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Center for Smart Agriculture

Organic Farming



Module 3: Crop management

Session 2: Crop rotation and intercropping



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Crop rotation refers to recurrent succession of crops on the same piece of land either in a year or over a longer period of time.

It is a process of growing different crops in succession on a piece of land in a specific period of time, with an objective to get maximum profit from least investment without impairing the soil fertility.



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PRINCIPLES OF CROP ROTATION

- The leguminous plants are grown alternately with non-leguminous plants to restore the fertility of the soil.
- The exhaustive crops are grown alternately with less exhaustive crops to restore the fertility of the soil.
- The tap root crops are grown alternately with fibrous root crops for uniform utilization of soil nutrients.



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- The rotation should provide roughage and pasturage for the livestock kept on farm. Therefore, fodder crop must be included in the rotation to feed the animals. Examples: rice- black gram-fodder maize/ berseem
- Under Dryland or limited irrigation condition, drought tolerant crops (Jowar, Bajra), in low lying & flood prone areas, water stagnation tolerant crops (Paddy, Jute) should be adopted.
- The crops of the same family should not be grown in succession because they act like alternate hosts for insect pests & disease pathogens and weeds associated with crops.



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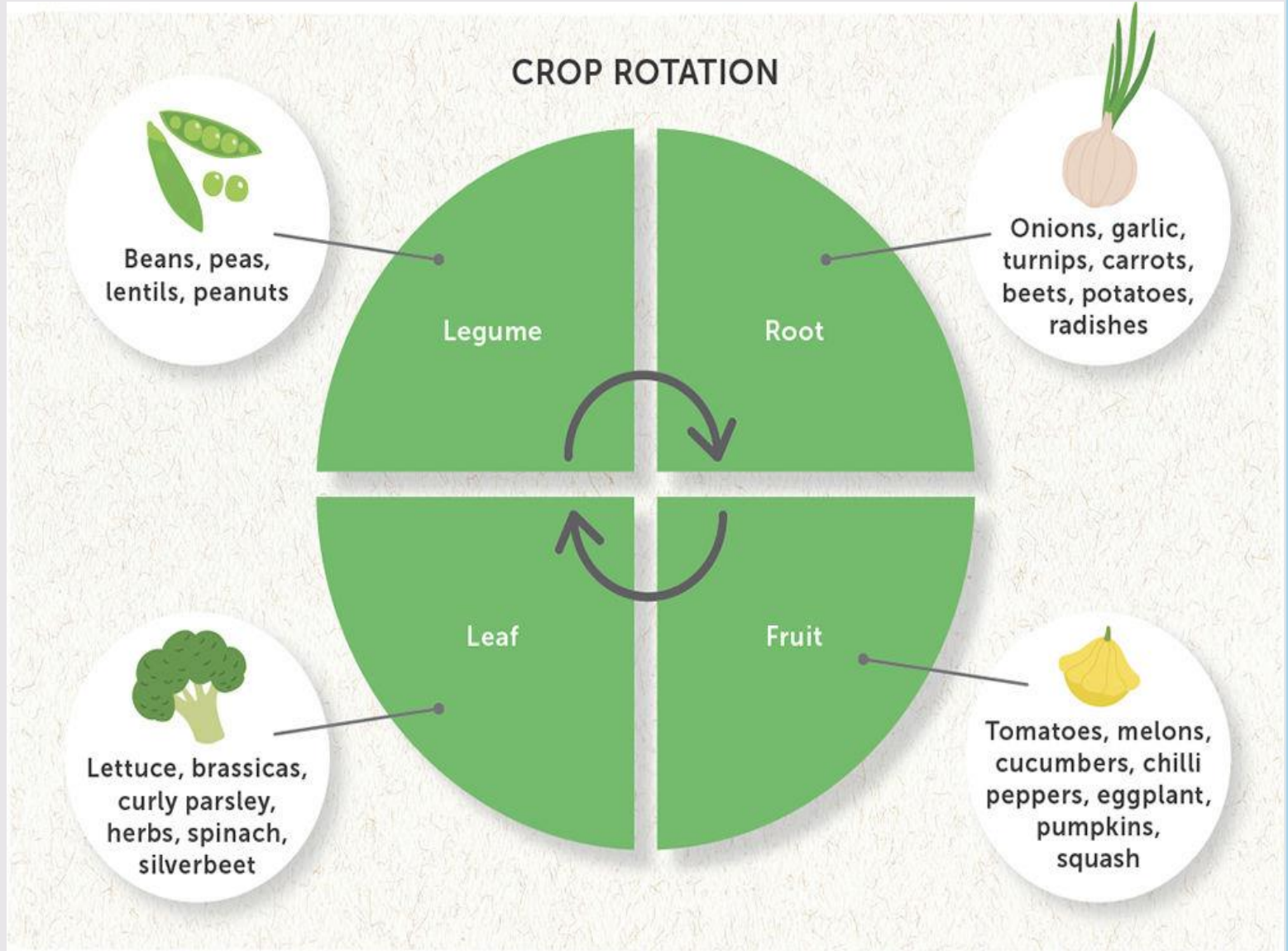
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- The selection of crops should be according to the need/demand base. That is according to need of the people of the area & family. Example: Vegetables and flowers are grown in areas closer to the cities for higher income.
- It should be adaptable to the existing soil, climatic and economic factors.
- The sequence of cropping adopted for any specific area should be based on proper land utilization.



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ADVANTAGES OF CROP ROTATION

- There is an overall increase in the yield of crops
- Helps in saving on nitrogenous fertilizers, because leguminous can fix atmospheric nitrogen in the soil
- Rotation of crops help in weed control and pest control.
- There is regular flow of income over the year.
- Proper choice of crops in rotation helps to prevent soil erosion.
- It supplies various needs of farmer & his cattle.
- Diversification of crops reduces the risk of financial loss from unfavorable weather conditions and damage due to pests & diseases.



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TYPE OF ROTATIONS

One-year rotation

1. Maize-mustard
2. 2. Rice-wheat

Two-year rotation

1. maize-mustard-sugarcane- fenugreek (methi)
2. Maize-potato-sugarcane-peas

Three-year rotation

1. rice-wheat-mung-mustard- sugarcane-berseem
2. Cotton-oat-sugarcane-peas- maize-wheat



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Intercropping

Intercropping is the growth of two or more crops, simultaneously

The major benefits of intercropping are:

- increasing the rate of crop production, with the advantage of simultaneously decreasing the risk of total crop reduction, and controlling weeds
- Intercrop systems have been indicated to use resources differently and more efficiently, and more resources are used compared with monocropping.



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Main Crop or Base Crop

The base crop is one which grown as a main source of income in between the main crop vacant spaces we will plant intercrop to get extra returns.

Intercrop: It is the growing of a crop in the vacant spaces of another widely grown crop that has a short duration of life cycle mainly grown for getting extra profits or to mitigate the losses during main crop failure.





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Different types of intercropping systems

1. Mixed Intercropping or Mixed Cropping:

Growing of two or more crops simultaneously on the same piece of land with no distinct row arrangement

2. Row Intercropping:

It is a kind intercropping where different crops are grown at the same time in the same piece of land with a distinct row arrangement.

3. Patch intercropping:

In this method of intercropping, intercrops are grown in patches in the vacant spaces in the same piece of land.



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4. Strip intercropping:

In this method, we will grow more than one crop in strips to allow independent cultivation in the same piece of land.

5. Relay Intercropping:

In relay intercropping intercrops were sown or planted when the main crops reach the maturity but before harvesting of the base crop.

6. Parallel Intercropping:

In this method, both selected intercrop and main crops are with different growing habits. Hence, there will zero competition for the available resources. So, both crops can express their full yield potential.



7. Multi Storied Intercropping:

In multistoried intercropping crops with different height were selected. Mostly this kind of intercropping is adopted in plantation crops.

8. Alley Intercropping:

Alley cropping is a kind of agroforestry system where intercrops are grown in the alleys of trees and hedges etc.

9. Guard Crops:

The main crop is grown in the center, where it is surrounded by hardy or thorny crops. Thus the main crop gets protection with the help of gourd crops.



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10. Trap Crops:

Trap crops like marigold and mustard etc. are intercropped in between the main crop to trap various insect pests.

11. Filler Cropping:

It is a method of cropping in which newly established orchards are planted with other filler crops in the juvenile period of the main crop for efficient utilization of space and to earn some extra profits.

12. Mixed Cropping:

It is said to be mixed cropping when two or more crops are grown in the same piece of land. In mixed cropping seeds of different crops are mixed and sown or broadcasted..



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