



RAINFED AGRICULTURE IN INDIA

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Rainfed agriculture constitutes 80% of global agriculture, which provides 70% of the world's staple food and plays a critical role in achieving global food security. In India about 55% of the agricultural land is rainfed contributing 40% to the national food basket (Srinivasarao *et al.*, 2015). Globally, 80 per cent of the agricultural land area is rainfed which generates 65 to 70 per cent staple foods but 70 per cent of the population inhabiting in these areas are poor due to low and variable productivity. The importance of rainfed agriculture varies regionally, but it produces most food for poor communities in developing countries. The proportion of rainfed agriculture is 93% in SSA, 87% in Latin America, 58% in SA, 65% in East Asia, and 67% in Near East and North Africa. India ranks first among the rainfed agricultural countries of the world in terms of both extent and value of produce. Rainfed agriculture with nearly 58% of the cultivated area supports 40 per cent of the national food basket. Even after full irrigation potential of the country is realized, half of the cultivated area will continue to be under rain-fed farming. Much of the acreage under coarse cereals (85%), pulses (83%) and oilseeds (70%), substantial area under rice (42%) and nearly 65% of cotton area is rainfed (Table 1). Hence, it is necessary to increase the productivity of major rainfed crops to meet the ever-increasing demand of food and fibre. Moreover, rainfed regions are home to about 40% of the human and 60% of the livestock population and the performance of rainfed agriculture is critical to achieve and sustain higher growth in agriculture. Droughts and famines are the general features of rainfed agriculture in India. Conceptually, drought is indicative of situation of limited rainfall that is below the "normal" amount for the area (Pandey and Bhandari, 2007). The perception of drought varies from one region to another depending upon normal climatic conditions, available water resources, agricultural practices, and the specific socioeconomic activities of the region (Prasad, 1998). The risk involved in successful cultivation of crops depends on the nature of drought, its probable duration, and periodicity of occurrence within the season. In the arid region, where the mean annual rainfall is less than 500 mm, drought is almost an inevitable phenomenon in all years (Ramakrishna, 1997).

Table 1 Percentage of rainfed area under various rainfed crops

Crop	Area sown (mha.)	Rainfed area (%)
Rice	45.5	42
Coarse cereals	27.5	85
Jowar	7.5	91
Bajra	8.7	91
Maize	8.2	75

<i>Pulses</i>	22.1	83
Redgram	3.4	96
Bengal gram	7.9	67
<i>Oilseeds</i>	27.6	70
Groundnut	6.2	79
Rapeseed and mustard	6.3	27
Soybean	9.5	99
Sunflower	1.8	69
Cotton	9.4	65

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Major rainfed production systems of India

In this approach, the rainfed agro-ecosystem was sub-divided into 5 homogenous production systems (Fig.2), viz.,

- i. Rainfed rice based system
- ii. Nutritious (coarse) cereals based system
- iii. Oilseeds based system
- iv. Pulses based system
- v. Cotton based system

The rainfed rice production system is mostly prevalent in eastern and north eastern parts of India. Coarse cereals are staple food of poor people and principal source of fodder for livestock is mainly confined to western and central parts of the country and the semi-arid hot high lands of Deccan plateau. Oilseed-based production system which is mostly rainfed wherein crops are grown both during *kharif* and *rabi* seasons under sole, inter and sequence cropping systems. The groundnut is mostly cultivated in western plains, central high lands, semi-arid Deccan plateau and Eastern Ghats while soybean is mainly confined to Madhya Pradesh and Uttar Pradesh in the central high lands, Malwa-Gujarat plains and Kathiawar peninsula and is now spreading to areas like Vidarbha region in Maharashtra.

In case of pulses-based production system, ninety per cent of pulses are grown under rainfed conditions as intercrops or in sequence cropping system all over the country. Pigeon pea and chickpea are the two most important pulse crops and grown during *kharif* and *rabi* seasons, respectively. Cotton-based production system has sixty per cent of the cropped area under rainfed condition mostly in the Deccan plateau and hot semi-arid peninsular parts of India.

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