

Vol 1 Issue 1 Oct 2011

ISSN No : 2249-894X

*Monthly Multidisciplinary
Research Journal*

*Review Of
Research Journal*

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Research Papers



ENVIRONMENTAL STUDIES ON SOCIO-ECONOMIC CONDITIONS OF FARMERS IN DROUGHT PRONE ANANTAPUR DISTRICT, ANDHRA PRADESH, INDIA.

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Abstract

The Anantapur district, A.P, India falls in the rain shadow area of Western Ghats, in the interior of Deccan Plateau. It is one of the chronically drought affected districts in the country with an average annual rainfall of about 560 mm, is lowest in the state and second driest part of the country, after Jaisalmer. The important river in Anantapur district is Hagari or Vedavathi. The construction of Bhairavani Thippa Reservoir across Hagari River gets impounded. Hence persistent dryness prevails in the river throughout the year. During the months of June to August, this region experiences strong surface winds from west to easterly direction. This has resulted in sand dune formation at a number of places. Several villages are affected by sandy soils to various extents. 80% of the working population is agricultural labourers and this has become a serious environmental problem, indicating higher levels of poverty. Availability of work in agricultural operations plays a crucial role in supplementing their incomes. The efforts to improve environmental conditions in such areas will improve the socio-economic conditions of farmers in the district.

Keywords: Desertification, Drought, Socio-economic conditions.

INTRODUCTION:

Anantapur district is the one of the most backward districts of the Rayalaseema Region of Andhra Pradesh. It is the largest district of Andhra Pradesh with an area of 19,130 Sq. kms. The district was formed in the year 1882 and later, the boundaries of the district were extended with the addition of Kadiri taluk from Cuddapah district in 1910 and Rayadurg taluk from Bellary district in 1956. The district lies in the western most part of Deccan plateau and forms southern most part of the Rayalaseema region of Andhra Pradesh. It is situated within geographical coordinates of 13° - 40' and 15° - 15' Northern latitude and 76° - 50' and 78° - 30' of eastern longitude, bounded by Cuddapah district on the East, Chitradurg district of Karnataka on the West, Kolar District of Karnataka on the South and Kurnool district on the North.

RAINFALL AND CLIMATE

Anantapur District is the driest part of the country with the second lowest rainfall after Jaisalmer District in the State of Rajasthan. Normal rainfall is 552 mm.³ The rainfall is highly erratic. Normally Southwest monsoon favours with 61% of the total rainfall (338 mm) and being far away from East Coast, North east monsoon will not be vigorous in the District (156 mm). Intermittent dry spell ranging from 4 to 6 weeks in the crucial state of crop growth period coupled with high velocity winds often result in low

productivity of crops. The altitude varies from 990' above MSL at Tadipatri to 2000' above MSL in Madakasira taluk. Maximum temperature ranging between 20.1 degrees Celsius to 38.4 degrees Celsius recorded during the months of March, April and May. The cooler months, with a minimum temperature of 17.2 degrees Celsius are November to January.

RIVERS:

The District is not endowed with perennial rivers. Seasonal rivers like Pennar, Jayamangala, Chitravathi and Hagari rivers flow during the rainy 64 days and benefit the seasonal requirements of the farmers on river tanks in 3317 kms. route of the rivers. Streams like Kushavali in Hindupur, Swarnamukhi in Madakasira, Tadakaleru and Pandameru in Anantapur block, Maddileru in Kadiri block and Papagni in Tanakal Mandal are the important water supply sources to various large and medium irrigation tanks in the district. The important river in the district is Penna. It has its origin in Nandi Hills of Karnataka State, what it is called Uttara Pinakini and enters this district in the extreme south of Hindupur Mandal and flows through 12 mandals and enters Cuddapah district. Chitravathi is another river of some significance in the district. The Hagari river with its tributary Chinna Hagari river, runs through the heart of the Rayadurg taluk, Kushavathi, Swarnamukhi, Tadakaleru, Pandameru and Mandaluru are the other sources of water to various large and small irrigation tanks in the district. All the above rivers and streams flow only during the rainy season. Thus, there are no perennial sources of water in the district.

VAST AREA UNDER RAINFED CULTIVATION:

25% of the Andhra Pradesh total rainfed farm land is in Anantapur District. Anantapur farmers are largely dependent on drought-prone, rain-fed agriculture; and mostly a single crop of groundnut is sown in about 8 lakh ha under such harsh and agro climatic conditions. Of its geographical area of 19,13,000 ha, (largest in AP) 10,00,000 ha are rain-fed. The present state of A.P has totally about 40 lakh ha under rainfed cultivation and 25% of it is in Anantapur district. Only about 1,08,000 ha are irrigated, that too mostly through undependable ground water fed tube wells. This is the only drought-prone district with a meagre 10% of cultivated area under irrigation and a large 90% under rainfed farming.

DESERTIFICATION AND INFLUENCE ON AGRICULTURE

Local historical evidence shows that nearly 200 years ago due to heavy flood in the Hagari river, most of the fine sand from the river bed has been drifted and deposited up to a considerable distances on agricultural fields reducing soil fertility on eastern side of the river. During the months of June to August this region experiences strong surface winds from west to easterly direction. This is also the south west monsoon season in India during which about 80.0 per cent of the annual rainfall is received. Ploughing of sandy soils for agricultural purpose in this region aggravates the sand migration. This has resulted in sand dune formation at a number of places. As most of the villagers are dependent on agriculture this has become a serious environmental problem for them besides recurring droughts. The sand affected area has been estimate to be about 334.0 hectares. There are strong indications to suggest that such sand affected area has been spreading over time. The only saving grace for some of these villages is the availability of water through the Thunga Bhadra High Level Canal (T.B. H.L.C) from Karnataka for irrigation. Apart from paddy cultivation in the canal command area, ground nut is widely cultivated in the sand affected soils. The region is occupied by underlying black soils with high clay content which makes the soils pervious. Because of this nature of soils, salinity is occurring wherever water logging is taking place due to poor drainage. Several villages in Kanekal and Bommanahal Mandals are affected by sandy soils to various extents. Farmers maintaining small plots of agricultural lands are heavily affected. During these months the fields are ploughed for sowing, as the farm folk tap into the south-west monsoons in India. But the strong surface winds carry away the ploughed loose fertile top soil – which is lighter, alluvial type in these ‘mandals’ – resulting in a poor produce year after year. Water logging and salinization of soil due to sand formation is another growing issue. Forest Department surveys in these 13 villages show 1,360 hectares of cultivation lands and 6,840 farmers are affected by the shifting sand dunes. Of these, 6,500 are small and marginal farmers with land holdings of a hectare or less and annual earnings averaging 800 to 1,000 U.S. dollars. Half the working population is landless farm labour while 15 percent belongs to the ‘dalit’ castes.(Manipadma Jena,2010)(Fig-Desertification in Kanekal

Mandal)



Kumar and Parikh (1998) show that economic impacts would be significant even after accounting for farm-level adaptation. The loss in net revenue at the farm level is estimated to range between 9% and 25% for a temperature rise of 2 °C–3.5 °C. Sanghi, Mendelsohn, and Dinar (1998) also attempt to incorporate adaptation options while estimating agricultural impacts. They calculate that a 2 °C rise in mean temperature and a 7% increase in mean precipitation would reduce net revenues by 12.3% for the country as a whole. Agriculture in the coastal regions of Gujarat, Maharashtra, and Karnataka is found to be the most negatively affected. Small losses are also indicated for the major food-grain producing regions of Punjab, Haryana, and western Uttar Pradesh. On the other hand, West Bengal, Orissa, and Andhra Pradesh are predicted to benefit – to a small extent – from warming.

SOCIO-ECONOMIC CONDITIONS:

Anantapur District has a population of about 41 lakhs (2011 census) or about 10 lakh households. About 30 lakh population (7.5 lakh households) live in rural areas. The Districts economy is predominantly agrarian. With virtually no other non-farm livelihoods, Anantapur backwardness and poverty are well indicated in its severe rural indebtedness, high turn up of labour under MGNREGS, rampant farmers migration including seasonal migration and highest number of farmer's suicides in the country. The District has predominantly small and marginal farmers 6.3 lakh farmer (93%) of the 7 lakh farmers are small and marginal, mostly belonging to Dalits, Tribals and other Backward communities. About 20 per cent of the population comprises dalits and tribals, and 60 per cent comprises of backward communities. Malnutrition, illiteracy, illness, deprivation, caste and gender discrimination are about the state average. Added to these social divisions, crime and discord between various factions and groupism are common in the district. One common feature of all these villages in that, more than half of the working population are agricultural labourers which indicates higher levels of poverty.



Availability of work in agricultural operations play a crucial role in supplementing their

incomes. Moreover, it is the poor who bear the brunt of adverse consequences of environmental degradation in fragile ecosystems. Thus, efforts to improve environmental conditions in such areas will improve their livelihoods.

To sum up, while scarce rainfall, poor soil condition, and frequent droughts have always been a feature of Anantapur agriculture, it is important to note that these adverse natural conditions are only one aspect of the agricultural problem facing the economy. The highly unstable agricultural economy has undergone fundamental changes with regard to cropping pattern and irrigation practices:

A food grain-based crop production system has changed into a commercial crop-based production system;

There has been a gross neglect of traditional water bodies and a rapid rise in private bore-pump irrigation.

Both these changes have increased the links the farmer has with the market forces. Reliance on cash for consumption as well as agricultural production increased over the years. In addition, there have been other problems such as soil degradation, pending irrigation projects, lack of adequate soil and water conservation activities, lack of availability of quality inputs, lack of awareness of correct agricultural practices among farmers, lack of agricultural extension etc. Further, all these changes have been happening in a context where economic reforms, initiated in the early 1990s, resulted in withdrawal of several state-support services, reduction in the plan outlay for agricultural research and education, import of edible oil, volatility in groundnut prices and a general dwindling of returns from agriculture. A complex set of factors have thus added a new dimension to the unstable agricultural economy of Anantapur district.

IMPROVING THE GEO ENVIRONMENTAL CONDITIONS

It is in this background, efforts have to be taken to ameliorate the environmental conditions in the affected villages through massive plantations Programme with the following objectives.

- ✦ Reduce surface wind speeds so that the sand is not carried on the agricultural fields further and thus prevent the spread of the sand affected area.
- ✦ Rehabilitate moderately or severely desertified lands for productive utilization.
- ✦ Promote measures to prevent soil erosion and enable soils to retain more moisture regenerate more greenery and contribute to increased biomass productivity.
- ✦ Restore ecological balance of the region, at least to some extent and contribute to the promotion of sustainable development strategies with full participation of local people / stakeholders.

Prevention of sand drifting by reducing wind speed is the most urgent task to be undertaken in the area. A preliminary interaction with villagers of the affected villages revealed that, a farmer of sand affected land waits for the sand to migrate on to his neighbour's land, so that he can cultivate his own land. The entire affected land is to be treated simultaneously by taking up plantations in all the affected Govt. lands, to fix the drifting sands. For this purpose, the species like *Tecomella Undulata*, Ber, D. Sissoo, *Lawsonia* (Mehandi) etc., are to be raised locally in the villages. Nursery centres are to be established to support one to two Lakhs of seedlings in each nursery. With regard to private lands the local farmers have high stakes on private lands. The villagers strongly feel that, planting of Ber (Regu), Neredu, Tamarind, Sapota would be financially beneficial to them in the long run, besides improving the canopy over the sand filled lands. These are drought resistant varieties that can survive in this area. Thus permanent vegetation will arrest sand drifting. The planting should be well planned and planting should be taken up without losing the pre-monsoons showers. Green belts are to be established to act as barriers between sand dune and private lands. The farmers are to be encouraged to apply silt to their fields in order to fix the sand particles in situ.

CONCLUSION

The only way to save the district from the impending desertification would be supplementing the soils with external sources of water in addition to the normal rainfall. While the entire State experiences floods during the monsoon season, Anantapur district reels under severe drought conditions which is viewed as a paradox. The best way to save the district from drought conditions is by filling all the

irrigation tanks, including stream beds. There are roughly 600 major and medium irrigation tanks and more than 1,000 minor tanks in the district and most of them were built during the time of Sri Krishnadevaraya. Farmers in the district are of the opinion that groundwater will be recharged in the ayacut areas if irrigation tanks are de-silted. All the arid and desertifying environmental conditions, chronically drought-prone agro-climatic conditions and poor socio-economic conditions make Anantapur District a very high priority for development intervention and very high relevance for Watershed Development, Sustainable Agriculture and Diversified Rural Livelihoods.

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