Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 03, Issue: 02 (MAR-APR, 2023)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Green Farm: A New Approach of Farming

(*Archana Prasad[1], Anoop Badoni[2], Adarsh Dangwal[2], Ashish Negi[2] and Chandan Kumar[2])
[1]Department of Agriculture, Uttaranchal P.G. College of Biomedical Science & Hospital
[2]PLANTICA-Indian Academy of Rural Development (IARD), Dehradun, Uttarakhand
*Corresponding Author's email: archanaprasad3097@gmail.com

Greenhouse agriculture farming in India is gaining popularity fast. A greenhouse can be defined as a house or a structure made of transparent material like glass or polyethylene wherein plants are grown under well-controlled microclimatic conditions. The size of structure varies from small sheds to industry-sized buildings according to the purpose. Primarily, a greenhouse is a glass house whose interiors grow warmer when exposed to sunlight as the house blocks the greenhouse gas to exit. Therefore, while it may be cold outside the temperature is survival friendly and warm for the plants growing inside. Some greenhouses using high-end technology have installed equipment like heating and cooling system, lighting, screening installations and even computerized facilities to provide optimal growth conditions for the plants. This is done specially to reduce the risks of crop loss in greenhouse cultivation.

Components of Greenhouse

The different components of a Greenhouse are given below;

- Roof- It is the transparent overhead cover of Greenhouse farming.
- Gable- The wall of the Greenhouse is known as gable which is transparent.
- Gutters- Gutters collect and drain out the snow and rainwater that is gathered between the spans.
- Column- Column is a vertical structure that carries the greenhouse.
- Ridge- Ridge is the horizontal section on top of the roof.
- Bracings- Bracings are erected to support the structure against the wind.
- Arches- These are the structures that support the covering materials.
- Foundation Pipe- These pipes connect the structure to the ground.

Types Of Greenhouse (Figure 1)

Greenhouses being structures for facilitating a controlled cultivation system in greenhouse farming, the structure must allow light penetration and maximum coverage. Hence they are semi-circular shaped structures made of transparent materials like glass, polyethylene and other transparent materials. Apart from controlling temperature other objectives of greenhouse farming are maintaining the right carbon dioxide levels, humidity, water, controlling pests and providing plant nutrients.

- Wooden framed Greenhouse structures – In general, for the Greenhouses with a span less than 6m, wooden framed structures are used. Side posts and columns are constructed of wood without the use of a truss is commonly used as it is inexpensive and possesses the required strength. Timber locally obtainable, with good strength, durability can be used for the construction.

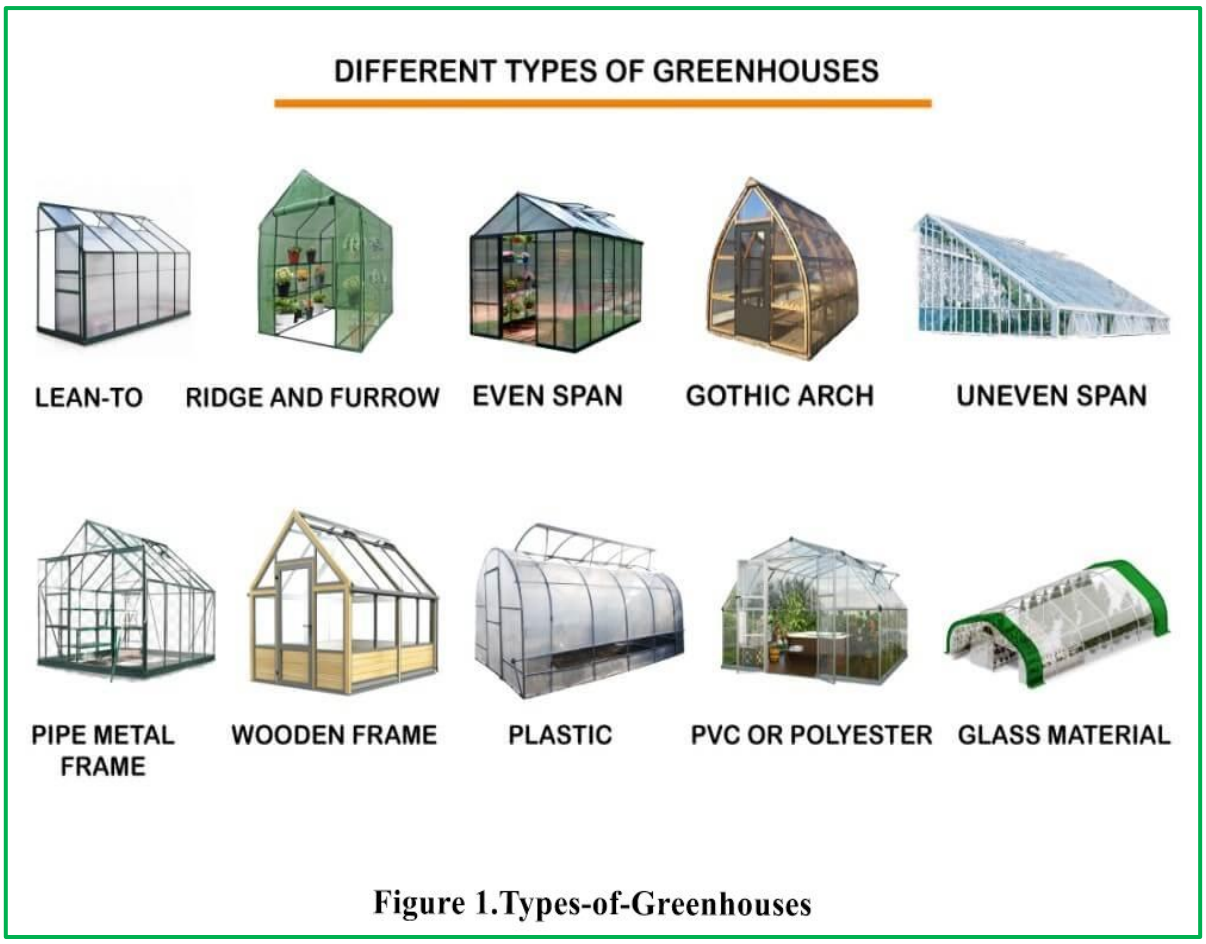

Figure 1.Types-of-Greenhouses

Source : Sierra Greenhouse

- Lean-to type Greenhouse – A lean-to type design is used when a greenhouse is placed against the side of an existing building. It is built against a building, using the existing construction for one or more of its sides. It is generally attached to a house but may be attached to other buildings.
- Pipe framed structures – Pipes are used for the construction of these Greenhouses when the clear span is around 12m. In common, the side posts, columns, cross ties, and purlins are constructed using pipes. In this type, of Greenhouses, the trusses are not used.
- Polyhouse – The polyhouse is a type of greenhouse across the globe. It is prepared of the frame (usually metal) of the desired size and covered with polyethylene film. Unlike glasshouses; polyethylene will be used as the glazing material. The polyhouse is not recommended at all in hilly regions because of poor temperature retention, low crop yield, and high installation cost.
- Ridge-and-furrow Greenhouse – Two or more even-span Greenhouses connected at the eaves is called as a ridge-and-furrow greenhouse. It contains supports but no inner walls dividing the greenhouses. This allows for the making of horticultural crops requiring the same growing environments.
- Glass greenhouses – Only glass type greenhouses with glass as the covering material existed before1950. These greenhouses have a higher air infiltration rate, which leads to lower interior humidity and improved disease prevention.

Advantages of Greenhouse Agriculture

Here we discuss the advantages of Greenhouse farming.

There are several advantages to utilizing Greenhouse agriculture technology.

- Crops grown under such controlled conditions give a yield that is 7 to 12 times higher than crops grown in the open, it provides for year-round and off-season production.
- It also aids in the efficient use of chemicals and pesticides to control pests and diseases.
- Most useful in monitoring and controlling the instability of the different ecological systems.
- Modern techniques of Hydroponic, Aeroponics and Nutrient film techniques are possible only under Greenhouse agriculture cultivation.
- The greenhouse crop yield can be 10 to 12 times higher than that of outdoor cultivation depending upon the kind of Greenhouse, type of crop, environmental facilities.
- Reliability of crop increases under greenhouse technology.
- Greenhouse technology ideally suited for vegetables and flower crops.
- In Greenhouse, year-round production of floricultural crops.
- Disease-free and genetically superior transplants can be produced continuously in Greenhouse.
- Water requirement of crops limited and easy to control.

Greenhouse Agriculture Farming Loan and Subsidies

- Bank provides loans with 12% – 14% interest, for the 5 to 7-year period and mostly many banks offer EMI (equated monthly instalment) options quarterly or every 6 months.
- For the Greenhouse subsidy, purpose takes the loan from a national bank, district bank and this is precondition government stated in subsidy norm.
- Our Indian government is promoting Greenhouse farming they offered a subsidy for Greenhouse through the horticulture department.
- The Indian government gives subsidy from 50%-60% to the project cost of the Greenhouse and subsidy percentage varies with the state to state.

Maintenance of Greenhouse

The chief expense of greenhouse is the maintenance of the transparent films. The biofilm on the walls and roof must be washed periodically since dust settles on them reducing the light transmittance. The greenhouse must be solarized annually. The pipes and sprinklers of the irrigation system must be cleaned periodically so as to prevent accumulation of microbes that may lead to infection in plants.

*The greenhouse farming took place in **Sikkim** for the first time in India*

Conclusion

Greenhouses have become a vital tool in modern agriculture, allowing farmers to grow crops in controlled environments and extend growing seasons. They also provide a means for hobbyists to enjoy gardening year-round. However, it is important to recognize that greenhouses can have negative environmental impacts if not used responsibly, such as excessive energy consumption and waste disposal. Thus, it is crucial to use sustainable practices when operating a greenhouse to ensure a healthy and thriving ecosystem for both plants and people.

References

1. “greenhouse” Oxford English Dictionary (Online ed). Oxford University Press. (Subscription or participating institution membership required.)
2. https://www.ncpahindia.com/green-house
3. http://agritech.tnau.ac.in/horticulture/horti_Greenhouse%20cultivation.html#cost