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LECTURE 5

CROPPING SYSTEMS AND PATTERNS, MULTIPLE CROPPING SYSTEM AND EFFICIENT CROPPING SYSTEMS AND THEIR EVALUATION



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Cropping pattern: The yearly sequence and spatial arrangement of crop or of crops and fallow on a given area (a farm), region, province or country apportioning due consideration to natural features (soil and climate), crop Efficiency, and capability, socio-economic structure, technological and extension infra-structure (changeable) and the national agricultural policy.

Multiple cropping :

a) Sequential cropping

- **Intercropping:** Growing two or more crops in a sequence on the same field in a farming year (twelve months) for irrigated land and is limited to the period of adequate soil moisture availability for crop growth in semi-arid & arid areas. The succeeding crop is planted after the preceding crop has been harvested. Crop intensification is only in time dimension. There is no inter-crop competition. Farmers manage only one crop at a time in the same field.



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- **Mixed inter-cropping:** Growing component crops simultaneously with no distinct row arrangement. This is commonly used in labour intensive subsistence Farming situations.
- **Row inter-cropping:** Growing component crops simultaneously in different row arrangement. This issued in mechanized agriculture.
- **Strip inter-cropping:** Growing component crops indifferent strips wide enough to permit independent cultivation but narrow enough to the crop to interact agronomically.
- **Relay inter-cropping:** Growing component crops in relay, so that growth cycles overlap. It necessarily does not mean planting of succeeding crop before flowering stage of preceding crop or attainment of reproductive stage of preceding crop.



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- **Monoculture:** The repetitive growing of the sole crop on the same piece of land. It may either be due to climatologically limitation or due to specialization by a farmer to grow a particular crop.
- **Staggered planting:** It means sowing of a crop is spread over and around optimum period of planting either to minimize risks or to use labour & machinery more effectively or to minimize competition (in inter-cropping) or to prolong the period of supply to the market or the factories.
- **Ratoon cropping :** The cultivation of crops are growth coming out of roots or stalks of the preceding crop after harvest, although not necessarily for grain is termed as ratooncropping/ratooning.



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- It is defined as a system of farming on a particular farm (regardless of size) which includes crop production, raising of livestock, poultry, fish and bee keeping, and/or trees to sustain and satisfy as many necessities of the owner (farmer) as is possible. Subsistence is the objective here. Its based on the principle of give and take. Farm animals feed on farm produce and in return manure is given to the crop.



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Importance of farming system

1. Recycling and utilization of other available resources in the farm

There is effective recycling of waste material in farming system. The word system itself signifies the assemblage of objects united by some form of regular interaction or interdependence. It is an organized unitary whole composed of two or more interdependent and interacting parts or components or sub-systems delineated by identifiable boundary or its environmental super system. Farming is a stochastic dynamic biological and open system with human and social involvement.



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2. Maximum possible return and Profitability:

Use of waste material of one component in the other at the least cost reduces cost of production and net profit is increased. Due to interaction of enterprises like crops, eggs, milk, mushroom, honey, cocoons silkworm farming there is flow of money to the farmer round the year.

3. Create adequate employment opportunities:

Combining crop with livestock enterprises would increase the labour requirement and help in reducing the problems of under employment. IFS provide enough scope to employ family labour round the year



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- 4. Productivity:** IFS provides an opportunity to increase economic yield per unit area per unit time by virtue of intensification of crop and allied enterprises.
- 5. Potentiality or Sustainability:** Organic supplementation through effective utilization of byproducts of linked component provides an opportunity to sustain the potentiality of production base for much longer periods.
- 6. Balanced Food:** The linked components of varied nature enable to produce different sources of nutrition.



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- 7. Environmental Safety:** In IFS waste materials are effectively recycled by linking appropriate components, thus minimize environment pollution.
- 8. Adoption of New Technology:** Resourceful farmers (big farmer) fully utilize the technology due to linkage of different components (crop with dairy / mushroom / sericulture / vegetable). Money flow round the year gives an inducement to the small/marginal farmers to go for the adoption of latest technologies.
- 9. Saving Energy:** Organic wastes available in the system can be utilized to generate biogas. This alternative source thus reduces our dependence on fossil energy sources within short time.



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10. Meeting Fodder crisis: Every piece of farm area is effectively utilized. Plantation of perennial legume fodder trees on field borders fixes the atmospheric nitrogen. These practices will greatly relieve the problem of non – availability of quality fodder to the animal component linked.

11. Solving Fuel and Timber Crisis: By linking agro- forestry appropriately, the production level of fuel and industrial wood can be enhanced without any effect on crop. This will also greatly reduce deforestation, thus preserving our natural ecosystem.



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12. Agro – industries: When one of produces in farming system is increased to commercial level, the surplus lead to the development of allied agro – industries.

13. Increasing Input Efficiency: Farming system provides good scope to use inputs in different component with greater efficiency and benefit cost ratio.