From there, you can begin to transition into more days throughout the week.

Throughout my switch to more of a plant-based diet I have missed some of the meats I normally consumed. At first, I completely cut out all meat and tried to focus on legumes for my protein source. It was hard for me, so I tried to find a happy medium with my diet and current exercise goals (regarding protein). My happy medium is that I've cut out beef, pork, lamb, and some high-energy consuming fish, while sticking to chicken and tilapia as my primary protein source. Doing so has allowed me to switch my diet in a way that is still beneficial, while still a comfortable way for me to meet my own nutritional needs.

Resources:

- [MyPlate Meal Planner - myplate.gov](https://myplate.gov)
- [Go Meatless Monday - mondaycampaigns.org](https://mondaycampaigns.org)
- [Make it a Meatless Monday - foodnetwork.com](https://foodnetwork.com)
- [Benefits of Meatless Monday - mondaycampaigns.org](https://mondaycampaigns.org)



**Go Meatless Monday—
It's Good for You,
and Good for the Planet**

Sustainable Foods

Something I've mentioned in many of the different sections of this guide is making sure your food is sustainable. By that, I mean foods that are limiting the amount of energy put in versus the amount of energy (calories, protein, nutrients) we get back. There are many ways we can be sustainable with those foods. A few of those ideas are listed below.

Buying local or growing your own crops is an example of being sustainable with food because it cuts out the extra energy needed in transportation, storage, and cooling of those crops if they were instead shipped from across the country. The same thing can be said for a lot of other goods besides food. You can instead look for local shops to get something, instead of ordering it off Amazon. Plus, shopping local is a great way to support the community.

Take advantage of stores that offer bulk foods, such as Winco, Sam's Club, or Costco. If you combine buying in bulk and buying minimally processed foods, then this translates into less packaging, waste, energy, and water used to produce foods. It is also a good way to save money, save time, and you can buy foods that you like to eat.

Sustainable aquaculture is growing to be one of the solutions for sustainability feeding the world. Farmed fish take less energy and can produce more sources of protein and nutrients than wild fish.³¹ Plus, you must account for the large water need of storage and farming of these carnivore fish. However, there are many US farm-raise, plant eating fish that are much more sustainable than air flown salmon or tuna. This includes herring, carp, sardine, US farmed catfish, barramundi, tilapia, shrimp, clams, oysters, and mussels. You can learn more about sustainable seafood and practices on the [Monterey Bay Aquarium Seafood Watch](#) website.

Eating food within the season is another way to help limit the energy needed for these foods. For example, blueberries don't grow in Montana during January, yet we can still buy "fresh" at this time. This is because these "fresh" blueberries are transported from other parts of the world where they are growing at that time. When we buy out of season foods, then we are also supporting the transportation, refrigeration, and storage costs/energy behind them. By limiting ourselves to eating seasonally, then we can help cut down on those costs.

Resources:

- [Monterey Bay Aquarium Seafood Watch - seafoodwatch.org](https://seafoodwatch.org)
- [Sustainable Food Guide - nutritionstripped.com](https://nutritionstripped.com)
- [What is Sustainable Food? - sustainweb.org](https://sustainweb.org)

Preserving Food

Now that I've talked about the various ways to be sustainable when planning, purchasing, and cooking our meals, the next step is to talk about different ways we can preserve our food to cut down on even more food waste. There are so many different ways to preserve food, from canning, freezing, drying, pickling, making jam, and just overall storage of food. I personally try to juice tomatoes from the garden, so I have tomato sauce throughout the year, cutting down on having to buy any from the store.

By learning how to preserve food better we not only cut down on food waste, but we can also save money by having those preserves readily available to us for our cooking. A great resource to you is the [National Center for Home Food Preservation](https://nchfp.uga.edu/) that goes into great depth on multiple methods of preservation, with helpful guides and recorded webinars.



By canning your foods, you can store your fruits, vegetables, herbs, jams & jellies, and more. Doing so can help give you a supply of food for a long time.



Freezing your extra fruits & veggies can help limit waste while cooking. You can store them in serving sizes to thaw as needed.

Resources:

- [National Center for Home Food Preservation - nchfp.uga.edu](https://nchfp.uga.edu/)
- [Helping to Avoid Food Waste - homepreservingbible.com](https://homepreservingbible.com)
- [A Guide to Home Food Preservation - masterclass.com](https://masterclass.com)
- [Utah Food Preservation & Canning - extension.usu.edu](https://extension.usu.edu)

Understanding Expiration Dates

As I previously mentioned, at least 1/3 of food in the United States is tossed out and wasted. This is primarily because of aesthetic reasoning or misunderstanding of expiration dates. This section is to help explain the difference between the common expiration dates so you can get the best out of your food and limit waste.

Sell-by:

This date tells the store how long to display the product for sale, and you should buy a product before the date. This does not always mean the product is unsafe to consume after the date.

Best if Used by:

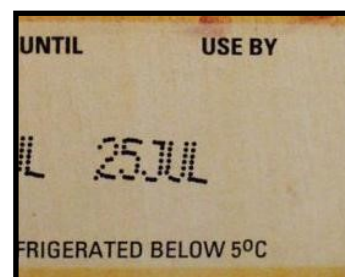
This date is recommended for best flavor or quality. It is not a purchase or safety date. After this date, you can use smell and taste to determine if the food is safe to eat or not.

Use-by:

This date is the last date recommended for the use of the product while at peak quality. The date has been determined by the manufacturer. After this date, product quality is likely to go down.

Closed or Coded:

Packaging numbers used by the manufacturer. Not as relevant to consumers.



Many foods can still be used after these above dates, as they usually refer to best quality and are not safety dates. If products are kept in adequate storage, then they can last longer. You can refer to this [Food Label Guide](#) for various tips and times for different storage methods.

Taking a Food Class

Last, but not least, I want to provide you with some fun information on how you can learn and get better at cooking. With all the different sustainable gardening and cooking resources, I want to also provide you with more information on how you can improve your cooking.

Weber State offers various gardening and cooking courses through the [Continued Education program](#). There are a great variety of courses available but keep your eye out for any relevant ones that interest you! Also, there are many cooking classes around Ogden city. You can google any of these or you can use this [Ogden Cooking Class](#) search tool to find which ones are being held.



Taking a cooking class at Weber State, or locally in your city, can help improve your cooking skills. Not only is it a fun activity, but you'll learn how to cook delicious food and better use ingredients!

This concludes the action section of this guide. I sincerely hope that you've learned something from this guide, and hopefully have seen a couple actions that you want to try out in your life! Not only will these actions help you become more sustainable in your own lives, but it will also help improve the planet.

**“An individual action,
multiplied by millions,
creates global change.”**

-Jack Johnson





~Recipes List~



Provided by Weber State Students, Faculty, and Community Members

Recipe List Intro

The recipes listed in this section of the guide include those provided by Weber State Students, former students, faculty, community members, and various recipe guides online. The overall goal is to provide you with examples and recipes of sustainable foods that relate to the other sections of the guide. Combining sustainable gardening and kitchen actions into tasty recipes that we all can enjoy.

I'd like to start by defining the difference between vegetarianism and veganism. You can identify each of the recipes based on the icon placed in the bottom corner part of the page. The icons look like this.



Vegetarian – Vegetarians are people who do not eat the products or byproducts of animals. These includes meat, poultry, fish, insects, rennet, gelatin, stocks, or fats that derive from animals.

However, there are many vegetarians that do consume byproducts of animals that does not involve the death of the animals. These include eggs, dairy products, and honey.

There are many variations of a vegetarian diet, listed below.

Lacto-ovo-vegetarian – Avoid all types of meat and fish but do consume dairy products and eggs.

Lacto-vegetarian – Does not eat any meat, fish, or eggs, but do consume dairy products.

Ovo-vegetarian – Does not eat any meat, fish, or dairy products, but do consume eggs.

Pescatarian – Does not eat most meats but eats fish and other types of seafood.

Vegan – A stricter form of vegetarianism, vegans avoid consuming or using any animal products or byproducts. The Vegan Society defines veganism as “a way of living, which seeks to exclude all forms of exploitation of and cruelty to animals for food, clothing, or any other purpose.”³²

Vegans strictly avoid food/drink that contain meat, poultry, fish, eggs, dairy, insects, rennet, gelatin, stocks, or fats that derive from animals.

Some vegans will also extend their principles beyond their diet and try to avoid any product that involves the human use of animals including: leather goods, wool, silk, beeswax, soaps, candles, latex products, and cosmetics that manufacturers test on animals.

Sweet Potato Tacos

Katherine Meyer, Applied Environmental Geoscience Major

- 2 Sweet potatoes
- 1 can black beans
- 1 avocado
- 4 flour or corn small tortillas
- Cilantro (for garnish)
- ½ tsp paprika
- Cheese (Vegan or non)
- Sauce – Chipotle sauce, tahini dressing, or your favorite salsa



Bake the sweet potatoes @ 400° F for 1.5 hours wrapped in tin foil. Or cook until it can be cooked until easily punctured with a fork. Rinse and strain the black beans, heat them in a saucepan with paprika on medium heat for a few minutes. Cube or dice the avocado. Add all the fixings into the tortillas and top with cilantro and cheese. A great camping dinner as well!

Vegan Chocolate Chip Cookies

Kelsey Burton, sophomore of Sociology

- ¾ cup refined coconut oil, melted
- ¾ cup organic granulated sugar
- ¾ cup organic brown sugar
- ½ cup unsweetened applesauce
- 2 teaspoons vanilla
- 2 ½ cup all-purpose flour (see notes for gluten free option)
- 1 tsp baking soda
- 1 tsp salt
- ½ tsp baking powder
- 1 ¼ cup vegan chocolate chips



In a large bowl, add the coconut oil, granulated sugar, brown sugar, applesauce, and vanilla, mix well. Stir in the all-purpose flour, baking soda, baking powder and salt until the dough forms. Lastly, mix in chocolate chips until well incorporated.

Set the dough into the refrigerator to chill for 2 hours (or in the freezer for 1 hour). Since we are using melted coconut oil, the cookies on their own (unchilled) will be flat and may overspread.

Preheat oven to 350°F and line a baking sheet with parchment paper or a silicone mat. Keep in mind that this recipe makes 3 dozen so you will need to bake multiple batches. See notes for freezing options.

Using a tablespoon sized scooper, drop mounds of dough onto the baking sheet 2 inches apart (we fit 12 on each sheet and baked these in 3 batches). No need to press them down.

Place into the oven and bake for 13-14 minutes, or until the edges brown. The cookies will seem soft but don't worry, they will firm up while they cool. Allow the cookies to rest on the baking sheet for 1 minute after removing them from the oven and then carefully transfer them onto a cooling rack using a spatula. Cool completely.

Vegan Curry

Ellen Shindoler

- Handful of fresh coriander leaves
- 2 cloves garlic
- 1-inch fresh ginger root, peeled
- 1 tbsp turmeric
- 1 tbsp cilantro
- ¼ tbsp cumin
- ¼ tbsp cinnamon
- ½ tsp cayenne pepper
- 2 tbsp water
- 3 tbsp oil
- 1 onion, diced
- 1 red pepper, diced
- 14oz sweet potatoes, peeled
- 1 can (14oz) chickpeas
- 1 small can of tomato paste
- 1 cup couscous



Mix the cilantro, garlic, ginger, spices, water and 2 tablespoons of the oil in a food processor or with a hand blender. With this you make your own curry paste. You can also use ready-made pasta for a quick curry. Cut the onion, bell pepper and potatoes into cubes. Heat the oil and fry the onion and bell pepper. Add the curry paste and fry for a while. Add the potato and drained chickpeas, together with the tomato puree and ± 2 cups of water. Let this simmer for 25 minutes. Meanwhile prepare the couscous according to the package. Add the fresh coriander on the plate.

Jackfruit Tacos

Justice Jones

- 20oz can Jackfruit
- 1 medium onion, chopped
- 8 cloves of garlic
- 1 tbsp oil (olive or safflower)
- ½ tsp salt
- Extra veggies (your choosing)
- Creamy dressing (your choosing)



Squeeze the jackfruit in between paper towels to remove as much liquid as possible. It is ok if it squishes. Process with onion, garlic, and jackfruit in a processor until coarsely shredded. Alternatively, finely chop the onion and garlic and finely chop/shred the jackfruit. Transfer to a bowl and mix in the spices and sauces well. Preheat the oven to 350 degrees F. Spread the mixture on a parchment lined baking sheet so it's an even layer.

Bake at 350 degrees F for 35 to 40 minutes. Mix and spread after 20 minutes to move the center portion out. Also, taste at this time for salt, heat and flavor. Adjust if needed and mix in. Prep your tortillas. Add a good helping of the jackfruit mixture. Add cucumbers or other crunchy veggies. Add a creamy dressing like tahini dressing, or vegan ranch dressing or tzatziki.

Vegan Nachos

Justice Jones

- 1 batch all-purpose vegan cheese sauce
- 1 large (450 g) sweet potato, peeled and chopped
- 2 tsp (10mL) oil of choice
- Fine sea salt, to taste
- Chili powder, to taste
- 1 batch spicy black beans
- 1 bag tortilla chips
- 1 medium (240 g) avocado, pitted and chopped
- 2 medium (20 g) onions, thinly sliced
- 3-4 tbsp (45-60 mL) pickled jalapeños, drained
- 1/3 cup (80 mL) chopped jarred roasted red pepper, drained
- ¼ cup (20 g) finely chopped purple cabbage
- Handful fresh cilantro, chopped
- Salsa of choice, to taste



Begin preparing the All-Purpose Vegan Cheese Sauce by soaking 1/4 cup cashews in a small bowl of boiling water for at least 30 to 60 minutes. Prepare the All-Purpose Vegan Cheese Sauce. While you're making the cheese sauce, preheat the oven to 400°F (200°C) and line a medium rimmed baking sheet with parchment paper. Set the cheese sauce aside once prepared.

Spread the chopped sweet potato onto the parchment-lined roasting pan and toss with the oil. Sprinkle with a generous amount of salt and chili powder. Roast for 25 to 30 minutes, until the bottoms are lightly charred. While the potatoes are roasting, prepare the Spicy Black Beans found in my DIY Burrito Bowl recipe (linked in ingredient list). After cooking, leave the beans in the skillet so you can reheat them just before layering onto the nachos.

Gather and prep any fresh toppings you'd like to use so they're ready to go. Please note my measurements are simply a guide. Feel free to add as much or as little of each as you wish! On a medium rimmed baking sheet or platter (if your sweet potatoes are finished roasting, feel free to set them aside and re-use the same sheet here), spread a layer of chips to cover the base entirely.

For warm nachos, reheat the Spicy Black Beans in the skillet and the All-Purpose Vegan Cheese Sauce in your microwave or a small pot on the stovetop. Now it's time to dress up those nacho chips! Layer the beans first before adding cheese sauce, roasted sweet potatoes, avocado (or guacamole, if using), green onion, pickled jalapeños, roasted red pepper, cabbage, cilantro, and salsa. Season with salt and serve immediately.

French Fries

Braden Lee

- 5 large potatoes
- ½ tsp onion powder
- ½ tsp garlic powder
- 1 tsp Italian seasoning
- 2 tbsp corn meal
- 1 tbsp corn starch
- ½ tsp sea salt
- ¼ tsp pepper
- 2 tsp tamari (or soy sauce)



Vegetarian



Slice the potatoes about ½ inch thick and sock them in cold water for at least 1 hour. Dry them off and place them on a cooking sheet prepared with parchment paper. Add the spices, seasonings, and corn meal/starch and gently mix in a bowl before spreading on all the potatoes. Make sure you evenly distribute the seasoning mix. Cook the fries @ 400° F for 15 minutes each side of the fries.

Vegan Chickpea Wraps

Kennedie Mills

- ½ avocado (per wrap)
- 2 (15 oz) can chickpeas
- 1 cup cilantro, lightly packed
- 1 tsp garlic powder
- 1 cup spinach, chopped
- 1 tsp lemon juice
- 2 tbsp siracha sauce
- 2 tbsp vegan mayo or tahini
- ½ tsp salt & pepper
- 1 tortilla (per wrap)



Place the chickpeas in a blender or food process and blend until they are mostly broken down. You can mash them in a bowl with a fork or potato masher. Combine the chickpea mixture with everything except the spinach and avocado. Place a scoop of the chickpea mixture in each tortilla and top with spinach and avocado. Season with salt and pepper and roll the wraps up.

Vegetarian Lasagna Roll-Ups

Sharon, championship mother & Weber alumni

- 1 package lasagna well drained
- 1 (16 oz) container ricotta cheese
- 1 egg, beaten
- ¼ cup parmesan cheese
- ½ tsp salt
- ¼ tsp pepper
- ¼ tsp onion powder
- 1 (10 oz) package frozen chopped spinach, thawed &
- 2 cups grated Monterey Jack (or Mexican blend) cheese
- 1 (32 oz) jar spaghetti sauce



This recipe makes 10-12 rolls, cook 14 lasagna noodles according to package directions. In a small bowl, blend ricotta cheese, egg, parmesan cheese, salt, pepper, and onion powder. Stir in spinach and 1 cup grated cheese. Drain the noodles, lay out on a cutting board, and gently blot dry with a paper towel. In the bottom a baking pan, spread a layer of sauce.

Spread the ricotta mixture on lasagna strips, then roll up each strip. The amount of ricotta mix should allow easy rolling without oozing out the sides. Lay the roll-ups seam-side down in the pan and pour the remaining sauce over the roll-ups. Sprinkle with remaining grated cheese. Cover with tin foil and bake for 45 min @ 350° F.

Mushroom Spaghetti

Kiyoung Song, former international student from South Korea

- ½ onion, sliced
- 3 cloves garlic, minced
- 3-5 small mushrooms (any type you want), sliced
- Olive oil
- 1 package fettuccine noodles
- Soy sauce
- Pepper



Slice the mushrooms, onion, garlic, and any other vegetables you want. Fry all the ingredients on a pan with olive oil and season with soy sauce and pepper. Boil the noodles until tender, then mix the noodles in with the other ingredients.

Vegan Sloppy Joes

- Onion
- Garlic
- Green peppers
- Brown or green lentils
- Olive oil
- Vegetable broth
- Ketchup
- Vegan Worcestershire sauce
- Various spices – mustard powder, onion powder, and chili powder



Dice the onion, garlic, and green pepper. Sauté the veggies for 5 minutes. Add the rest of the ingredients and simmer for 30-35 minutes until a thick sauce forms and the lentils are tender. Stir in ketchup for a last jump of flavor before serving. Serve on buns, lettuce wraps, or whatever you desire.

Simple Stuffed Peppers

- 1 cup brown rice, uncooked
- 1 can black beans, unsalted
- 4 bell peppers (any color)
- 1 cup cheddar cheese, shredded (reduced fat)
- 1 tomato, sliced
- 1 cup salsa
- Salt, to taste



Vegetarian

Preheat the oven to 400° F and start cooking the brown rice according to the package directions. Wash the peppers, cut off the tops, and spoon out the sides. Drain and rinse the black beans. Combine the rice, beans, salsa, and salt.

Spoon out 3 tbsp of the mixture into the bottom of each pepper, then place a slice of tomato on top of the mixture and sprinkle with 2 tbsp of cheese. Repeat the steps until the pepper is filled, but don't top with cheese. Bake the peppers for 30 minutes, then top each with 2 tbsp of cheese and continue baking for 15 minutes more.

Pasta Primavera

- 1 cup rotini noodles
- 1 tbsp vegetable oil
- 2 cups mixed vegetables (chopped)
- 1 cup tomatoes (chopped)
- 1 tbsp margarine or butter
- ¼ tsp garlic powder
- 1/8 tsp black pepper
- 3 tbsp parmesan cheese



Vegetarian

Cook the noodles according to package directions. While the noodles are cooking, begin heating the oil in a skillet. Add the vegetables to the skillet and sauté until tender, stirring occasionally. Add tomato and sauce, cook 2 more minutes. Strain the noodles and add in the vegetables, margarine (or butter) and mix. Add spices, and sprinkle with parmesan cheese.

Black Beans

- 2 cans (15 oz)
- ½ onion
- 2 garlic cloves
- 2 tbsp vegetable oil
- ½ tsp cumin (ground)
- ½ tsp salt
- ¼ tsp oregano (fresh or dried)



Vegetarian

Drain the juice from one can of black beans and pour them into a bowl. Use a fork or potato masher to mash the beans until they are no longer whole. Set them aside. Chop the onion into ¼ inch pieces. Peel the garlic cloves and mince them finely.

In a medium saucepan, heat the oil over medium high heat. Add the onions and sauté for 1 to 2 minutes. Stir in the garlic and cumin, cook for 30 seconds more. Stir in the mashed black beans and add the second can of black beans, including the juice. When the beans begin to boil, reduce the heat to low, stir in the salt and oregano, and simmer for 10 minutes, uncovered. Can pair these black beans with brown rice and/or a green salad.

Teriyaki Vegetable Stir Fry

- Teriyaki sauce
- 1 (8 oz) package tempeh
- 2 medium heads broccoli
- 3 bell peppers
- 1 tsp fresh ginger root, minced
- 5 small green onions
- 1 ½ tbsp sesame oil
- Kosher salt
- Sesame seeds
- Rice or soba noodles



Cook the rice/noodles according to packaging. Thinly slice the tempeh (or tofu) into rectangles, cut the broccoli into florets, dice the peppers into large chunks, peel and mince the ginger, and thinly slice the green onion.

In a large skillet, heat 1 tablespoon sesame oil over medium-high heat. Add the tempeh in a single layer, add a few pinches of salt, and cook 2-3 minutes on each side until lightly browned. Remove from pan. Add ½ tbsp sesame oil to the same skillet, add the broccoli and add a few pinches of salt. Cook for 1 minute. Add ½ cup water and continue to sauté, then add ginger, peppers, green onions, and another pinch of salt. Sauté about 5 minutes, until veggies are tender.

Turn off the heat, add the tempeh and sauce, mix everything together until everything is coated with sauce. Garnish with sesame seeds and serve with rice.

Heart of Palm & Chickpea Ceviche

- 1 can hearts of palm, drained & chopped into small pieces
- 1 can chickpeas, drained & rinsed
- 2 tomatoes, chopped
- ½ red onion, diced
- 1 jalapeno, seeded and finely chopped
- 1 bell pepper, chopped into small pieces
- 1 cucumber, chopped into small pieces
- ½ bunch cilantro, finely chopped
- Juice of 2 limes
- 1 avocado, cut into small chunks
- Salt & pepper, to taste



Add all the ingredients (minus the avocado) into a large bowl and mix everything together. Mix in the avocado gently and add salt/pepper if necessary. Eat on its own with tortilla chips, or eat on tortillas, or mix into a salad.

Jacket Potato w/ Fried Veggies

- 1 medium-large baking potato (or sweet potato)
- Vegetables: peppers, onions, mushrooms, broccoli, corn, green beans, snow peas, etc.
- 1 clove chopped garlic
- 1 tsp butter
- Salt & pepper, to taste



Poke the potato with a fork and cook in the microwave for 8-10 minutes, or baking in a oven at 200° F for 45-60 min. While cooking the potato, slice the veggies into thin strips, and fry the veggies in butter and oil over medium-high heat. Add the garlic after and fry for 1 minute. Continue frying the veggie mix for about 5-10 minutes, until softened, then add seasoning. Cut open the potato and mix the veggie mix over.

Farmer's Market Veggie Enchiladas

- 1-2 tbsp olive oil
- 1 onion, diced
- 4 garlic cloves, chopped
- 1 red bell pepper, diced
- 1 small yam, diced (or zucchini)
- ½ tsp salt
- 1 ear of corn
- 1 tsp cumin
- 1 tsp coriander
- 1 tsp dried oregano
- 1 14 oz can black beans, rinsed & drained
- ¼ cup cilantro, chopped
- 2 cups enchilada sauce
- 8x8-inch whole wheat tortillas
- 2 cups grated cheese (pepper jack, Mexican blend, cheddar)
- Optional garnish: sour cream, avocado, hot sauce



Preheat oven to 400° F. Heat oil in a large skillet over medium-high heat. Add the onion and stir 2-3 minutes until fragrant. Lower heat to medium and add bell pepper, yams, garlic, and salt. Sauté this mix until yams and peppers are tender, about 8 minutes. Add water if it gets dry. Add in the corn, cumin, coriander, and oregano. Sauté for about 3 more minutes. Remove from heat, then add the black beans, salt, and half the cilantro.

Prepare a baking dish, adding in ½ cup of the enchilada sauce, spreading around the bottom. Place ½ cup of the veggie mix into the middle of the tortilla and add about 2 tbsp cheese over top. Wrap up the tortillas and nestle side-by-side in the baking dish. Pour the remaining sauce over the enchiladas. Add more cheese on top. Place foil over the baking dish and cook for 20 minutes, then uncover for 8 additional minutes. Let it cool, add garnishes, and enjoy!

Chickpea Guacaroni

- 1 serving whole wheat macaroni
- ¾ cup chickpeas, cooked
- ½ ripe avocado
- 1 tbsp diced onion
- Juice of ¼ lemon
- ½ tsp garlic salt/powder
- ½ bell pepper or handful of cherry tomatoes
- Optional: chopped cilantro
- Salt & pepper, to taste



Cook the macaroni according to instructions. While waiting for it to cook, mash your chickpeas with a fork or food processor. Mix in and mash the ripe avocado. Add in onion, lemon juice, garlic salt, bell pepper, and cilantro. Mix well. Once the macaroni is cooked, drain and rinse under cold water. Add the macaroni into the avocado and chickpea mixture, mix well. Add salt & pepper to taste, enjoy!

3 Ingredient High Protein Bean-Balls

- 2 cups cooked/canned chickpeas (rinsed & drained)
- ¾ cup tomato-based pasta sauce
- 1.5-2 cups almond flour (substitute oat flour if preferred)
- ½ cup almond flour (or breadcrumbs) to coat



Mash chickpeas with a fork or food processor. Add the mashed chickpeas into a large mixing bowl along with the pasta sauce and almond flour. Mix everything well. If the mixture is too wet, add a little more flour. Add the ½ cup of almond flour onto a plate. Form small balls of the chickpea mixture and coat each ball with flour (or breadcrumbs). Cook at 370° F for 20-25 minutes or until slightly browned and firmed, flipping halfway). Enjoy!

Orecchiette Pasta w/ Broccoli Sauce

- 12 oz broccoli florets
- 8 oz short pasta (orecchiette, penne, rigatoni)
- 2 tbsp olive oil
- 6 garlic cloves, chopped
- Pinch of chili flakes
- Pinch of salt & pepper, to taste
- 1 tsp miso paste
- 2 cups veggie broth (or chicken broth)
- Optional garnish: cheese, lemon zest, basil, bread-crumbs, truffle oil, olives.



Vegetarian

Steam broccoli florets until tender, set aside. Cook pasta according to directions. In a large pan, sauté the garlic and chili flakes in olive oil, over medium heat for about 2-3 minutes. Stir in miso paste, add steamed broccoli, salt, pepper, and broth. Bring to a simmer and break apart the broccoli florets, basically melting the broccoli down into a sauce. Continue simmering until half the liquid evaporates, about 10-15 minutes. Add the pasta and mix, adding more seasonings to taste. Divide among bowls and top with optional garnishes, enjoy!

Soba Noodle Salad w/ Edamame Beans

- 1 serving soba (buckwheat) noodles
- ½ bell pepper
- ½ carrot
- Sauce recipe:
 - ½ tbsp soy sauce
 - ½ tbsp apple cider vinegar or rice vinegar
 - ½ tbsp maple syrup
 - ½ tsp garlic powder
 - ¼ tsp ground ginger
 - ½ tsp toasted sesame oil
- ½ cup frozen shelled edamame beans, thawed
- 1 tsp toasted sesame seeds
- Optional: chopped green onions



Cook noodles according to instructions. Meanwhile, chop bell pepper and carrots in thin, long pieces. In a small bowl, mix all the sauce ingredients together until well-combined. When noodles are done cooking, drain and rinse under cold water. Add noodles, veggies and sauce into a bowl and mix well. Top with toasted sesame seeds and green onions, enjoy!

Mushroom Pasta w/ Goat Cheese

- 8 oz bowtie pasta
- 8 oz mixed mushrooms (such as baby portabella, shitake, and oyster)
- ¼ cup fresh thyme and oregano, finely chopped
- 2 tbsp olive oil
- 1 tbsp lemon juice
- 3 cups baby greens: spinach or kale
- ¼ cup parmesan cheese, grated
- 3-4 oz soft goat cheese
- Salt & pepper, to taste



Vegetarian

Cook the pasta to instructions, with heavily salted water. Clean the mushrooms, slice them and the herbs. In a sauté pan, add olive oil and heat to medium-high and cook herbs, mushrooms, and salt together for about 5 minutes. When mushrooms are cooked and tender, reduce heat to low, add lemon juice, greens, and a little bit more salt. Cook for about 2 minutes until greens are wilted.

Add parmesan cheese and some extra pasta water and stir until cheese is melted. Add the drained pasta to the mushrooms, add pepper to taste. Add goat cheese crumbles into the pasta and serve.

One Pot Quinoa & Eggplant Power Bowl

- 1 cup quinoa + 2.5 cups water
- 1 ½ tsp vegetable broth powder (or vegetable broth instead of water above)
- 1 tsp oregano
- 1 tsp garlic powder
- ½ tsp crushed red chili peppers
- 2 tomatoes, chopped
- 1 can black beans, drained & rinsed
- 2 cups chopped eggplant
- ¾ cup olives (optional)
- 1 cup tomato sauce or pasta sauce
- Salt & pepper, to taste



Add all the ingredients into a large pot or wok and let it come to a boil. When it comes to a boil, turn the heat down to low, cover and let it simmer for about 20 minutes or until the quinoa is cooked. Check on it to make sure it isn't drying out, adding water or broth if it is. Add salt & pepper and serve.

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**That's all the references, if you've made it
this far then thanks!**



Index

Included in the index will be larger scale graphs, tables, lists, and extra info that might help in your gardening/kitchen adventures!

WATER-WISE PLANTS FOR UTAH

The following plant list was compiled by the Utah Water-Wise Plants Committee for use with its **Water-Wise Plant Tagging Program**. Please use this list to find plants that are appropriate for Utah's climate and conditions. For specific plant information and design ideas please visit www.waterwiseplants.utah.gov.

ALPHA BY LATIN NAME

CONIFEROUS TREES

| | | | |
|--------------------------------|------------------------|-------------------------|-----------------------|
| <i>Abies concolor</i> | White Fir | <i>Pinus aristata</i> | Bristlecone Pine |
| <i>Calocedrus decurrens</i> | Incense Cedar | <i>Pinus edulis</i> | Pinyon Pine |
| <i>Cedrus atlantica glauca</i> | Blue Atlas Cedar | <i>Pinus flexilis</i> | Limber Pine |
| <i>Cedrus libani</i> | Cedar of Lebanon | <i>Pinus monophylla</i> | Single-Needled Pinyon |
| <i>Cupressus arizonica</i> | Arizona Cypress | <i>Pinus nigra</i> | Austrian Pine |
| <i>Juniperus osteosperma</i> | Utah Juniper | <i>Pinus ponderosa</i> | Ponderosa Pine |
| <i>Juniperus scopulorum</i> | Rocky Mountain Juniper | <i>Pinus sylvestris</i> | Scotch Pine |

DECIDUOUS TREES

| | | | |
|----------------------------|---------------------|--------------------------------------|----------------------|
| <i>Acer campestre</i> | Hedge Maple | <i>Gymnocladus dioica</i> | Kentucky Coffee Tree |
| <i>Acer ginnala</i> | Amur Maple | <i>Koeleruteria paniculata</i> | Goldenrain Tree |
| <i>Acer grandidentatum</i> | Bigtooth Maple | <i>Maclura pomifera</i> | Osage Orange |
| <i>Acer tataricum</i> | Tatarian Maple | <i>Parrotia persica</i> | Persian Ironwood |
| <i>Acer truncatum</i> | Shantung Maple | <i>Ptelea trifoliata</i> | Hop Tree |
| <i>Amelanchier sp.</i> | Serviceberry | <i>Quercus gambelii</i> | Gambel Oak |
| <i>Catalpa speciosa</i> | Western Catalpa | <i>Quercus macrocarpa</i> | Bur Oak |
| <i>Celtis occidentalis</i> | Common Hackberry | <i>Quercus muehlenbergii</i> | Chinkapin Oak |
| <i>Chilopsis linearis</i> | Desert Willow | <i>Robinia neomexicana</i> | New Mexico Locust |
| <i>Corylus columa</i> | Turkish Filbert | <i>Sophora japonica</i> | Japanese Pagoda Tree |
| <i>Cotinus obovatus</i> | American Smoke Tree | <i>Syringa reticulata</i> | Japanese Lilac Tree |
| <i>Crataegus douglasii</i> | Douglas Hawthorne | <i>Ulmus parvifolia (parviflora)</i> | Lacebark/Chinese Elm |
| <i>Fraxinus anomala</i> | Single-Leaf Ash | <i>Zelkova serrata</i> | Zelkova |
| <i>Ginkgo biloba</i> | Ginkgo | | |

SHRUBS

| | | | |
|-----------------------------------|--------------------------|------------------------------------|------------------------|
| <i>Agave utahensis</i> | Utah Agave | <i>Krascheninnikovia lanata</i> | Winterfat |
| <i>Amorpha canescens</i> | Leadplant | <i>Mahonia aquifolium</i> | Oregon Grape |
| <i>Artemisia cana</i> | Silver Sage | <i>Mahonia fremontii</i> | Fremont Holly |
| <i>Artemisia filifolia</i> | Sand Sage | <i>Peraphyllum ramosissimum</i> | Sqaw Apple |
| <i>Artemisia frigida</i> | Fringed Sage | <i>Philadelphus microphyllus</i> | Littleleaf Mockorange |
| <i>Artemisia nova</i> | Black Sage | <i>Physocarpus malvaceus</i> | Mallow-leaved Ninebark |
| <i>Artemisia tridentata</i> | Big Sage | <i>Physocarpus opulifolius</i> | Ninebark |
| <i>Atriplex canescens</i> | Fourwing Saltbrush | <i>Pinus mugo</i> | Mugo Pine |
| <i>Atriplex confertifolia</i> | Shadscale | <i>Potentilla fruticosa</i> | Shrubby Cinquefoil |
| <i>Buddleia davidii</i> | Butterfly Bush | <i>Prunus pumila v. besseyi</i> | Sand Cherry |
| <i>Caragana arborescens</i> | Siberian Peashrub | <i>Purshia mexicana</i> | Cliffrose |
| <i>Caryopteris x clandonensis</i> | Blue Mist Spirea | <i>Quercus turbinella</i> | Shrub Live Oak |
| <i>Ceanothus martinii</i> | Utah Mountain Lilac | <i>Rhus aromatica</i> | Fragrant Sumac |
| <i>Cercocarpus intricatus</i> | Little-Leaf Mtn Mahogany | <i>Rhus glabra</i> | Smooth Sumac |
| <i>Cercocarpus ledifolius</i> | Curl-Leaf Mtn Mahogany | <i>Rhus trilobata</i> | Squawbush |
| <i>Cercocarpus montanus</i> | Alder-Leaf Mtn Mahogany | <i>Rhus typhina</i> | Staghorn Sumac |
| <i>Chamaebatiaria millefolium</i> | Fernbush | <i>Ribes aureum</i> | Golden Currant |
| <i>Cotinus coggygria</i> | Smoke Bush | <i>Rosa glauca (rubrifolia)</i> | Shrub Rose |
| <i>Cotoneaster apiculatus</i> | Cranberry Cotoneaster | <i>Rosa rugosa</i> | Rugosa Rose |
| <i>Cotoneaster dammeri</i> | Bearberry Cotoneaster | <i>Rosa woodsii</i> | Woods Rose |
| <i>Cotoneaster divaricatus</i> | Spreading Cotoneaster | <i>Rubus deliciosus</i> | Rocky Mtn Thimbleberry |
| <i>Cotoneaster horizontalis</i> | Rock Cotoneaster | <i>Salvia dorrii</i> | Dorr Sage |
| <i>Cytisus scoparius</i> | Scotch Broom | <i>Shepherdia argentea</i> | Silver Buffaloberry |
| <i>Ephedra viridis</i> | Green Mormon Tea | <i>Sorbaria corbifolia</i> | False Spirea |
| <i>Ericameria nauseosus</i> | Rubber Rabbitbrush | <i>Symphoricarpos orbiculatus</i> | Coralberry |
| <i>Fallugia paradoxa</i> | Apache Plume | <i>Symphoricarpos oreophilus</i> | Mountain Snowberry |
| <i>Forestiera neomexicana</i> | New Mexican Privet | <i>Symphoricarpos x chenaultii</i> | Snowberry |
| <i>Genista hispanica</i> | Spanish Broom | <i>Syringa vulgaris</i> | Lilac |
| <i>Genista pilosa</i> | Silky-Leaf Broom | <i>Viburnum lantana</i> | Wayfaring Tree |
| <i>Genista tinctoria</i> | Common Woadwaxen | <i>Viburnum rhytidophyloides</i> | Blackhaw |
| <i>Holodiscus dumosus</i> | Mountain Spray | <i>Viburnum rhytidophyllum</i> | Leather-Leaf Viburnum |
| <i>Iliamna rivularis</i> | Maple Mallow | <i>Yucca sp.</i> | Yucca |
| <i>Juniperus sp.</i> | Juniper | <i>Zizophora clinopodioides</i> | Blue Mint Bush |
| <i>Kolkwitzia amabilis</i> | Beauty Bush | | |

PERENNIALS

| | | | |
|---|--------------------------|------------------------------------|---------------------------|
| <i>Achillea filipendula 'Gold Plate'</i> | 'Gold Plate' Yarrow | <i>Hesperaloe parvifolia</i> | Red Yucca |
| <i>Achillea millefolium</i> | Common Yarrow | <i>Heuchera sp.</i> | Coral Bells |
| <i>Achillea tomentosa</i> | Wooly Yarrow | <i>Hymenoxis acaulis</i> | Sundancer Daisy |
| <i>Achillea x 'Coronation Gold'</i> | 'Coronation Gold' Yarrow | <i>Iberis sempervirens</i> | Candytuft |
| <i>Achillea x 'Moonshine'</i> | 'Moonshine' Yarrow | <i>Iris sp.</i> | Iris |
| <i>Aethionema schistosum</i> | Stonecress | <i>Kniphofia uvaria</i> | Red-Hot Poker/Torch Lily |
| <i>Agastache rupestris</i> | Sunset Hyssop | <i>Lavandula angustifolia</i> | English Lavender |
| <i>Alchemilla sp.</i> | Lady's Mantle | <i>Leucojum aestivum</i> | Summer Snowflake |
| <i>Allium sp.</i> | Allium/Ornamental Onion | <i>Liatris punctata</i> | Dotted Blazing-Star |
| <i>Amsonia tabernaemontana</i> | Willow Blue Star | <i>Liatris scariosa</i> | Tall Gayfeather |
| <i>Anacyclus depressus</i> | Mount Atlas Daisy | <i>Liatris spicata</i> | Spike Gayfeather |
| <i>Anaphalis margaritacea</i> | Pearly Everlasting | <i>Limonium latifolium</i> | Sea Lavender |
| <i>Aquilegia sp.</i> | Columbine | <i>Linum lewisii</i> | Lewis Flax |
| <i>Arabis caucasica</i> | Rock Cress | <i>Linum perenne</i> | Blue Flax |
| <i>Arenaria macradenia</i> | Showy Sandwort | <i>Melampodium leucanthum</i> | Blackfoot Daisy |
| <i>Armeria maritima</i> | Sea Pinks/Thrift | <i>Mirabilis multiflora</i> | Desert Four O'Clock |
| <i>Asclepias tuberosa</i> | Butterfly Weed | <i>Monardella odoratissima</i> | Little Bee Balm |
| <i>Aster x frikartii 'Monch'</i> | 'Monch' Aster | <i>Narcissus sp.</i> | Daffodils/Narcissus |
| <i>Aster x frikartii 'Wonder of Staffa'</i> | 'Wonder of Staffa' Aster | <i>Nepeta x faassenii</i> | Catmint |
| <i>Astragalus sp.</i> | Utah Ladyfinger | <i>Oenothera caespitosa</i> | White Evening Primrose |
| <i>Aubrieta hybrida</i> | Purple Rock Cress | <i>Oenothera howardii</i> | Bronze Evening Primrose |
| <i>Aurinia saxatilis</i> | Basket-of-Gold | <i>Oenothera macrocarpa</i> | Missouri Evening Primrose |
| <i>Baileya multiradiata</i> | Desert Marigold | <i>Oenothera pallida</i> | Pale Evening Primrose |
| <i>Ballota pseudodictamnus</i> | Horehound | <i>Origanum sp.</i> | Oregano |
| <i>Bergenia cordifolia</i> | Bergenia | <i>Papaver orientale</i> | Oriental Poppy |
| <i>Berlandiera lyrata</i> | Chocolate Flower | <i>Penstemon barbatus</i> | Common Beardtongue |
| <i>Brodiaea sp.</i> | Brodiaea | <i>Penstemon caespitosus</i> | Mat Penstemon |
| <i>Callirhoe involucrata</i> | Poppy Mallow/Wine Cups | <i>Penstemon cobaea</i> | Foxglove Penstemon |
| <i>Calylophus sp.</i> | Sundrops | <i>Penstemon cyananthus</i> | Wasatch Penstemon |
| <i>Castilleja sp.</i> | Indian Paint Brush | <i>Penstemon eatonii</i> | Firecracker Penstemon |
| <i>Catananche caerulea</i> | Cupid's Dart | <i>Penstemon mexicali hybrids</i> | Mexicali Penstemon |
| <i>Centranthus ruber</i> | Jupiter's Beard | <i>Penstemon palmeri</i> | Palmer Penstemon |
| <i>Colchicum autumnale</i> | Autumn Crocus | <i>Penstemon pinifolius</i> | Pine-Leaf Penstemon |
| <i>Coreopsis grandiflora</i> | Large-flowered Coreopsis | <i>Penstemon pseudospectabilis</i> | Canyon Penstemon |
| <i>Coreopsis verticillata</i> | Thread-Leaf Coreopsis | <i>Penstemon rostriflorus</i> | Bridges Penstemon |
| <i>Corydalis lutea</i> | Yellow Corydalis | <i>Penstemon sepalulus</i> | Littlecup Penstemon |
| <i>Crocus sp.</i> | Crocus | <i>Penstemon strictus</i> | Rocky Mtn Penstemon |
| <i>Delosperma sp.</i> | Ice Plant | <i>Penstemon utahensis</i> | Utah Penstemon |
| <i>Dianthus deltoideus</i> | Maiden Pinks | <i>Penstemon whippleanus</i> | Whipple's Penstemon |
| <i>Dianthus gratianopolitanus</i> | Cheddar Pinks | <i>Perovskia atriplicifolia</i> | Russian Sage |
| <i>Dianthus plumarius</i> | Cottage Pinks | <i>Phlomis sp.</i> | Jerusalem Sage |
| <i>Dianthus x allwoodii</i> | Border Pinks | <i>Potentilla sp.</i> | Cinquefoil/Potentilla |
| <i>Diascia integerrima 'Coral Canyon'</i> | 'Coral Canyon' Twinspur | <i>Psilostrophe tagetina</i> | Paper Flower |

| | | | |
|---------------------------------|---------------------|--|-----------------------|
| <i>Dicotyles albus</i> | Gas Plant | <i>Pulsatilla vulgaris</i> | Pasqueflower |
| <i>Echinops ritro</i> | Globe Thistle | <i>Ratibida columnifera</i> | Mexican Hat |
| <i>Epimedium sp.</i> | Barrenwort | <i>Salvia aurea</i> | Blue Sage |
| <i>Erigeron compositus</i> | Fernleaf Fleabane | <i>Salvia nemorosa</i> | Violet Sage |
| <i>Erigeron speciosus</i> | Showy Fleabane | <i>Salvia officinalis</i> | Garden Sage |
| <i>Eriogonum heracleoides</i> | Hercules Buckwheat | <i>Santolina sp.</i> | Cotton Lavender |
| <i>Eriogonum jamesii</i> | James Buckwheat | <i>Scabiosa caucasica</i> | Pincushion Flower |
| <i>Eriogonum ovalifolium</i> | Silver Buckwheat | <i>Sedum acre</i> | Gold Moss Sedum |
| <i>Eriogonum umbellatum</i> | Sulfur Buckwheat | <i>Sedum kamtschaticum</i> | Kamtschatka Stonecrop |
| <i>Erygium amethystinum</i> | Amethyst Sea Holly | <i>Sedum spurium</i> | Two-Row Stonecrop |
| <i>Gaillardia aristata</i> | Blanket Flower | <i>Sedum x 'Autumn Joy'</i> | 'Autumn Joy' Sedum |
| <i>Gaillardia pinnatifolia</i> | Hopi Blanket Flower | <i>Sempervivum tectorum</i> | Hens and Chicks |
| <i>Gaillardia x grandiflora</i> | Blanket Flower | <i>Smilacina racemosa</i> | False Solomon Seal |
| <i>Gaura lindheimeri</i> | Gaura | <i>Sphaeralcea sp.</i> | Desert Globemallow |
| <i>Geranium endressii</i> | Endress Cranesbill | <i>Tetrameuris (Hymenoxys) acaulis</i> | Sundancer Daisy |
| <i>Geranium macrorrhizum</i> | Bigroot Cranesbill | <i>Teucrium chamaedrys</i> | Germander |
| <i>Geranium sanguineum</i> | Bloody Cranesbill | <i>Tithonia rotundifolia</i> | Mexican Sunflower |
| <i>Geranium viscosissimum</i> | Sticky Geranium | <i>Tulipa sp.</i> | Tulip |
| <i>Gypsophila paniculata</i> | Baby's Breath | <i>Veronica spicata</i> | Spike Speedwell |
| <i>Hedysarum boreale</i> | Utah Sweetvetch | <i>Viguiera multiflora</i> | Showy Goldeneye |
| <i>Helenium hoopesii</i> | Orange Sneezeweed | <i>Zauschneria sp.</i> | Hummingbird Flower |
| <i>Helianthemum nummularium</i> | Sun Rose | <i>Zinnia grandiflora</i> | Desert Zinnia |
| <i>Heimerocallis hybrid</i> | Daylily | | |

GROUNDCOVERS

| | | | |
|--------------------------------|------------------|-------------------------------|--------------------|
| <i>Antennaria sp.</i> | Pussytoes | <i>Erigeron flagellaris</i> | Trailing Fleabane |
| <i>Arctostaphylos uva-ursi</i> | Bearberry | <i>Hypericum calycinum</i> | St. Johns Wort |
| <i>Cerastium tomentosum</i> | Snow-in-Summer | <i>Juniperus horizontalis</i> | Horizontal Juniper |
| <i>Mahonia repens</i> | Creeping Mahonia | <i>Thymus sp.</i> | Thyme |
| <i>Phlox subulata</i> | Creeping Phlox | <i>Veronica liwanensis</i> | Turkish Veronica |
| <i>Stachys byzantina</i> | Lamb's Ear | <i>Veronica procata</i> | Creeping Veronica |

GRASSES

| | | | |
|---------------------------------------|----------------------|---------------------------------------|-------------------------|
| <i>Achnatherum hymenoides</i> | Indian Rice Grass | <i>Hesperostipa comata</i> | Needle-and-Thread Grass |
| <i>Andropogon gerardii</i> | Big Bluestem | <i>Leymus cinereus</i> | Great Basin Wildrye |
| <i>Aristida purpurea</i> | Purple Three-Awn | <i>Miscanthus sinensis</i> | Maiden Grass |
| <i>Arundo donax</i> | Giant Reed Grass | <i>Molina sp.</i> | Purple Moor Grass |
| <i>Bouteloua curtipendula</i> | Sideoats Grama Grass | <i>Nassella (Stipa) tenuissima</i> | Mexican Feather Grass |
| <i>Bouteloua gracilis</i> | Blue Grama Grass | <i>Panicum virgatum</i> | Switch Grass |
| <i>Buchloe dactyloides</i> | Buffalograss | <i>Saccharum (Erianthus) ravennae</i> | Ravenna Grass |
| <i>Calamagrostis acutiflora</i> | Feather Reed Grass | <i>Schizachyrium scoparium</i> | Little Bluestem |
| <i>Deschampsia caespitosa</i> | Tufted Hair Grass | <i>Sorghastrum nutans</i> | Indian Grass |
| <i>Festuca ovina glauca (cinerea)</i> | Blue Fescue | <i>Sporobolus airoides</i> | Alkali Sacaton Grass |
| <i>Helictotrichon sempervirens</i> | Blue Oat Grass | | |

VINES

| | | | |
|--------------------------------|---------------------|----------------------------|-------------------|
| <i>Campsis radicans</i> | Trumpet Vine | <i>Polygonum aubertii</i> | Silverlace Vine |
| <i>Clematis ligusticifolia</i> | White Virgins-Bower | <i>Wisteria floribunda</i> | Japanese Wisteria |
| <i>Clematis tangutica</i> | Golden Clematis | | |

CACTI

| | | | |
|-------------------------------------|--------------------|----------------------------|----------------------------|
| <i>Dasylium wheeleri</i> | Sotol/Desert Spoon | <i>Opuntia erinacea</i> | Hedgehog Prickly Pear |
| <i>Echinocereus engelmannii</i> | Engelmann Hedgehog | <i>Opuntia phaeacantha</i> | Prickly Pear Cactus |
| <i>Echinocereus triglochidiatus</i> | Claretcup Cactus | <i>Opuntia polyacantha</i> | Plains Prickly Pear Cactus |
| <i>Opuntia basilaris</i> | Beavertail Cactus | | |

Brought to you by:

- Utah Division of Water Resources
- Utah State University Center for Water-Efficient Landscaping
- Central Utah Water Conservancy District
- Utah Water Conservation Forum
- Washington County Water Conservancy District
- Jordan Valley Water Conservancy District
- US Bureau of Reclamation
- Utah State University Extension
- Utah Nursery and Landscape Association
- Utah Botanical Center
- Red Butte Garden
- Salt Lake City Corporation
- Utah Native Plant Society
- Wasatch Community Gardens



Perennials

Spring & Summer

Asclepias (Milkweed)
Monarda (Bee Balm)
Lavandula (Lavender)
Phlox
Solidago (Goldenrod)
Salvia
Rosmarinus (Rosemary)
Thymus (Thyme)

Late Summer & Fall

Liatris (Gayfeather)
Rudbeckia (Black Eyed Susan)
Echinacea purpurea (Coneflower)
Aster
Achillea (Yarrow)
Mertha (Mint)

Annuals

Cosmos
Marigolds
Snapdragons
Dahlia
Zinnia

Shrubs

Spring & Summer

Physocarpus (Ninebark)
Cotoneaster
Spiraea
Viburnum

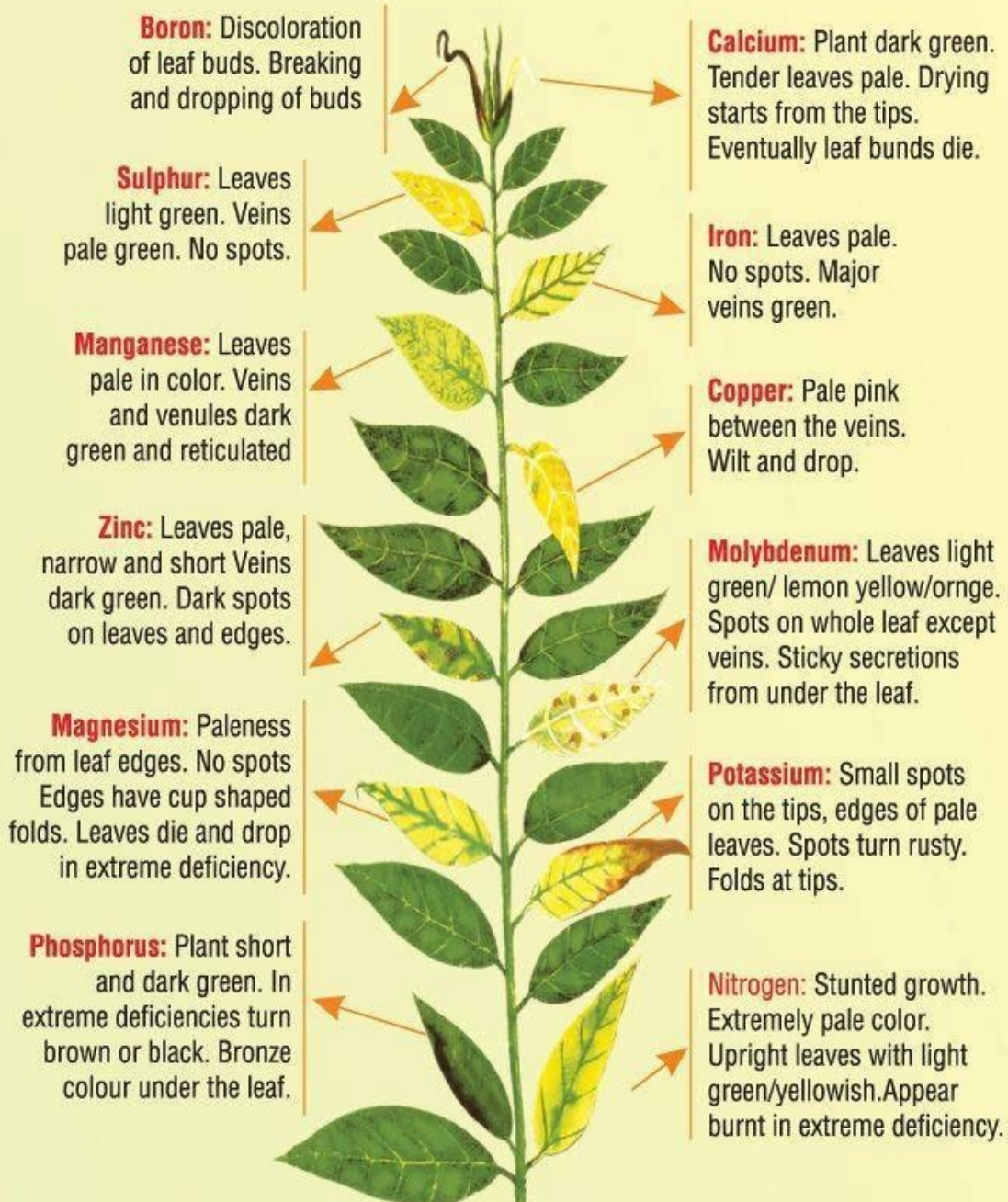
Late Summer & Fall

Caryopteris (Bluebeard)
Hibiscus (Rose of Sharon)
Potentilla



A list of local Utah flowers that pollinators ADORE! Planting any of these will help attract this beneficial bugs. They'll help pollinate your flowers and help around the garden.

Deficiency Chart of Micronutrients



**THE COLOUR REPRESENTED ARE INDICATIVE.
THEY MAY VARY FROM PLANT TO PLANT**

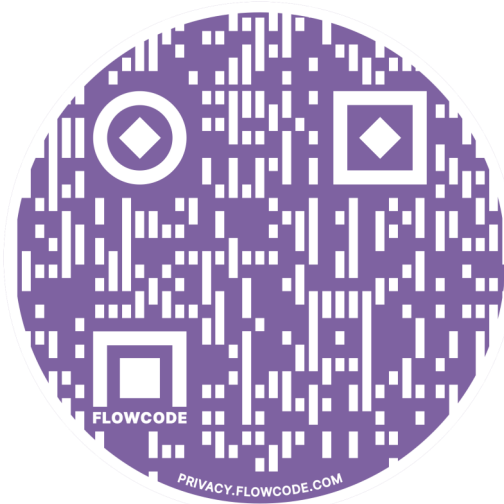
Along with understanding your soil, it is also important to look for signs of nutrient deficiency. If you are noticing any of these issues in your plants, I would recommend talking to a local garden nursery to help with the correct soil amendments.

The Weber State Community Garden is a student-managed and operated garden that is focused on providing fresh fruit and vegetables to the students and community. The food grown in the garden is donated to the Weber Cares Food Pantry, or one of the various pantries in need.

One of the major goals in the garden is to provide a space and an education to those who want to learn more about home gardening, composting, and advice for plant care. The garden also aims to encourage sustainable practices in garden, and well as transitioning into the kitchen.

The Community Garden is continuously growing as we get more volunteers and funding throughout the years to build more raised beds, trellises for vining fruit, and the tools & supplies needed to run a garden.

This guide is provided free to you in hopes that we all can become more sustainable in our own gardens & kitchens. A link will be provided below if you would like to donate to the Weber State Community Garden. It is much appreciated!



I've really enjoyed putting this guide together, and I hope that it can be useful to even just one of you. Gardening will always be a part of my life, for the self-sustainability and peace it brings to me. Even now I can picture myself growing old and gardening with family around me. I hope you all can find the peace and enjoyment that gardening brings.

Thank you

- Cayden Quayle (2021)

