“Horticulture, Forestry and Herbal Technology”

B. Sc. III Sem VI Sec II

“Gardening and Ornamental Plants”

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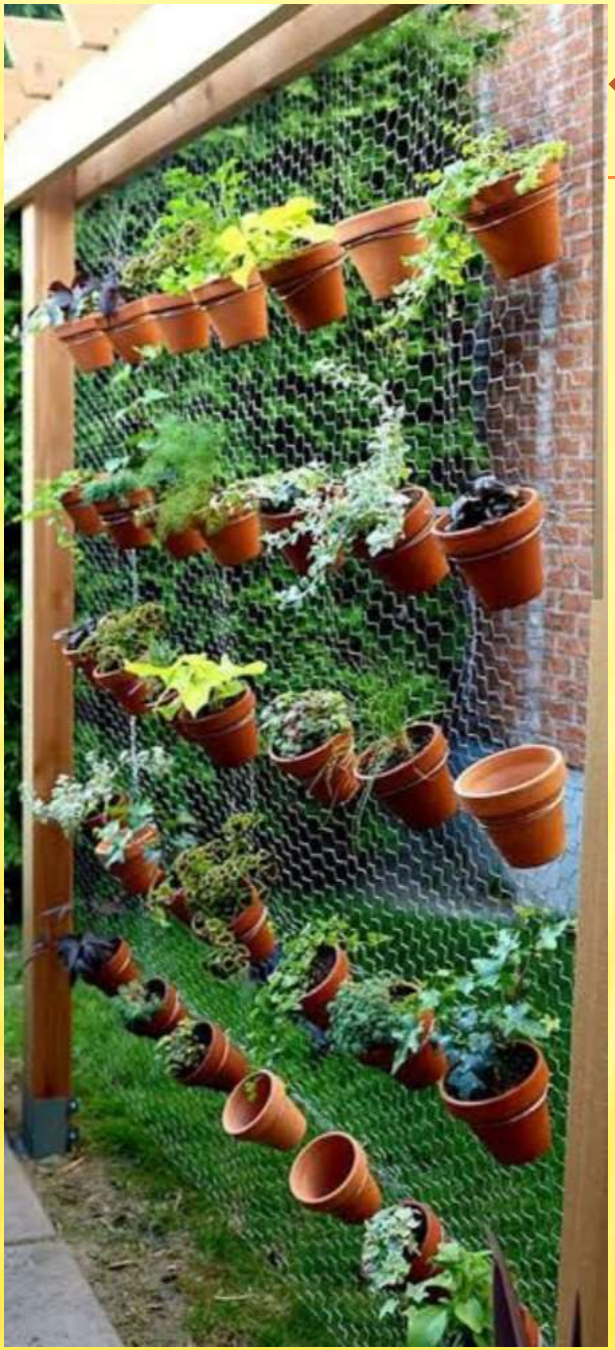
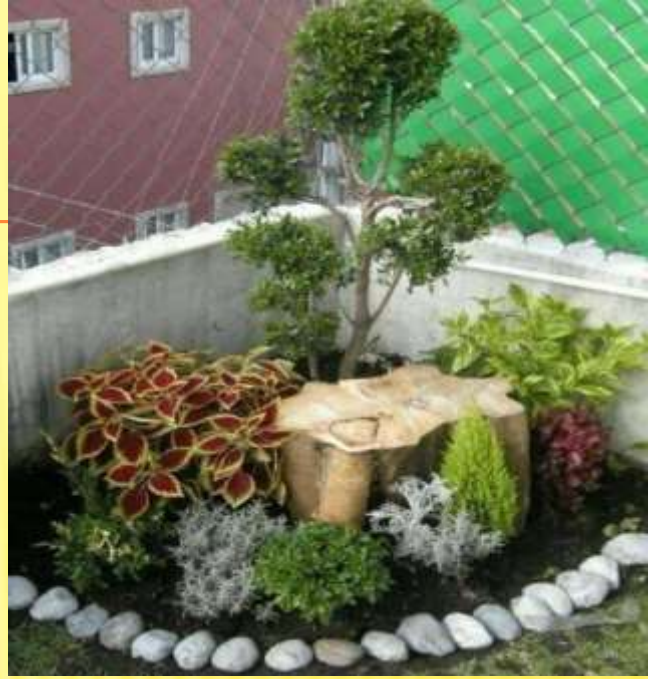
“Gardening and Landscape”

❖ landscaping gardening is branch of horticulture it deals planting of ornamental plants, it is art and service to develop ground in such a way that it gives effect to natural landscape.

❖ Landscaping has great benefits, it increases your home value, beautifying your space, decreases heating and cooling environmental area , it having good health benefits.



Vertical type gardening



❖ Landscaping and gardening involves design, planning and maintenance , gardening usually involves only the plants in a space but landscape is the overall surrounding area that contains the plants.

❖ Landscape is part of earth surface that can be viewed at one time from one place

Steps of Gardening

- Make good use of your location.
- Plan your garden layout.
- Grow recommended varieties.
- Obtain good seed, plants, equipment and supplies.
- Prepare and care for the soil properly
- Plant your plantlets right
- Control pests

Water Management

We save water while planting by…..

- ❖ Shade combined with proper use of mulch.
- ❖ Plant selection, Choose native plants.
- ❖ Choose drought tolerant plants.
- ❖ Install an automatic rain shut off devices.
- ❖ Update irrigation system with a smart controller.
- ❖ Upgrade water efficient emitters…
- ❖ We can store water also by irrigation systems.

Irrigation System

- ❖ It is most important water conservation method for watering landscapes and gardens.
- ❖ Irrigation is **artificial** application of water to a landscape, to keep your garden healthy it requires careful management of irrigation practices.
- ❖ Useful irrigation systems for water management are……

Drip irrigation, Sprinkler irrigation, Surface irrigation and Subsurface irrigation.

1. Drip Irrigation

- ❖ It is most efficient, appropriate irrigation system.
- ❖ Purpose- **Places water directly to root zone and minimize evaporation.**
- ❖ It is type of **micro-irrigation** system which has potential to save water and nutrients by allowing water to drip slowly to the roots of plants.

Water and nutrients are supplied across the field or landscape area in pipes called **dripperliners** featuring smaller units known as drippers. Each dripper emits drops containing water and fertilizers resulting in the **uniform application of water and nutrients direct to each plant root zone**, across an entire field area.

Advantages of Drip Irrigation

- ❖ Minimum operating cost, no soil erosion.
- ❖ Soil infiltration capacity is increased, it is not necessary to level the fields.
- ❖ **Energy cost is reduced** as it is operated in lower pressure than other irrigation methods.
- ❖ Waste of fertilizers is reduced by 50%.
- ❖ Fertilizers and ground water is not mixed.
- ❖ Fertilizers can be used with high efficiency.
- ❖ Weeds can not absorb water as no water is available for them and grow in less number.
- ❖ Water is used at maximum optimum level.
- ❖ We can use recycled water safely.
- ❖ As water is applied locally and leaching is reduced.

Disadvantages of Drip Irrigation

- Sun heat affects tubes, sometimes they get broken for excessive heat production
- Plastic tubes affects the soil fertility.
- Tubes get clogged or blocked sometimes and the installation process needs time
- If drip irrigation is not installed properly, then it is a waste of time, water and heat.

2. Sprinkler Irrigation

- It is a method of applying irrigation Water which is similar to natural rainfall.
- It is used to irrigate agricultural crops, lawns, landscapes, golf and other areas.
- Purpose- To take water from source and distribute it uniformly over an area in droplet form, due to which it **cover a large area**, it can throw water in considerable distance, for this require pressure that translates in to fuel.

Soaker house sprinkler

Three armed rotary/lawn sprinkler

Bubbler/ Pop up sprinkler

Advantages

❖ You will not need to spend much on labor cost for setting it up, it is affordable and easy to set up.

❖ Physical condition and composition of soil are maintained, suitable for all type of soils, it helps in the conservation of soil and increases soil productivity.

❖ Protects crops from extreme frost or temperature.

Disadvantges

❖ For spraying water droplets evenly there is a requirement of constant water supply.

❖There is a requirement of continuous power supply for operating this system.

❖ There is chance of nozzle clogging of sprinklers due to deposition of debris, sand and large amount of salt.

❖ It requires high cost investment.

3. Surface Irrigation

❖ Surface irrigation is widely utilized and therefore a well known system which can be operated without any high technique.

❖ It is normally used when conditions are favorable – mild and regular slopes, soil type with medium to low infiltration rate and a sufficient supply of surface or groundwater.

❖ In surface irrigation water is applied and distributed over the soil surface by **gravity.**

❖ Surface irrigation has three major types Basin irrigation, Furrow irrigation and Border irrigation

Basin irrigation

❖ In basin irrigation method area is divided in to number checks or basins.

❖Water is ponded on an enclosed level field and allowed to infiltrate in basins.

❖ Slopes of the land is high.

❖ Soil is highly permeable.

❖ It is suitable for many field crops and most suitable for paddy rice.

Furrow Irrigation

❖ It is subtype of surface irrigation, it is used to supply water to crops and landscaping plants through shallow, evenly spaced furrows.

❖Furrows are made with a hipper that forms parallel beds and are usually spaced 30 to 35 inch apart. Water flows from a pump to furrows in lay-flat plastic pipes.

Border Irrigation

❖ It is type of surface irrigation where field is divided into strips separated by border ridges running down the gradient of the field. The area between the ridges is flooded during irrigation.

Advantages of Surface Irrigation

❖Management is very easy, low cost required, we beneficial with small lands too
❖ Adapts easily to flat topography
❖ Can function with no outlet drainage facilities.
❖Allows easy leaching of salts, allow full utilization of rainwater.
❖ Works well with short term water supplies
❖Adapt well to small land holdings
❖You can use this irrigation process in sloping lands and long fields.
❖ It also works effectively in a low filtration rate.

Disadvantages

❖It is difficult to remove excess water, particularly during times of excess rainfall.
❖ If drainage system is far then it require larger tubes.
❖ It is not applicable on soil with a high accuracy.
❖Sometimes limited space gets more water than required.

4. Sub-surface Irrigation

❖ It is a low pressure , high efficiency irrigation system that uses buried drip tubes or drip tape to meet crops or plants water needs.

❖ water is directly applied to root zone of the plantlets not to the soil surface where most weed seeds germinate after cultivation.

❖ This is highly efficient irrigation system that apply accurate amount of water at right time directly to roots.

Advantages

❖ This is specially suitable for arid, semi-arid, and windy areas with limited water supply specially on sandy type of soils.

❖ Plants grown in these conditions may grow more uniformly. The water is evenly distributed across all plants improving over all growth level.

❖ With less water remaining on the leaves there is a lowered risk of excessive moisture damage.

❖There is immediate reduction in cost because there is no need for worker to water plants .

❖It is an eco-friendly move , it allows grower to better manage resources and reduces overall mechanical use.

Disadvantages

❖ Risk of clogging

❖ Bacterial slimes and algae growing on the anterior walls of the laterals and emitters combined with clay particles in the water can block the emitters**.**

❖ When the saline water is used, salt get accumulated at wetting front.

❖ Emitters can be damaged or blocked by root hairs.