

**RAMA UNIVERSITY, KANPUR, UTTAR
PRADESH**

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**Course: Production Technology of Ornamental Crops, MAPs, &
Landscaping (HOR-221)**

Lecture 3

Landscape uses of trees, shrubs and climbers

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Tree is a perennial plant having distinct trunk and crown at the top.

Logical meaning of each letter of tree

- T- Temperature and microclimatemoderation
- R- Removal of airpollutants
- E- Erosioncontrol
- E-Energy

conservation.

Uses of tree

- Trees combat the greenhouse effect: Global warming is the result of excess greenhouse gases, created by burning fossil fuels and destroying tropical rainforests. Heat from the sun, reflected back from the earth, is trapped in this thickening layer of gases, causing global temperatures to rise.
- Carbon dioxide (CO₂) is a major greenhouse gas. Trees absorb CO₂, removing and storing the carbon while releasing the oxygen back into the air.
- Trees clean the air: Trees absorb odors and pollutant gases (nitrogen oxides, ammonia, sulfur dioxide and ozone) and filter particulates out of the air by trapping them on their leaves and bark.
- Trees cool the streets and the city: Average temperatures in Los Angeles have risen 6°F in the last 50 years as tree coverage has declined and the number of heat-absorbing roads and buildings has increased.
- Trees cool the city by up to 10°F, by shading our homes and streets, breaking up urban “heat islands” and releasing water vapour into the air through their leaves.
- Trees conserve energy: Three trees placed strategically around a single-family home can cut summer air conditioning needs by up to 50 percent. By reducing the energy demand for cooling our houses, we reduce carbon dioxide and other pollution emissions from

powerplants.

- Trees save water: Shade from trees slows water evaporation from thirsty lawns. Most newly planted trees need only fifteen gallons of water a week. As trees transpire, they increase atmospheric moisture.
- Trees help prevent water pollution: Trees reduce runoff by breaking rainfall thus allowing the water to flow down the trunk and into the earth below the tree. This prevents storm water from carrying pollutants to the ocean. When mulched, trees act like a sponge that filters this water naturally and uses it to recharge groundwater supplies.
- Trees help prevent soil erosion: On hillsides or stream slopes, trees slow runoff and hold soil in place by binding the soil particles with their roots. Trees improve fertility of soil by adding organic manure in the form of leaves every year. Trees help prevent check air pollution and noise pollution
- Trees shield children from ultra-violet rays: Skin cancer is the most common form of cancer in the United States. Trees reduce UV-B exposure by about 50 percent, thus providing protection to children on school campuses and playgrounds - where children spend hours outdoors.
- Trees provide food: An apple tree can yield up to 15-20 bushels of fruit per year and can be planted on the tiniest urban lot. Aside from fruit for humans, trees provide food for birds and wildlife.
- Trees heal: Studies have shown that patients with views of trees out their windows heal faster and with less complications. Children with ADHD show fewer symptoms when they have access to nature. Exposure to trees and nature aids concentration by reducing mental fatigue.
- Trees reduce violence: Neighbourhoods and homes that are barren have shown to have a greater incidence of violence in and out of the home than their greener counterparts. Trees and landscaping help to reduce the level of fear.
- Trees mark the seasons: Is it winter, spring, summer or fall? Look at the trees.
- Trees create economic opportunities: Fruit harvested from community orchards can be sold, thus providing income. Small business opportunities in green waste management and landscaping arise when cities value mulching and its water-saving qualities. Vocational training for youth interested in green jobs is also a great way to develop economic opportunities from trees.

- Trees are teachers and playmates: Whether as houses for children or creative and spiritual inspiration for adults, trees have provided the space for human retreat throughout the ages.
- Trees bring diverse groups of people together: Tree plantings provide an opportunity for community involvement and empowerment that improves the quality of life in our neighbourhoods. All cultures, ages, and genders have an important role to play at a tree planting or tree care event.
- Trees add unity: Trees as landmarks can give a neighborhood a new identity and encourage civic pride.
- Trees provide a canopy and habitat for wildlife: Sycamore and oak are among the many urban species that provide excellent urban homes for birds, bees, possums and squirrels.
- Trees block things; Trees can mask concrete walls or parking lots, and unsightly views. They muffle sound from nearby streets and freeways, and create an eye-soothing canopy of green. Trees absorb dust and wind and reduce glare.
- Trees provide wood: In suburban and rural areas, trees can be selectively harvested for fuel and craft wood.
- Trees increase property values: The beauty of a well-planted property and its surrounding street and neighborhood can raise property values by as much as 15 percent.
- Trees increase business traffic: Studies show that the more trees and landscaping a business district has, the more business will flow in. A tree-lined street will also slow traffic – enough to allow the drivers to look at the store fronts instead of whizzing by.

- Specimen tree: Such trees are planted singly for their attractive shape, beautiful foliage, flowers or for drooping branches which reflect humbleness.
Ex: *Araucaria cookii*, *Callistemon lanceolatus*, *Salix babylonica*, *Cassia fistula*, *Plumeria alba*, *Cassia nodosa*.

- Shady trees: Such trees have mostly round canopy or umbrella crown. Leaves are large and dense so that no or very little sun is allowed underneath them. Ex: *Azadirachta indica*, *Ficus religiosa*, *F. benghalensis*, *F. infectoria*, *Mangifera indica*

- Flowering trees: produce colourful and beautiful flowers. Ex: *Bauhinia variegata*,
Callistemon lanceolatus, *Cassia fistula*, *Delonix regia*, *Plumeria alba*, *Butea monosperma*

- Tree for avenue or roadside: Planted for shade or flowers. Ex: *Cassia fistula*, *Grevillea robusta*, *Jacaranda acutifolia*, *Ficus infectoria*, *Kigelia pinnata*.

- Screening purpose: When all upright trees are planted very close to give an ultimate look of curtain or screen. Such trees are planted to hide some objects or sides. Ex: *Grevillea robusta*, *Eucalyptus* sp., *Poplar* sp., *Polyalthia longifolia*, *P. pendula*

- Fragrant flowers: ex: *Kanak champa* (*Pterospermum acerifolium*), *Pagod tree* (*Plumeria* sp.), *Bara champa* (*Magnolia grandiflora*), *Swarn champa* (*Michelia champaka*).

- For checking air pollution: *Morus* sp., *Poplar hybrida*, *Plumeria acutifolia*, *Ficus infectoria*

Shrubs

- A shrub is distinguished from a tree by its multiple stems and shorter height, usually under 6 m (20 ft) tall.
- Plants of many species may grow either into shrubs or trees, depending on their growing conditions. Small, low shrubs, generally less than 2 m (6.6 ft) tall, such as lavender, periwinkle and most small garden varieties of roses, are often termed subshrubs or bushes.
- Shrubs are woody, perennial plants that generally grow to a height of 12 feet but can sometimes reach 20 feet or more.
- Among the hundreds of varieties of shrubs, two main types emerge--deciduous shrubs, which lose their leaves in winter, and evergreens, which don't.
- Many varieties of both produce berries and small fruit, while others produce flowers of different colors, shapes and scents.
- In the landscape, they can serve as windbreaks and privacy screens, as ornaments, or as an important food source for birds, small animals, insects and other wildlife.

Purpose of planting shrubs

- To enhance the beauty of surroundings
- To provide fragrance in the garden
- To act as boundary of property line and provide liveliness to the garden
- Planted for screening purpose to hide unwanted places
- Planted to divide the area of the garden such as ladies corners or children's corner

Classification

Flowering Shrubs: Produce very attractive and spectacular flowers which are grown for mass effect and carpeting purposes. Ex: *Hibiscus rosa-sinensis*, *Hibiscus mutabilis*, *Caesalpinia pulcherrima*, *Bougainvillea* sp., *Ervatamia divaricata*, *Nerium indicum*, *Calliandra*

- **For Foliage:** grown in the garden for handsome and richly variegated foliage. Ex: *Acalypha tricolour*, *Nandina domestica*, *Codium variegata*, *Manihot variegata*
- **For Flowers and Foliage:** Some flowers have handsome foliage and produce good flowers
too. Ex: *Bougainvillea*, *Buddleia asiatica*, *Buddleia madagascariensis*, *Hamelia patens*
- **For Fragrant Flowers:** *Cestrum nocturnum*, *Cestrum diurnum*, *Murraya paniculata*, *Jasminum sambac*, *Jasminum auriculatum*

Climbers

- Climbers—group of plants which have weak stems and ability to climb up the support with the help of modified organs for sunlight and air.
- Climbers possess different modified organs which help in climbing of the support
- They are tendrils : *Antigonon leptopus*, *Bignonia gracilis*, *Pyrostegia venusta*
- Thorns : *Bougainvillea*
- Roots and rootlets: *Campsis grandiflora*, *Ficus repens* by secreting sticky substances from growing points
- Twiners differ from climbers in the way that they don't possess such modified organs but twine around the support, cover it and reach the top

Uses of Climbers

- Create natural and thick screen
- Covering ugly objects
- Create privacy
- Covering slopes as groundcover
- Shading after training over pergolas
- Avenue planting
- Topiary
- Integrating house with the garden
- Softening harsh masonry walls

- To supplement and filling bare spots in the garden
- To give added interest by training on trees
- To cover up
patio

Selection of climbers

- There is different situation in the garden like sunny, partial shade and different structures according to which suitable types can be selected
- For sunny situation: *Pyrostegia venusta*, *Quisqualis indica*, *Antigonon leptopus*, *Bougainvillea*
- For partial shade: *Clerodendron splendens*, *Petreavolubilis*
- Heavy Climbers: Produce luxuriant vegetative growth and grow very vigorously. They cover large area and are suitable for covering bigger area
- Eg: *Antigonon leptopus*, *Bignonia magnifica*, *Bougainvillea*, *Pyrostegia venusta*, *Clerodendron splendens*
- Light climbers: These climbers make sparse vegetative growth and remain light in spread. These are suitable for limited spaces. eg. *Lonicera japonica*, *Clitoria ternatea*
- Climbers for fragrant flowers: *Jasminum grandiflorum*, *J. officinale*, *Hiptage benghalensis*
- Climbers for pots: *Bougainvillea*, *Clitoria ternatea*
- Making hedge: *Clerodendron inerme*, *Bougainvillea*
- Indoor decoration: *Pothos*, *Monstera deliciosa*, *Philodendron sp.*, *Asparagus sp.*,
- For screening: *Vernonia elegnaefolia*, *Pyrostegia venusta*
- Annual Climbers: *Ipomea lobata*, *Clitoria ternatea*