

Establishment a plantation

Decisions to make before you commit

- Motivation: money, fun, connect with nature.
- Family considerations: labor, energy level.
- How hard do you want to work.
- Skills and temperament: growing, selling.
- Financial situation: Full time or part time.
- Cost: already own land and equipment.
- Goals: self supporting, size, profit level.

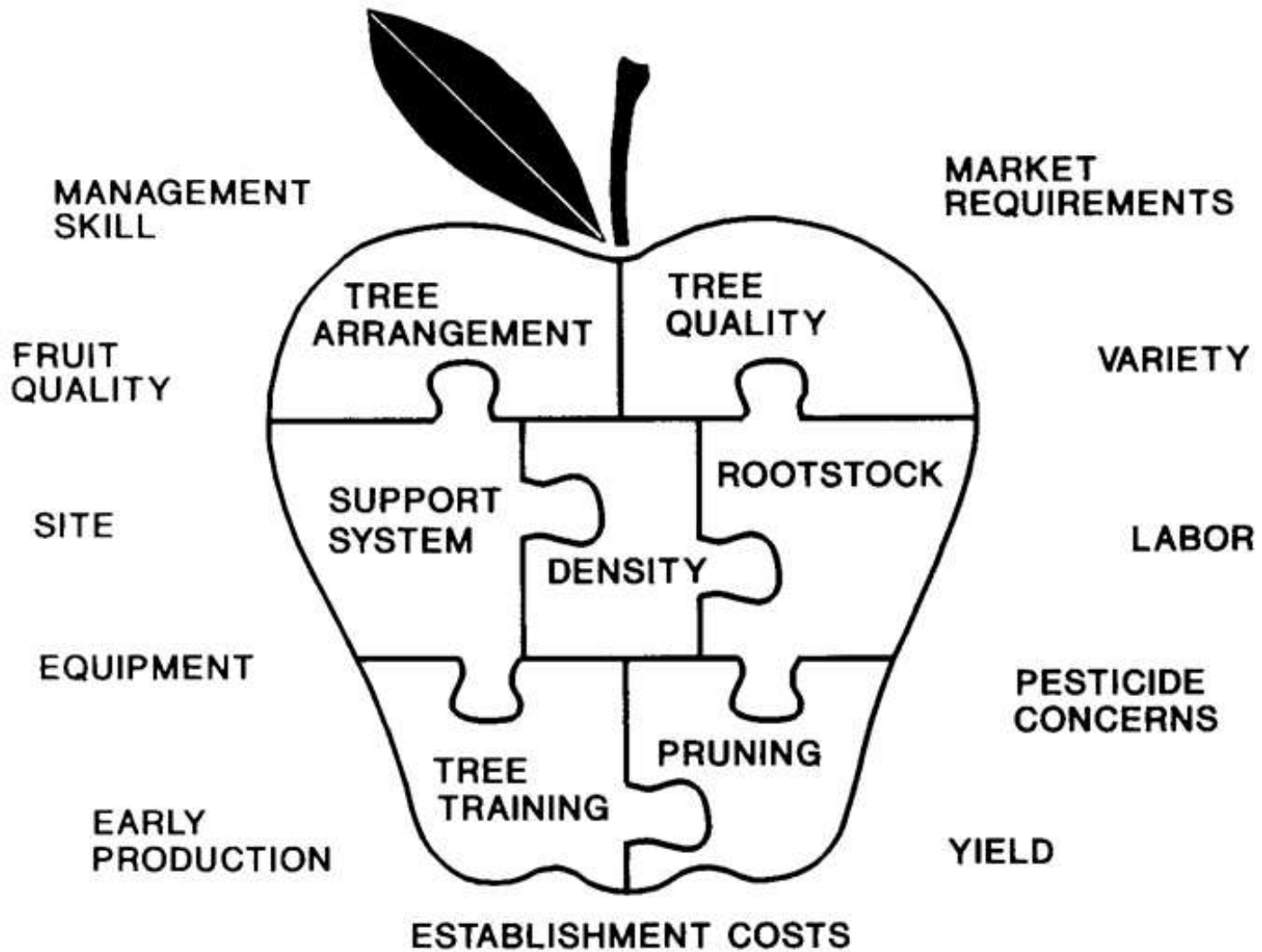
Steps of the plantation establishment

- Site selection.
- Ordering the plant material.
- Soil preparation.
- Planting.
- Trellising.
- Maintaining till the first commercial product will be harvesting.

Key Considerations

- Location.
- Marketing.
- Tree fruit options.
- Planning the planting.
- Maintaining your orchard.
- Harvesting and marketing.
- Other products.
- Top 10 Common Mistakes.

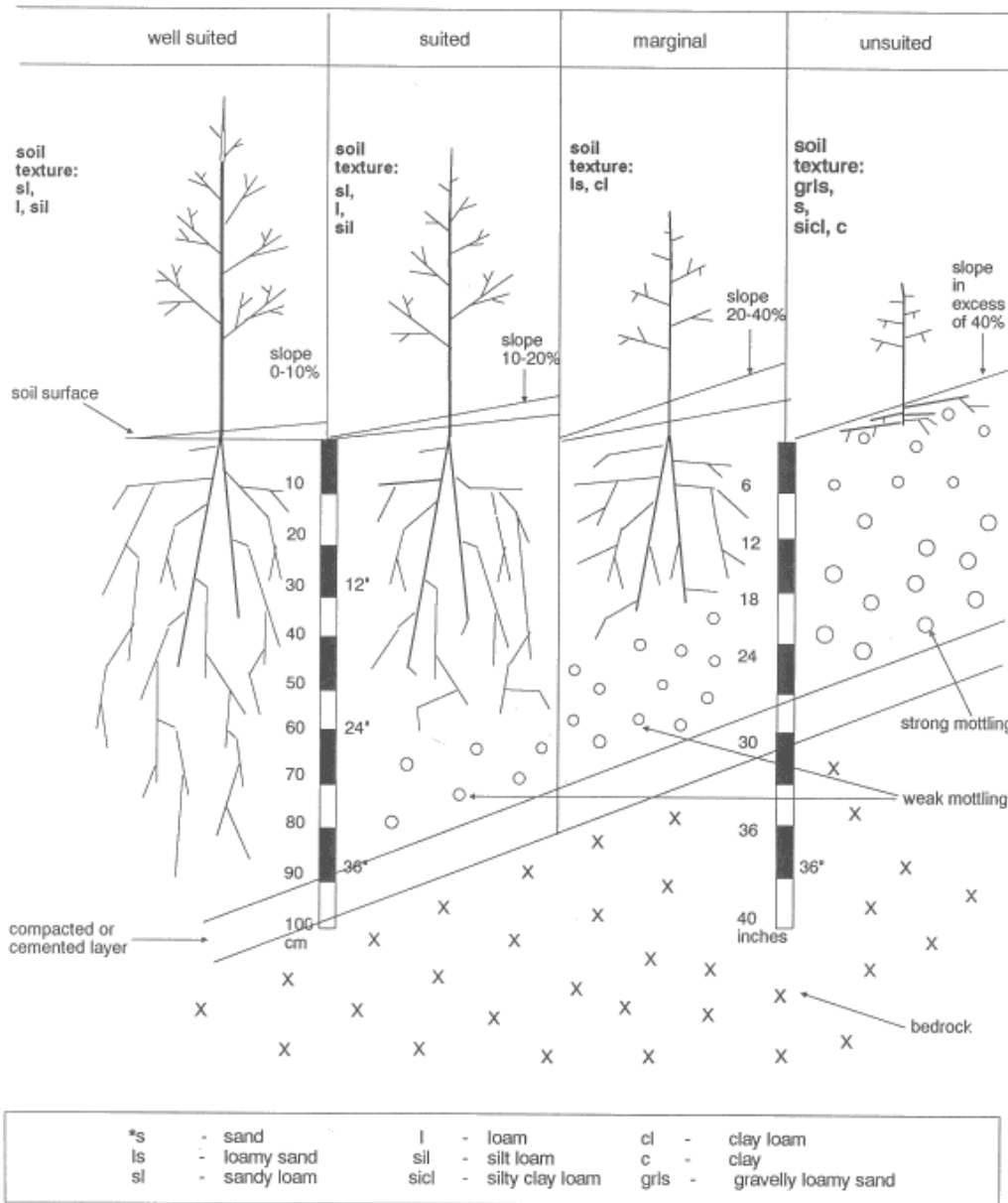
The Orchard System



Site selection

- **Site:** Most important and critical choice to make the first decision. If the site is not good the best plans will not be successful.
- Key points for site:
 - 1) Well drained soil.
 - 2) Air drainage: cold air moves downhill.
 - 3) Slope.

FIGURE 1. Soil Suitability for Apple Orchard



The overall performance of orchards is closely related to the soil characteristics and climate of the orchard site. The proper selection of an orchard site is the most important managerial decision the producer will make during the entire life span of the orchard. In order to realize the paramount importance of this decision, one need only take into account the high costs of land preparation, labour and materials of orchard establishment, and the long life expectancy of an orchard.

Site selection for vineyards

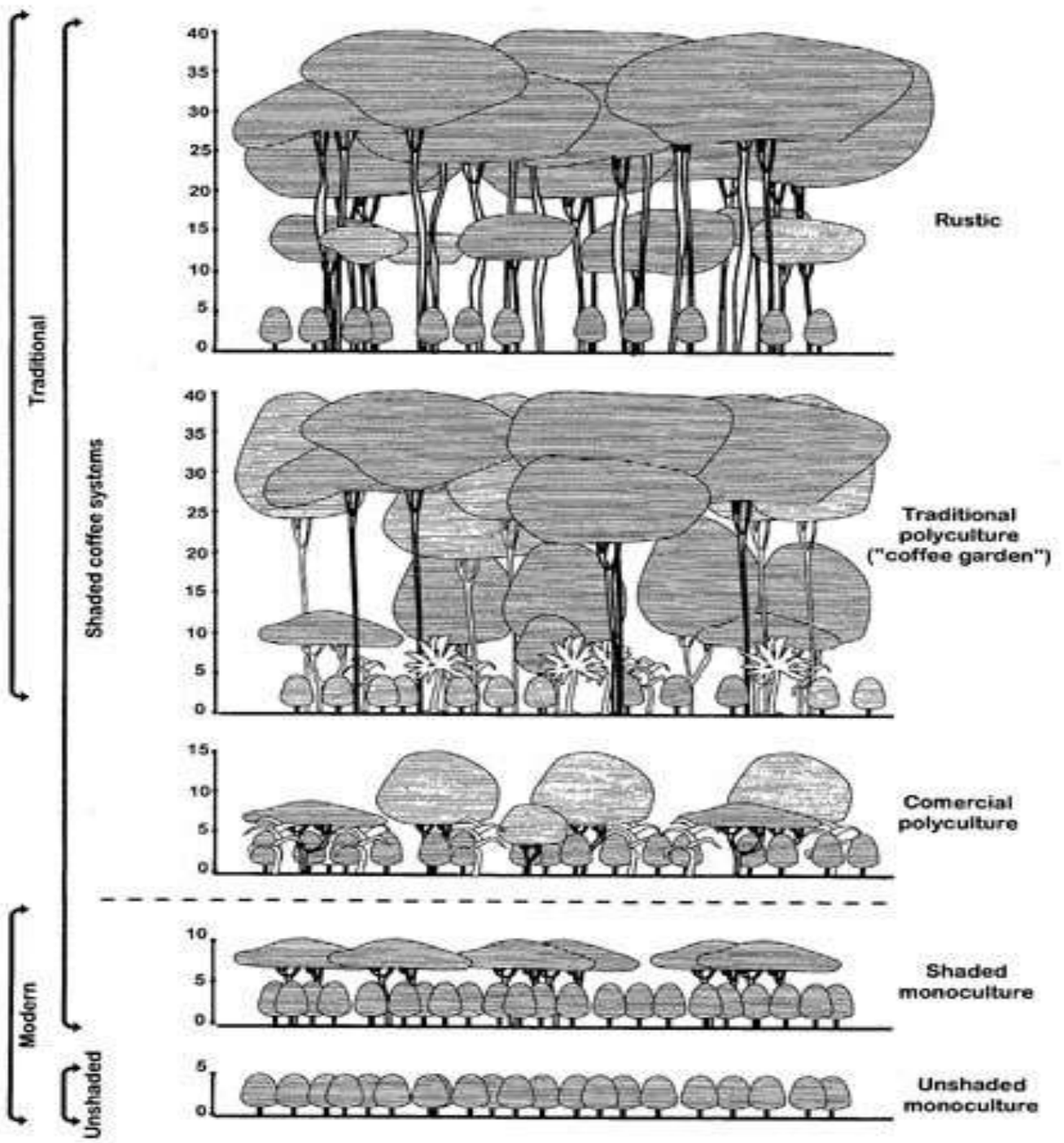
- Considered the most important decision when establishing a vineyard, proper site selection is the basis for optimizing grape yield and quality.
- Developing a vineyard is capital intensive, so ensuring that the vineyard site is evaluated for:
 - zoning,
 - soil quality,
 - climate,
 - access,
 - site risks and varietal appropriateness.

Site selection directly impacts the long-term sustainability of the vineyard and the grower's business.

Site selection encompasses considerations outside of the vineyard, such as what is the surrounding property like and what are its uses?







Shade V.S. Sun

Shade-grown coffee plantations

- The majority of bird species are feeding in the shaded overstorey.
- **dead leaves** from the overstorey trees provide nutrients to the coffee shrubs as they decay.
- **fewer weeds** in shade plantations, because fallen leaves from overstorey trees in shade plantations act as natural mulch.

Sun cultivation

- **monocultures** do not support a diversity of birds.
- nutrients are not available, so **fertilizers** must be used
- **Herbicides** are needed to control weeds.
- Soils are **more exposed to the elements**, particularly rains of tropical areas.
 - more erosion of topsoil, and the leaching of chemical fertilizers, pesticides, and herbicides into local watersheds which causes water pollution in the nearby rivers or lakes.
- **grow faster** and age more quickly than those grown in shade, and therefore must be replaced more often, specifically at about 6 versus 30 year intervals, respectively.

Soil Preparation

- The site should be completely weeded before planting, e.g. by ploughing and harrowing.
- Mechanical cultivation improves soil structure, and consequently water holding capacity and draining.
- A hardpan impedes draining. Hardpan is broken by deep ploughing or sub-soiling.
- The soil should have the optimal acidity and nutrient level for the tree species to be planted. Soil tests are carried out prior to planting possible lime and fertilizer is applied before planting.

Spacing considerations

- Plants should be spaced to intercept maximum light because light = energy.
- Spacing comes in three dimensions:
 - row width,
 - in row spacing,
 - plants height.
- Row orientation.
- Layout the orchard or vineyard.

Space between rows

- 1:1 ratio could be the best.
- Generally as narrow as possible.
- Cultural practices.



Space between stocks in rows

- Determined by vigour and desired plant size.
 - vigorous – more distant.
 - less vigorous – closer together.
- At full maturity should touch each other to
 - fully utilize space.
 - maximize yield per unit of space.

Semi Dwarf Trees



Row orientation

- North to South is better than East to West.
- Wind blow direction needs to be considered.
- Pollination, pests and diseases management.

Intensive Pear plantation





Pollination Requirements of Trees

- Apple: self sterile (Golden Delicious may be partially self fertile) need 2 varieties
- Peach: self fertile mostly
- Pear: self sterile
- Sweet Cherry: self sterile
- Sour Cherry: self fertile
- Plums: variable

Planting techniques

- Depends on the size of the plantation.
- Depends on the quality of nursery material
 - bare-root trees,
 - containerized,
 - balled.

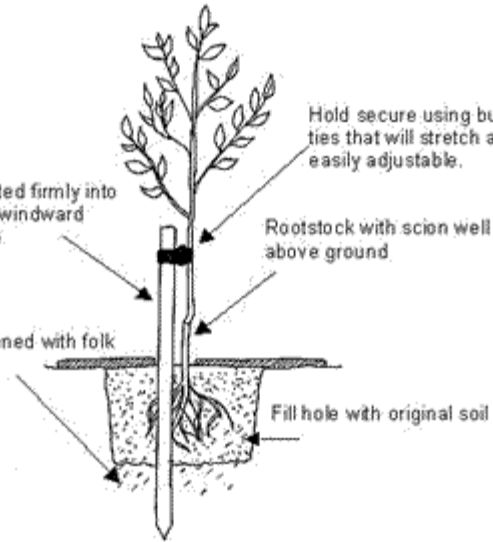


- Depends on the soil conditions and timing.



Stake planted firmly into ground on windward side of tree

Soil loosened with fork











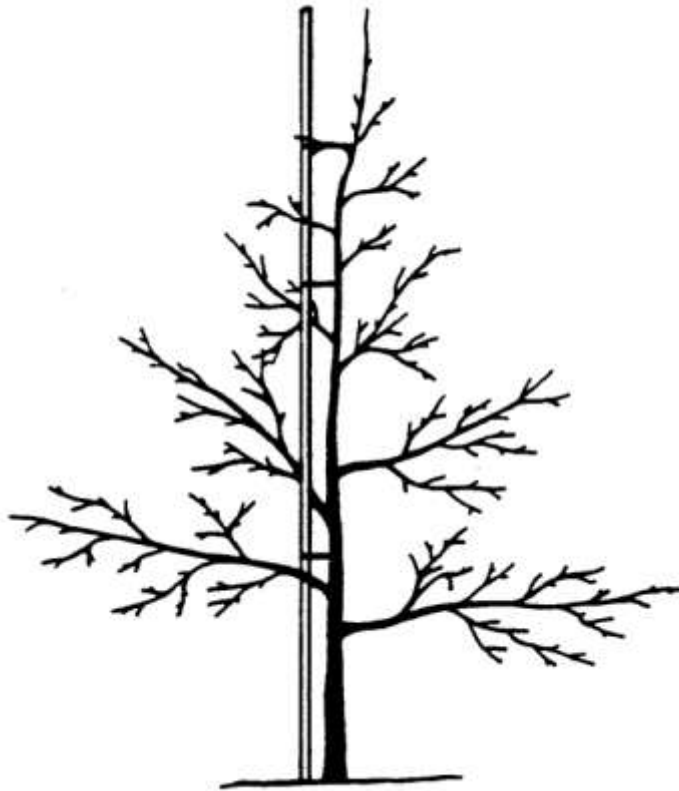








Ideal Tree Shape



- Wide bottom
- Narrow top
- Branches well spaced
- Good branch angles
- Post for tree support

Shaping the trees



When to Harvest

- Calendar date
- Starch test
- Fruit color
- Firmness
- Fruit falls from tree
- Ethylene concentration
- Taste the apple: best method

Issue of harvest





After Harvest

- Still respiring
- Still using up energy
- Still requires oxygen
- Aim to reduce respiration, but not stop it.
- Most common method: cool storage
- Sort apples before storing, remove damaged apples.

Top 10 Mistakes Made by Beginning Growers

- 1) Failure to keep adequate records-spraying, thinning, variety production history.
- 2) Purchasing equipment before it's needed
- 3) Failure to assess soil and air drainage of site.

Top 10 Mistakes Made by Beginning Growers

- 4) Failure to assess market details- landscaping, neatness, initial visual impact, high quality product and impression.
- 5) Ignoring other crops eg. Blackberry, blueberry for u-pick.
- 6) Failure to interact with the customer- they want to meet the grower/information.

Top 10 Mistakes Made by Beginning Growers

- 9) Planting too many trees before acquiring basic skills. Pruning too much when trees are young and too little when trees are mature.
- 10) Under pricing-don't compete on price. Compete on product quality and customer service.

A large, light-colored wicker basket is overflowing with a variety of fresh fruits. The basket is filled with several red and green apples, several pears in various shades of green and brown, several bright orange oranges, and a few lemons. A whole pineapple with its green crown is also visible. The basket is tied with a decorative, light-colored fabric ribbon. In the foreground, partially obscured by the basket, is a small white box with green and black text that reads "CRO FOODS".

Do not make a mistake!

Establish a plantation in the near future!