

Different planting systems

or layouts of Horticultural orchards/plants

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Planting system

The arrangement of plants in a systematic form for facilitate the various practices such as weeding, fertilization and spraying etc which are essential for the plants to successfully grow.

Different systems of planting

1. Vertical row planting system

- Square system
- Rectangular system
- Cluster system

2. Alternate row planting pattern

- Triangular system
- Quincunx system
- Hexagonal system
- Contour system

3. Free style system

Square system of planting

It is most common and easiest system of planting. In this system, plant to plant and row to row distance is kept similar. The plants are planted at each corner of the squares.

$$\text{Total number of plants} = \frac{\text{Total Area of the land}}{\text{Plant to Plant distance} \times \text{Row to Row distance}}$$

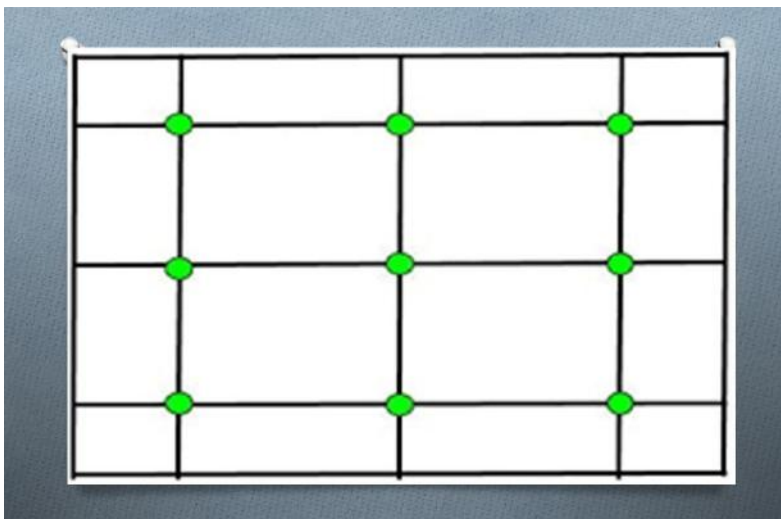
Advantages

- It is one of the most easy and cheapest systems of planting.

- Intercultural practices can be done in both directions.

Disadvantage

The centre of the square remains unutilized.



Square system of planting

Rectangular system of planting

It is just similar to square system but in this system, row to row distance is kept more than plant to plant distance. The plot is divided into

rectangles instead of squares. The plants are planted at each corner of the rectangles.

$$\text{Total number of plants} = \frac{\text{Total Area of the land}}{\text{Plant to Plant distance} \times \text{Row to Row distance}}$$

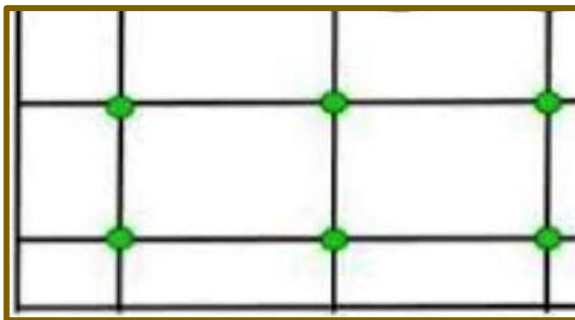
Advantages

- It is also simple and easiest system of planting.
- More space between rows to rows.
- Plants get proper space and sunlight.

- Highly used in HDP.

Disadvantage

A greater loss of income in case of no practice of intercropping is disadvantage of this system.



Rectangular system of planting

Cluster system-Accommodates almost twice number of plants than square system.

Quincunx system of planting

It is also known as diagonal and filler system of planting. It is just similar to the square system except an additional plant is planted at the centre of square. The main crop is called primary crop and filler crop is called secondary

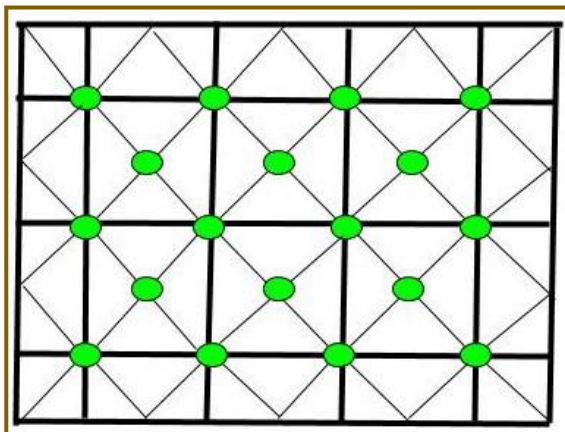
or supplementary crop. Fruit plants such as papaya, phalsa, banana, kinnow, guava, peach, pomegranate and plum are planted as filler/additional crop. In this system, we can get almost double of plants than square system.

$$\text{Total number of plants} = 2 \times \left[\frac{\text{Total Area of the land}}{\text{Plant to Plant distance} \times \text{Row to Row distance}} \right]$$

Advantages

- Generate of additional income.

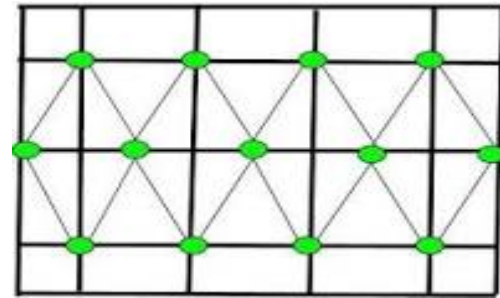
- Proper utilization of space.



Quincunx system of planting

Triangular system of planting

It is based on the principle of isolateral triangle. It is also similar to the square system except the plants are planted in the alternate rows in the middle of the two corners of the square. In this system, we can accommodate slightly lesser number of plants (11 per cent) than square system. Economically it is not beneficial and layout is very difficult to prepare. Intercultural practices are also very difficult in this system. It is mostly used for High Density of Planting (Ex. Mango cv. Amrapali)



Triangular system of planting

Hexagonal system of planting

It is also known as septule system or equilateral system of planting. In this system, the plants are planted at the corners of the triangles having all sides equal in length. The one corner of six equilateral triangles (uniform in length) meets at a point and forms hexagon. The seventh plants we can be planted at the middle of triangle.

Features

- It is very difficult layout to prepare.
- It is mainly used where land is so costly.
- It is mainly used near at city.
- 15 per cent more plants can be accommodated than square system.

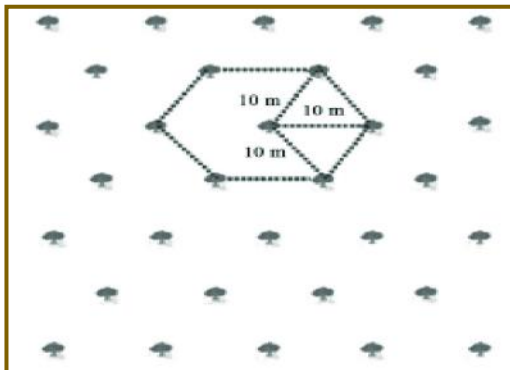
Total number of plants=

Total Area of the land

Area occupied a single plant

Area occupied a single plant= $\frac{3}{4} \times A^2 \times 2$

Where A is spacing between plants/length of a side of triangle.



Hexagonal system of planting

Contour system of planting

It is mainly applied in hilly areas or where slope is more than 10 per cent. This system is useful for minimize the soil erosion.

Total number of plants =

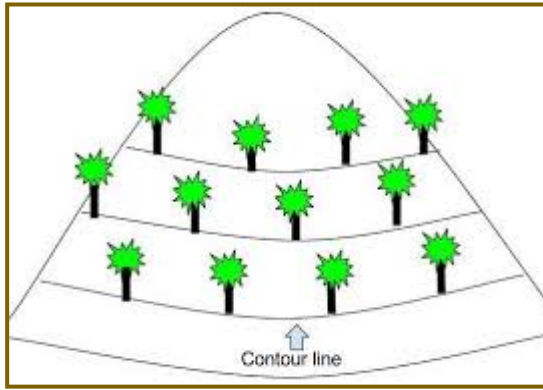
$\frac{N \times \text{Unit area}}{D(H+V)}$

Where, N = Number of hedges

D= Distance between plants

H= Distance between hedges

V= Vertical distance between rows



Contour system of planting

Free style system of planting

It is also known as wild style system of planting. If the plants are planted without following any regular geometrical layout or

design, then it is considering as free style system of planting. For example, Homestead lands, public land and waste lands etc.

NOTE: Single Hedge Planting System-Apple and Pineapple
 Double hedge planting system-Pineapple