

**FACULTY OF AGRICULTURE SCIENCES AND
ALLIED INDUSTRIES**

CROPPING SYSTEM AND PATTERN

Cropping system:

The term cropping system refers to the crops and crop sequences and the management techniques used on a particular field over a period of years.

Or

The term cropping system refers to the crops and crop sequences in which the crops are cultivated on piece of land over a fixed period and their interaction with farm resources and other farm enterprises. Cropping system is the most important component of a farming system.

Cropping pattern:

It indicates the yearly sequence and spatial arrangement of crops and fallow in an area. It is for larger area like zone, taluka, district etc.

Types of cropping systems

Depending on the resources and technology available, different types of cropping systems are adopted on farms. Broadly three types of cropping system are followed

1. Sole cropping

It is opposite of inter cropping. It is defined as the cultivation of one crop variety alone in pure stands at normal density in a certain time and place.

2. Mono cropping or Monoculture

Mono cropping or monoculture refers to growing of only one crop on same piece of land year after year. It may be due to climatologically and socio-economic condition or due to specialization of a farmer in growing a particular crop. Under rainfed conditions, groundnut or cotton or sorghum are grown year after year due to limitation of rainfall. In canal irrigate areas, under waterlogged condition; rice crop is grown, as it is not possible to grow any other crop.

Problems of mono cropping

1. The resources like labour, fertilizers, water and machines are not utilized efficiently.
2. The soil health is not cared and nutrients are depleted.
3. There are chances of occurrence of pest and diseases infestation.
4. Natural resources are not fully utilized.

3. Multiple cropping

"Growing two or more crops on the same piece of land in succession within one calendar year is known as multiple cropping" e.g. Rice-Rice-G' nut or Cotton-Wheat etc. It aims of maximum production per unit area per unit time. It offers multiple use of resource. It is the intensification of cropping in time and space dimensions i.e. more number of crops within a year & more no of crops on the same piece of land at any given period. It includes inter-cropping, mixed cropping, sequence cropping etc.

Advantages of multiple cropping

1. It is a better source of land utilization
2. It improves yield
3. Increase yield per unit of land
4. Costs of input decrease as compared to individual crop growing cost
5. Reduce pest and disease attack
6. Different type of products can be produce at a time
7. It helps to produce a balance diet for a family
8. It helps to maintain the soil fertility
9. It helps to control weeds

Disadvantages of multiple cropping

1. The survival of pests become easy
2. Pests can easily shift from one crop to another crop
3. Problem of weed management
4. Implementation of new technology is difficult etc.

Types of multiple cropping:

A. Inter cropping

Inter cropping is growing two or more crops simultaneously on the same piece of land with a definite row arrangement.

The main objective of inter-cropping is to utilize the space left between two rows of main crops and to produce more grain per unit area. Inter cropping was originally practiced as an insurance against crop failure under rainfed condition. e.g.: Groundnut & Pigeonpea in 6:1 ratio or Sorghum & Pigeonpea in 4:2 ratio.

Intercropping is further classified as:

Additive Series: Intercrop is introduced in the base crop. It is done by adjusting or changing crop geometry. It is mostly used in India. e.g.: Maize + Moongbean (1+1)

Replacement Series: Both the crops are component crops. It is done by sacrificing certain proportion of population. It is mostly used in western countries. e.g.: Wheat + Mustard (9:1), Maize + Moongbean (1:3).

Advantages of intercropping:

1. Improvement in yield
2. Improvement in soil property under legume intercropping system
3. Less risk against crop diseases and pests
4. Additional income and higher profit
5. Soil erosion is reduced
6. Stability in production
7. Economic sustainability is maintained

Disadvantages of intercropping:

1. Fertilizer application in one crop may hamper the growth of other crop
2. Improved implements cannot be used efficiently
3. Harvesting is difficult
4. Yield decreases if the crops differ in their competitive abilities

B. Mixed cropping: Growing two or more crops simultaneously on the same piece of land in a proportion without any row arrangement.

e.g. Wheat and Mustard seeds are mixed together in 2:1 rates and shown broadcast with no spacing maintained between the crops.

C. Sequential cropping: Growing of crops in sequence.

e.g. Double cropping: Growing of 2 crops in a year e.g.: Rice-Wheat

Triple cropping: Growing of 3 crops in a year e.g.: Rice-Wheat-Maize

Quadruple cropping: Growing of 4 crops in a year e.g.: Rice-early potato-Wheat-Moongbean

D. Multistoried cropping: Cultivation of crops of different heights in the same field at the same time. e.g. Sugarcane + Indian bean or Potato or Onion, Sorghum+ Moongbean

E. Ratoon cropping: Raising a crop with re-growth coming out of roots or stalks after harvest of the crop. e.g. sugarcane, pigeonpea, fodder sorghum, fodder maize.

This minimizes the cost of production of next crop in terms of land preparation and cost of seed, also the next crop i.e. ratoon crop gets already established root system.

F. Paira/ Utera/ Relay cropping: In this, second crop is sown before the harvest of previous crop in same field. e.g. 1st crop-Potato 2nd crop-Maize, Lathyrus in rice.

This is done mainly to utilize the conserve moisture in the field after *kharif* season. It also saves the time and keeps the land under vegetation.

G. Alley cropping: Growing food crops within the rows of tree or plantation crops e.g. Moongbean in alley of glyricidia or subabul.

H. Spatial arrangement: The physical or spatial organisation of component crops in a multiple cropping system.

I. Strip cropping: Growing soil conservation and soil depleting crops in alternate strips running perpendicular to the slope of the land or to the direction of prevailing winds for the purpose of reducing erosion.