



CROPPING SYSTEMS IN VEGETABLE CROPS

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Cropping system

- Cropping system helps to obtain higher yield per unit area and per unit time
- At present, vegetable crops are being cultivated on an area of about 3% of the total cropped area in India
- Most of the vegetable crops are short duration and quick growing
- In order to increase vegetable production, it is essential to adopt suitable cropping system with respect to local climate and soil
- The success of any cropping systems depends on the availability of farm resources (**physical** - land, light and water), **socio-economic** (market, labour, power, finance, etc.)

Definition: Cropping system is defined as the cropping pattern followed on a farm and its interactions with farm resources, other farm enterprises and production technology. The yearly sequence and spatial arrangement of crops and fallow on given area.

Why is cropping system important

- Adequate and scientific crop management practices
- Increasing cropping intensities following different cropping patterns
- Soil management
- Crop residue management
- Judicious use of fertilizer and other chemicals

- Provision of adequate irrigation water
- Weed, insect pest and disease management

Classification of cropping system

- Rotation cropping
- Multiple cropping
- Mixed cropping
- Intercropping or companion cropping
- Relay cropping
- Succession cropping
- Vertical cropping

1. Rotation cropping

- ❑ Crop rotation means the raising of crops one crop after the other
- ❑ The crop rotation may be for one year, two-year, three years

Basic principles of Crop rotation

- A crop which is a heavy feeder of nutrients is followed by a crop that requires less nutrients
- A crop having high water requirement is followed by the crop having low water requirement
- Deep rooted crop is followed by shallow rooted
- A crop requiring more tillage operations is followed by a crop requiring less tillage
- Legume crop is followed by non-legume one

Advantages of crop rotation

- Crop rotation makes vegetable farming systematic
- This is a patent way of controlling weeds, insect-pests and diseases
- It utilizes farm resources efficiently and effectively
- It increases yield, quality and marketability

Some important vegetables rotations

- Radish (June-Sept) Pea (Oct-March) Bhindi (March-June)
- Bitter gourd (July-Nov) Tomato (Dec-June)
- Cauliflower (rainy season) Potato (winter season) Bottle gourd(summer season)

2. Multiple cropping: Multiple cropping is a system of cropping in which more



than one crop is grown on the same unit of land in a year without any gaps

Types of multiple cropping:

- Sequential cropping: Where two or more crops are grown one after the other
- Intercropping: Where two or more crops are grown at the same time on a piece of land

Advantages of multiple cropping

- Multiple cropping system is a remunerative proposition
- Available resource can be utilized efficiently
- Multiple cropping generates employment to unskilled rural poor throughout the year
- Total outturn per unit area and per unit time is increased
- Soil is protected from erosion losses
- There is better utilization of soil fertility

Disadvantages

- ✓ It requires assured irrigation facilities
- ✓ It requires only short duration, quick growing varieties
- ✓ More input is needed

3. Mixed cropping: It is a system of growing two or more crops on the same piece of land with major crop either mixed sown or in alternate line in one season.

Advantages of mixed cropping

- ✓ Getting of at least one crop is ensured because in the event of failure of one crop, another crop can give some return
- ✓ There is economic utilization of space, light and nutrients
- ✓ Gives more yield
- ✓ It provides balance production
- ✓ Reduces soil erosion
- ✓ Effective control of weeds

Disadvantages of mixed cropping

- ❑ Certain insect pest, diseases may increase
- ❑ Harvesting may be difficult due to different sowing time and different maturity periods

Some examples of mixed cropping

- ❑ Potato + Radish

- ❑ Potato + Coriander
- ❑ Okra + Radish
- ❑ Cabbage + Lettuce + Radish

4. Intercropping or companion cropping: The system involving raising of crops on inter space available between rows of the main crop on the same land

Advantages of intercropping

- ❑ Best utilization of inter space available between two rows of main crop
- ❑ Increases gross returns from the area cultivated
- ❑ One crop provides physical support to the other crop
- ❑ One crop provides shelter to the other crop
- ❑ Prevent soil erosion

Disadvantages of intercropping

- Raising of intercrops requires more agricultural inputs
- Creates obstruction in free use of machines for intercultural operations

Some examples of intercropping

- Okra + Cowpea
- Okra + Beet root
- Okra + French bean
- Okra + Radish
- Okra + Knolkhol

5. Relay cropping: In this system of cropping, an inter planting of seedlings or sowing of seeds of the following crop in the preceding annual crop is done just before maturity/harvesting

Example: in the furrows of potato crop seeds of cucurbits are sown. By the time potato crop becomes ready for digging, the germination of seed is about to complete

Advantages of relay cropping

- By adopting this system, early crop can be sent to the market for getting premium prices
- Preparation of land is not needed
- There is no gap between two crops, hence more crops can be grown on the same land without much difficulty

6. Succession cropping: Succession planting means the growing of a second or even third crop in one year on the



same piece of land after the previous crop or crops have been harvested

- Succession is followed in home gardens
- Short duration and quick growing crops make succession remunerative

7. Vertical cropping: The plants are grown with support like peas and pole beans will climb naturally but tomatoes, cucumbers, squash melons and gourds can be trained to climb upward

Conclusion

- Proper utilization of space and resources
- Addition of organic matter to soil which increases soil fertility
- Multiple cropping smothers the weed growth
- Mixed cropping reduces soil erosion
- Cropping systems generates employment to unskilled rural peoples
- Total income per unit area and per unit time is increased

Reference

- Ali A.M. and Hassan A.M.M. 2008. The allelopathic potential of some crops and vegetables in mixed farming in Dohuk Governorate (I. Water Extract). J. Dohuk Univ., 11 : 181-197.
- Singh S.P. 1997. Cropping systems in vegetable crops, Principles of Vegetable Production. Agrotech Publishing Academy.
- Nelliat E.V., Bavappa K.V.A, and Nair P.K.R. 1974. Multistoried cropping: New dimension of multiple cropping in coconut plantation. World Crops 26 : 262-266.
- R.P. Singh, Padmaja Pande, S.S. Solankey and Antra Chatterjee., 2015, Fundamentals of Vegetable Production.