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*Research Paper*

# Impact of Watershed Development Programme on Rural Development: A study of Sarole Pathar Village,

***T.M.Varat**

*** Head, Research Centre & P.G. Dept. of Geography New Arts, Commerce & Sc. College, Ahmednagar**

***A B S T R A C T***

***The main objective of this research paper is to assess the impact of watershed Development Programme on rural development. The chages exhibibited due to implmentaion of watershed development in the study area (Sarole Pathar Village. Dist. Ahmednagr) in terms of landuse, cropping pattern, crop yield, agriculture support activities, water conservation, ground water level, women empowerment and economic development. The study was based on beneficiaries household survey, involved acquisition of data through questionnaire survey from a sample of 25% household using systematic random sampling procedure. Data was collected both for pre and after the implementation of watershed development programme. (1990-90 to 2000-01). The study revealed that due to implementation of programme there is increase in area under cultivation, changes in cropping pattern, yield per hector, agricultural support activities, ground water level and status of women employment in the village Sarole Pathar. This transformation shows the necessity and significance of implementation of such programmes at village level for improvement of rural life.***

**Introduction:**

A watershed area is the drainage basin or catchment area of a particular stream or river. It refers to the area from where the water to a particular drainage system comes from. Watershed area is a hydrological, biological, physical, economic and social unit. It is an integrated concept which has wide ranging effects on lives of the people at large. Watershed development approach refers to the conservation and regeneration of natural and human resources. Watershed development tries to bring out the best possible balance in the environment between natural and human resources which requires people participation of watershed areas. The integrated watershed development programmes are being implemented in the rain fed, drought prone and non-forest watershed areas.

These programmes are being funded by central governments, World Bank and some non-government organizations. Government of Maharashtra accepted the Watershed Development Scheme in 1983-84, now it is commonly known as Integrated Watershed Development Programme.

Ahmednagar district is drought prone area and a water scarcity zone in Maharashtra. Most of the area of Ahmednagar district is rain fed and problems of rain fed agriculture are many and varied in nature. These are related to climatic factors. Conservation of soil, water and plants, is necessary for sustainable development of the area. Village Sarole Pathar from Sangamner tahsil of Ahmednagar district is selected for the study. The impact of the programme on water and soil conservation, area under cultivation, land use and cropping pattern, crop productivity agricultural and socio-economic development of the villager is assessed by taking in to account the situation of the village before and after the implementation of programme.

**Objective:**

Main objectives of the study are to assess the impact of watershed development programme on land use, cropping pattern ground water level, yield per hector,women emporment and economic development in the village Sarole Pathar Dist. Ahmednagar.

**Methodology:**

The study entirely relied on primary data collected through household survey and intensively conducted field observation. The sample method was employed for collecting data regarding pre and after the implementation situation of villagers in respect to land use and Agricultural development in the village. Total sample size was 25% of the households. The data generated through questionnaire survey were analyzed quantitatively and this was supplemented by the qualitative analysis of the data generated through field observation.

**Study area and Discussion:**

Geographically Sangamner taluka lies between the coordinates from 180 36' to 190 09' North latitude, and 740 01' to 740 56' East longitude with the total geographical area 1680.1 sq. km. and comprising 162 inhabited villages. The Sangamner taluka is a semi-arid, chronically drought prone area. The average rainfall pattern of Sangamner taluka ranges from 150 mm to 500 mm. Topography is undulating and barren with shrub vegetation which is heavily grazed. Water tankers were supplying drinking water to most of the villages of the taluka. Most the families of the villages depended upon daily wages, labour work and dry land

farming. To improve the social and economic condition of rural people, changes in the cropping pattern, aforestation, plantation, soil and water conservation are the of main objectives of the watershed development programme.

The Village Sarole Pathar is located in the Pathar area of Sangamner Taluka, which is 26 km away at south-west of Sangamner. Village lies between 7309' to 7505' East longitude and 1802' to 1909' North latitude and is five km away from the Pune-Nashik (NH-50) highway. The total geographical area of the village is 1453.98 hectors at the foot hills of the Sahyadri range. The village area is well defined with a North-West to South-East flow. The upper catchment has a highest elevation of 800 mts. above mean sea level. The watershed drains into river Mula which is a part of Godawari basin. The average rainfall is 350.00 mm for 30 to 35 days only and it is received from south-west monsoon during June to September. Soil on the pathar area is sandy clay to sandy clay loan. The lands on the slopes have limited soil depth and have poor fertility. The soil in valley is fertile and texture is mainly clay loams.

**Location of Village Sarole Pathar**


Location Of Village Sarole Pathar

**Map: 1: Location Of Village Sarole Pathar**

Following methods are used by the Maharashtra Government under watershed development programme in the village Sarole Pathar.

1. Continuous Contour Trench (C.C.T.) :- This is a type of trench that form a kind of girdle around the hill slope at a given contour especially used for treating non arable area of hill slopes. Contours are the important soil conservation measures. They also control runoff and erosion and improve subsurface drainage and conserve soil moisture.

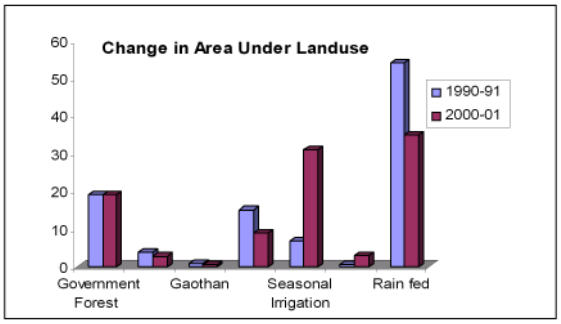
2. Loose boulder: - The small drainage lines having catchment up to 10 hector are plugged with the help of locally available stone in order to check velocity of water help to deposition of load, control and erosive force and increase the recharge of rain water in to the ground. 3. Contour Bunding and graded Bunding :- In shal low and medium soil depth area at appropriate vertical interval and horizontal distance across the slope contour bunding is carried out which helps in reduction of soil erosion and conservation of soil moisture. 4. Gabien Structure: - In the stream channals wire boxes are filled with loose stones mainly for ground water recharges and stabilization of water course. 5.Check dams: - Earth dams or concrete masonry are built across the stream to store slow down water and for ground water recharge. 6. Farm ponds: - Farm ponds are water bodied of variable size constructed by excavating a pit or as an embankment across a water course, so the water can be utilized for irrigation and it also becomes the source of drinking water as well as for live stock. 7. Nala Bunding (Runoff management measures):- The runoff from the catchment of 10 to 200 hector considered for nala bunding having different designed and capacity as par the location. This helps to store excess runoff water and recharge ground water table very efficiently.

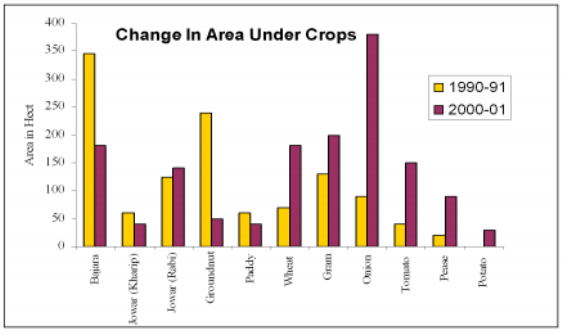
**Map:2: Development of Village**

Table – 1: Changes in area under landuse (Area in hectors)

**Before and after Implementation of WSD programme (1990-1991 to 2000-2001)**

| Sr. No. | Landuse | | 1990-1991 | % | 2000-2001 | % |
|---|---|---|---|---|---|---|
| 01 | Government Forest | | 279.00 | 19.18 | 279.00 | 19.18 |
| 02 | Gairan | | 55.12 | 3.79 | 40.12 | 2.75 |
| 03 | Gaothan | | 11.40 | 0.78 | 5.46 | 0.37 |
| 04 | Uncultivable Area | | 218.46 | 15.02 | 129.46 | 8.90 |
| 05 | Cultivable Ares | Seasonal Irrigation | 100.00 | 6.87 | 450.00 | 30.94 |
| | | Perennial Irrigation | 06.00 | 0.41 | 43.00 | 2.95 |
| | | Rain fed | 785.00 | 53.98 | 507.00 | 34.86 |
| | | Total = | 1453.98 | 100.00 | 1453.98 | 100.00 |




Change in area under land use shows that there was decrease in uncultivable area, Seasonal irrigation and perennial irrigation area increased after the implementation of watershed development programme in the village. Whereas area under gairan decreased but rain fed cultivation decreased from 785 hect. to 507 hectors. Instead of cultivating the rain fed crops because of watershed work the farmer shifted towards cultivating cash crops like onion tomato, pease and used high yield variety seeds of crops like wheat, gram and jowar which causes for achieving agriculture development in the village.

**See Table 2**

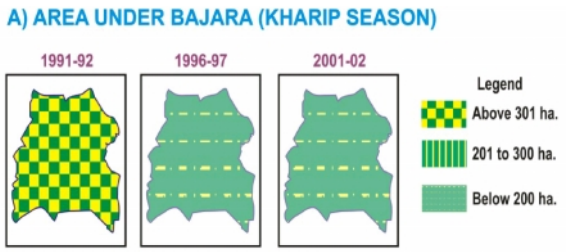
Area under various crops also changed after the implementation of watershed development programme. Data shows that area under bajara, groundnut, paddy was decreased and crops like rabi jawar, wheat, gram, onion, tomato and pease was increased considerably. Particularly area under vegetables increased significantly before (1990-91) it was 150 hectors and it becomes 650 hectors (2000-01). This change in cropping pattern improves the economic condition of the farmers. An observation shows that there was an introduction of horticulture like Mango, Amla and Lemon in the village due to the free supply of seedling as a part of watershed development programme.

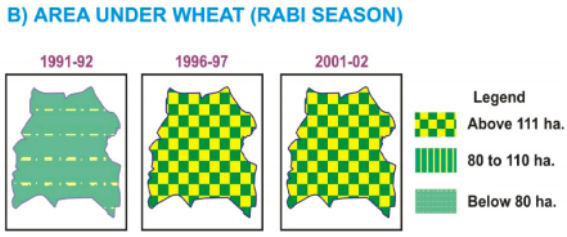
**Table - 2:** Changes in area under various crops (Area in hectors) Before and after implementation of WSD programme (1990-**1991 to 2000-2001)**

| Sr. No | Crop | 1990-1991 | 2000-2001 |
|---|---|---|---|
| 1 | Bajara | 345 | 180 |
| 2 | Jowar (Kharip) | 60 | 40 |
| 3 | Jowar (Rabi) | 125 | 140 |
| 4 | Groundnut | 240 | 50 |
| 5 | Paddy | 60 | 40 |
| 6 | Wheat | 70 | 180 |
| 7 | Gram | 130 | 200 |
| 8 | Onion | 90 | 380 |
| 9 | Tomato | 40 | 150 |
| 10 | Pease | 20 | 90 |
| 11 | Potato | - | 30 |

**Map: 3** : Change In cropping Pattren

Table-3 shows that yield per hector also improved. Availability of irrigation, use of HYVS, adoption of modern technology, increase in duration of moisture are the main factors responsible for increase in yield per hectors of various crops. The average yield of vegetables like onion, and tomato improved considerably. For instance tomato crop has yield of 45 qt/ha before the WDP which was increased to 63 qt/ha during post WDP.



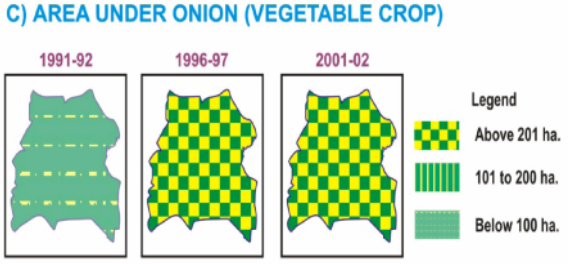




**Table - 3: Changes in crop yield (Quintals per Hec**tor)

| Sr. No. | Crop | 1990-1991 | 2000-2001 |
|---|---|---|---|
| 1. | Wheat | 05 | 10 |
| 2. | Gram | 02 | 3.5 |
| 3. | Onion | 30 | 40 |
| 4. | Tomato | 45 | 63 |

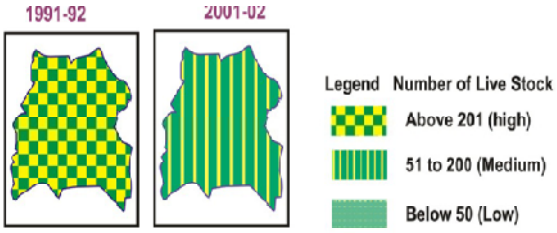
Livestock population table shows that the number of local cow has decreased form 376 to 103 and cross-bred

**Table - 4:Changes in population of livestock and growth in dairy farming**

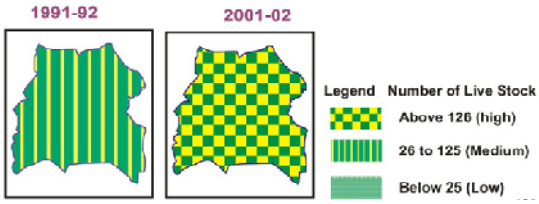
| Sr. No. | Particulars | 1990-1991 | 2000-2001 |
|---|---|---|---|
| 1 | Local cow | 376 | 103 |
| 2 | Cross-bred cow | 68 | 180 |
| 3 | Sheep and Goat | 562 | 602 |
| 4 | Average yearly milk collection in liters | 8660 | 63294 |
| 5 | Selling price for milk (Rs/Lit) | 06 | 10 |

cow increased from 68 to 140. The yearly average milk collection of co-operative dairy was 8660 liters; it was increased 63294 liters in 2000-01. This increase in milk production leads to improvement in necessary backward and forward linkages for dairy activity. Apart from dairy farming there was also improvement in poultry farming.

**Map: 4: Population of Local Cow**




**Map: 5: Population of Cross Bred Cow**




Irrigation was very rare phenomena in agriculture of village Sarole Pathar before the implementation of watershed development programme. A little irrigation was available from the wells which was seasonal but this programme has changed this scene considerably. Different soil and water conservation activities like C.C.T., loose bolders, contour bunding, check dam, farm ponds and nala bunding are carried out under watershed development programme which help in recharging ground water level in the village. There were 27 wells this number increased to 83 in 2000-01. In addition to seasonal wells in the watershed there was increase in bi-seasonal and annual irrigation. One percolation tank and nine check dams were constructed in the village area. These all watershed activities help to more water availability for irrigation and domestic purpose. There is a ban on digging of tube wells in the village area.

Self Helps Groups organization in the village is the result of implementation of this programme. Eight saving groups were organized, involving 144 women member in the village. These groups have been linked with banks in order to build the capacity of self help groups. Loan from saving amount was disbursed to the members for activities like dairy farming, land development, house constriction, business purpose, family function, health treatment and child education. The self help groups are found very useful in social awareness, family responsibilities, well protected social life and empowerment of the women's in the village.

The women in the village are more motivated than men by the implementation of this programme. The programme has enabled women to come out of their homes and participate in the various activities. Women's were more organized and form self help groups. Because of introduction of cooking devices, biogas plants, non-formal education, latrines, soak pits and health camps which help to improve the living standard of women. Women participation increased in activities like rearing cows, dairy, poultry, grocery shops, stationary shops as well as in the local development institutions like village watershed committees, Gram Sabhas and their own self help groups so women employment was increased. The emphasis was also given by some NGO's on development of women by way of introducing various activities such as Anganwadi, Tailoring, Nursery and Mahila Mandals.

**Table -5: Women Self Help Group (SHG) and Women Development**

| Sr. No. | Name of SHG | Members | Saving Per Month by Each Member (Rs.) | Total Saving (in four years) | Loan Disbursement | Loan Utilization |
|---|---|---|---|---|---|---|
| **1** | Sharda | 20 | 50 | 48000 | 45000 | Dairy Farming |
| **2** | Chetana | 20 | 25 | 24000 | 22000 | Land Development |
| **3** | Shramik | 18 | 25 | 21600 | 20000 | Land Development |
| **4** | Pragati | 20 | 20 | 19200 | 18000 | House Construction |
| **5** | Jijamata | 17 | 20 | 16320 | 15000 | House Construction |
| **6** | MaduSanchay | 20 | 25 | 24000 | 15000 | Family Function |
| **7** | Gruhini | 14 | 20 | 13440 | 13000 | Education |
| **8** | Dhanshree | 15 | 25 | 18000 | 13000 | Business |

**Conclusion:**

This study is based on analysis and description and aimed to examine the impact an land use cropping pattern, crop yield, agricultural support activities, water conservation, ground water level, women empowerment and economic development after the implementation of watershed development programme in the village Sarole Pathar. The study revealed that there is considerable temporal change in the above aspects. There was significant transformation in agricultural activities because of conservation of water resource in the village. Village economy is improved, women participation increased, village become more resistance to drought, agricultural produce increased and as a result improving standard of living and reducing rate of poverty in the village Sarole Pathar.

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