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Understanding the Present Situation of Drought and the Areas Affected By It with Special Reference to Andhra Pradesh

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Abstract – An inadequacy in rainfall causes exhaustion of soil moisture, fall in surface and ground water levels which thusly is probably going to deleteriously affect horticultural tasks, because of lacking accessibility of water for the crops, particularly amid the basic phases of plant development. The correlation between quantum of rainfall and the trigger for drought in India fluctuate crosswise over agro-climatic zones. Drought is a climatic hazard and a noteworthy danger among the common climatic hazards to vocation and financial development of people. Drought might be characterized as the scanty accessibility of water coming about because of subnormal or erratic rainfall distribution, or a blend of the two variables for an extensive stretch. In any case, it affects a wide district for a season or for back to back years. The arid zones are increasingly vulnerable to drought as their wellspring of rainfall relies upon few rainfall occasions. The primary goal of this examination is to contemplate on climate, rainfall and drought status in Andhra Pradesh. The state spread over with two particular geographical districts, Rayalaseema and Coastal Andhra. Andhra Pradesh is a critical State in Nation's Food Production. as of late, drought and other regular disasters have unfavourably affected the State's economy and its people. Agriculture keeps on being monsoon dependant, fundamentally on South West Monsoon (SWM) through which State gets 2/3 of its rainfall. The State with 5 constantly drought inclined districts (viz., Anantapur, Kadapa, Chittoor, Kurnool, and Prakasam) out of 13 districts.

Keywords: Drought, Impact, Climate, Rainfall, Agriculture, Crop, Andhra, Pradesh

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1. INTRODUCTION

The Indian sub-mainland is dominatingly portrayed by a tropical monsoon climate and the whole routine is recognized primarily by the distinctions in rainfall both in amount and distribution. The most vital component is the territorial and fleeting adjustment of atmospheric flow designs related with the monsoon. There are two monsoon frameworks working in the locale (a) The south-west or summer monsoon representing about 80% and (b) The north-east or the winter monsoon which represents generally 20% of the rainfall. About 60% of a cultivable zone of India is downpour encouraged or un-irrigated which is basic regarding securities for drinking, domestic and industrial water supply, fodder, feed, food, farmers' misery and farm income. Drought is one of the major environmental disasters in numerous pieces of the world. Drought is a temporary, repeating cataclysmic event, which starts from the absence of precipitation and brings noteworthy financial misfortunes. It is a typical, repetitive component of climate that happens in essentially all climate zones, from extremely wet to very dry.

It is beyond the realm of imagination to expect to stay away from drought. In any case, drought readiness can be developed and drought impacts can be overseen. Droughts have now turned into an inside piece of the survival method of the people in the nation. 19% of the all-out geographical territory and 12% of the absolute populace is under drought-prone conditions. Because of low and unsteadiness in efficiency there exist a few imbalances in provincial and monetary qualities in these zones. The Government of India started long haul drought destruction plan amid the five-year plan known as Drought Prone Area Program (DPAP). The projects' system is to support agriculture and associated exercises and with these to accomplish adjusted local development. The imperative points of the program are (1) To diminish the impact of drought, (2) To expand the incomes of people, (3) To re-establish biological equalization.

2. CONCEPT OF DROUGHT

Drought is a compound normal hazard. It is characterized as any inadequacy of water to fulfill the typical requirement for agriculture, livestock,

industry, or human populace. Drought produces both immediate and roundabout impacts. The immediate impacts are the shortage of agricultural production because of the disappointment of crops, insignificant water levels for human need and the deficiency of fodder for livestock or decrease of livestock. The indirect impacts are trailed by abatement income for farmers, increment costs for food production and agricultural work prompts migration.

Figure 1 Drought

Drought is temporary decrease in water or moisture availability essentially underneath the ordinary sum for a particular period. It is a climatic inconsistency described by inadequate supply of moisture coming about either from sub-ordinary rainfall, erratic rainfall distribution, higher water needs or a mix of all the 3 factors. Droughts, by and large, are outrageous hydrologic occasions causing intense water shortages which continue sufficiently long to trigger impeding consequences for human, vegetation, creatures and ecosystem over a significant zone.

3. IMPACT OF RAINFALL AND DROUGHT ON AGRICULTURE OF ANDHRA PRADESH

In 2015, the state endured its most extreme rainfall shortage when it just gotten 153.8 mm rainfall against its ordinary of 624 mm prompting most serious drought in state in most recent 50 years. As a result of which, the Kharif crop all through the state confronted intense shortage of water which lead to crop failure. The state has been endeavouring to handle the issue of droughts by the usage of different projects like Drought Prone Areas Program (DPAP), Water Harvesting Structures, Micro and government should actualize the plan with the goal that the inclusion of these canals can be broadened. Under the plan there ought to be advancement of different drought moderation estimates like rooftop rain water harvesting, and so forth., with the goal that the limit of ground water can be expanded. Towards adjustment of climate change under the NREGA manor of trees in the towns at different areas like close check dams, lakes, dams should be possible. NREGA can be incorporated to different plans like watershed the board conspire with the goal that impacts of climate change can be decreased. – Vira Chudasama, and – Meet J. Gadhvi, Tata Institute of Social Sciences (TISS), Mumbai Irrigation Project, Watershed Development and so forth.

Water shortages because of the failure of the southwest monsoon lead to a few circumstances like crop misfortune, less crop yields or agricultural drought. The zones under serious drought advance progressively and districts under greatest drought force differ from season to season. The parameters demonstrating drought impacts contain soil moisture exhaustion, decrease in streamflow, repository capacity, lake levels and groundwater level. A few systems have been prescribed for contemplating the attributes of drought to help strategy producers in tending to this unpredictable occasion. Notwithstanding, drought seriousness is the key factor to choose qualities of drought. Drought seriousness is evaluated by drought lists, which are pointer based and helpful for recognizing and checking drought decisively. The drought time frame has significant environmental, agricultural, health, economic and social outcomes which change as indicated by susceptibility. Minor farmers are progressively affected and drift amid drought as they don't have substitute food sources.

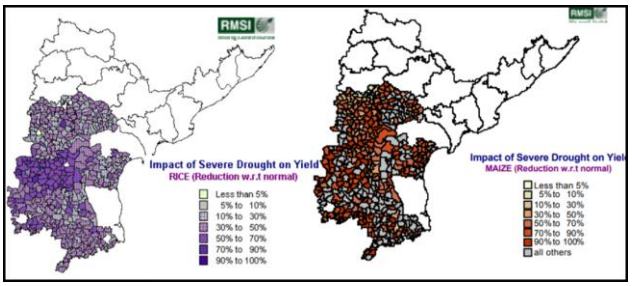

Figure 2 Impact of Severe Drought

The occurrence and states of drought are impacted by various components. Rainfall and cropping pattern are distinctive over the locale. It isn't only the insufficiency of rainfall, yet in addition uneven distribution of rain over the season, term of rainfall inadequacy and its impact on region agriculture, economy and its people employment. Normally it will prompt agricultural drought that describe drought. The impacts of drought on crop production may be yearly and enduring crop losses, harm to crop quality, income losses for farmers because of decreased crop yields, diminished profitability of cropland, insect infestation, plant disease, increased irrigation costs, cost of new or supplemental water asset development (Wells, Dams, Pipelines). Drought conditions are enduring because of poor rainfall in incessant years; these conditions don't permit people the chance to recoup from the impact of drought to get by with the impact. The impacts of drought depend on recurrence, severity, degree and on the weakness of the region and parts.

The repetitive failure of monsoons affects the crop production in the Rayalaseema region. It has been

seen in that the absolute irrigated region consistently decrease in Rayalaseema differs from year to year. The cropping design is additionally changing with the impact of climate, rainfall and absence of other water system sources. The major change that happened in the cropping design is that there was critical decay of territory under food crops particularly Jowar, Bajra, and Maize in the entire region. The level of territory under non-food crops has dramatically increased. Business crops (Sugarcane, Sunflower, and Cotton) have supplanted the region under food crops in the region. The patterns and impact of drought, rainfall on agriculture.

4. DEMOGRAPHIC PROFILE OF ANDHRA PRADESH

Andhra Pradesh is fundamentally an agricultural State, with 34% of its GDP contributed by agriculture. Agriculture is the significant source of employment for the people also. Drought is a common marvel in Andhra Pradesh as there is a drought in the state once like clockwork. Given the staggering dependence of Andhra Pradesh on agriculture, droughts will in general have a seriously devastating impact on the state's economy.

The State covers a region of 160,204 square KMs representing 4.87 percent of all out zone in the nation, Coastal Andhra 92,906 Sq KMs (58 percent of State zone) and Rayalaseema covering a territory of 67,298 Sq KMs (42 percent of State zone). According to Census – 2011, all out populace of the state is 493.8 Lakhs, of which populace in Coastal Andhra 341.9 Lakhs (69.2 percent of all out populace) and Rayalaseema Region 151.85 Lakhs (30.8 percent of complete Population). Populace of Scheduled Castes is 17.1 percent of complete Population and populace of Scheduled Tribes is 5.3 percent of absolute populace. In Andhra Pradesh, Agriculture Work Force is 50.6 percent of absolute work force according to Population Census – 2011. Irrigated territory was 40.96 lakh hectares (50.39 percent of sown zone), which incorporates region under canals (19.56 lakh ha), Tanks (3.77 lakh ha), tube wells (15.07 lakh ha), and different wells (1.16 lakh ha) and region under different sources is 1.40 lakh hectares. Un-irrigated was 40.32 lakh hectares in 2013-14 by Agricultural Census

► Agro- Economic features of Andhra Pradesh

Agriculture which is for the most part rain bolstered has been the fundamental work occupation of the farmers in the State. The region under food grain amid 2012-13 was 41.56 Lakh hectares. Food grain production was 104.96 Lakh tones in 2012-13. Cereals and Millets add to the food grain production (83.21%) trailed by pulses (10.79%). About the number of inhabitants in A.P. lives in rural regions and depends for its employment on agriculture and the rural non-farm segment. Andhra Pradesh positions first at all India level in the production of Mango, Chillies, Turmeric, Sweet Lime and Papaya. The state likewise positions second in the production of Lime, Coriander, Pomegranate, Loose Flowers; third position in cashew; fourth in Sapota and fifth in Banana, Guava and Ginger. The real crops incorporate rice, Bajra, jowar, groundnut, sunflower, sugarcane, pulses, cotton, chillies, turmeric, and plant crops like mango, banana and citrus. Noteworthy changes have likewise occurred in cropping design in Andhra Pradesh.

Table 1. Andhra Pradesh Agricultural profile Area in Hectares (Lakh)

Category	Total
Total Geographical Area	162.4
Gross Cropped Area	79.60
Net Cropped Area	63.54
Gross Irrigated Area	37.11
Net irrigated Area	28.01
Number of Farm Holdings	76.21
• Marginal	49.83
• Small	15.91
• Others	10.47
Total area operated by	80.96
• Marginal	21.60
• Small	22.51
• Others	36.85
Average Annual Rainfall	966.1
Cropping Intensity	1.23%
Irrigation Intensity	1.32%

► Agriculture in Andhra Pradesh Economy

Andhra Pradesh is the eighth biggest state in the nation covering 162.44 lakh hectares and speaking to 5.01 percent of the nation's territory. It has a populace of 4.94 crores, positioning tenth in the nation. Economic development in Agriculture sector is the "need of great importance" for the State of Andhra Pradesh as well as for the Country all in all. It is the bed shake of the State's economy. Out of the absolute populace of the State around 70 percent live in rural territories squeezing their job from Agriculture and partnered exercises. It is a noteworthy source of income to the State's economy. Agriculture is the foundation of state's economy contributing around 23 percent to the Gross Domestic Product of the State. Andhra Pradesh is one of the dynamic States in regard of agriculture development, keeping up high amounts of crop production.

5. PRESENT SITUATION OF CLIMATE AND RAINFALL IN ANDHRA PRADESH

Broadened climatic conditions win according to the evolving seasons. Penetrating sun heat in summer pursued by opening of sluice doors of sky, for which agriculturists tensely anticipate, clearing a way for lovely winter, win in perpetual periods in Andhra Pradesh. The state has commonly a sweltering summer and a pleasant winter. The state has arid, semi-arid and sub-sticky climatic conditions. The most extreme and least temperatures in the state are 41.5ºC and 11.1º C. separately. The rainfall in Andhra Pradesh is affected by both South-West and North-East Monsoons.

The average annual rainfall of the State is 940 mm. Significant bit (68.5%) of rainfall is contributed by South-West Monsoon (June-Sept) trailed by (22.3%), North-East Monsoon (Oct-Dec). The rest 9.2% of the rainfall is gotten amid the winter and summer months. The distribution of rainfall is erratic, bringing about continuous droughts. Beach front Andhra gets rains essentially through south-west monsoon (80%), while Rayalaseema to a vast degree amid the north-east monsoon. In Andhra Pradesh about half of the zone falls under dry land agriculture and rest is irrigated.

The all out developed region is 8.6 m ha and this is spread over different agro-climatic regions of the state. Rainfall got amid the South-West Monsoon period for 2014-15 was 374 mm as against the Normal rainfall of 554 mm, recording a deficiency by 32%. The rainfall got amid the North East monsoon time frame for 2014-15 was 173 mm as against the ordinary rainfall of 298 mm, recording a deficiency of 42%. The state (13 Districts) overall got 43 mm rainfall against the ordinary rainfall of 93 mm (54 percent deficiency) amid June-2014. The subtleties of the normal rainfall and ordinary rainfall are given beneath Table 1 and 3.

6. PRESENT SITUATION OF DROUGHTS IN ANDHRA PRADESH (1995-96 TO 2014-15)

- Andhra Pradesh (AP) is the fifth biggest province of India with a populace of 76 million, more than 70 % percent of which is rural. Agriculture has been generally of key significance to the economy of AP and food security all things considered. Irrigated by three noteworthy waterways Krishna, Godavari and Pennar, the state positions among the best five as far as cultivable land and is among the best makers of rice and organic product. It likewise drives every single other state in the poultry sector.

- AP is likewise one of the three states in India with the biggest drought-prone land area.2 The state falls under the semi-arid region of peninsular India and is comprehensively isolated into three regions - Coastal Andhra (containing 9 districts), Teleangana (10 districts) and Rayalaseema (4 districts). Amid a noteworthy drought of 2002, 22 of the all-out 23 districts in AP purportedly had under 75% of the typical rainfall amid the monsoon season.

- Stress on water resources, particularly intense amid low rainfall years, has been additionally exacerbated in the previous decades, as interest for water has expanded forcefully because of development in agricultural production, populace, and the modern and urban sectors. Especially troubling is the over-misuse of groundwater for water system in specific pockets and the progressive decrease in the ground water levels making wells evaporate in the dry season. This impact is being felt most by the farmers, agricultural workers and the rural network in dry-land rain-sustained regions. Recently, there have additionally been expanding issues with water supply on a bigger scale, including urban focuses

- Over the most recent three decades, the quantity of groundwater wells has expanded from 8 lakhs to 22 lakhs, alongside the extension of area irrigated through groundwater from 10 lakh hectares to 26 lakh hectares. This pushed up a general dimension of groundwater abuse in the state from 16% to 43%. While there is as yet critical unutilized groundwater potential in the state all in all, the development of this resource is spatially uneven, and there are pockets where groundwater misuse has surpassed 100%. The vast majority of the development is occurring in surface water non-direction areas: the phase of groundwater development in these areas is 56%, as against 16% in surface water command areas, which spread just 5% of the state's geographical area.

- Out of 23, the eight alleged "rain-shadow" districts, with the yearly normal rainfall well underneath the state normal, are the most exceedingly terrible affected by drought. These districts are: every one of the four districts in the Rayalaseema region - Anantapur, Chittoor, Cuddapah and Kurnool; Rangareddi, Mahbubnagar and Nalgonda in the Telengana region; and Prakasam in coastal Andhra

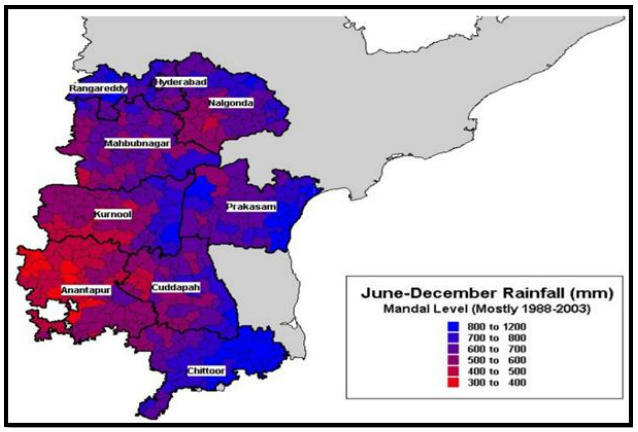

Figure 3 Rainfall Levels and Most Drought Prone Districts in AP

Drought is an unpredictable and testing characteristic phenomenon. It is a much increasingly mind boggling and testing financial phenomenon, with differing, some of the time clashing, impacts on the micro, sectoral and large-scale levels. State has been affected by 13 characteristic catastrophes, viz., Laila Cyclone (May 2010), Heavy rains (South-West Monsoon 2010), Jal Cyclone (October-November-2010), Depression (December, 2010), Thane Cyclone (December – 2011), Drought (Kharif 2011), Nilam Cyclone (Oct-Nov-2012), Drought (Kharif-2012), Unseasonal Heavy Rains (Feb-2013), Phailin Cyclone (October-2013), Heavy Rains/floods (October-2013).

Table 2. Region wise average rainfall during 2014-15

Region	Average Rainfall June-2014 (mm)	Normal Rainfall June-2014 (mm)	Percentage deviation from normal (%)
Coastal Andhra	36	103	-65
Rayalaseem	59	72	-18
Andhra Pradesh	43	93	-54

Table 3. Rainfall deviation in the Andhra Pradesh during 2014-15

Deviation	Districts	Number of Districts
Excess (20% & above)	NIL	-
Normal (+19% to - 19%	Kurnool (-7) and Chittoor (-14) Anantapur (-21%), Kadapa (-33%), Nellore	2
Deficit (-20% to -59%)	(-41%), Vijayanagaram (-45%), Srikakulam (-50%) and Visakhapatnam (-58%) Krishna (-71), Prakasam (-79%), East Godavari (-80%), West Godavari (-81%)	6
Scanty (-60% to -99%)	and Guntur (-85%)	5

Table 4. Drought affected Mandals in Andhra Pradesh

Drought affected Year	Number of Mandals
1995- 1996	198
1996- 1997	13
1997- 1998	487
1999- 2000	444
2001- 2002	589
2002- 2003	641
2003- 2004	302
2004-2005	408
2006-2007	195
2009-2010	626
2011-2012	460
2012-2013	218
2013-2014	123
2014- 2015	230

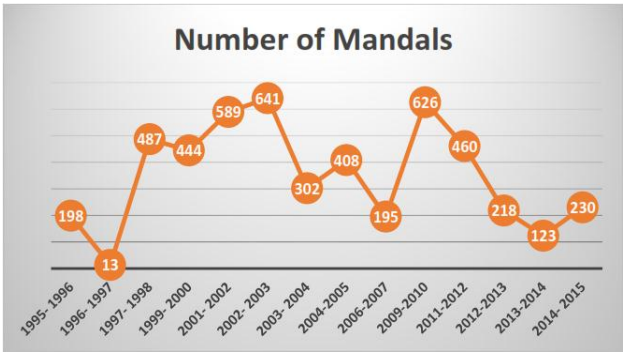

Figure 4 Drought affected Mandals in Andhra Pradesh

Helen Cyclone (November-2013) and Leher Cyclone (November-2013) affecting the employment of numerous families. Amid current year, the State experienced remarkable misfortune in 4 North Coastal District because of Very Severe Cyclone "HUDHUD" Cyclone in October-2014. Five out of the 13 Districts in Andhra Pradesh were incorporated into the rundown of Districts incessantly affected by Drought conditions, i.e., Anantapur, Chittoor, Kadapa, Kurnool and Prakasam Districts. Since 1995, the State has seen Drought in 15 years out of 19 years. Number of Mandals pronounced as drought affected in every one of these years were referenced Table 4.

7. CONCLUSION

The rains are erratic, questionable and unevenly conveyed. Along these lines, the agriculture in these areas has turned into a kind of gamble with the nature and all the time the crops need to confront climatic hazards. The farmers likewise take up farming indifferently as they don't know of having the capacity to gather the crops. Along

these lines, water shortage turns into a genuine bottleneck in drought in agriculture. In dry areas where flighty rain and starvation are a continuous phenomenon the farmer needs to search up for an optional occupation to increase his income. To an expansive degree dairy cattle development as subsidiary occupation has been thought of to mitigate the enduring of the people. Social and economic existence of Andhra Pradesh populace is portrayed by repeating cataclysmic events. The state is presented to typhoons, storm floods, floods, and droughts. As indicated by the accessible disaster inventories, Andhra Pradesh is the express that has experienced the most the antagonistic impacts of serious twisters. Despite the fact that the Andhra Pradesh is distinguished as the "beje welled rice bowl of India". Drought is seriously caused the work relocation i.e., Migration. Government of Andhra Pradesh has pronounced 230 Mandals as drought affected Mandals in the year 2014-15. It is in this manner, important for the State Government to quickly begin help employment programs and give works. Provision of employment is a vital drought moderation measure in the State. Income age through the employment works causes the poor workers to meet their fundamental needs, for example, food and health expenditure.

Climate change flexibility is a multi-dimensional; it ought to be done from arrangement level to network level. At people group level eco-sensitive approach will help in managing climate change. Parity of Nature framework and Human framework ought to be kept up. A plan like drought, land debasement and desertification, making of artificial drainage, underground water source recovery and biological community rebuilding ought to be advanced. This restoration undertaking would them be able to be clubbed with NREGA which will help in progress of condition on groundwater and forest.

REFERENCES

1. Fussel, H. M. and Klein, R. J. T. (2006). Climate change vulnerability assessments: an evolution of conceptual thinking. Clim. Change, 75(3), pp. 301–32.

2. Bikash R.P. (2006). Analysing the effect of severity and duration of agricultural drought on crop performance using Terra/MODIS Satellite data and Meteorological Data [thesis]. The Netherlands: ITC, University of Twente. Available from: http://www.itc.nl/library/papers_2006/msc/iirs/bikash.pdf.

3. Patel N.R., Parida B.R., Venus V., Saha S.K., Dadhwal V.K. (2012). Analysis of agricultural drought using vegetation temperature condition index (VTCI) from Terra/MODIS satellite data. Environ Monit Assess. 184: pp. 7153–7163.

4. Administrative and geographical profile of Andhra Pradesh, May 2014.

5. Memorandum on drought in Andhra Pradesh 2014. www.ap.gov.in/wp content/uploads/.../Memorandum_ on_drought_in_AP-2014.pdf. Date accessed: 31/03/2015.

6. An outline of the agricultural situation in Andhra Pradesh. Hyderabad, India: Directorate of Economics and Statistics, Government of Andhra Pradesh.

7. Annual plan 2014-15, Government of Andhra Pradesh.

8. Department of Agriculture, Government of Andhra Pradesh, National conference for Rabi campaign 2014-15, September 2014.

9. Directorate, Economics and Statistics, Hyderabad.

10. Thomas, T., Jaiswal, R. K., Galkate, R., Nayak, P. C. and Ghosh, N. C. (2016). Drought indicators-based integrated assessment of drought vulnerability: a case study of Bundelkhand droughts in central India. Nat. Hazards, 2016, 81(3), pp. 1627–1652.

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