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www.123-Greenhouse- Gardening.com

An Introduction to Greenhouse Gardening.

Ken Leclerc

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Greenhouse Gardening made easy. Live, Learn, and Share your own Greenhouse Gardening Experience.

Greenhouse Gardening Introduction:

The purpose of this E-book:

A Greenhouse offers many benefits to any Gardener. *It is a great way to grow “healthy” fruits and vegetables year round for our families at a great cost savings*. It also extends the growing or gardening season. A great hobby that is fun for the whole family.

I truly hope that this E-book, along with the www.123greenhousegardening.com website helps to simplify the whole greenhouse gardening process. The more produce we grow for ourselves, locally, the better off we will all be.

I would love to hear your feedback and can be reached at our **Contact Us** page at www.123greenhousegardening.com .

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Greenhouse Gardening:

Greenhouse Gardening can be a very fun and rewarding **hobby**. You don't have to be an expert to enjoy greenhouse gardening. As soon as the basics are learned they basically apply to any Greenhouse no matter what size it is.

For people who would like to **spend more time gardening** but live in a climate that has a short growing season, a greenhouse is a great thing. Greenhouses turn gardening into a year round activity.

The trick is to **choose the right greenhouse**. The greenhouse should accommodate your gardening needs, as well as the amount you have in your budget.

Greenhouse Gardening Information:

This information is meant as an introduction to Greenhouse Gardening. Please share it with anyone *that* has thought, or shown interest, in a Greenhouse. It is our goal to pass on the information that we have accumulated.

We would really like to see community gardens and people in general grow their own fruits and vegetables as much as they possibly can.

The information is focussed on the hobby/backyard grower, the urban gardening community, and really for anybody that would like to **build, and garden, in their own greenhouse** - whether it is for their own personal use, or for a nursery or hobby business we hope to offer something of interest.

Further information can be found at www.123-greenhouse-gardening.com , in the meantime we hope you enjoy the e-book:

- How to **Build your own greenhouse**
- Greenhouse Plans
- **Solar** Energy
- Ventilation
- Heating and Temperature control
- Kits – Options pros and cons
- Greenhouses for nursery growers
- "How to" Greenhouse growing projects

Greenhouse Environment, Year Round Gardening:

Year-round gardening depends on your geographic location, the site of your greenhouse, and if you use any alternative heat **sources**.

A greenhouse offers the opportunity to sow hardy annuals for spring flowering, over-winter delicate plants, or start seeds to plant in an outdoor garden (all three without heat).

In a greenhouse, **vegetables and flowers can be grown year round** with an artificial or solar heat source.

Generally speaking, a greenhouse that can maintain a minimum [greenhouse temperature](#) of 60°F, at night, can grow **almost any fruit or vegetable year-round** .

A greenhouse is basically a controlled micro climate of your outdoor growing conditions. Greenhouse Gardening is ideal because the environment can be kept perfect, and the plant is kept safe.

Greenhouse History:

History of Greenhouses: From the simplest of beginnings to the most extravagantly built structures, greenhouses have amazed, educated and fed for centuries.



Romain Times:

The history of greenhouses dates back to the **Roman times** when a Roman Emperor, Tiberius(the second roman emperor), was very particular about eating a cucumber-like vegetable daily called an Armenian cucumber, which is actually a variety of melon.

To make sure that they had this fruit available for the Emperor daily the Roman gardener's used artificial methods (like that of greenhouse gardening) en

abling them to grow every day of the year.

They would **plant the Armenian cucumbers in wheeled carts**, allowing them to be able to wheel them to the locations that received the most sun throughout the day. This would probably be where the concept of container gardening had originated as well.

At night, because of the cold night time temperatures, these garden beds on wheels would be moved inside to be kept warm. They would also be kept, when need be, in houses glazed with oiled cloth that would allow for sunlight but would retain the warmth of the suns rays.

Italy:

The first true greenhouses were built in Italy for the **tropical plants** that were brought back from the excursions of thirteenth century explorers. Originally these early greenhouses were referred to as **botanical gardens**.

Netherlands and England:

This technology soon found a home in the **Netherlands and England**, where plants from the tropics were also kept and studied. These greenhouses were still primitive and it took large amounts of work and effort to close them at night, not to mention the preparation in heating them for the coming winter. Balanced heat was very difficult for these early greenhouse gardeners to achieve and maintain.

The first practical greenhouse was built in Holland, to grow medicinal tropical plants by a French botanist named Jules Charles.

Greenhouse Progression:

Early on greenhouses were reserved for the rich (it is a common misconception nowadays that they are still reserved for the rich), and as the **plant sciences** grew in popularity and fascination they soon found a home with the Universities.

The French referred to their early greenhouses as orangeries, as they were used to keep their orange trees from freezing, and as other fruits became popular, like the pineapple, they too had special greenhouses constructed to keep them safe and warm.

Famous Greenhouses around the World:

As **greenhouse technology improved** and construction techniques evolved, there were some fascinatingly elaborate greenhouses constructed that still exist today, such as:

- the greenhouse at the Palace of Versailles
- the conservatory at Kew Gardens in England
- the Crystal Palace – London England
- the Crystal Palace – New York, USA
- Glaspalast – Munich, Germany
- **the Royal Greenhouses of Laeken** – Brussels, Belgium

These heated greenhouses are absolutely amazing, and just go to show what can be achieved with greenhouse gardening.

Knowing the history of greenhouses shows the simplest forms of greenhouse gardening that can be very effective. Or, as it can be today as well, be very intricate and involved.

The History of Greenhouses, it shows how they have played a huge role in exploration around the world for centuries.

Some of the benefits of Greenhouse Gardening:

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- Prolong the growing season (grow earlier, and later, in the seasons without heating)
- Grow Vegetables throughout the year
- Produce larger, healthier plants that **produce more fruits and vegetables**.
- Save your back and stay out of the dirt (if you want to...:), benches, hanging baskets
- **Grow Organic** - try **self watering containers**.
- Protect plants from the elements, and from critters.
- Garden year round no matter the weather -(your very own get away!)
- Grow any kind of plants, by controlling the environment in the greenhouse.
- Propagate from seeds, cuttings or grafts, even **make money** selling your **free plants**.
- **Grow more with less space**: racks, shelving, hanging baskets - and you don't spend the whole time bent over!
- What hooked me into greenhouse gardening? - Less weeding!

A Greenhouse of Your Own:

It is exciting when you decide that owning a greenhouse is the right thing for you and your family. The times and experiences that can be shared are endless.

Not to mention we are living in Times when producing your own fruits and vegetables is a great thing. Being self sufficient.

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Genetically Modified organisms (GMO's), Pesticides, Salmonella..... The list is too long for my liking. We can be rest assured that the fruits and vegetables that we grow in our own Greenhouses and Gardens are a 100% safe.

The time that we share in growing these fruits and vegetables, are moments that will stay with us forever, not to mention the skills that we provide our children are endless, and they are not just skills that they can use in the garden.....

Many people have turned their hobbies into a side business due to the extra space, and growing capabilities, that they now have with their Greenhouse. The opportunities really stop when your imagination does – ornamentals, hobby plants, bedding plants – or supply Fresh Organic Fruits and Vegetables to Friends, Neighbors, Farmer's Markets, or Local Restaurants.

If you have this E-book you are probably already a part of our Newsletter (unless a Friend of yours has shared this E-book with you).

If you are a part of our Newsletter mailout, we will soon be sharing with you exact plans and How to instructions for how you can build your very own Greenhouse, using materials that can all be found at your local Home Depot.

Believe me I have looked and have not found a better, and more cost effective way, to build as many Greenhouses as you want, as is in the information that we will be providing. And we have listed some Free plans on our site.

To make sure that you receive this information along with our Greenhouse Gardening Calendar and Newsletter – Please be sure to visit us and sign up at www.123greenhousegardening.com .

There are a Number of ways to Own your own Greenhouse.....

Greenhouse kits - the good, the bad, the ugly.

There are a lot of different greenhouse kits that are available. All have their own sets of pros and cons, each offering something that the other does not and in the end it comes down to preference.

Most greenhouses that are available come as a kit, and assembly is in the hands of the owner. However, these kits are usually fairly simple and come with detailed and illustrated instructions.

Here are some options available – for more information on each of the styles, please visit our website at the link below:

- 1) Aluminum Greenhouse Kits – foundation is key

- 2) Wood Greenhouse Kits – be sure to use the proper wood

- 3) PVC Greenhouse – build from plans

- 4) Hoop House / Poly Tunnel Kits - #1 used greenhouse in North America

For more information, please visit us at www.123greenhousegardening.com

Build a Greenhouse:

There are a many different ways to build a greenhouse, and if you plan to build one using a set of greenhouse plans there are some things that you may want to keep in mind when choosing the right ones for your project.

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There are a number of free greenhouse plans available, and we'll offer some greenhouse tips that are helpful in **building a greenhouse**.

The nice thing about using greenhouse plans is that you likely have all, most, or some of the tools needed on hand.

The other thing is that **most of the materials** needed to build a greenhouse **can usually be found at your local hardware store**.

The right tools for the Job:

Here is a list of the tools that we think are the most helpful in greenhouse building, although the **tools needed will depend on the style and materials used**, the following are the most common:

- Drill and bits
- Heavy duty stapler – for attaching Poly Film (if poly channel is not used).
- Utility Knife
- **Tape Measure**
- Hack saw
- Circular Saw
- Shovel and rake
- Wrenches – to tighten bolts
- Pliers
- Carpenter's Square
- Level
- Pencil
- Wire, zap straps, Hose clamps (are all handy to have around).

Greenhouse Building Materials :

The materials used for building a greenhouse are based on the type of greenhouse that is being built.

It is great to be able to find a set of greenhouse plans that come with a list of materials needed, but the fact is that your perfect plans may not have a list. Really not that big a deal with a little bit of planning.

Although they may not be listed, it is usually pretty easy to make a list yourself. You can figure out exactly what is going to be needed before construction starts. It is always a good idea to have **all** of the materials needed, I don't know how many times I have had to make a trip to the hardware store because I didn't fully plan ahead....

Here are some of the **more common materials** to build a greenhouse from plans:

- [PVC pipe](#)
- Pressure treated lumber
- [Cedar](#) (if you prefer natural wood)
- [Galvanized steel tubing](#)
- Aluminum
- Straw/Hay bales
- [Poly Plastic](#)
- [Poly Channel](#)
- miscellaneous recycled materials
- Many [greenhouse cover](#) choices are available to choose from

Really imagination is the limit; when it comes to greenhouse building, **any type of material could potentially be used to make a greenhouse.**

[Look at some Free Greenhouse Plans](#)

Hoop Houses / Poly Tunnel Greenhouses:

Hoop Houses and Poly Tunnel Greenhouses are the #1 style of Greenhouses used in North America.

It is the style of Greenhouse that is our first choice and can be made using materials that can all be found at your local Home Depot store (and may I add that the end construction is very professional looking).

They are an inexpensive, and very versatile choice, for any greenhouse gardener. They can be purchased as a kit or can be made, again, by using materials that can be found at your local Home Depot or local Hardware store.

For the person that is looking for a greenhouse as a business opportunity, these greenhouses are a great choice and are used by many growers throughout North America.

Simple construction and location prep, they are of interest to hobby gardeners and professional growers alike.

To learn more visit us at www.123greenhousegardening.com

Greenhouse Glazing:

Greenhouse Glazing is the material that covers the greenhouse frame. The term glazing refers to any transparent material, like traditional glass, used to cover greenhouse frames that allow light and retain heat in the greenhouse.

The most common greenhouse covering materials are:

- [Glass](#)
- [Poly and Plastic Films](#)
- [Polycarbonate](#)
- [Plexiglas](#)

Many new greenhouse glazing materials have emerged in recent years.

In considering different glazing options, it is beneficial to keep the following in mind:

- **Light Penetration**
- Ease of Installation
- Reparability
- Budget
- Lifespan
- Durability
- Heat Retention

All of these considerations are explained in further detail at www.123greenhousegardening.com

Greenhouse Temperature

Greenhouse Temperature is another benefit of greenhouse gardening. The Greenhouse can be set to whatever temperature the plants are going to need to be healthy. That is if you are going to use some sort of artificial heat source.

Temperature Classifications:

The **inside temperature** of greenhouses are laid out in three categories: **Cool and Frost Free, Warm, and Hothouse.**

These are based off of the coldest temperatures that the greenhouse reaches in a 24 hr period (or **night time temperature**).

A drastic change below these temperatures **may cause slower growth**, flower drop, or in a nutshell lower yields and other problems.

Here is a list of the Three Classes and their Night Time Temp. (Coldest Temp in a 24 hr period):

1. **Cool and frost free greenhouses:** Night Temperature: between 5-7 degrees C (40-45 degrees F) is the prime temperature for growing frost sensitive plants, or your propagated cuttings.

2. **Warm greenhouse:** Night Temperature: 13 degrees C (55 degrees F). Grow lights may also be needed to supplement light for plants grown at this temperature and from a climate that this is mimicking. A warm greenhouse would mimic sunnier areas.

3. **Hothouse:** Night Temperature: 18 degrees C (65 degrees F). For tropical and exotic plants. Temperatures may run up to 85 degrees F.

Air circulation is also important in controlling temperature.

To Learn more please visit us at www.123greenhousegardening.com

Solar Greenhouse Heating:

Solar greenhouse heating can be achieved in two ways - passive and active.

The easiest and most inexpensive way to solar heat your greenhouse is through passive solar heating.

This is achieved by incorporating more physical or thermal mass into the design and layout of your greenhouse garden.

Items that create Thermal Solar Mass:

- Large Rocks
- Water Filled Steel Drums (black or another dark non-reflective color is best)
- Cement Filled Cinder blocks
- Piles of rocks
- Lean to greenhouses work great as the wall that they are attached to act as a great solar heat storing Thermal mass.

Retain the Captured Solar Greenhouse Heat:

It is important to retain the heat that is let off by the thermal mass objects that are being used to store heat. The best way to do this is to make sure that the greenhouse is air tight. Check out greenhouse micro climates for more information.

Things that can be done to retain the captured solar heat:

- insulate walls that do not allow light in during the day
- weather strip all doors and vents to reduce any air leaks
- mono foam, caulk, or tape any gaps that may be allowing any loss of heat
- install double or triple glazing
- concrete wall or slab floor
- line the inside walls with inflated layers of poly film - creates an insulating barrier of warmed air between the inside and outside temperatures.

Greenhouse Equipment:

There is quite a lot of greenhouse equipment that is available on the market today. So where to start? Which ones are necessities and which ones are luxuries?

Greenhouse tools help to create, and maintain, the proper conditions for plants to grow in the greenhouse. These tools help to monitor, and sustain, the proper environment in keeping the plants happy and healthy. All greenhouse supplies are meant to help make sure that the greenhouse growing experience is a good one.

Description of Greenhouse Equipment:

Greenhouse Organization and storage:

- Benches
- Shelving
- Hanging Baskets

This group of greenhouse tools helps in making sure that there is the max amount of work, and growing, space available in the greenhouse. These supplies are not always needed many, growers simply set up the greenhouse over a plot of land and simply grow as they would traditionally in the ground, with the benefit of having the greenhouse shelter for their plants – this is a great application for a Hoop house.

Cooling, Ventilating, and Humidifying

- Shade Cloth
- [Air circulators](#)
- Shutter Fans and Shutters
- Automatic vent openers
- Cooling Mist and Timer Packages
- Drip Irrigation

Ventilation is a **key component** in greenhouse gardening. It is recommended to have proper greenhouse ventilation. Ventilation also helps to regulate the temperature. Misting and irrigation supplies help to cool the temperature, and water plants. Watering the plants can be a daunting and time consuming task. There are many watering systems and supplies that can be used to greatly cut down the time, and even automate the process.

Heating, lighting, and propagation:

- Propane heater-
- Greenhouse Heaters
- Thermostat
- [Minimum/Maximum Thermometer](#)
- Seeding Heat Mats
- Greenhouse supplemental Lights
- Timer plug ins

Lots of these accessories are considered **necessities** when controlling the temperature in a greenhouse. This is something that needs to be monitored carefully. Drastic changes in temperature are not a wanted thing in Greenhouse Gardening, and can be very harmful to the plants.

To regulate the temperatures, pretty much automatically, a greenhouse heater, greenhouse thermostat and greenhouse thermometer are very highly recommended greenhouse equipment.

All of the greenhouse accessories listed above is designed to create a **simpler growing experience**. Many will help with the automation of a greenhouse. Although, as much time as possible will want to be spent in working in your garden. The plants growing are alive. As many accessories that are out there the “set it, and forget it” mentality will definitely want to be avoided.

Careful monitoring of the growing system is a must.

To learn more about the equipment used in a greenhouse please visit us at www.123greenhousegardening.com

How To Projects:

There are many how to projects that can be done, including the building of your own greenhouse.

Here are some of the many How to Projects that can be done yourself:

- 1) Build a Raised Bed
- 2) Aeroponics / Hydroponic growing systems
- 3) Propagate your own plants – from seeds, cuttings etc....
- 4) Build your own Mini Greenhouse (great for kids)
- 5) Build your own Greenhouse
- 6) Build your own Cold Frame

Please visit us at www.123-greenhouse-gardening.com

Urban / Community Gardening – Spread the Word:



Urban gardening has come about over the years due to urbanization. As the population grows, rural or natural land is turned into city space (or the “concrete jungle”).

This isn't always good for gardener's, communities, families, environment or animals, as the **natural land is turned to concrete** not leaving very much space for any.

I mention the animals because many urban gardeners make sure to put up housing for different types of animals that they find beneficial to have around: birds, bugs, bats.... Etc.

Since the amount of land that is available is limited and there is usually not enough good growing soil available to plant the vegetables in the ground, city gardeners usually have to be pretty creative, growing in as many locations as they can think of, and that are available.

Some areas that lend themselves well to city growing are:

- Roof Top Gardens
- Back Lanes
- Abandoned or unused land (communities usually do this together)
- Using un-used or abandoned land for growing vegetables
- Joint projects for the community (community adopts a parcel of un-used land for vegetable growing)
- Rent a plot of land (becoming more and more popular)
- Share a yard space with neighbours

Communities come together :

More and more people find themselves living in **condos and apartments** with little to no land, finding it very difficult to squeeze in North America's #1 past time. Some people find it relaxing working in the garden.

People with some backyard space to spare may find it beneficial for themselves and others to rent out their extra yard for others to grow their vegetables.

Urban Growing - Technology and Technique

As the soil is not always available to grow in the ground, the following is also usually needed to grow as well:

- Available soil
- Container gardening (I've seen people grow in old bathtubs, and tires)
- Raised garden beds
- Window Boxes
- Indoor Gardening
- Gardening
- Rain Barrels and other rain collectors

***A note on **Greenhouse Gardening** and the cooperative gardening trend. Greenhouses add themselves well to any urban garden project as they extend the growing season and allow people to grow year round. Also, a greenhouse allows the gardener to use as much of the land that is available to them in the most productive way possible.

The addition of shelving and benches, added with container gardening grows the overall square footage of garden space that can be used to grow vegetables.

Conclusion - Self Sufficiency:

Through this website I have been very grateful to be put into contact with people that are starting their own, or are part of, a community garden.

This seems to be a growing trend, and one that I truly hope continues to grow. With the trying Economic times, it is crucial more than ever that we have a readily available source of Food.

Some are starting these Gardens for the less fortunate Families and Individuals in their own local areas. What a great thing to do.

Greenhouses allow people to grow for a longer period of time. For some this has turned out to be a year round endeavour.

It is not all about saving money on your grocery bill..... many have wanted to get involved with greenhouse growing but have found it to be overly complicated, or felt that it was a hobby reserved for the rich – not true.

Many have created a successful business or side income through these great and amazing structures.

I hope that you have found this information to be helpful. I would appreciate it if you take a look at our website – and if you do visit. Please send a quick comment to me using our Contact Us page, I'd love to hear from you.

To: Community, Urban, Backyard Nursery, Vegetable, Hobby and overall Greenhouse or Gardening Enthusiasts, or soon to be..... I wish you all of the Best!

Thank you,

Ken Leclerc

www.123-greenhouse-gardening.com