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Innovative activities for fodder and livestock development in watershed area a holistic approach: Anantapur and YSR Kadapa districts

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Abstract

The guidelines of the watershed development stated that an insight into the rainfed regions reveals a grim picture of poverty, water scarcity, rapid depletion of ground water table and fragile ecosystems. Land degradation due to soil erosion by wind and water, low rainwater use efficiency, high population pressure, acute fodder shortage, poor livestock productivity, under investment in water use efficiency, lack of assured and remunerative marketing opportunities and poor infrastructure are important concerns of enabling policies.

Keywords: Rain-fed regions, livelihoods, productivity

Introduction

The challenge in rain-fed areas, therefore, is to improve rural livelihoods through participatory watershed development with focus on integrated farming systems for enhancing income, productivity and livelihood security in a sustainable manner. Accordingly, the watershed programme has been given utmost importance to improve the livestock in Batch-IV projects of Anantapur and YSR Kadapa districts in Andhra Pradesh. The research analysis on the importance of livestock in the watershed villages highlighted the various activities carried out in the livestock sector, which contributed to an increase in the animal population and provided income for poor, marginal and landless families in watershed villages.

Study area

The livestock thematic study was conducted in Batch-IV projects in the districts of Anantapur and YSR Kadapa. A total of 23 projects and 95 MWS villages covered under these 2 districts. The expenditure on livestock activities captured and analyzed for the Batch-IV projects of 2 districts and also analyzed cattle population and milk production between pre and post implementation of watershed project. The table-1 explains about the study area details of Batch-IV projects of 2 districts.

Table 1: Study area for the Livestock Thematic Study

Sl. No.	Name of the District	No. of Projects in Batch-IV	No. of MWS Villages	No. of Habitations	Net Treatment Area (Ha)
1	Anantapur	16	65	166	67,028
2	YSR Kadapa	7	30	99	23,669
	Total	23	95	265	90,697

The selected area for the study covers 23 projects from the two districts of Rayalaseema region for the period of 2012-13 to 2019-20. As part of the program, the total net treated area is 90697 ha covering 95 villages and 265 habitations.

Objective of the study

1. Understanding the different livestock activities carried out under the watershed system and their effect on the Socio-economic status of the watershed population.
2. Understanding the various strategies and interventions developed in the production of livestock which have contributed to the holistic development of rural areas.

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Materials and Methods

1. Primary data collected from the DWMA, Anantapur and YSR Kadapa for Batch-IV projects on different PSI activities and expenditure
2. Primary data collected from the beneficiaries of the watershed villages through household survey
3. Household schedule to collect the Socio-economic, demographic and other aspects of the sample households
4. PO schedule to collect information on the present status of infrastructure and other facilities available in the area
5. Checklist for FGDs

The entire methodology adopted for sampling is schematically followed. A multistage sampling procedure was adopted for impact assessment of Batch-IV projects covering all the watersheds in the district in the first stage of sampling. In each project all the micro-watersheds are considered so as to have a good representative nature of the works undertaken both in physical and social aspects. After this all the villages located in each micro-watershed are considered for drawing household sample for collecting Socio-economic data. FGDs (Focus Group Discussions) were organized in each village wherever the villages are less than six. In cases where the villages are more than six, the villages are grouped and FGD was organized for a cluster of 2 to 4 villages. Five percent of households are selected for survey, subject to a minimum of 75 households per project. The data collected from households is compared against the baseline data collected for drawing inferences.

Data analysis and tabulation

1. The livestock related data for Batch-IV projects of Anantapur and YSR Kadapa were tabulated and analyzed
2. Analysis of data pertaining to animal population and milk production in terms of pre-and post-implementation of watershed projects
3. Focus Group Discussions (FGDs) were conducted and

analyzed about the impact of the watershed project on livestock development

Data analysis and tabulation

1. The livestock activities for Batch-IV: 23 projects and 95 MWS villages were analyzed.
2. The 2 districts livestock activities expenditure tabulated and analyzed in connection with the targets and achievement of budget released from the watershed programme as wells as NREGS under the livestock development.
3. Analysis of data pertaining to animal population and milk production in terms of pre-and post-implementation of watershed projects
4. Focus Group Discussions were conducted and analyzed about the impact of the watershed project on livestock development

The watershed programme focused on productivity enhancement and livelihoods priority along with conservation measures. Resource development and usage planned and promoted farming and allied activities and also promoted local livelihoods while ensuring resource conservation and regeneration. The new approach systematically integrated livestock management as a central intervention and encouraged dairying. In the rainfed areas, the animal resources became a major source of income for the people and effectively integrated with the watershed development projects, a comprehensive animal husbandry component has been contributed significantly ensured a better and sustainable livelihood for the people of the rainfed areas. Accordingly, watershed programme promoted activities such as raising fodder, pasture development, sericulture, bee keeping, back yard poultry, small ruminant, other livestock and other micro-enterprises. Veterinary services for livestock and other livestock improvement measures.

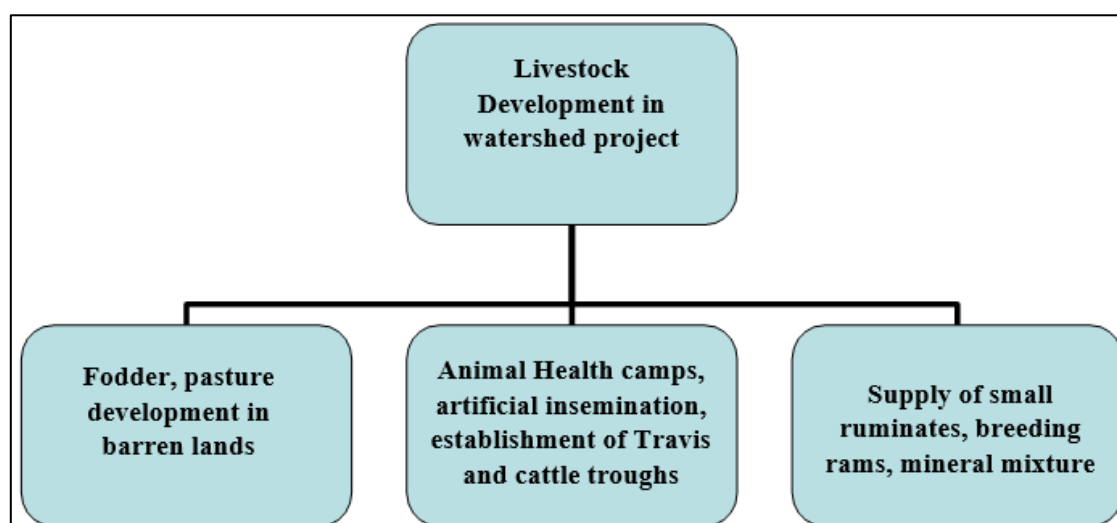


Fig 1: Holistic development of livestock management in watershed

Table 2: Details of Fodder development works carried in Batch-I to Batch IV projects of Anantapur and YSR Kadapa Districts

Sl. No.	District	IWMP					
		Sanctioned			Executed		
		Area in (Acres)	Physical (No.)	Estimated Cost (Rs. in Lakhs)	Area in (Acres)	Physical (No.)	Expenditure (Rs. in Lakhs)
1	Anantapur	922.7	473	271.37	323.4	471	3.83
2	YSR Kadapa	1590.66	897	443	370.01	893	16.52
	Total	2513.36	1370	714.37	693.41	1364	20.35

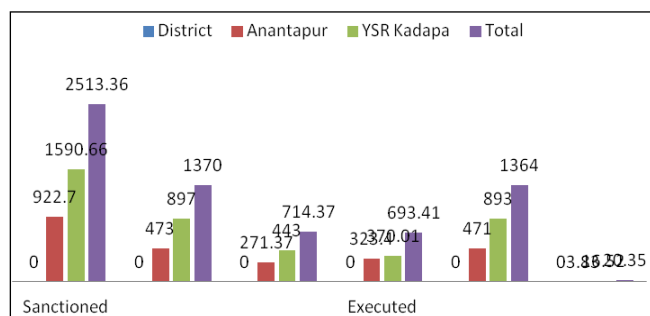


Fig 2: Fodder development works carried in Batch-I to Batch IV projects of Anantapur and YSR Kadapa Districts

The table-2 reveals the details of development of fodder works in the two districts of Rayalaseema from Batch I to Batch IV. The total physical works had taken up under IWMP are 1370 with the estimated cost of Rs. 714.37 (lakhs) in the extent of 2513.36 acres. The total physical works executed are 1364 with the cost of Rs. 20.35 (lakhs) in the extent of 693.41 acres. Among the districts, Anantapur is showing effective implementation with physical works executed 471 with Rs. 3.83 (lakhs) in the extent of 323.4 acres from the sanctioned works of 437 with Rs. 271.37 (lakhs) to the extent of 922.7 acres followed by YSR Kadapa where physical works executed were 893 with Rs. 16.52 (lakhs) in the extent of 370.01 acres from the sanctioned works 897 with Rs. 443 (lakhs) in an area of 1590.66 acres.

Convergence with NREGS–livestock development

The IWMP programme convergence with various line departments in the rural development sector which NREGS played a key role on promoting employment guarantee to the rural community and implemented various works related to watershed programme such as NRM based projects for implementation by IWMP & MG-NREGS in IWMP villages, sharing of funds & staff between both the programmes based on the type of projects executed ground water recharge, drainage line treatment, afforestation, common property resources projects and others- flood control, roads land development & fodder development, dry land horticulture.

Table 3: Details of Expenditure incurred for Fodder Development under EGS Activities in Batch-IV projects of Anantapur and YSR Kadapa Districts

Sl. No.	District	Expenditure (Rs. in Lakhs)
1	Anantapur	16.72
2	YSR Kadapa	32.58
	Grand Total	49.3

The table-3 contained the details of EGS activities among two districts of Rayalaseema region with sanctioned and executed works. It shows the total expenditure spent during the program was Rs. 49.3 (lakhs). Among these, Rs. 32.58 (lakhs), a major has spent in YSR Kadapa followed by Rs. 16.72 (lakhs) in Anantapur district.

Primary and secondary data analysis

The primary data has been collected from the beneficiaries of watershed project area and secondary data collected from the

watershed office. The data analyzed and tabulated before and after the watershed project implementation on availability of the fodder in quintals in Table-4.

Table 4: Details of Fodder Production (Qt) in Batch-IV projects of Anantapur and YSR Kadapa Districts

Sl. No.	Name of the District	Pre Project (in Qt)	Post Project (in Qt)	Results
1	Anantapur	7,854	8,768	Fodder production is increased by 11.6%
2	YSR Kadapa	1,009	1,671	Fodder production is increased by 65.6%

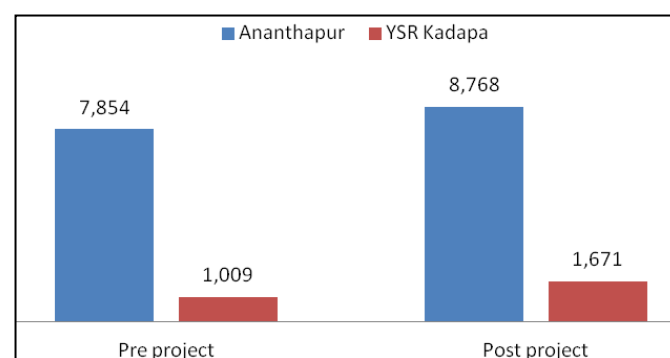


Fig 3: Details of Fodder Production (Qt) in Batch-IV projects of Anantapur and YSR Kadapa Districts

The Table-4 and Fig-3 explain the details of fodder development of works from the 2 districts of Rayalaseema region in Batch IV. Fodder production activities have been carried out in the watershed area by increasing green pasture species in barren lands as well as common lands. In this, it showed the fodder (qts) availability from pre-project status to post project with the end result.

Anantapur district shows that the highest increase in fodder availability as high as 11.6%, preceded by YSR Kadapa district with 65.6% from 1,009 (qtls) with pre- project to 1,671 (qtls) in post project. The availability of the green fodder increased due to the watershed intervention activities when compared with the pre project period. The green fodder cultivation increased in waste lands in the watershed project area.

The details of dairy cattle from pre to post IWMP-Watershed Project in Rayalaseema districts are furnished in Table-5 and Fig-4. Initially, the dairy activity under livelihood component followed with the livestock maintenance and production in the project area with all the beneficiaries. This can be understood from the status of livestock before and after the project with identifying difference and percentage of it from 2012-2013 to 2020-2021.

Table 5: Details of milch cattle (number) in Batch-IV projects of Anantapur and YSR Kadapa Districts (Cows)

Sl. No.	Name of the District	Before the Project 2012-2013	After the Project 2019-2020	Difference	Change of Percentage
1	Anantapur	8281	9473	1192	14
2	YSR Kadapa	2073	3022	949	46
	Total	10354	12495	2141	21

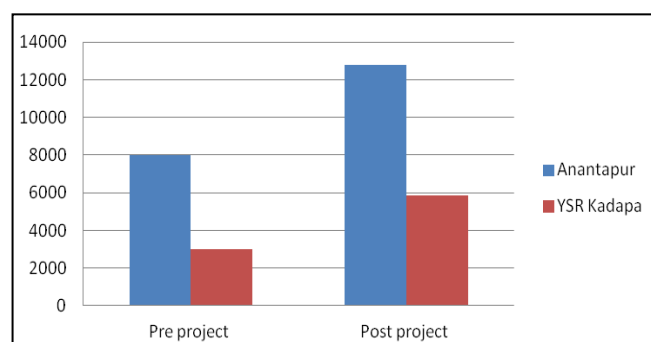
Table 5A: Details of milch cattle (number) in Batch-IV projects of Anantapur and YSR Kadapa Districts (Buffalos)

Sl. No.	Name of the District	Before the Project 2012-2013	After the Project 2019-2020	Difference	Change of Percentage
1	Anantapur	6746	8127	1381	20
2	YSR Kadapa	4190	5607	1417	34
	Total	10936	13734	2798	26

Livestock population in the watershed villages consists

Table 6: Details of Milk Production (thousand liters per annum) in Batch-IV projects of Anantapur and YSR Kadapa Districts

Sl. No.	Name of the District	Before the project 2012-13 (Thousand liters per annum)	After the project 2019-20 (Thousand liters per annum)	Difference	Percentage
1	Anantapur	7995.6	12799.5	4803.9	60.08
2	YSR Kadapa	3009.1	5849.0	2839.9	94.4
	Total	11004.7	18648.5	7643.8	69

**Fig 4:** Details of milk production (thousand liters per annum) in Batch-IV projects of Anantapur and YSR Kadapa Districts

In this, it showed the milk production from pre-project status to post project with the end result. YSR Kadapa district shows that 94.4% and Anantapur district shows that 60.8% increase at end of the project due to the watershed intervention. The cattle population has been increased due to the intervention of watershed activities to enhance the livestock development activities such as animal health camps, supply of breeding rams, fertility camps, small ruminant health camps, feed supply to pregnant milch animals during last 100 days of pregnancy, feed supply to AI born true to type calves, supply of breeding bucks, establishment of travices and also cattle troughs, cultivation of green fodder.

Productive support improvements also one of the interventions enhanced the livestock development in the watershed programme. Therefore, many activities have been carried under the PSI which helped the increase of animal population and reduced mortality among the animals and increased dairy production.

Results and Discussion

The livestock sector plays a significant role in India's socio-economic growth. Not only does it provide nutritious healthy food for millions of people, it also creates substantial employment in both the rural and urban sectors. The sector also has the ability to create self-employment.

Employment is one of the main indicators for watershed growth and its effect on alleviation of rural poverty. Total employment has risen among the beneficiary households. The trend of employment changes towards horticultural crops and other commercial crops, along with non-farm activities that have increased significantly.

The overall increase in income and consumption rates reflects

largely as cows and buffalos. Before and after the project, the total number of cows and buffalos in the two districts increased. Cows population increased from 10354 to 12495 after the project implementation and Buffalos population has been increased from 10936 to 13734 at end of the project. Milk production activity was carried out with the supporting activities such as grazing fodder, distributing fodder cutters, seeds, fertilizers, planning, awareness, training, and participation. The activities that have taken in throughout the project are follows as;

the ability of watershed growth to enhance additional properties, such as livestock, in watershed projects villages in Rayalaseema district. Improvements in fodder and common land have tremendous potential for employment for the rural population within their own villages. In general, the effect of watershed programs on animal husbandry indicates that livestock holding potential in watershed areas has improved due to watershed development programs, although some improvements have been made. The composition of the animals has undergone a change; firstly, the local variety of cows, buffaloes have been replaced by cross-breed cows, buffaloes; and secondly, the number of milch animals has increased, and small ruminants, such as sheep and goats, have also increased since the introduction of the watershed.

The dairy operation is gaining importance in the watershed areas due to the availability of feed and other related facilities, such as the availability of artificial insemination services, etc. It is also noted that the number of farmers engaged in dairy farming has increased thus milk production.

The number of farmers engaged in dairy farming has increased accordingly milk production has also increased. As far as feeding practices are concerned, the major change recorded is that usage of mineral mixture along with green fodder has increased. The watershed programme provided mineral mixture to the livestock which helped animal's nutrition and resulted more milk production. As concerned with the livestock watershed also established travices, water trough facilities etc., all these directly or indirectly helped the animal development in the watershed villages.

There is a close linkage between the various aspects and livestock sector especially green fodder availability, feed availability, animal health etc. The livestock sector makes a significant contribution to the income in watershed villages with well developed dairy sector.

The success of the dairy sector depends on several aspects. The Impact of the watershed village indicates that due to implementation of watershed program the availability of feeds and fodder increases and, in this case, particularly green fodder that stimulated the growth of dairy sector. At the same time the different interventions in the livestock management in the watershed villages clearly indicated the watershed program is beneficial to landless poor, small and marginal farmers in the selected watershed villages.

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