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DROUGHT

Low rainfall or failure of monsoon rains is a recurring feature in India. This has been responsible for droughts and famines. The word droughts generally denotes scarcity of water in a region. Though, aridity and drought are due to insufficient water, aridity is a permanent climatic feature and is the culmination of a number of long term processes. However, drought is a temporary condition that occurs for a short period due to deficient precipitation for vegetation, river flow, water supply and human consumption. Drought is due to anomaly in atmospheric circulation.

DEFINITION OF DROUGHT

There is no universally accepted definition of drought. Early workers defined drought as prolonged period without rainfall. According to Ramdas (1960) drought is a situation when the actual seasonal rainfall is deficient by more than twice the mean deviation. American Meteorological Society defined drought as a period of abnormally dry weather sufficient prolonged for lack of water to cause a severe hydrological imbalance in the area affected.

Prolonged deficiency of soil moisture adversely affect crop growth indicating incidence agricultural drought. It is the result of imbalance between soil moisture and evapotranspiration needs of an area over a fairly long period as to cause damage to standing crops and to reduced the yields.

Palmer defined drought as a prolonged period of abnormal moisture deficiency.

HOW WATER SUPPLY BECOMES DEFICIENT?

Water deficiency is resulted from the following :

1. Sub-normal rainfall.
2. Erratic rainfall distribution
3. Excessive water need
4. Early withdrawal of monsoon
5. Late onset of Monsoon

CLASSIFICATION OF DROUGHT

Thornthwaite (1947) described four types of. Drought occurs whenever the supply of moisture from precipitation or stored soil moisture is insufficient to fulfill the optimum water need of plants.

1. Permanent drought

2. Seasonal drought
3. Contingent drought
4. Invisible drought

Permanent Drought

It is found in desert areas, where in no season, the precipitation equals to the water need. Plants are adopted to dry conditions. Agriculture is impossible without irrigation.

Seasonal drought

It is found in semi-arid regions. These droughts can be expected in each year. Agriculture is possible during the rainy season or with irrigation in dry season.

Contingent drought

These droughts are found in sub-humid and humid areas. This drought results when rainfall is irregular and variable. They can occur at any season but more severe at greatest needs. They are serious because of their unpredictability.

Invisible drought

This drought is confined to humid regions

- It can occur at any time, even during the periods of precipitation when the daily supply of moisture fails to equal the daily water needs of the plants.
- Plants fail to grow at their optimum rate.
- The yields appear to be normal, the plants continue to grow and wilting is not observed.
- This drought cannot be easily recognized.

According to National Commission on Agriculture (NCA) 1976

1. Meteorological drought
2. Hydrological drought
3. Agricultural drought

Meteorological drought

It is situation when the actual rainfall is significantly lower than the climatologically normal rainfall over a wide area.

Hydrological drought

This drought results if meteorological drought is prolonged for a long period. It is associated with depletion of surface water and drying up of rivers, reservoirs and lakes.

Agricultural droughts

It is a condition in which there is insufficient soil moisture available to a crop in a season.

According to India meteorological Department

The meteorological drought is divided in to three categories.

1. Moderate drought : 75% of Normal RF
2. Severe drought : 50% of Normal RF
3. Disastrous drought : 25% of Normal RF

Agricultural Practices to be taken under drought conditions :

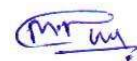
1. Drought resistant crops/seeds should be preferred
2. Application of water harvesting methods to manage excess water due to high rainfall.
3. Moisture conservation and soil conservation methods to be adopted.
4. Use to keeping the land fallow as a management technique.
5. Some agronomical practices which influence meteorological condition in the plant soil environment to be used under drought condition are.
 - a) Elimination of weeds.
 - b) Shelterbelts and wind breaks.
 - c) Mulching for conservation of moisture.

References :

1. Principals of Crop Production by S.R. Reddy, Kalyani Publishers.
2. Agrometeorology and Remote Sensing Principles and Practices by D.D. Sahu, Agrobios (India)

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