

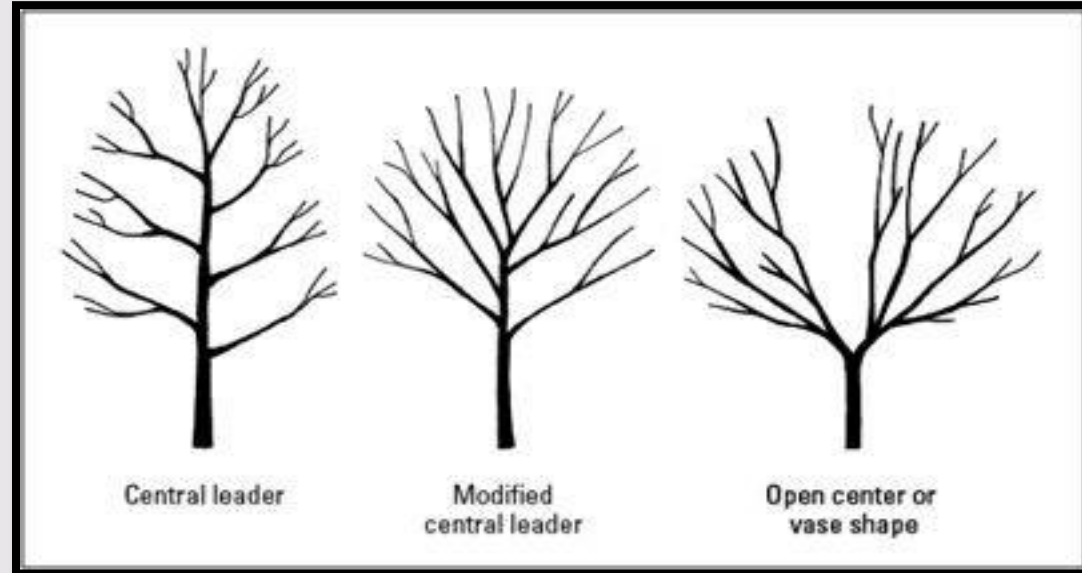


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# Center for Smart Agriculture

## Hi Tech Fruit Culture



### **Module 3: Canopy Management**

### **Session 2: Training and methods of training**



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- Horticultural plants are grown for their produce like fruits, vegetable, flowers, medicinal components, spices (oleoresins), aromatic (essential oils) etc.
- Therefore, these plants should be managed in such a way that human desires for the purpose of growing them are fully satisfied in terms of quality and quantity of produce.



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- This demands direct manipulation of plant growth itself or plant environment through various inputs.
- In manipulation of plant development, training and pruning are important for which our knowledge about plant development and its phenology has to be complete.



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- **Training**
- **Definition**
- Physical techniques that control the shape, size and direction of plant growth are known as training **or in other words training in effect is orientation of plant in space through techniques** like tying, fastening, staking, supporting over a trellis or pergola in a certain fashion or pruning of some parts.



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- **Objectives:**
- To improve appearance and usefulness of plant/tree through providing different shapes
- and securing balanced distribution.
- To ease cultural practices including intercultivation, plant protection and harvesting.
- To improve performance like planting at an angle of  $45^\circ$  and horizontal orientation of
- branches make them fruiting better.



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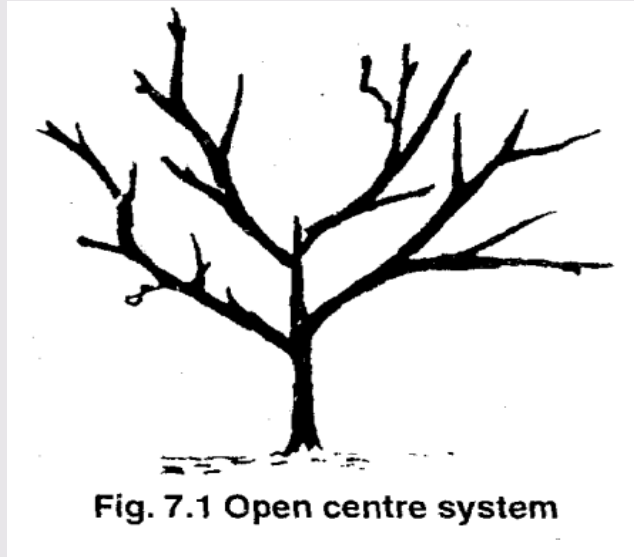
- **Training of woody perennials:**
- The woody perennials, which are widely spaced and remain on a place for a long duration, are trained for develop strong framework for sustainable production of quality produce and for ornamental beauty in different shapes (topiary). In these plants following types of training are followed.
  - (i) Open centre system (Vase shaped)
  - (ii) Central leader system
  - (iii) Modified leader system
  - (iv) Cordon system
  - (v) Training on pergola
  - (vi) Training in different shapes



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## Open centre system (Vase shaped):

- In this system the main stem is allowed to grow to a certain height and the leader is cut to encourage lateral scaffold from near the ground giving a vase shaped plant. This is common in peaches, apricots and ber (Fig. 7.1).



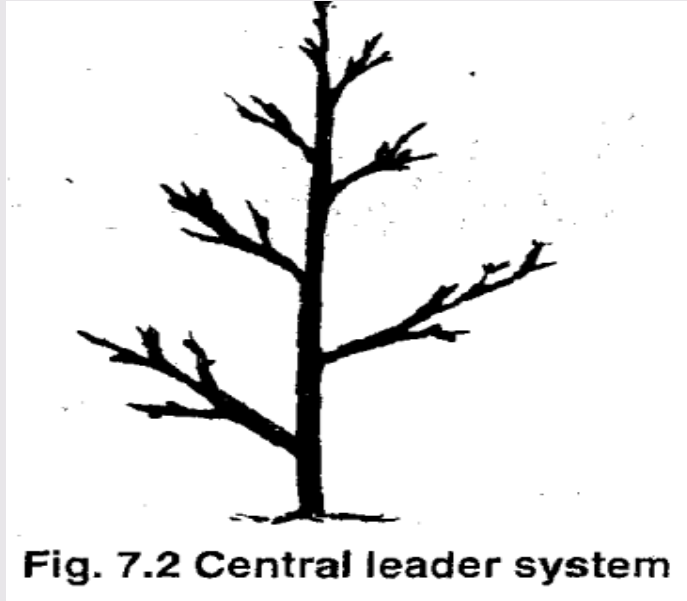
**Fig. 7.1 Open centre system**



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## Central leader system (closed centre):

- In this system the central axis of plant is allowed to grow unhindered permitting branches all around. This system is also known as closed centre system and common in use in apple, pear, mango and sapota (Fig.7.2)







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## Modified leader system

- This system is in between open centre and central leader system wherein central axis is allowed to grow unhindered upto 4—5 years and then the central stem is headed back and laterals are permitted .It is common in apple, pear, cherry, plum, guava (Fig.7.3)

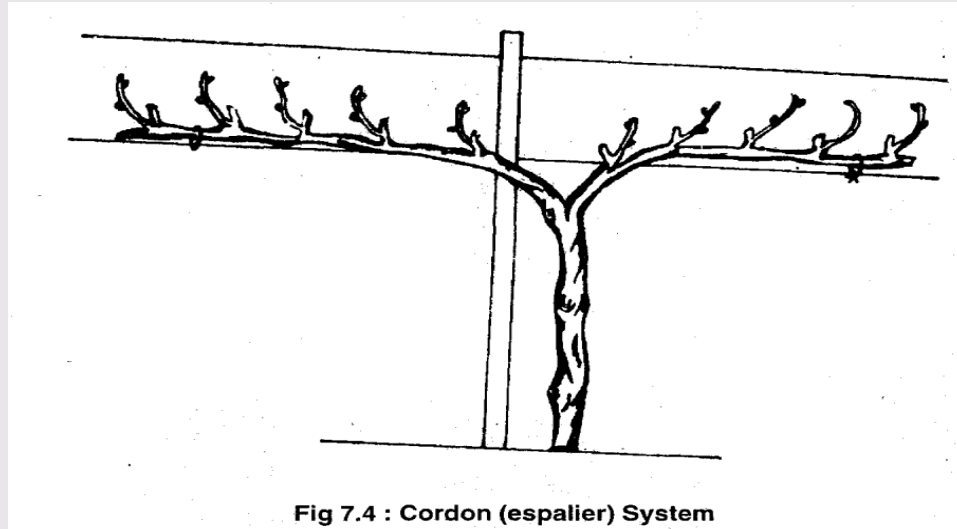


**Fig. 7.3 Modified leader system**



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- **Cordon system :**
- This is a system wherein espalier is allowed with the help of training on wires. This system is followed in vines incapable of standing on their stem. This can be trained in single cordon or double cordon and commonly followed in crops like grape and passion fruit (Fig. 7.4).



**Fig 7.4 : Cordon (espalier) System**



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## Training on pergola:

To support perennial vine crops pergola is developed by a network of criss-cross wires supported by RCC/angle iron poles on which vines are trained. This is common for crops like grape, passion fruit, small gourd, pointed gourd and even peaches.





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*Thank  
you*

