**Cropping Patterns and Systems in India**

**Cropping Pattern** refers to a yearly sequence and spatial arrangement of crops and fallow in a given area

Cropping pattern used on a farm and its interaction with farm resources, other farm enterprises and available technology that determines its make up, is called a **cropping system**.

A farmer’s choice of crops is governed by several sets of factors: Physical, Social and Economic. But, by and large, most of the Indian farmers go for cultivation of a number of crops at their farms and rotate a particular crop combination over a period of 3-4 years. It results in a multiplicity of cropping systems, which remains dynamic in time and space making it difficult to precisely determine the spread of different cropping systems.

Scientists have identified more than 250 cropping systems being followed throughout the country but it is estimated that only 30 major cropping systems are prevalent (except the areas under monocropping due to moisture or heat conditions)

A large diversity of cropping systems exists under rainfed and dryland areas with an overriding practice of intercropping. This is because of greater risks involved in cultivating a large area under a particular crop. While in areas with assured irrigation only a few cropping systems are followed and they have a considerable coverage across the region and contribute significantly to foodgrains production at the national level.

1.Types of Cropping Systems in India:

Broadly speaking there are 3 types of cropping systems in India:

**1. Sequential** – In sequential multiple cropping, farmers use short duration crops and intensive input management practices. E.g.

* In Maharashtra:- Rice-Frenchbean-Groundnut
* In Rainfed Areas:- Pigeon Pea – Wheat

**2. Inter-Cropping** – Growing two or more crops simultaneously on the same field is called intercropping. In this case, crop intensification is in both temporal and spatial dimension. There is an inter-crop competition during all or in part of crop growth. E.g.

* Maize and Groundnut in Ranchi
* Cotton and Groundnut in Junagarh

**3. Alley Cropping System** – Growing of annual crops with multipurpose perennial shrubs/trees is called alley cropping. It is a way of increasing production potential under fragile environments. It is recommended to meet food, fodder and fuel needs besides improving soil fertility e.g. In the salt affected alluvial soil areas of Modipuram, alley cropping of rice-wheat sequence is done with trees like babool.

2.Major Cropping Systems in India:

The crop occupying the highest percentage of sown area of the region is taken as the base crop and all the other possible alternative crops sown in the region as substitutes (i.e. spatial variation) for the base crop in the same season or as the crops that fit in with the rotation in the subsequent seasons (i.e. temporal variations) are considered in the pattern.

**1. Rainy Season Cropping Systems**: Among the Kharif Crops – Rice, Sorghum, Pearl Millet (Bajra), Maize, Groundnut and Cotton are the prominent crops to be considered as the base crops for describing the Kharif Cropping Patterns.

1. **Rice Based Cropping Patterns**: Rice is grown in the high rainfall area or in the areas where supplemental irrigation is available to ensure good yields. At an all India Basis, nearly 80% of rice is sown during June to September and the rest during the remaining season. E.g.
	* With rice, other crops being cotton, vegetables and fruits (in Meghalaya)
	* Jute as an alternative to rice (in Orissa, coastal Andhra Pradesh, Bihar, Jharkhand, Assam etc.)
	* In Bihar, the alternative crops being pulses, wheat, maize, jute, sugarcane and oilseeds
2. **Kharif Cereals other than rice**:
	* **Maize-based cropping systems:** Maize is grown in high rainfall areas or on soil with a better capacity for retaining moisture, but with a good drainage.
	* **Sorghum based cropping system:** Grown in medium rainfall regions. These systems are popular in Maharashtra and Madhya Pradesh. The alternative crops being cotton, pulses, groundnut, and small millets in Maharashtra.
	* **Pearl-Millet based cropping system** –Pearl millet is a more drought resistant crop than several other cereal crops and is generally preferred in low or less dependable rainfall and on light textured soils. These are popular in Rajasthan, Maharashtra, Gujarat and Uttar Pradesh. E.g. in Rajasthan with pulses, groundnut, oilseeds, etc.
3. **Groundnut based cropping systems**: These are popular in Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu and Maharashtra. E.g. In Andhra Pradesh and Tamil Nadu, rice forms an alternative; in Karnataka, Sorghum is the main alternative crop, whereas cotton, tobacco, sugarcane and wheat are also grown here.
4. **Cotton based cropping systems**: These are popular in Maharashtra, Gujarat, Andhra Pradesh and Punjab. E.g. Cotton with other crops:
	* Sorghum (Kharif and rabi), groundnut, pulses and wheat etc;
	* With irrigation in some places sugarcane and rice are also grown with cotton.

**2. Winter Cropping Systems:** Among the Rabi Crops, wheat together with barley and oats, sorghum and chickpea are the main base crops. Generally, wheat and chickpea are concentrated in the subtropical region in northern India, whereas Rabi sorghum is grown mostly in the Deccan.

1. **Wheat and Chickpea based cropping systems:** Wheat and Chickpea are grown under identical climate and can be substituted for each other. E.g. alternative crops in Madhya Pradesh being Kharif sorghum groundnut, oilseeds, cotton, small millets etc. In Punjab, the alternative crops are rice, mailze, cotton, pearl-millet etc.
2. **Rabi Sorghum based cropping systems:** These are popular in Maharashtra, Karnataka and Andhra Pradesh. E.g. in Maharashtra, the alternative crops are pearl millet, pulses, oilseeds and tobacco etc.

**3. Plantation and other commercial crops:**

* Sugarcane, Tobacco, Potato, Jute, Tea, Coffee, Coconut, Rubber, Spices and condiments are important crops. Some of these are seasonal, some annual, some perennial.
* Generally, the areas occupied by these crops are very limited compared with those of food and other crops. Nevertheless, they are important from commerce point of view.
* Besides the above-mentioned crops, there are certain horticultural crops like apple, mango and citrus fruits.
* E.g. in the jute growing areas, rice is the usual alternative crop; in Punjab, Bihar, Haryana and Uttar Pradesh, wheat and maize are rotation crops with sugarcane.

**4. Mixed Cropping:**

* Crop Mixtures, for example, pulses and some oilseeds are grown with maize, sorghum and pearl millet.
* Lowland Rice is invariably grown unmixed, but in upland rice, several mixtures are prevalent. E.g. In un-irrigated areas of the north, during rabi season, wheat, barley and chickpea are the mixtures of grain crops.
* Note: Mixed Cropping was considered by some researchers a primitive practice, but now many researchers regard it as a more efficient way of using the land. [Mixed cropping ≠Mixed Farming; Mixed Farming = Farming + Animal Rearing. Note the difference!]

**Note4students:** With this article, we conclude our discussion on Indian Agriculture. However, these articles only cover the geographical aspect of agriculture in India. For a comprehensive understanding and coverage of other aspects like economic, government schemes etc., do read our comprehensive article series on Indian Agriculture (Click [here](https://www.civilsdaily.com/collection/agriculture-food-sector/) to read).