

Drought and its Mitigation Strategies in Indian Agriculture

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SUMMARY

Climate variability is a predominant feature of Indian agriculture and more so in rainfed farming and therefore, crop production is greatly conditioned by climatic risks. Due to the late onset of the monsoon, prolonged dry spells of the monsoon, total failure of monsoon leads to failure of crops. With the increasing frequency and severity of drought in many regions of the country and increased agricultural vulnerability, more emphasis is now being placed on the development of mitigation strategies by crop management and soil water conservation along with policy and programmes. The strategies of drought monitoring, data management, impacts and mitigation approach are critically assessed in the Indian perspective

INTRODUCTION

India is facing under an intense drought situation which causes social, economic and environmental impacts. Numbers of Indian farmers committed suicide mainly due to crop failure, damaged crops owing to inclement weather, lack of water for irrigation and drought issues. Bad monsoons and weak policies around water security have further compounded the problem and precipitated a crisis. Often people do not react to drought likely they do to other sudden disasters such as earthquakes, cyclones, and floods. Since drought develop over period of time, and without immediately change to environment, hence it is called as a slow on 'slow set disaster' The area facing desertification in India are about 82 million hectares, 16 percent of India's geographic area, mostly arid, semi-arid and sub-humid is drought-prone. Out of net sown area of 140 million hectares, about 68% is reported to be vulnerable to drought conditions and about 50% of such vulnerable area is classified as 'severe', where frequency of drought is almost regular (Rathore, B.M.S. 2014).

Drought : It's Occurrence and Impact

Drought occurs due to natural climate variability which includes precipitation deficiency causing reduction in infiltration, runoff and deep percolation. It also occur due to high temperature, high winds, low relative humidity, greater sunshine, less cloud cover. Thus variation in natural climate results in soil water deficiency which cause plant water stress reduced biomass yield and finally have impact on economic, social and environmental situation.

Drought produces wide-ranging impacts that affect many sectors of the national economy. Drought produces both direct and indirect impacts. Direct impacts includes reduced agricultural production, increased fire hazard, depleted water levels, higher livestock and wildlife mortality rates and damage to wildlife and fish habitats. When direct impacts have multiplier effects through the economy and society, they are referred to as indirect impacts. These include a reduction in agricultural production that may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced purchasing capacity and demand for consumption, default on agricultural loans, rural unrest, and reduction in agricultural employment leading to migration and drought relief programmes (Ministry of agriculture, GoI, 2009). Manipur declared drought like situation in 2019 after deficit rainfall has adversely affected crops across 70 blocks. As per initial estimates, crop failure ranges from 33% to more than 50% based on which they would categorised as moderately and severely affected by drought. State suffer from rain deficit of over 50% and the water deficiency level of the reservoirs is over 60% (Sharma K.S, 2019).

Mitigation Strategies of Drought:

1. Contingency crop planning is the most important strategy to tackle drought situations. These contingency crop plans contained alternative crop/varieties depending on commencement of rains and availability of soil moisture.
2. Selection of crop or varieties which are short duration, early vigour, deep root and drought tolerant.

3. Pre-sowing hardening technique has been used as an alternate approach to overcome the adverse effects of abiotic stresses in agricultural production because of its low cost and risk.
4. In-situ moisture conservation techniques include contour bund, compartmental bunding, mulching, ridges and furrows. Construction of water conservation structures like farm pond, percolation tank, check dam or anicut.
5. Government policy and programmes includes Mahatma Gandhi National Rural Employment Guarantee Act, Mukhyamantri Jal Swavalamban Abhiyan, National Food Security Mission etc.

For Having Successful Drought Policy, The Following Techniques Should Follow:

1. Drought monitoring and early warning systems: It is designed to identify climate and water supply trends and thus to detect the emergence or probability of occurrence and the likely severity of drought as early as possible in order to implement District Agriculture Contingency Plans and the Crisis Management Plan.
2. Drought impact assessment and vulnerability: Examines the consequences of a given event or change, begins by identifying direct consequences of drought, such as reduced crop yield, livestock losses and reservoir depletion.
3. Mitigation, preparedness and response: Comprise the appropriate measures and actions aimed to reduced vulnerability to drought and reducing impacts of drought.

CONCLUSION

Drought is the most complex but least understood among natural hazard. Severe drought periods affected environment, economic and social resources. Depending upon the situation of the area there should be integrated management proceeded for its effective mitigation approach. It is important to control drought by government initiatives and our own responsibilities by taking necessary steps for tree planting, conservation and restriction of deforestation, construction of small dams and other reservoirs to store and supply water to drought affected areas.

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