Role of Watersheds for Sustainable Agriculture in Dry land Areas

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The dry-land areas in the country account for about 70 per cent of the cropped area and at the same time more than half of the country’s food grains production like cereals major pulses, oilseeds, fiber crops also grew in Rain-fed areas in all parts of India. Even today the entire irrigation potential in the country about half of the areas still remain un-irrigated in our country. The Indian agriculture is depend on Monsoons these are un certainity and in-acceptable distribution of the rain fall throughout the country due to this, most of the areas are led to dry land farming even in commercial crops also. The Indian policy makers and Politicians are looking towards the Goal of Vision 2020. But is it possible? Yes why not, the proper implementations of watershed development programs in the rural area (Dry land regions) it should be done. In the rural areas mass people almost depend on agricultural and the allied activities. The watershed development programmes are almost implemented in the dry-land and hill areas of the country.

In this programme so many activities are under taken for the sustainable development for the rain-fed areas, like irrigation activities labour activities, livestock, and other livelihood activities all are influenced the sustainable development in the rain fed areas in the country. The present paper focusing the some the highlighted studies were conducted in the rain-fed areas of the country, in this regard the paper is total based on the secondary literature.

Efficient and sustainable use of natural resources has become the sine quanon for economic development, especially in resource-poor countries, and all the more so in agriculturally dominated economies like India, where two-thirds of the cropped area is dependent on rainfall without any protective irrigation facilities. The promotion of appropriate technologies and development strategies in rainfed regions could potentially result in multiple benefits such as by ensuring food security, enhancing the viability of farming and improving the ecological balance.

A major programme for development of all the degraded land in AP over 10 years was launched during 1997 as the 10 year perspective plan. The action plan for development includes wet lands, degraded lands (i.e. dry lands which are being cultivated under rainfed conditions) and degraded reserve forests. It is envisaged to develop 10 million hectares of degraded and wastelands, with an outlay of about Rs. 4000 crores (US $ 888.89 million) from 1997 to 2007 at the rate of 1 million hectares every year. About 2.7 million hectares have already been covered under 5472 watersheds, which are largest number of any state in the whole country1.

The watersheds programme are being implemented in 337 districts of India under DPAP, DDP and IWDP under 1994 guidelines. These districts were categorized by GoI by environmental, social and developmental indicators. High priority is accorded to low-rainfall regions with concentration of Scheduled Castes (SC), Scheduled Tribes (ST) and low literacy rate regions of the county2.

Methodology

The paper is based on the secondary literature, where conducted the studies on dry farming in different regions of the country. But all the major finding and observations are not covered in this paper, some of the studies and observations whose observations are relevant to the sustainable development under the watershed development programme or watershed based technology are included in this paper. But the main limitation is the sustainable development scope is limited for some of the parameters i.e. improve in labour employment, change in cropping pattern, yield per acre, livestock and livelihood operations are focused in the present paper.

Objectives of the Study

- To observe the watershed based development activities in some the rain-fed areas of the country.
- To assess the impact of watershed development on the rain-fed areas
- To identify the improvement in animal husbandry of the dry-land agriculture in watershed implemented area of the country.

Source of the Data

This study uses secondary data only and the data includes books journals and periodical publications such as season and crop reports published by NSS, the Bureau of Economics and Statistics, Govt. of A.P., and India, publications of NIRD reports and EPW etc.

A watershed is a logical, natural planning unit for sustainable agricultural research and development particularly when environmental considerations are emphasized. Hydro logically, watershed could be defined as an area from which the runoff drains through a particular point in the drainage system. Some of the highlighted studies which related to the sustainable agriculture development in the rain-fed area are as follows

The VIIth planning commission of India, announced their document which gave considerable importance to rain-fed farming. This lead was followed, through the approach papers in the eight plan. Thus, the framework of agriculture planning for dry land areas on watershed (holistic resource region) basis began at some locations. Different organizations at various locations in the country undertook experiments on watershed basis. Broadly, there are five different programmes operating in the country, which differ in terms of techniques, administration and planning and system composition. The first group consists of the operational research projects (ORP) taken up by the Indian Council of Agricultural Research (ICAR) at different locations in the country. Secondly the World Bank financed four watershed projects in Manoli (Maharashtra), Kabbelnala (Karnataka), Maheshwaram (Andhra Pradesh) and Parua Nala (Madhya Pradesh). These were also undertaken
with the active participation of Agricultural Universities. These are purely scientist managed projects. Thirdly, state Governments have taken up such programmes either with additional or existing administrative machinery. Fourthly, the Central Government initiated a National Watershed Development Programme for Rainfed areas (NWDPRA) which was implemented by each State Government with some modifications. Lastly, there are projects undertaken by voluntary agencies (Despande and Reddy, 1991)3

Ramanna4 (1991) observed that the farmers have received the double benefit of the programme both on arable and non-arable lands in the form of a rise in the water table level in wells and reduced salt levels of tanks. Establishment of micro watershed Sanghas (committee) in Karnataka has demonstrated how an NGO can involve people in watershed development. The yield of groundnut increases from 8.95q/ha to 12.75q/ha in Chitravati watershed area in 1987-88.

Deshpande and Reddy, (1991), in their analysis of the state level Comprehensive Watershed Development Programme (COWDEP) of Maharashtra, significant changes in the household economy were noted. The study covers 30 blocks in the state and indicated concentration of certain specific components and overall good results of the technology. It was noted that employment generated in each of the watersheds was 30,000 man-days depending on the agro-climatic zone. The crop pattern, crop intensity, proportion of wasteland and yield per hectare changed substantially. The yield level of sunflower, bajra, ragi, wheat, paddy and pulses are 64, 46, 34, 18, 11 and 7 per cent respectively, whereas the yield level for jowar decreases by 2 per cent. Moisture availability has increased in the watershed regions. The study also made a comparative analysis of the cases of active beneficiary participation against passive participation. On the basis of group interaction with farmers’ in Karnataka5

The study was conducted in Bichiwada village of udaipur district in Rajasthan state. In this they find out the increase in agricultural output in the post watershed period. The basic change that has taken place in both of the study area is there has been noticeable development on the waste land. In case of the number of crops rose to 16 compared to 14 crops per year. Even significant change in case of yield rate is also visible. The mean production of Sorghum was 34.40 kilograms and rose to 47.40 kilograms in the post watershed period. The mean production of Maize has recorded 76.40 kilograms compared to 38.40 kilograms in the pre watershed period. Such increase is observed from almost all the agricultural outputs in the post watershed period. Tomato and Radish are the new crops those are cultivated in the period. The productions of all most all the crops are doubled in the post watershed period. Now they are able to generate income from selling the vegetables as the production of these commercial crops has also increased in the due course of time.6 (Sahu, Santosh 2009)

Watershed development projects have greater potential to generate employment opportunities to the rural people. This was due to the increased availability of water resources, diversified cropping pattern including cultivation of labor intensive vegetable crops and other horticultural crops. This additional employment generation from a watershed program varies across regions depending on the cropping intensity, and the labor intensive crops grown in the rain-fed regions in the state of Andhra Pradesh. This additional employment generation in the villages led to minimizing migration of landless and other labor. Thus watershed programs also contributed towards checking migration of rural people to the urban areas. This migration has greater concern for planning and devising rural development strategies. (Reddy et al 2001)

Thus it is evident that Watershed Technology has contributed to the yield improvements in all the crops. However, it is clear that the yield improvements have varied across crops and regions, and also that the increase in the yields of crops is much more modest as compared with the increases experienced during the green revolution. The modest increase in the yield, but spread over all the crops in an area has two implications: first it indicates that the gains of Watershed Technology would be shared more evenly by the cultivators in the dry-land Agriculture as compared to the distribution of gains in the green revolution area; second, that there would be less extreme specialization of crops in the former area along with less temptations and opportunities to push up yields to levels leading to exhaustion of soil. V.M. Rao (1995)8

The review of studies, which have examined the impact of watershed based technology on the agriculture, reveals that the impact of the programme on the cultivated area, irrigated area and cropping intensity has been positive. However, the range of variations is quite large and random, indicating that the impact is specific to a region. The cropping pattern in the project areas has been diversified and the watershed-based technology has contributed to the yield improvement in all the crops grown in the watershed areas. However, it is clear that the yield improvements have varied across crops in the same region and across the regions, and also that the increases in the yields of crops are much more modest as compared with the experiences by the crops during the green revolution. The modest increase in the yield, but spread over all the crops in an area has two implications; first it indicates that the gains of watershed based technology are shared more evenly by the cultivators in the dry land agriculture as compared to the distribution of gains in the green revolution areas; second that there is less extreme specialization of crops in these areas along with less temptation and opportunities to push up yields to levels leading to exhaustion of soil.9

Conclusion

All these studies have come up with successful stories of watershed management programme (WMP). 90 percent of the studies across the country have recorded a positive impact of the WMP on all most all crops, especially on dry land crops. With growing importance to the watershed management programme, the socio-economic and demographic particulars of the study areas are impacted as the way of overall development in the rain-fed areas. In this regard I feel good as the watershed development programmes are the best alternative to the sustainable development of rain-fed regions in the country.

REFERENCES

[6] Santosh Kumar Sahu Cost Benefit Analysis of Participatory Natural Resource Management: A study of watershed development initiative in Indian village Sahu, Santosh Department of Economics, Berhampur University, Orissa 07. March 2008 email: santosh2103@hotmail.com