

# The Ultimate Trellis Guide

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**TRILLIX**



# Welcome

Welcome to *The Ultimate Trellis Guide* e-book. Here you will find everything you need to know about trellising—what trellising is, how trellising is done, why you should be trellising, and the best type of trellis to build for your garden.

Let's get started. We have lots to learn!

# Introduction to Trellising

Trellising can seem a bit intimidating, especially when you're first starting off, but it is actually very simple and just requires patience and perseverance—great virtues to live by! Trust us—with every passing year, you will become more skilled with trellising and become a master gardener!

Just like there are people in life who lift us up, support us, and keep us out of trouble, trellising does the same for plants. Think of trellises as your support mechanism in the garden.

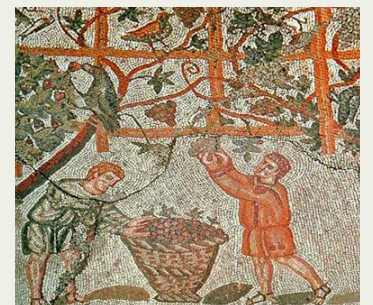
Trellising will make gardening easier for you, while also giving you bigger, healthier and more beautiful crops by:

- Keeping plants off the ground and away from pests
- Providing better sunlight absorption
- Increasing air circulation
- Keeping crops out of wet environments that foster disease

Trellises are your all-star player in the garden and something that every gardener should take advantage of.

# History of Trellising

Trellising has been around since the first century—yes, the first century! The first written word in our history to describe a trellis was by a man named Gaius Plinius Secundus, also known as Pliny the Younger. He was a prolific writer, and one of his favorite topics was garden design. The word he used to describe the earliest trellis was *trilix*, meaning three warped thread. In its primitive form, the trellis he was describing was similar to tomato cages in that there were three sticks in the ground with twine strung around them (three warped thread) to create the support mechanism for the plant as it grew.







The second purpose of a trellis is to support a plants' fruit. As plants grow fruit, the weight of the fruit can become heavy enough to snap the branch without proper support. This is why plants that produce fruits need to be supported—to help them offset the weight of the crop load so that you will be able to harvest something at the end of the season. When a plant doesn't have the proper support, it will put a lot of energy into thickening the stem so that the stem can support the fruit load and not fall over. Plants are smart; they know if a branch has enough support or not and will put valuable energy into secondary growth (thickening of the stem) and not into fruit production. We want all our plants' energy to go into fruit production to maximize return into a healthy harvest. Additionally, we want plants to be off the ground. Pests and disease all come from the ground, so the farther away our fruits are from the ground, the better.

Plants that are off the ground will also have increased air flow helping to dry the plants faster and decrease the chances of disease or rot while also helping the plant to get the best sunlight absorption to grow strong. Think about it. If you were constantly in a wet and cold environment, you would get sick too. When plants are up off the ground, they're easier to water because you can find the base of the plant (where the roots are located) to minimize water contact where it is not needed. Trellised plants are easier to harvest and maintain as it is easier to spot the produce with less bending over and searching. Plus, fruits will be healthier, uniform, and bigger than their ground counterparts—perfect for market growers or showing off to your friends and family how awesome you are!

## What Is a Trellis?

A trellis is an architectural structure, usually made out of wood, metal, or plastic, that creates a support system to train plants to grow in a certain manner or direction. There are different types of trellises for different types of plants, but it's safe to say that nearly all plants benefit from growing with the support of a trellis.

The purpose of a trellis is two-fold: First, it is meant to direct the growth of plants and provide the structure needed for optimal growth. By structure, we mean that each plant has its own space to grow (uniformity) with good air circulation and sunlight exposure; the idea is to minimize contact or overshadowing.







## What Is the Best Material for a Trellis?

There are three materials you can use to build a trellis: wood, metal, and plastic. Each material has its pros and cons, which we will explain in a second, but we have found that most trellises sold in garden centers are more for aesthetic purposes than actually being useful. A lot of the store-bought trellises are not meant to help you grow more and they are not modifiable for different crops or growing methods. Most are cheaply designed, overpriced, and don't last through more than one season—so annoying! Furthermore, they don't store well, they don't withstand the elements, and they are made only for a specific type of plant. No wonder so many of us resort to doing it ourselves! We have compiled a list of standards that every trellis needs in order to be beneficial and cost-effective in the garden:



Functional and modular (can be used for many crops, not just one)



Easy to build, take down, and store



Structurally strong (won't blow over or collapse from the weight of the plant)



Assist in increasing productivity and yields



Won't rust, rot, or degrade (lasts more than one season)

Unfortunately, a trellis that meets all the standards above is hard to find because it doesn't exist. Well, not until now. That's where Trillix come in. But before we bask in our glory and act like that narcissistic friend who only talks about themselves, let's explain the differences in trellis materials.

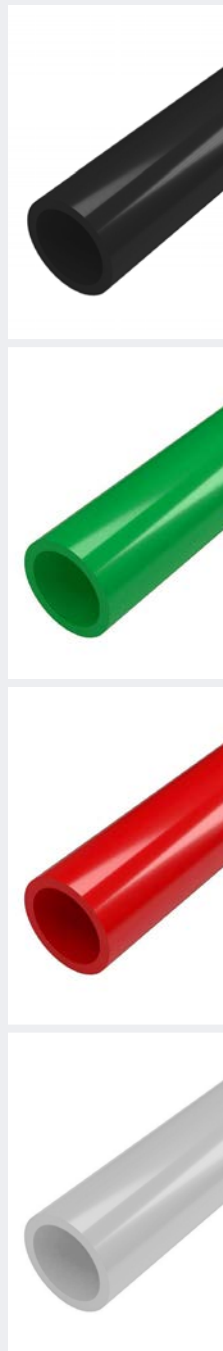
Let's start with wood. Wood is a great material, it's inexpensive and can be used for many projects. However, in the garden, it's not the greatest material to use against the elements as it will rot or need to be continually maintained. The type of wood that can stand up to the elements is expensive and coated in sealers and chemicals that aren't safe to have around your food supply. Building with wood also requires a certain degree of knowledge and proper tools (e.g., power tools, hammers, nails, screws, etc.), which, for some, can be a headache. For these reasons, we would not suggest wood as our go-to choice for trellising.

Next is metal. Metal is superior in strength, no argument there. It's strong and durable. Just like wood, however, metal is susceptible to rusting, degradation, and will need continual maintenance to prevent oxidation. Metal can also be expensive and difficult to cut without the proper knowledge and tools.





For trellising, we want long-lasting materials that we don't have to worry about continually maintaining or replacing. So what material is there that is strong, easy to work with, and long-lasting? Well, that would be plastic.



First, we are not talking about the plastic pipe you find at your local hardware store, which is for irrigation. We are talking about a high-grade pipe that is meant for the outdoors, called furniture-grade. However, if you're on a budget, standard pipe at your local hardware store will work too; it just won't last as long. Furniture-grade plastic is made to withstand the elements and is UV resistant to prevent discoloring and fading. It is impact resistant to withstand weight and is made without heavy metals, just pure plastic granules that can be recycled. Furniture-grade plastic comes in a variety of colors with no manufacturing marks and a high-gloss finish to be visually appealing in your garden.

Did we mention that certain colors will naturally draw pollinators to your garden, such as blue, purple, red, and yellow? Certain pollinators, such as bees, can only see from the blue to yellow spectrum, and hummingbirds are attracted to red. You can pick and choose the color of your trellis based on what pollinators you want to attract.

But wait—plastic is bad for the environment, right? Yes and no. We understand that plastic has a bad rap, but not all plastic is the same, and furniture-grade is truly the king of the three materials when it comes to gardening. We source our plastic from certified suppliers that meet the same standards as medical-grade items that are cleared to go inside your body. All our pipe is manufactured in the USA to ensure quality control. And yes, certain grades of plastic are horrible for the environment, and that's why we go to great lengths to provide the highest quality material that is recyclable and free of dioxins, phthalates, and heavy metals, to keep your garden and the environment safe.



So why plastic over wood and metal? It's simple to cut, easy to measure, lightweight, and it will last a long time. Additionally, out of the three materials, plastic is the only one that is resistant to rust, rot, and fading; comes in a variety of colors, including clear; and It's the only option with fittings that are extremely modular, meaning you can re-create different trellis configurations for any type of garden and any type of crop. Gone are the days of being limited to one type of trellis.

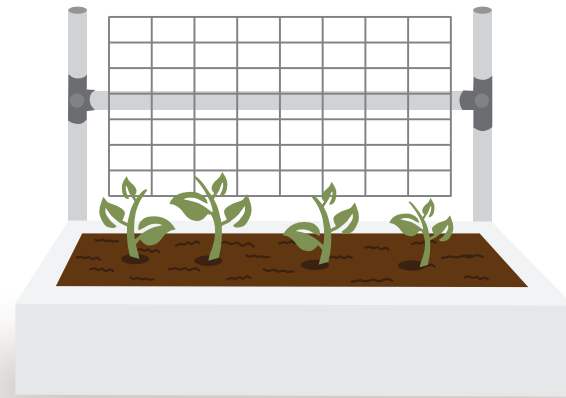
Before constructing any trellis, you'll need to know the answers to the following questions:

- What type of plants am I growing this season?
- What type of garden space do I have?
- What areas in my garden get the best sunlight?
- Will it be a vertical or horizontal trellis?
- Should I use twine, cattle panel, or trellis netting?

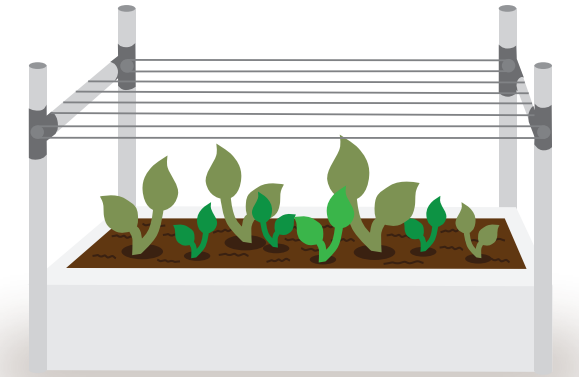
# What Are the Different Types of Trellises?

There are two different types of trellises: horizontal and vertical.

**1 Horizontal Trellis:** Horizontal trellising is when you grow plants in a row that extends parallel to the ground and, if you have the space, it is the least labor-intensive method. A horizontal trellis is suitable for determinate varieties, grapes, flowers, and more.



**2 Vertical Trellis:** Vertical trellising is widely used as it is the best for saving space and maximizing your growing space. Instead of plants growing outward above the ground on the trellis, they grow upward on the trellis. This also increases air circulation and sunlight exposure. With this method, branches will need to be secured to the trellis as their natural tendency will be to fall. As vines grow, you will want to weave or secure them to the trellis to keep them from falling.



Pros	Cons
No further pruning above the top of the trellis. Plants will naturally sprawl on the trellis above the ground and produce will hang above the ground, making it easy to spot and pick them.	Uses more space than a vertical trellis
Provides maximum amount of sunlight and air circulation	
Very easy to install	
Makes maintenance and harvesting easier with less bending over	

Pros	Cons
Maximizes the amount of growing space	More labor intensive as you have to continually secure the vines as they grow
Increases air circulation and sunlight exposure	
Provides shade for other crops that might need it	
Decreases the need to bend over, making maintenance and harvesting easier	





Now that you know the two ways you can structure your trellis, we want to briefly explain the six main ways that plants grow:

- **Tendrils:** These are thin, wiry outgrowths from the stem or leaf that whip around to find support and then coil around the closest contact. They grow best when using netting that is at least 2", thin horizontal strings, or a material that is no more than ¼" in diameter.

*Examples: passionflowers, grapes, peas*

- **Twiners:** These come in two varieties, twining leaves and twining stems. Twining leaves twist around thin supports such as wires, string, twigs, or other leaves. Twining stems twist around whatever they touch, whether it's a pole, netting, or string. The stems wind clockwise or counterclockwise depending on the species.

*Examples: pole beans, kiwi*

- **Sprawlers/Scramblers:** These plants have long, flexible stems resembling vines; however, they are unable to climb without help. These plants climb with the help of thorns that grip neighboring stems. To aid climbing, properly tie these plants to the trellis with wire, string, or weave them into the trellis.

*Examples: cucumbers, tomatoes*

Since Trillix can work with any type of trellis and support any type of crop, all you'll need to do is add Trillix components to your pillar posts by sliding down to the desired level, locking in with the fastener, and connecting pipe to the fittings to create your frame work.

- **Adhesive Vines:** These plants can grow on almost any surface with the help of adhesive pads that grow from stem tendrils. These plants will grow along the face of a building, the trunk of a tree, or happily crawl along the ground.

*Examples: cissus, Boston ivy*

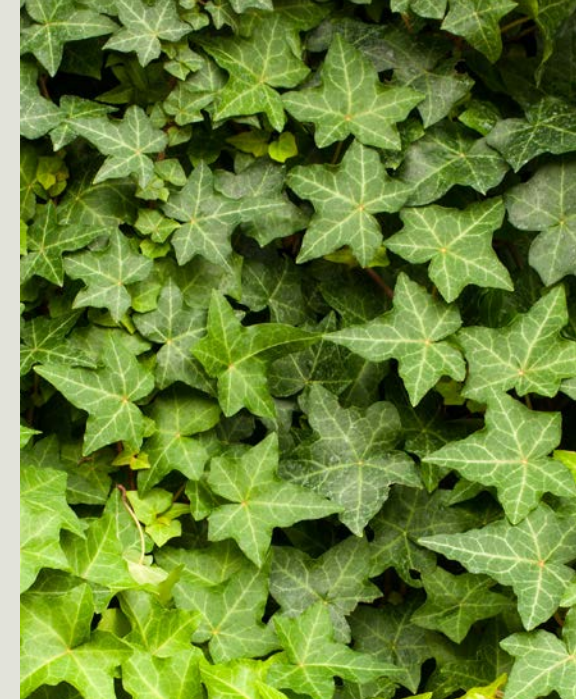
- **Clinging Vines:** The last group of climbers uses stem roots that cling to their surroundings. The roots grow as a stout cluster and attach to almost any surface.

*Examples: English Ivy, euonymus*

- **Bines:** These climb by shoots that grow in a helix around a support. The stems of many bines are rough or have downward-pointing bristles to aid their grip.

*Example: hops*

Let's recap. We now know the two main ways you can trellis plants as well as the manner in which plant vines can grow. Once you've decided on a horizontal or vertical trellis for your garden, the next step is to decide where to set up your trellis.





# Where can you trellis?

Anywhere! You can build a variety of trellis to match your growing style. Trellises work well in traditional ground gardens or raised beds. If you have limited space, you can construct a trellis over a pot on your deck or patio to help aid the growth of your plants. You should not be limited to how you can trellis and should have a system that gives you the ability to meet the demands of any plant.



## Raised Beds

Raised beds are ideal for growing plants as the soil will be porous and loose, giving the roots the ability to thrive and spread. Some additional benefits of raised beds include:

- Plants will have a natural barrier from being stepped on if you have kids or pets
- Take up less space than having rows in the ground
- Don't need to be tilled or chopped up with a shovel to loosen
- Keep everything orderly and define the space for your plants



With a raised bed, the simplest way to trellis is to attach your support pillars (as you know we highly recommend furniture-grade pipe) to the corners of the beds with plastic clamps. This will give your trellis a secure foundation that can't be blown over and that will support heavier plants throughout their growing cycle.

Once your plants start to grow, make sure you continually attach them to the supporting material either by weaving the growing vines into the support or manual attaching them with twine or zip ties. Reconfigure and get creative with your trellis. Have fun with it!







## Small Space Growing

If you don't have the ability or the space to grow in an open area, you can still trellis in pots or planters. Utilize Trillix fittings to create a custom framework that will give you the same ability to trellis as raised-bed or ground growers. Trillix fittings can be used to create any size trellis and support any type of crops. For example, create a freestanding frame out of piping and use Trillix fittings and adjust accordingly to the height of your plants.



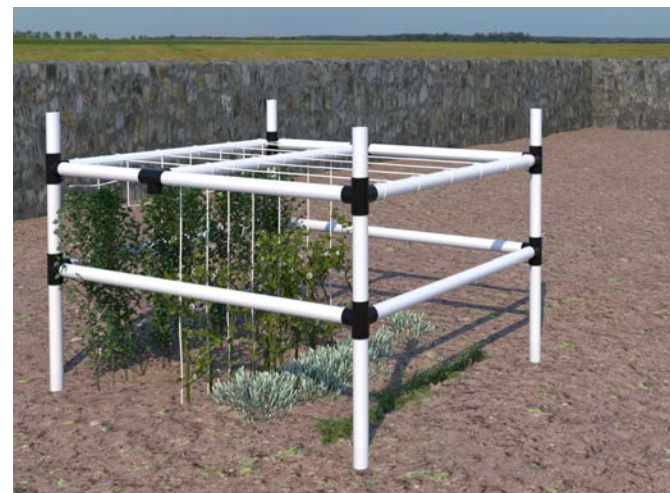
Attach trellis netting or cattle panel then weave growing vines in or run a string of twine down to the base of the plant and circle the growing vines around the string as it grows upward, to support its growth. Having limited gardening space shouldn't limit your growing potential.

## Ground Growing

The next method is to grow directly into the ground. We recommend growing in a raised bed as it requires significantly less labor. Ground growing requires tilling the soil and creating rows of raised soil to plant in. However, if you do prefer this method, there's no cons to growth or yield of your crops, it just requires more effort to create.

With the raised bed, we can easily clamp our trellis frame to the bed. With ground growing, you'll need to use rebar to support the plastic trellis frame. Easy to use and sturdy, rebar will provide a strong foundation for your trellis that will hold up against the elements.

Hammer the rebar 2 – 3 feet into the ground, then slide the pipe over the rebar and hammer the pipe 6-8 inches into the ground. Once secured, add our fitting by sliding over the pipe and use the fastener to lock in at the desired level and add pipe into the connection points to create your frame. Lastly, take your support material and secure it the frame and start growing!





# What Is the Best Support Material to Use with My Trellis?

Many gardeners experiment with different materials to support their plants' growth. The most commonly used materials are trellis netting, cattle panel, and twine.

Trellis netting is available in nylon or plastic mesh squares between 3.5 to 6 inches. Cattle panel is metal wire mesh that comes in 4- to 6-inch squares, just like trellis netting, but it is much stronger and will be able to handle the weight of the heaviest crops better than trellis netting will. We recommend buying trellising netting with a 6-inch square as it is much easier to fit your hand through to work or harvest from the plant. Lastly, twine (or string) is available in nylon or jute on a single strand that can be stretched out to whatever length you'd like and then cut with scissors. Twine can be used to construct your own grid pattern but is typically used with certain plants. Let's look into the pros and cons of each material and find out what works best for the types of crops in your garden.

## Trellis Netting

Trellising netting is very inexpensive and can last for more than one season if handled properly. It is simple to set up and use as the plant grows by either weaving the vines into the square mesh or letting them naturally grow into the mesh to be supported. Trellis netting is the most commonly used supporting material in commercial applications as it can easily be unwound over plants and attached to support pillars. As the plants' vines grow, they will automatically grow into the squares and support themselves. This material is ideal for soft fruits and plants that don't produce heavy fruits, as the heavy fruit will cause the netting to sag and lose its ability to provide support.

**Ideal for:** *determinate varieties, tomatoes, bell peppers, flowers, sweet peas, and beans (also works with kale, spinach, or strawberries to give them a defined growing space within the squares helps keep them off the ground)*





## Cattle Panel

Cattle panel is similar to trellis netting but is much sturdier as it is made of wire mesh and designed to support heavier crops that require a solid, non-flexible support grid. Cattle panel is usually used in vertical growing as it is strong enough to hold the weight of crops without sagging, but can also be used in horizontal and slanted (A-frame) trellises.

**Ideal for:** tomatoes, melons, squash, cucumbers, pumpkins, hardy kiwi, gourds, sweet potatoes, peas, and melons



## Twine

Twine is the most inexpensive material for support, but it can only be used with certain plants. Ideal for keeping berries and grapes on a horizontal trellis contained to a certain area, you can also use twine to string down from a trellis for beans, cucumbers, and other plants that naturally spiral. Twine allows for a lot of customization since it can be cut to any size. For example, gardeners in Florida use the weave method for tomatoes and bell peppers.

Here's a quick chart to reference when determining the best support material for your trellis:

Material	Pros	Cons	Best for
Trellis Netting	Flexible	Too Soft	Fragile Vegetables
Cattle Panel	Strongest	Too Rigid	Heavy Fruits
Twine	Single Strands	Limited Use	Single Stem



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