Your Guide to Understanding GROWING ZONES

PLUS
5 Factors that Help You Grow Beyond Your Zone
WHAT ARE GROWING ZONES & WHY ARE THEY IMPORTANT?

While we all have soil, air, water, & sun, the combination of those elements is unique to your location. In the United States, Growing Zones were developed as a way to help you understand what cultivated plants will most likely thrive in your region, and each vegetable has its own low temperature limit. (We'll look at other classification systems from around the world in the coming pages.)

In the United States, you can refer to the USDA Hardiness Zone Map for your Growing Zone. That zone tells you what plants might survive the winter in your area. Each zone represents a different average minimum winter temperature. Visit the interactive map here where you can zoom in to your local area >> [http://planthardiness.ars.usda.gov/PHZMWeb/](http://planthardiness.ars.usda.gov/PHZMWeb/)

You can see the USDA Hardiness Zone Map is broken up into 26 growing zones, each in increments of 5 degrees Fahrenheit. Here is a close up of those growing zones for reference:

Average Minimum Temperatures (in Fahrenheit)

While coldest winter air temperature is an important factor to know whether a plant will survive or not, there are other factors that you'll want to consider as well. Heat, for example, can also kill your plants.
GROWING ZONES AROUND THE GLOBE
Not all countries and continents have their climate data organized the same way for growers, so it can be hard to find sometimes. While Europe has the EGF Zones (you can compare them to USDA zones below), many places don’t use Growing Zones as there are other factors involved when growing food.

While there is this image online of the USDA zones applied to the rest of the globe (see below), it is just a rough guide. Unfortunately, you can’t zoom in for details. Visit this map >> http://tcpermaculture.blogspot.com/2012/01/plant-hardiness-zones-maps-for-world.html
GROWING ZONES VS Köppen-Geiger CLIMATE CLASSIFICATION
Many places in the world use the Köppen-Geiger Climate Classification. The system is based on the concept that native vegetation is the best expression of climate, so climate zone boundaries reflect vegetation distribution.

You can view this map and zoom in here >>
https://en.wikipedia.org/wiki/Köppen_climate_classification

The drawback to this particular data set is the broad temperature ranges for each classification which won’t necessarily help you understand what vegetables will thrive in your area. Here is the classification for the southeast United States:

“Mild with no dry season, hot summer. Average temperature of warmest months are over 22°C (72°F). Average temperature of coldest month is under 18°C (64°F). Year around rainfall but highly variable.”

That’s a broad sweep of temperatures! The map shows this classification for cities ranging from Washington D.C., Louisville, Kentucky, all the way down to the tip of Florida. Growing vegetables in these areas is vastly different, so it’s good to find as much DETAILED climate data specific to growing vegetables.
WHY IS HEAT DATA IMPORTANT?
We’ve established that planting by growing zone is no guarantee, because that data is based on average LOW temperatures only. But what if you get a heat wave?

Heat damage can be just as life threatening to your plants as freezing temperatures. Some of the signs: flower buds wither, leaves droop, leaves brown, roots cease to grow, and more susceptible to pests. Heat can affect long term growth of plant even if you don’t see these signs.

Above 86 degrees Fahrenheit (30 C), most vegetable plants stop functioning properly and you may see all or some of the signs listed above. Find your local climate data for average daily high temperatures.

Here in the United States, we are fortunate to have The American Horticultural Society Heat Zone map. It shows the average number of days above 86 degrees Fahrenheit. Visit this map online: http://www.ahs.org/gardening-resources/gardening-maps/heat-zone-map

NOTE: Two places may be in the same Hardiness Growing Zone with an average of 30 degrees Fahrenheit low temperature, but one might have 250 days per year above 86 F and the other might have only 50 days above that temperature making them radically different growing spaces. Mother nature loves to create biodiversity!
FIRST A QUICK LESSON IN HEAT: THE EARTH IS A BATTERY
To understand why air temperatures alone may not be the most reliable data, it's helpful to think of the earth like a giant battery. During the daylight hours, the sun warms up the earth's surface, heating the soil: the sun is charging up the battery so to speak. When the sun goes down, the earth starts to cool again and loses its charge. So while the air temperature may be 40 degrees Fahrenheit, it's possible the ground may be 50 degrees or warmer.

5 ADDITIONAL FACTORS TO CONSIDER BEYOND AIR TEMPERATURES
While air temperatures are helpful to know for growing vegetables, you CAN affect those temperatures to create more favorable growing conditions. You can create microclimates that are either warmer or cooler than your average local temperatures. Here are 5 examples.
NUMBER OF HOURS OF SUNLIGHT EACH DAY AFFECTS YIELD

If the plant doesn’t see the sun, it can’t photosynthesize, and if it sees the sun 24 hours straight for weeks, you’re in for some large vegetables!

For example, Northern Alaska, won’t see the sun for 67 days in the winter, but they enjoy over 80 days of uninterrupted daylight during the summer! Yes, this is a real vegetable.

This particular factor is the most challenging to adjust. You are generally stuck with the number of hours of sunlight you receive unless you want to add grow lamps (or move to Alaska).
EXPOSING SOIL CREATES LARGER TEMPERATURE SWINGS

Besides the mineral composition, oxygen, water and organic matter in the soil which all contribute to whether or not vegetables thrive… bare soils reflect more light & heat than those covered by plants or mulch & heats up the air in the garden. You can cover the soil with mulch to keep the temperatures cooler during the day and warmer during the night, reducing large temperature swings.
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BODIES OF WATER CAN RAISE AIR & EARTH TEMPERATURES

Water evaporates & this moisture captures heat from the sun, making the air around a pond warmer than areas further away.

Water, as snow, can insulate the ground: temperature beneath the snow can be up to 20 degrees Fahrenheit warmer than air temperature. That’s 4 USDA Growing Zones warmer!
TOPOGRAPHY SEPARATES COLD & HOT AIR
Cool air falls while hot air rises. Even small dips and indentations in topography can form collection points for cold air and as a result sometimes form frost pockets. Temperatures at the top of a slope can be warmer than temperatures at the bottom of the hill. Plant warmer temperature crops at the top of hills and cooler weather crops at the bottom.
HARD SURFACES ABSORB & REFLECT HEAT

If you are in the city near a lot of paved surfaces, temperatures can be 5-10 degrees Fahrenheit (3-5 C) warmer than in an area with a lot of vegetation. You can use this to your advantage and protect crops that like warmer climates with a wall of rocks that can collect heat during the day and reflect it back to the plant at night.