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Agricultural Drought Mitigation and Management of Sustained Agricultural Development in India

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INTRODUCTION

Drought is a many faceted natural disaster that leads to serious socio-economic impacts particularly affecting agricultural production and water supplies. The first is the long term planning in which strategies can be devised, and precautions taken to reduce impact. Drought management policies included agricultural planning and practices with consideration of overall water requirement within the individual agro climatic zones. Rainfall also can be harvested in either farm ponds orin village tanks and can be recycled. The focus in mitigation should be on measures like improvement in agriculture, management of rangeland, development of water resource and animal husbandry. Human civilization over centuries has accommodated the climatic fluctuations of various magnitudes and evolved through these testing times by very imaginatively adapting to these changes. The infamous example of such miseries are many, like Doji Bara (famine with heaps of human skulls) in 1791-92 and the 1943 famine in Bengal. The Bengal famine left a devastating scar on Bengal when a large number of deaths took place. There were a few episodes of acute suffering owing to the devastations caused by some extreme events. Actually, this famine brought the studies of famine into academics looking at it both ways. The accommodative mechanisms developed over centuries included crop choices, seasonal calendars, adjustments with soil quality and meeting the climatic aberrations with advanced planning Drought is a pervasive phenomenon, which spans out over every region of the country. Irrigated regions do not get excluded from the possibility of confronting a drought situation, but droughts are frequent visitors to the rainfed regions of the country.

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The academicians engaged in drought related studies prefer to categorise droughts as

(1) Meteorological Drought,
(2) Hydrological Drought,
(3) Agricultural Drought,
(4) Ecological Drought,
(5) Famine Like Conditions.

Meteorological Drought: In meteorological parlance, drought is viewed in many ways. Initial attempt to define drought began sometime in the late 1950sDrought was defined by the IMD as a situation where the annual rainfall was less than 75% of the normal or there is a departure of 25% from the normal

Hydrological Drought: Is a resultant of the meteorological drought, which puts stress on the surface and groundwater, thereby, reducing the availability of water for different uses. Earlier in the famine code, the water level in the wells and drying rivers were considered as criteria for declaration of drought. Major indicators for hydrological drought are the volume of water in the permanent water bodies, inadequate flows in the streams and rivers, measurement of run-off and its deviation from the normal run of, and, finally, the Surface Water Supply Index (SWSI).

Agricultural Drought: Is a resultant of meteorological drought and hydrological drought, as all the activities in agricultural sector depend on availability of water either through rainfall or irrigation. It actually refers to the adequacy in the soil moisture during the growing season and increased Aridity Index. Even though, it is very simple to understand the agricultural drought with the satellite imageries, a crop moisture index (CMI) is utilised in order to declare an agricultural drought. Thus, the existence of the first two types of droughts essentially reflects on the certainty of the agricultural drought. In the crop insurance operations, the declaration of agricultural drought decides the payment of indemnity, therefore, this index assumes importance.

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Ecological drought is an "episodic deficit in water availability that drives ecosystems beyond thresholds of vulnerability, impacts ecosystem services, and triggers feedbacks in natural and/or human systems" Droughts and other natural hazards have been part of Earth's natural processes since the beginning of time. Plants, animals, and ecological systems have adapted and evolved with these hazards. When driven beyond their capacity to adapt, ecosystems may cross critical thresholds, resulting in temporary or permanent alteration in their composition, structure, and/or functioning at local or landscape scales. The vulnerability of natural systems to withstand or adapt to drought disturbances depends on the sensitivity of the system, its exposure to the hazard and its capacity to adapt and recover from drought.

Famine Like Conditions: Famine can be declared across a country or either local or international regions. However, it's up to individual governments to declare the beginning (and end) of a famine. This can be especially difficult in many of the world's hungriest countries: Generally, famines occur in areas where there is a lack of infrastructure, which can make these data points hard to know for certain.