



GROWING YOUR

Producing your own food can be a rewarding experience in a number of ways.

In Wyoming, however, growing fruits, vegetables, and herbs can be challenging. Some of the challenges for those on rural acreages include:

- Soil issues
- Water supply
- Short growing seasons
- Wildlife
- Pests
- Diseases
- And, in some areas, wind

Soil issues

See the “Soils” section of this guide for more information on determining what type of soil you have.

The importance of organic matter

Vegetable crops like soils with high levels of organic matter. Unfortunately, Wyoming soils don’t contain much organic matter (which comes from decomposed plant material) because of our short growing seasons and scarce rainfall. These conditions aren’t favorable to the growth of an abundance of vegetation that will die down and create organic matter.

Common problems we see in Wyoming soils include low fertility, low water retention, compaction, and poor drainage. Organic matter can

help you address these issues. As organic materials degrade during the growing season, they release valuable nutrients that plants can utilize. If the soil is heavy clay, adding organic matter loosens the soil, which helps relieve compaction problems and improves drainage. Soil structure is improved. Many organic materials retain significant amounts of water and improve moisture-holding capacity in very sandy soils. Organic matter is truly a wonder drug for your soil.

Improving organic matter in soil on a small scale

Organic matter content is easy to improve on a small scale. Incorporate a 1- to 2-inch layer of organic material to vegetable gardens whenever the soil is turned. Add the layer and then turn the soil to mix in. Adding compost, lawn clippings, and manure are ways to add organic matter, but each has its own limitations.

Compost

Compost can be a great source of organic matter. However, you should only use mature compost. Compost that has not finished the decomposition process can contain compounds toxic to plants. See the barnyardsandbackyards.com “Composting” section and the “Manure” section in this guide for more information on simple methods of composting. Note the comments on manure use in compost in the manure paragraph below.

Lawn Clippings

Lawn clippings can be added as a mulch. If using lawn clippings, ensure the grass has not been treated with herbicides that might damage your plants. Apply a 1-inch layer between garden rows. Be sure to let a layer dry before adding additional layers. If the grass is still wet or a too-heavy layer is added, the layers will turn soggy, the amount of air will be reduced, and it will begin to smell due to the activity of anaerobic bacteria. The mulch can be turned into the soil at the end of the growing season.

Manure

Manures have been used as a nutrient and organic matter source for thousands of years, but they have unique issues. Because of the high, volatile nitrogen content in fresh manure, it can burn plants. Let manure age at least six months to a year before use. Manures often contain high levels of salts. This varies by the type of livestock, what they’ve been eating and drinking, and how often the manure is cleaned out of holding areas. Have a sample tested for salt content before use. Check with the Colorado State University soil testing laboratory (<http://www.soiltestinglab.colostate.edu>) for more information on testing.

Never use dog, cat, or pig manures on plants you plan to eat. They often contain parasites that can infect humans. These parasites can

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survive a long time in the soil. Don't even add them to your compost pile. Other manures (beef, dairy, goat, chicken) can contain pathogenic strains of *Salmonella sp.* and *E. coli* bacteria. As the manure ages, the bacteria decline, but they can still be a potential threat to health. The U.S. Department of Agriculture (USDA) Organic Standards (<http://www.ams.usda.gov/AMSV1.0/nop>) require a 90- or 120-day waiting period after uncomposted manure application, depending on the crop, before harvesting for human consumption. The 120-day wait applies to anything grown in a vegetable garden. The 90-day requirement applies to fruit trees. Manure can be composted to minimize the risk of disease organisms, but it is hard to maintain the appropriate conditions throughout the compost pile. The USDA Organic Standards require a compost pile be maintained at 131 to 170 degrees Fahrenheit for three days using an in-vessel or aerated static pile (<http://www.epa.gov/osw/conserve/rrr/composting/static.htm>).

Manure should be avoided if anyone with a compromised immune system is likely to eat produce from the garden. Manure can also contain weed seeds. These seeds have had their hard outer coats weakened by their trip through an animal leaving them ready to germinate. Composting will usually kill weed



These raised beds are 4' wide and 32' long.

seeds if the appropriate temperatures are maintained.

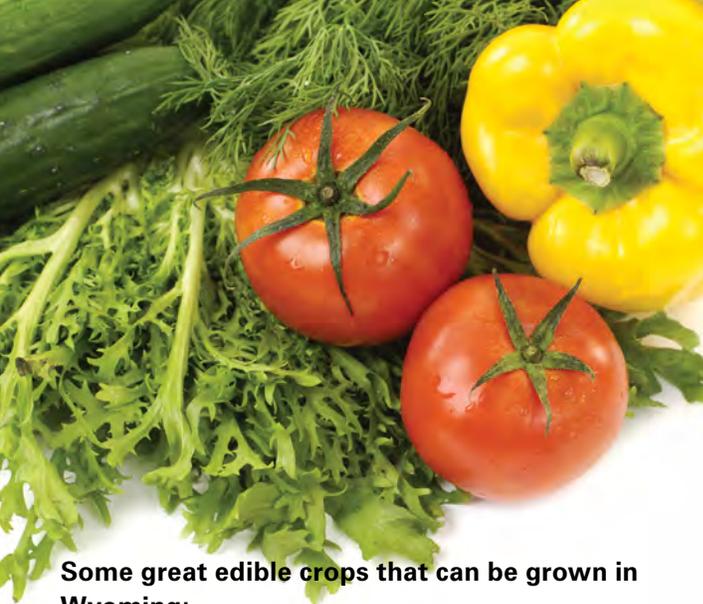
Raised Beds

One very effective way of dealing with poor soil is to utilize raised beds. These beds can be filled with topsoil and decomposed organic material such as compost to create a great soil mix for growing vegetables. The mix also tends to warm up a bit earlier in the spring, and the vegetables can be easier to tend as you don't have to lean down so far. When considering how wide to make your

raised beds, consider how easy it will be for you to reach the middle of the bed to tend plants or harvest. Raised beds can be made out a variety of materials including lumber, composite materials, and even straw bales. Keep in mind that eventually all organic materials (wood, straw bales, etc.) will decompose.

Water

Most of our state does not receive adequate precipitation for raising vegetables and fruits. Therefore, consider how you plan to irrigate your garden. Running a



Some great edible crops that can be grown in Wyoming:

- asparagus
- green beans
- beets
- broccoli
- Brussels sprouts
- cabbage
- carrots
- cauliflower
- garlic
- greens including arugula, pac choi, mustard greens such as mizuna, and Chinese cabbage
- green onions (bunching onions)
- herbs: dill, parsley, and many others
- kale
- kohlrabi
- lettuce
- leeks
- onions (choose “long-day” varieties)
- peas
- potatoes
- radishes
- raspberries
- rhubarb
- spinach
- strawberries
- summer squash (zucchini, etc.)
- Swiss chard

These crops often need some kind of protection/season extension to produce well in many Wyoming locations

- cucumbers
- eggplants
- muskmelons (cantaloupes)
- peppers
- sweet corn
- tomatoes
- watermelons
- winter squash

water line so that you have a handy tap near your vegetable garden will make irrigation easier. Many folks water by hand using a hose. Others prefer some kind of drip irrigation or soaker hose system (often using a timer). It’s usually best to hand water in the morning when the wind is low. This helps prevent some plant disease issues (as any excess water will evaporate off the leaves by night fall) and helps keep you from losing water to evaporation by the wind. Mulching vegetable crops can also help conserve water.

Another issue in Wyoming when it comes to water has to do with the quality of your water source. If you haven’t irrigated with your water before, consider getting it tested by a lab to see if it has any issues. (See this guide’s “Water” section for more information on water quality issues.)

Visit barnyardsandbackyards.com to learn more about irrigating crops.

Short growing seasons

Most of Wyoming’s elevations are high. This translates to short growing seasons for many of our communities. Residents in these areas, and even folks living in lower elevations having warmer temperatures, may want to extend their growing season for longer-seasoned vegetables, for “warm-season” crops such as tomatoes or corn, or to produce more food during the year.

Season extenders can help you do this. These can include everything from starting seeds indoors or using row covers, hot caps, cold frames, or high tunnel (greenhouse) structures.

Another strategy that will help you succeed in our short, often cool growing seasons is to select vegetable varieties with short maturation times. When deciding between vegetable varieties, try choosing those that take the least



On this high elevation rural property, the fence around the garden keeps out larger critters while decreasing the wind and creating a much better climate for vegetable growth.

number of days to mature (usually listed on the seed packet, and in hard copy or online catalogs).

There are great articles, links, and videos on the barnyardsandbackyards.com website under "Gardening" that can help you get started in season extension. You can also visit the "Events" section to see if a workshop is taking place in a community near you on one of these topics. If you don't have Internet access, stop by your local University of Wyoming (UW) Extension office (or many local community libraries have computers for use by the public) to access these resources.

Wildlife

Wildlife can be a major challenge in rural areas when it comes to growing vegetables and fruits. Your most reliable option for dealing with many different kinds of wildlife will be exclusion (fencing, etc.). If they can't get to your produce, they can't eat it. Read the "Wildlife" section of this guide for more details and resources on keeping critters out of your veggies.

Pests

One advantage of having short seasons and tough winters is that our insect pest problems tend to be less numerous than in more gentle climates; however, issues do crop up. The first step whether you have an insect or a weed issue is to identify the culprit. Many beneficial insects and their young can look like pretty alarming (take a look at a lady bug larvae to see what we mean) so you may assume they are pests. Accurate identification is a critical step to determine if you have a problem and what to do about it. Along with online resources,



your local UW Extension or weed and pest district offices can help identify potential pests and weeds. If you do have an issue (such as an insect infestation or weed issue) the next step is to decide what, if anything, you should do about it. Read the "Weed" section of this guide to learn about weed identification and control steps. For insects, determine if beneficial insects or diseases are already taking a toll on the pest; if so, waiting might be your best option. If not, then determine your strategy. You'll find many great publications on insect pests and their control on the barnyardsandbackyards.com website.

Plant diseases can also be an issue. One of the best defenses against many plant diseases is choosing vegetable and fruit varieties that are resistant to them (if you are shopping for vegetable seeds in a catalog or online, they'll list which diseases they are resistant to). Again, the first step is deciding what the issue is. Many soil issues can give plants symptoms that look like plant diseases. The Summer 2010 *Barnyards & Backyards* magazine article "Don't have a plant M.D.? Here's how to determine what's ailing them" provides many tips on determining what's wrong with your plants.

Wind

In some areas of our state, wind can be a major issue – whether in spring when it dries out the soil and carries dirt that can injure seedlings or in the winter when it can pick up and carry off your precious garden soil. Consider wind when you initially site your garden. Careful placement in a more sheltered area can save you some headaches. Windbreaks can be constructed or planted. See this guide's "Windbreak" section for more information on establishing living windbreaks. If you are planning to build a windbreak



fence of some sort, visit the "Windbreak" section to get a handle on how windbreak fences function (such as how density affects wind and snow deposition). Depending on your wildlife issues, sometimes a fence built to keep out wildlife (the larger herbivores) can also act as a windbreak, creating a cozy microclimate for your vegetables.

Growing your own food in Wyoming can be a great experience for you and your family. Keeping in mind some of the challenges as you begin your adventure can help you succeed. Nothing beats a great meal featuring your own produce!

For a variety of publications, videos, and links to great websites, visit the barnyardsandbackyards.com website.

*This section was compiled from information from the Summer 2012 *Barnyards & Backyards* magazine article "Fixing what ails your soil," by Kelli Belden, manager of the Laramie Research and Extension Center Greenhouse Complex in the University of Wyoming College of Agriculture and Natural Resources, and from material by Jennifer Thompson, Small Acreage Outreach Coordinator.*

Selected pictures by Jan Cartwright.