



All About Greenhouse Growing

TABLE OF CONTENTS

Introduction.....	4
A Peek into a Greenhouse.....	6
What is a greenhouse?	6
How does a greenhouse capture heat?	6
Types of Greenhouses.....	9
Hot Greenhouse.....	10
Warm Greenhouse.....	10
Cool Greenhouse	10
Structures	10
Lean-To.....	10
Detached	10
Ridge/Furrow	11
Cold frame type.....	11
Glasshouse Materials	12
Glass	12
Fiberglass.....	12
Plastic	12
Polyethylene.....	13
PVC	13
Tools and Materials for Your Greenhouse.....	14
Greenhouse Lighting Systems	15
Greenhouse tables, shelving and plant holders.....	15
Greenhouse garden coil indoor/outdoor watering wand	16

Tips for Your Greenhouse.....	17
Your Wonderland.....	19
Three Reasons to Consider Purchasing a Greenhouse.....	19
From Little to Plentiful.....	20
Buying a Greenhouse Checklist.....	21

This is a free book

Provided to you by

www.HOMEMADEHYDROponic.net

**Please feel free to give copies of this to
your friends and family.**

Introduction

A growing number of people at least have one greenhouse story to share.

The idea of growing food at controlled temperatures all year round and extending the growing season have set fire to people's imaginations. No wonder the greenhouse building industry has recorded phenomenal growth.

From construction plans to tools and accessories for greenhouses, individuals are working on all fours to satisfy the increasing demands of consumers who have made building their own greenhouses top priority. This trend, which started humbly in the 70's, is now a full-fledged endeavor on the part of greenhouse entrepreneurs and "homesteaders."

One greenhouse story told by a woman was particularly moving. Months before the spring, her husband bought the materials required for building a greenhouse. His plan was to attach it to the house.

The woman had protested because he was at the same time going through radiation and chemotherapy treatments for his cancer. His wife said he should be resting instead of puttering about with shelves and glass and plastic.

What he said broke her heart. He wanted to build and finish the greenhouse while he still had some strength left, because he knew for a long time that she had always wanted one in their backyard. He said he wanted to see the joy in her face when she started planting her tomatoes or gardenias or whatever else she wanted to put there.

Greenhouses are an extension of our personalities. Most especially, it mirrors our soul and what we want from life.

And what we want is a steady supply of home-grown healthy food. During these precarious times when terrorist attacks and life-threatening calamities can cast us in the dark indefinitely, we have one thing we can be sure of – the tomatoes and cucumbers that are in the food basket in the kitchen will tide us over should the country go on emergency mode.

The sweet potatoes and carrots will be around, and there will be more from the greenhouse to feed our families for a few weeks before things return to normal.

Not that we believe that a shortage will ever happen, the country has become much more prepared for any kind of emergency, but just on the off chance...

If greenhouses can save our lives, we may, at some point in time, consider the idea of building one soon, a first step towards self-sufficiency.

It's not just a constant supply of healthy food that concerns individuals, but a greenhouse – and building it – can be sources of pure enjoyment and clean fun for everyone in the family. Most greenhouse owners are familiar with the advantages of growing their own plants and flowers, prolonging the growing season and the possibility of heating their home. And who knows? They could be selling fresh produce in the communities they live in.

There are many greenhouse models to choose from. You can go from affordable to very expensive. You can build a greenhouse by using junk or a plastic film stretched over a rudimentary structure, or purchase elaborate metal and glass pre-manufactured sun-rooms.

Each of them serves the fundamental function of extending the growing season. Even the question of irrigation can be simple or complex, depending on your preferences.

Just want to make it a hobby? Why not? Homeowners attach theirs to their homes. Even schools have greenhouses built by elementary and high school students.

Finally, the wholesome taste of a home-grown tomato! Everyone knows there is a difference. But really, between you and me, it goes beyond just tomatoes.

Perseverance, labor of love and the sweet anticipation of “harvest time” are what truly matter.

A Peek into a Greenhouse

What is a greenhouse?

A greenhouse is also called a glasshouse or a hothouse. It is a structure where plants – fruits, vegetables and flowers are grown. It attracts heat because the sun's electromagnetic radiation warms the plants, soil, and other components within the greenhouse. Air is warmed from the hot interior area inside the structure through the roof and walls.

How does a greenhouse capture heat?

Commercial greenhouses use a special kind of glass that acts as a medium which selectively transmits spectral frequencies; normal glass is perfectly adequate for home glasshouses. Spectral comes from the word "spectrum".

In layman's terms, a spectral frequency can be defined in terms of the following principle: any object in the universe emits, radiates or transmits light. The distribution of this light along an electromagnetic spectrum is determined by the object's composition.

Therefore, the glass of a greenhouse traps energy within the greenhouse and the heat in turn provides heat for the plants and the ground inside the greenhouse. It warms the air near the ground, warming the ground; the ground stores the heat and releases it into the air as the air cools.

Temperature inside the glasshouse is controlled by venting, if you open a small window near the roof of a greenhouse, the temperature drops significantly. An auto vent automatic cooling system is commonly used to automatically control the temperature.

Curious about how the idea of a greenhouse came about? Glasshouses go back to the days of the Romans, who as history shows were the first people to create a structure to protect plants. The Romans used heated pits; they assembled slabs of rock to form an enclosure.

The term "glasshouse" which is the correct name of this structure, was adopted sometime in the 17th and 18th centuries.

At that time, however, the error was in believing that heat was more important than light for plants to thrive. Structures were being built that actually prevented light entering. The removal of the glass tax of 1845 made glass a much more affordable product and the design of greenhouses started to change.



Builders realized that building a curved roof rather than a flat one allowed higher concentrations of sun light into the glasshouse, and that by using iron instead of wood, the greenhouse could be structurally stronger.

A man named Joseph Paxton, a horticulturist, appeared on the scene and introduced changes to the greenhouse design concept. He was famous for the Palm House at Kew Gardens which he built in 1842. It measured 110 meters long, 30 meters wide and over 20 meters high. Nine years later, he built the Crystal Palace.

It has been forty years now since major improvements in materials and design have been integrated into the greenhouse, and it is now very much a feature of any home garden.



One greenhouse principle is the ability to extend the growing season. Early vegetables can be planted indoors and then transplanted when they mature. A greenhouse owner also gains several weeks to the growing and sowing period especially if there is a

form of heating installed.

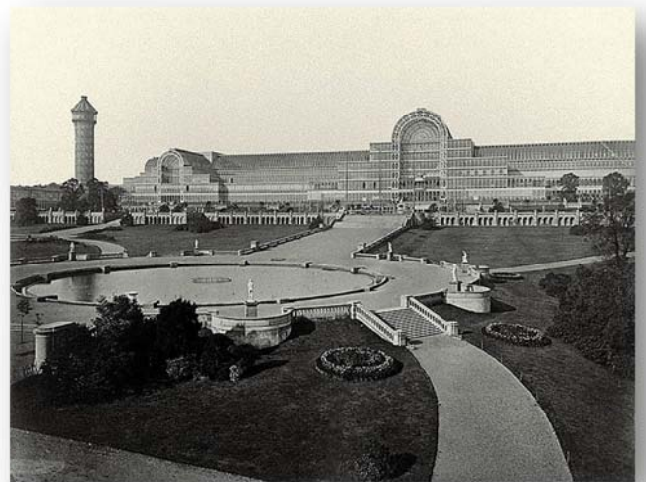
Controlling temperature, light and moisture allows greenhouse owners to achieve much better results, the control over environmental conditions (temperature, moisture, air movement and light)

means that ideal growing conditions can be provided to the plants being grown in the glasshouse. Our science classes taught us that many plant varieties enjoy a warm, moist temperature.

The introduction of growing systems like hydroponics has further extended the growers capabilities to provide the ideal environment and nutrients to the plants.

For details on growing using hydroponics visit <http://HomemadeHydroponic.net>

Whatever the intent is, a greenhouse will deliver hours of emotional satisfaction to owners. Imagine being able to grow juicy tomatoes or producing new kinds of plants by the simple act of propagation.



Don't be discouraged by the fact that you have limited space in your garden or that is completely paved or concreted. You can still make use of limited space.

If space is a problem, there is what people call "free standing" greenhouses that take just a few square feet of space, and some can be installed on balconies or roof tops.

Today, you can choose any greenhouse frame you want, including color. If you're not into aluminum, you can build one with a dark frame color or go for earth colors instead.

Let's mention a few of the numerous benefits of greenhouses:

- Extended growing periods,
- Control of growing conditions for plants to obtain desired results,
- Protection from the elements and from birds and animals,
- Facility in controlling pests and diseases,
- Ability to grow plants that require warmer conditions,
- Ability to grow exotic plants
- Easy access by the elderly and disabled, given that greenhouses are less physically demanding than wide open crop spaces and fields,
- Possibility of reducing gardening costs because the owner or gardener grows his own plants,
- Possibility of widening the variety of plants for general gardening purposes.
- A greenhouse serves as an escape or refuge after a trying day.

Types of Greenhouses

After you decide that you want to have a greenhouse, you have to decide next what type you want or that you have space for. This should be easy to determine provided that you know what kinds of plants you want to grow.

You will need to answer questions such as:

- What will my greenhouse principally be used for?
- Do I want a small, medium or large greenhouse?
- Do I want to grow tall plants
- Will the greenhouse be the main attraction of my garden?
- Is my garden exposed to strong winds?
- Are there young children or wild animals in the area?

Factors such as cost and space will determine the type of greenhouse you build. If you do live in an area that has high levels of wind, it would be worth spending the extra money for a solid and sturdy greenhouse.

Go to your local garden center, nursery, hardware store or do-it-yourself home center and see what models are available. The customer service representative should be able to provide you with valuable information before you make a final decision.

It can be relatively easy to build your own glasshouse; a simple wooden framing with corrugated plastic sheeting can provide a very good custom glasshouse.

So as not to mislead you, while there may be different types of greenhouse designs, we're talking about the same greenhouse. You get to decide which type you want it to be.

For example, if temperature is the main factor, because of the plant varieties you want to grow, then there are three types of glasshouses in terms of temperature control. There are also different types of greenhouses based on structural design. We'll start with temperature control factors.

For temperature control purposes, three types of greenhouses exist:

- a hot greenhouse
- a warm greenhouse
- a cool greenhouse.

Hot Greenhouse

A **hot greenhouse's** inside temperature is generally maintained at a minimum of sixty five degrees F. You can at some future date increase the temperature, but a hot greenhouse is intended for growing tropical and exotic plants. If you live in a very cold region, you will need to install heating and lighting equipment to satisfy the requirements of tropical and exotic plant species; double glazing will also greatly assist with maintaining the temperature.

Warm Greenhouse

The temperature inside a warm greenhouse, on the other hand, is at about fifty-five degrees F. At this temperature, a larger variety of plants can be grown, perhaps as many as you would in your outdoor garden. You may still need to resort to the use of additional heat and light during the cooler months.

Cool Greenhouse

A cool greenhouse (frost-free greenhouse) is maintained at a temperature ranging from forty to forty five degrees F. This temperature is ideal for growing seedlings or any plants that do not need warmer temperatures to survive. A cool greenhouse is perfect for starting your plants and vegetables in anticipation of the summer months. Generally, the use of heat or lights isn't required for a cool greenhouse. A heating pad can be used for germinating seeds that require warmer conditions.

Structures

As for structure, there are three basic glasshouse types:

- lean-to
- detached
- ridge and furrow or gutter connected.

Lean-To

The lean-to glasshouse is very popular among hobbyists. A lean-to is ideal where there is limited space available. They are great for townhouses, apartments, put them on a wall of the house or a fence. Lean-tos are rarely used for commercial purposes because of size restrictions.



Detached

Detached greenhouses, as the name suggests, are independent standalone structures. They may still be attached to a work area or have access provided to another greenhouse via a passageway.

The Quonset is the most common type of detached greenhouse used for commercial production. They are built from arched rafters and have solid walls for support. Quonset greenhouses are ideal for producing most crops, although the growing area is limited to the areas around the side walls, which diminishes efficiency and productivity.



Ridge/Furrow

Ridge and furrow greenhouses are attached at the lower edges of the roof by a gutter. The absence of an inside wall below the gutter allows for increased efficiency. Ridge and furrow greenhouses may be built with gabled or curved arches. Gabled houses are appropriate for heavy coverings (i.e. glass, fiberglass) while curved arch houses are covered with lighter materials (i.e. polyethylene, polycarbonates).

You may encounter different classifications in your readings on greenhouses. For example, another classification, which is similar to the ones just mentioned are:

Cold frame type

A transparent roofed enclosure typically covered by glass or plastic. The Cold Frame is typically used to protect plants from cold weather. This is an unheated greenhouse, relying on the sun for warmth. This can be easily made using an old window attached to a basic frame. Cold Frames are great for germinating seeds and then hardening them off simply by opening the lid. Plants like pumpkins can be started early in the enclosure and when weather has warmed up, simply open the lid and you will have a mature plant ready for a maximum crop.



Another way of looking at greenhouse types is the material they are made of; that is, glass, fiberglass, or plastic. Each type has its advantages and disadvantages. Whatever you choose, make sure you leave the installation and irrigation systems to professionals.

Glasshouse Materials

Glass

Glass is the most traditionally used material for glasshouses. They may be constructed with slanted sides, straight sides and eaves. Aluminum, glass buildings provide low maintenance and have aesthetically pleasing lines, as well as ensuring that you get a weather-tight structure. Pre-fabricated glass kits are available for easy installation by hobbyists and amateur gardeners. They come in a wide range of models to meet budget and space restrictions.

The disadvantages of glass are that it can easily be broken and it's high cost. The advantages of glass are that it lasts a very long time, can be easily cleaned and does not lose its transparency over time (like plastics tend to do)



Fiberglass

Fiberglass greenhouses – they are light, strong and hail-proof. Take care selecting the fiberglass; low quality fiberglass will discolor over time, reducing penetration of light. Using a good quality fiberglass will however make it almost as expensive as building using glass. If you decide to go for fiberglass, go for the most expensive grade, and do not buy colored fiberglass.

If you plan to have a hot house, ensure that you properly seal the ends of the sheets as a lot of warm air can easily escape.



Plastic

Plastic greenhouses are becoming very popular for the following reasons:

- Low cost (about 1/6 the cost of glass)
- Absorbs sufficient heat
- Fruits and vegetables and other plants under plastic are comparable in quality to that of glass-grown varieties
- Easy to install
- A double skin can be installed providing a heat loss barrier
- Lower tax liabilities

There is a choice of plastics available, these include: polyethylene (PE), polyvinyl chloride (PVC), copolymers of these materials, and other readily available clear films.



Be aware that most plastics will degrade over time and require replacement; plastic can also be difficult to clean.

Polyethylene

Polyethylene is lightweight and inexpensive. It stands up well during the seasons of fall, winter and spring, but tends to deteriorate during the summer when it gets constant exposure to the sun. It breaks down due to ultraviolet rays and the deterioration begins along the rafters and along the creases. This problem can be avoided by using UV-inhibited polyethylene, which is available in a wide range of sizes and thicknesses.

PVC

Polyvinyl chloride (PVC or Vinyl) - like polyethylene, PVCs are soft and flexible, select a transparent PVC. Vinyl costs two to five times more than polyethylene. When properly installed, they can last as long as five years. Because it attracts dust and dirt from the air, it has to be washed from time to time.

Take utmost care where the plastic comes in contact with the structure of your glasshouse, any sharp or abrasive areas will damage the covering, remember that the plastic will move in the wind. One good idea is to cover all edges on the structure that the plastic will come in contact with a thick plastic tape (electrical tape or duct tape would be good)

The ends of the plastic can be easily secured by sandwiching them between two pieces of wood; this eliminates specific stress points that would be encountered with nailing or tying the plastic.

Tools and Materials for Your Greenhouse

Remember that you are not limited to a certain variety of plants to grow in a greenhouse. Bear in mind, however, that your preference for certain fruits, vegetables and plants will determine the type of greenhouse you like to build. “Know thy crop” is an important factor when you are deciding on the type of greenhouse you will install.

You will need a good soil for planting seeds. Compost, potting or gardening soil and a little sand or perlite are a good start. Read all directions in your seed packets.

Save seedling trays when you purchase plants from your garden center, these are great for in your glasshouse.

Benches in greenhouses are essential, as they hold trays of plants that have already sprouted from seeds.

Styrofoam cups – have several of these handy. Seeds sprout quickly and once they grow large enough to move into separate containers, they can be gently lifted and transferred into ordinary Styrofoam cups.



You can also use yogurt plastic container, large commercial type containers that can hold more than one plant or any container you can think of will be suitable. Ensure that there are holes in the bottom of the containers to allow good drainage; most plants do not like to have their roots sitting in a pool of water.

Other materials you should have on hand are broken clay pots, cracked walnuts, marbles, charcoal or gravel. These help in proper drainage. Be sure to soak clay pots in water a few minutes before using them. This will prevent the clay from absorbing the moisture from the potting soil.

If you want to have trellises inside your greenhouse, you can make them out of wire coat hangers, which you can bend to any shape your heart desires. Bamboo also makes great supports for plants and can be purchased very cheaply and in a wide range of sizes.

Herbs are perfect for keeping pests at under control. They are what one writer calls “nature's insecticides”. Have a variety of them inside your greenhouse, including onions and garlic. You can make a natural insecticide by adding onions or garlic to a jar of water. Leave it for a week and spray on your plants.

Other equipment that will help you run your greenhouse efficiently are air coolers or fans to disperse excess heat during summer, this will allow you to maintain the temperatures at desired levels. Power vents in the roof are also a good idea to release hot air that can build up suddenly in the summer.

In the winter, a good heater will enable you to keep the glasshouse at the desired optimum temperature. Other accessories you can use are a humidifier, a CO2 generator, and a mister.

Greenhouse Lighting Systems.

Plants use light as their energy source, so it is important that they receive enough light to reach their optimum growth.

A type of light called high intensity discharge lighting (HID) is used by commercial growers in large greenhouses. H.I.D. lighting not only adds to natural sunlight, but can actually serve as a substitute during long winters when natural sunlight is in scant supply. They are energy efficient and operational costs are low. Here are just a few of the benefits of HID lighting:



- Increases the health and strength of plants, and stimulates growth and yield rates,
- Supplements natural sunlight; by using HID lighting, you also extend “day length”,
- Enables container outdoor plants on decks and patios during the summer to be moved indoors during the winter,
- Are definitely more powerful than conventional fluorescents.

If you have a plastic glasshouse, make sure that there is plenty of space between the light and the wall and roof of your glasshouse; these lights can put out a considerable amount of heat and could very easily melt the plastic in your glasshouse.

Make sure that there is sufficient space between the light and your plants to stop your plants being burnt. The distance required should be documented in the instructions that you will get when you purchase the light.

Greenhouse tables, shelving and plant holders

These are indispensable, especially when you need to work inside your greenhouse and to maximize and organize your greenhouse space. As your plant varieties grow, you will need shelves and tables and plant holders to facilitate your gardening. One popular type of bench that greenhouse hobbyists like is the cedar double layer bench. They are durable and efficient to use.

For shelves, you can opt for two and three section lengths made of aluminum.

Given that watering your plants is an essential – indispensable -part of any greenhouse gardening, a good watering system is required. You can choose either the automatic or hand held watering system to make your watering needs more efficient.

You can also install an automatic irrigation system; there are models that come equipped with an automatic drip irrigation and fertilizer system. Day and night they regulate the watering of the plants

and adjust the flow of fertilizer. Some have a tank in which the water and fertilizer are mixed and are distributed to plants via hoses, Y-connections and drip pins.

Greenhouse garden coil indoor/outdoor watering wand

This is a "self-coiling" garden hose made of rugged and durable polyurethane tubing. It produces ultra-fine mists and sprays in soft, gentle streams. Some wand models extend to as long as 50 feet. No hassle storage because of self-coiling mechanism.



Greenhouses constantly evolve in style and design. It follows then that tools and accessories will grow in number or existing ones will be considerably improved. Manufacturers are continually inventing and improving tools and accessories that will make our work in greenhouses easier and quicker.

The ones we just described are already being used by many greenhouse enthusiasts. In a few years, new products will definitely appear in the market.

Tips for Your Greenhouse

If you're growing carrots, beets, turnips and other root crops, they thrive well in deep boxes which can be put under benches. Those that require tub-type containers are tomatoes, peas, cucumbers and pole beans, while lettuce or other low leafy vegetables may be planted in the tub with the taller vegetables.

You can plant corn directly on the floor of the greenhouse, in a special bed prepared for it. To save space, you can plant pumpkin between the rows of corn.

Use room temperature water to water your indoor plants. Let tap water stand for a day to get rid of the chlorine substance. This way you avoid your plants getting brown tips.

Distribute crushed egg shells in your garden to stimulate growth. Sprinkling coffee grounds will add acid to the greenhouse ground.

Before bringing vegetables and fruits from the greenhouse to your house, rinse them well outside; this way dirt and bugs stay outside and will not make your kitchen dirty.

To make more room in your greenhouse, use lower benches for starting seeds and transplants; upper benches for growing flowers and specimen plants. Some vegetables, like tomatoes, should be planted in a warm section of the greenhouse.

Regarding planting of seeds; seeds are best planted in fine seeding mix, seeds should only be watered lightly and be kept moist. Over watering may cause the seeds to come to the surface too soon, preventing them from rooting properly. Seed trays are a very easy way to plant seeds and you can easily plant more than one type of seed in a single tray, simply mark where each type of seeds are with some sticks.



Preparation and production must be done in separate areas. Don't do general preparation on the growing floor. This makes for a tidier greenhouse and helps to maintain good glasshouse hygiene.

Here is a list of the largest vegetables that will need the most spacing in your greenhouse:

- bush type beans: minimum of five feet between rows,
- cabbage: a foot between rows,
- peppers: about a foot between rows,
- cantaloupes: two to three feet between rows,
- squash: two to three feet between rows,
- tomatoes and watermelons: minimum of two feet between rows.

All other vegetables (beets, carrots, garlic, lettuce, onions, peas, radishes, spinach, and turnips): five to ten inches to grow fully in the bed in your greenhouse.

For carrots, beets, and onions that grow deep down in the dirt, keep your soil at least two foot deep as the roots on some of these plants and the vegetable that grows from these plants can get to be very large under the soil.

Mixing vegetables in rows is a good idea. Plants that are different put side by side will not compete for the nutrients, soil and water. For example, take onions and lettuce. One grows down in the dirt while the other grows up from the soil – they grow well side by side. However if you were to put onions and carrots together, they will be competing for the soil space.

Your Wonderland

Your greenhouse can be your wonderland. You can make anything of it that you like. It is an oasis in both time and space.

The time that you spend tending to your greenhouse can be your downtime, a time away where the stresses of this world pass away.

If your greenhouse is your hobby, you will wish to spend time there each and every day.

However you consider your greenhouse you will enjoy yourself. You will go back to nature and get in touch with your organic self. All of this is very good for the soul.

Three Reasons to Consider Purchasing a Greenhouse

Your greenhouse can be attached to your home. It can alternatively be freestanding to add to the beauty of your surrounding landscape. If you are an avid gardener then you will likely enjoy the atmosphere of a greenhouse. You should forget about the largeness of a commercial greenhouse. These are nothing like the warmth and ambience of your personal greenhouse. You will have a greenhouse on a much smaller scale, a place to house your personal choices in plants, flowers and fruits and vegetables. You will also have a very handy place to do the work you need to do without being interrupted. You will be in your own domain and not under someone else's green thumb.

Owning your own greenhouse sure saves you a bundle when it comes time for buying seeds. You can capture your own seeds from your garden and then transfer those to your greenhouse. This saves money during the springtime.

As you spend more time with your greenhouse, you will be amazed by how many seeds you can start there. You will learn more about growing and rely less and less on the commercial growers! In no time at all, your greenhouse will begin to pay for itself.

When you own your own greenhouse, you will have the opportunity to expand it as just a hobby. You can become equipped grow flowers, vegetables and plants all through the year. Having your own greenhouse means you can be free of growing just for spring growing seasons. You can grow throughout the entire year. This is true even if you do not wish for the expenses of heating throughout the winter months.

Begin by planting seeds, March through April and then plan to plant again, May through June. During the cooler temperatures, place your plants in the greenhouse. This will mean a much longer life span for your flowers and vegetables.

Another good reason for owning a greenhouse is that you can plant and harvest your own organic foods, vegetables, fruits, and herbs. This will save on your grocery bills and will also make for very healthy eating. Those with food allergies and chemical sensitivities prefer to eat organic foods and this makes owning a greenhouse ideal for them.

Building and owning a greenhouse is pure pleasure for the entire family. Each member can have their own little organic corner where they are in control. Watching a plant begin from seed and then grow into plants is a delight.

From Little to Plentiful

Your greenhouse has so much to offer you. Have you ever taken the time to think about all of the plenty that your greenhouse does offer you?

When you take a walk through the front door of your imagined greenhouse, what do you see? Your every sense will come alive with color, scent and sight! You will feel alive in every sense of the word. Everywhere there will be new growth! It is pure delight! If you are ever feeling homebound, just peek your head inside your greenhouse for an instant boost of pure energy.



As you return to your hobby greenhouse, you have the pleasure of knowing that your tomatoes life span will continue into the fall. By the time the Christmas holidays come along, you will have ripe and fresh tomatoes to enjoy.

You will save money by buying your seeds in bulk from catalogs or, perhaps, by trading seeds with friendly gardeners for free. You can next start your flowers and plants come January. You will feel like quite the garden manager!

You spend so many hours at work and running to meet the needs of others that when you spend a little time doing something that you really enjoy you feel more worthwhile inside. You can start and grow trees and shrubs without the worry of deer and other animals coming and eating them when they are small and vulnerable. Starting and keeping your trees and shrubs indoors for a year will give them an extra edge so they can grow larger and stronger before being faced by animals.

If you want to be on your own, away from the clatter of life, you can simply walk down the aisles of your greenhouse and reflect on your day. All around you are the great creations of nature that you had a hand in yourself! This is very nourishing to the spirit and helps you to gather your thoughts in a positive reflection.

If you are a mother, you can bring your children to the greenhouse and teach them the lessons of the earth. They can get your hands dirty with Mother Nature and then watch as their plants grow and flourish!

You can start to grow early on and watch the beauty of your own bounty before all of those who do not have a greenhouse. You will enjoy your spring flowers and vegetables early!

Your neighbors and your friends might watch you and wish that they, too, had a terrific greenhouse! As you tend to your plants year round, you feel fulfilled inside, as you are doing something that is very important. Helping to bring wholesome and natural foods to your family's table each day brings its own reward!

You spend so much time each day running here and there and always doing for others, with your own greenhouse, what you do there is for you and for those you choose to share your bounty. This brings a sense of satisfaction.

Owning a personal greenhouse brings with it many rewards – perhaps the most important being the feeling of extreme accomplishment that comes from all of the hard work you do there. It is time very well spent and enjoyed!

Buying a Greenhouse Checklist

Framework

- Aluminum - wood is beautiful, but our aluminum frames are longer lasting and maintenance-free.
- Painted Aluminum - best appearance, looks new for many years.

Glazing

- Tempered safety glass
- TwinWall or Opal
- Triple Wall
- Glass walls, TwinWall or Opal roof

Foundation

- Pressure treated timbers (up to 200 sq. ft. greenhouse)
- Concrete/block base wall
- Concrete slab/tile

Note: Outside dimensions of greenhouse foundation are given under "Actual Sizes" on the price charts.

Floor

If you have not poured a concrete slab, you will need a walkway down the middle of your greenhouse. First, lay down landscape fabric (#2380) over the entire floor. For an aisle of bricks: frame the walkway with treated 2 x 4 lumber, lay down 2" of crushed rock, then 1" of sand, and set the bricks with 3/8" spacing. A final touch might be to plant lemon thyme between the bricks! Finish the remainder of the floor with 2" of pea gravel.

- Aisle pavers/bricks, Pea gravel under benches
- All pavers - provides good drainage
- Concrete slab/tile - not too smooth or it gets slippery. Provide for drainage.

Accessories

- Benches
- Shading
- Heating
- Air Circulation
- Misting System
- Other

Conclusion

Lisa Roberts, in her essay, [A Garden of Glass](#), calls greenhouses ‘conservatories’. A rather odd word to use, because we’ve always associated conservatories with places where we learn music or forced to learn music by fussy parents.

Thinking about it, however, greenhouses are music to everyone’s ears. They have come to signify the human race’s fondness for protecting plants – be they exotic species from distant lands or simply common, home-grown vegetables.

Greenhouses also signify man’s wonder at seeing life take shape from beginning to end. There’s something about a seed that mystifies and stimulates human imagination. Greenhouses are also about self-sufficiency and good nutrition.

Many centuries ago, greenhouses were the monopoly of Europe’s aristocratic classes. At that time, only the moneyed were able to import rare and exotic plants from foreign countries and had the resources to erect expensive structures in which to store their precious possessions.

Happily that monopoly turned into a commodity that even ordinary, unschooled people could have. As styles and designs evolved quickly, greenhouses were now within reach of schools, universities and hobbyists searching for an endeavor that could bring joy and pleasure to their hearts.

Greenhouses not only became plant protectors, cultivators and all-season enclaves for growing plant forms, but also a refuge for weary souls, and clean entertainment for amateur and expert horticulturists bored by the outside world. The greenhouse was a welcome escape from the urban decay that characterized cities in transition. And once they’ve tasted fresh, juicy tomatoes or rich red sweet strawberries “harvested” in the greenhouse, consumers would rather shun the bland supermarket varieties that pale in comparison with greenhouse babies.

It isn’t difficult to imagine how Joseph Paxton must have enjoyed life with an overdose of zest. He was enriched by life because he gave back to it in so many ways. “You reap what you sow” is an appropriate

way to describe his horticultural tasks, because the Crystal Palace has been acclaimed by many as a piece of architectural art that is unsurpassed.

A gardener for large estates in England, Paxton stumbled upon greenhouse design and construction. The Crystal Palace, which was his creation, was as long as 18 football fields and as wide as 8, and beat other greenhouses that were built in the twenty years preceding the birth of the Crystal Palace.

Mr. Paxton built another greenhouse for the purpose of housing and preserving only one plant – the giant Victoria Regia lily. The Duke of England at that time wanted to bring the flower to England and propagate it to be given as a gift to the queen.

It was in the greenhouse that Paxton built where the plant had produced 126 blooms during the following year. Mr. Paxton must have been ecstatic for earning such admirable brownie points.

Greenhouses have made people who don't own these structures green with envy; many have gone ahead to build one in their back gardens. Most important of all, greenhouses have made people appreciate the meaning of life, bringing them closer to the soil that nurtures the food that keeps them alive.