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Agricultural Changes In Hivare Bazar Village Before and After Watershed Development

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Abstract:

Water is wonder of nature. It plays crucial role in the evolution of life from molecules to man. It is as important for survival of human being as much air, food etc but more attention is needed for its economical use and conservation of the precious natural resource. Quantity of water in nature does not decrease but only changes its form with time. With increase in population, there has been continuous increase in demand of water for different purposes. Due to indiscriminate pumping of ground water, the water level is decreasing rapidly, it is very serious problem. If proper care and appropriate measure are not taken in time, it will create serious problems to the generation to come. The next generation may have to face severe crisis of water. Total quantity of water available on the globe is 1.5 billion cubic Km and only 12,500 to 14 billion liters becomes available annually for human use. At present about one third population of the world is not able to get fresh water (Gurjar R.K. Jat B.C., 2008). Actually, water is not scarce resource but unconscious and quantum use of it create problem of scarcity. Water crisis started initially not only because of uneven distribution of it and ever-increasing demand by population, but at present it is worsened by unlimited and improper use of water for agriculture, industries and domestic purpose.

In such scenario 'Watershed development and Management' becomes a key aspect for sustainable development. Today, watershed management has become the main intervention for natural resource management. Watershed development program not only protect and conserve the environment, but also contributes to livelihood security (Panalkar S. S., 2010).

Key words-: *Conservation, indiscriminate, quantum, Watershed development and Management*

Introduction

If we want to solve the water problem in rural areas and stop the mass migration of the rural people to the urban centers, watershed development is the only solution. If we plan watershed development, works well, we can save the country from water crisis in the future. For that, a village should be considered as a unit and then composite thoughts need to be given to allthe watershed areas in that unit. Watershed development is a miracle which transforms the society. Watershed developments not only increase water availability of the area but also change the society. It takes social and economic transformation through various activities. Watershed development is the foundation of economic and social transformation. Watersheds developments teach earn water through hard rock, and use it for welfare of village and downtrodden community of the village to raise their social transformation. The social transformation brings the economic transformation (Anna Hazare, 2011)

Effective watershed management is also considered an appropriate approach for addressing food security and poverty alleviation. Watershed management is being seen as a major component of soil; water and vegetation cover conservation, rural communities' living standard improvement and better environmental conditions. So, watershed management is one of the important topics of this present study. For the development of a country, its natural resources must be conserved, utilized and managed properly. This can be achieved efficiently by considering watershed as a basic workable unit and it has been proved by a number of researchers (David A. Eash 1994).

Watershed management implies rational utilization of land and water resources for optimum and sustained production with the minimum of hazards to natural resources and environment. It requires collection and analysis of a great deal of information on physical relationship of vegetation-soil-water to land management which ensures economic and social progress of a region (Nagarajan.

N.2012).

In India, most watershed projects are implemented with the twin objectives of soil and water conservation and enhancing the live hood of the rural poor (Sharma and Scott, 2005). For these different types of treatment activities are carried out in watershed villages like Ralegansiddi, Hivarebajar, Darewadi, Mudgal, Shirpur, Johad etc. These model watershed villages are the best examples, and they indicate that watershed is not only tool to increase availability of water, but also watershed is the best tool of socio-economic transformation of the society. But today these villages are also facing problems of scarcity of water, so there is a dire need to acquaint people with water management.Result and Discussion

Agricultural Characteristics

1.1 Source of Water for Irrigation

Table No.1

Source of water for irrigation in Hivare Bazar (Per Cent)

Sr. No	Name of model villages	Well		Bore well		Canal		Rain water	
		BW	AW	BW	AW	BW	AW	BW	AW
1	Hivare Bazar	45.5	92.4	01	NA	1.5	NA	52	7.6

Source: Computed by researcher (Sample survey 2015).

Table no. 1 represents Per Cent of source of water for irrigation before and after watershed development. Before watershed development the Per Cent of dependence on well for irrigation was high as compare to other sources. The average Per Cent of well irrigation in the model watershed village is 45.5 Per Cent After watershed development average Per Cent of well irrigation increased up to 92.4 Per Cent in Hivare Bazar. The average Per Cent of bore well irrigation is very less i.e. 01 Per Cent before watershed development, but there is not bore well available after watershed development because of ban on bore wells. As far as canal irrigation is concerned only 1.5 Per Centt find before watershed development and no traditional irrigational method found after watershed development in village Hivare Bazar. has a very less Per Cent of canal irrigation.

The average Per Cent of rain water irrigation before watershed development in the model watershed village was 52 Per Cent but after watershed development it decreased up to 7.6 Per Cent because of availability of other sources of water for irrigation and implementation of watershed development programs. In general, it is seen that after watershed development the main source of water for irrigation is wells.

1.1 Duration of Water Available for Irrigation

Table No.2

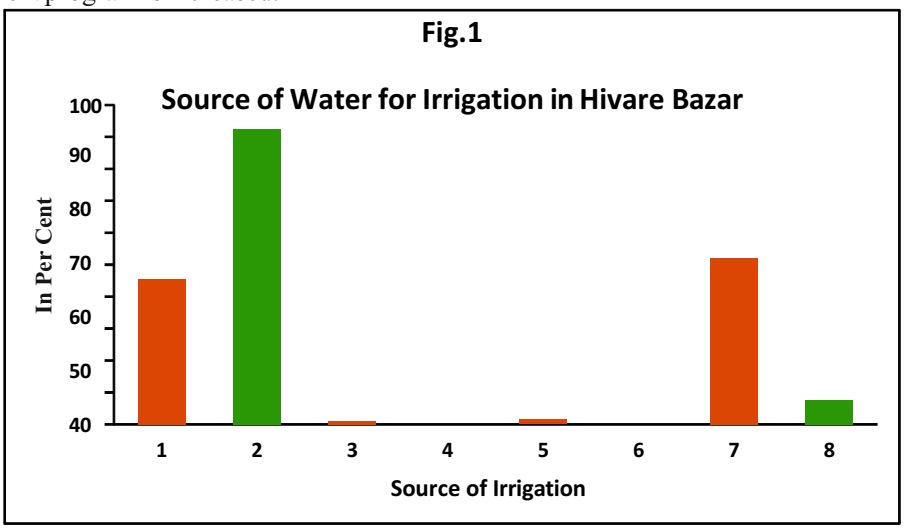
Average availability of water for irrigation in Hivare Bazar.

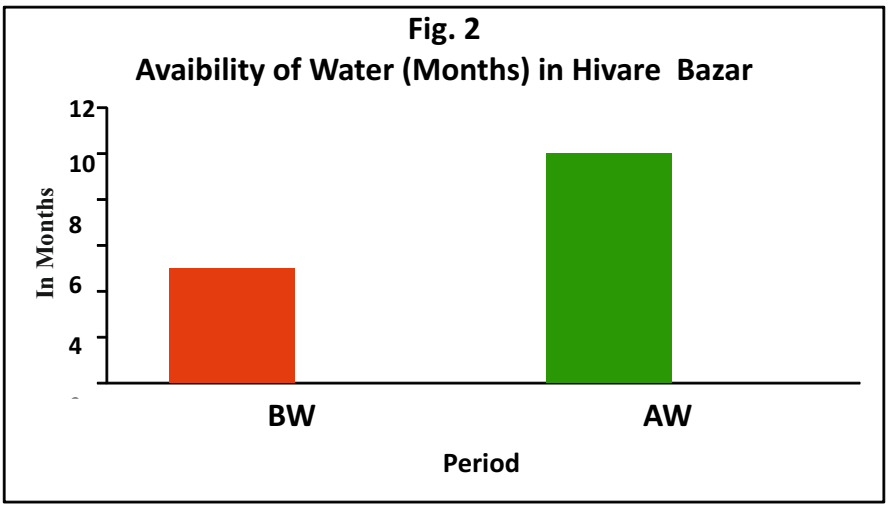
Sr. No	Name of Village ⟹	Hivare Bazar	
		BW	AW
1	Average water Available for irrigation (in months)	05	10

Source: Computed by researcher (Sample survey 2015).

Table no.2 represents average availability of water for irrigation to the land in model watershed villages. According to the above table water available for irrigation in a model watershed village is up to 05 months. in Hivare Bazar 05, months due to less rainfall and lack of water conservation methods. But after successful implementation of watershed development program, it

increased up to double (09 Months) in a year. After watershed development availability of water for irrigation is in Hivare Bazar 10, months. In general, before watershed development availability of water to the agriculture land is 05 months and after successfully implementation of watershed development program is increased.





1.1 Cultivation Method of Agriculture

Table No.3
Agricultural cultivation methods in Hivare Bazar. (Per Cent).

Sr. No	Name of Village	Hivarebajar	
		AW	BW
1	Tractor	90.9	NA
2	Bullock	9.1	100

Source: Computed by researcher (Sample survey 2015).

Table no..3 shows Per Cent of agriculture cultivation methods used in model watershed village. The average Per Cent of using bullock before watershed development was high it is up to 100 Per Cent. But after watershed development it decreased up to 9.1 Per Cent. The Per Cent of using tractor for agriculture cultivation before watershed development in Hivare Bazar is nil in Per Cent households used tractor for a agriculture cultivation. But after watershed development the average Per Cent of using tractor using for agriculture cultivation increased up to 90.9 Per Cent.
In general, it is found that the trend of agriculture cultivation is shifting from bullock to tractor after watershed development.

1.1 Use of Pesticides and Fertilizers

Table No.4

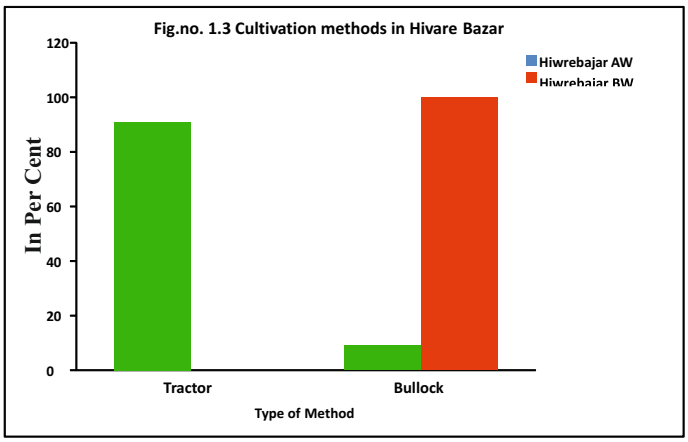
Use of pesticides and fertilizers in agriculture in Hivare Bazar. (Per Cent).

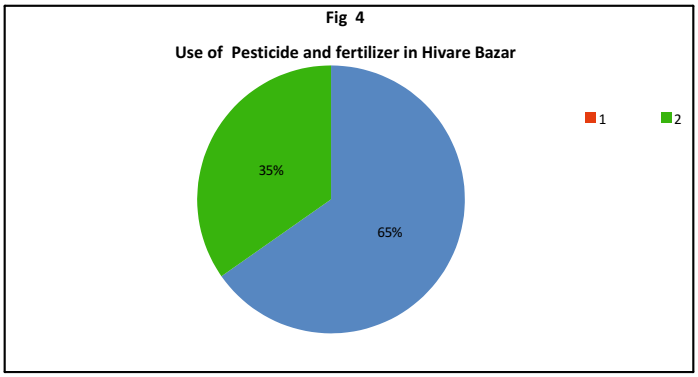
Sr. No	Name of Village	Hivare Bazar	
		AW	BW
1	Use of Pesticide and fertilizer	94	50.01

Source: Computed by researcher (Sample survey 2015).

The table 4 shows the average Per Cent of households using pesticides and fertilizers in agriculture in model watershed villages before and after watershed development. Before watershed development number of household using pesticides and fertilizers in all model watersheds Hivare Bazar was 50.01 Per Cent

However, after watershed development there is increase in the Per Cent of households using pesticides and fertilizers Hivare Bazar 94 Per Cent. It is found that after watershed





1.1 Number of Producing Crops

Table No.5
Average number of crops from agriculture in Hivare Bazar

Sr. No	Name of Village	Hivare Bazar	
		AW	BW
1	Number of crops	02	04

Source: Computed by researcher (Sample survey 2015).

Table no 5 represents number of crops per year before and after watershed development. In Hivare Bazar before watershed development two crops were taken per year but after watershed development four crops are taken.

In general, it is found that numbers of taken crops per year is increased by two in model watershed villages Hivare Bazar.

1.1 Agriculture Productivity

Agriculture is the most vital economic activity of man. It is the main provider of substance for human being in India. The country like India having predominance of agricultural activity along with over population, it is necessary to give more attention to spatial organization of agriculture. Some of the regions agriculturally more developed than other while some are back word. The understanding of existing level of productivity is essential for better planning management and development of the any agricultural region. Many geographers have taken into consideration one or more features of agriculture and tried to regionalize it. In one of such studies (Whittelessy D.1936) has fixed the various agricultural sections of the world on the following conclusions such as crops, animals, fertility of soil processes, sale of agricultural products, mechanization the nature of agricultural settlement etc. He fixed thirteen agricultural regions of the world on the basis of the valuation of conclusions from subjective point of view. Kendall (1939) treated it as mathematical problem and he pointed out that the productivity coefficient is concerned only with the yield per acre but not in any way weight according to the volume of production (Stamp D.L. 1958) applied Kendall's ranking coefficient technique on an international level in order to determine agricultural efficiency of a number of countries as well as some major crops.

Table No. 6
Production of different crops in Hivare Bazar.

Sr. No	Crop In Kg. / Name of Villages	Jawar	Wheat	Bajara	Pulses	Onion
1	Hivare Bazar	399	235	4219	1341	3846

Source: Computed by researcher (Sample survey 2015).

Table No. 7
Ranking according to crop production in Hivare Bazar.

Sr. No.	Name of Villages	Jawar	Wheat	Bajara	Pulses	Onion	Total	Ranking
		Rank	Rank	Rank	Rank	Rank	Rank	Coefficient
1	Hivare Bazar	4	4	2	2	1	13	2.6

Computed by researcher

Table No. 8
Production of different crops in Hivare Bazar after watershed development.

Sr. No	Crops → / Name of Villages ↓	Jawar	Wheat	Bajara	Pulses	Onion
1	**Hivare Bazar**	669	887	6073	3005	6431

Source: Computed by researcher (Sample survey 2015).

Table No. 9
Ranking according to crop production in Hivare Bazar..

Sr.No	Name of Villages	Jawar Rank	Wheat Rank	Bajara Rank	Pulses Rank	Onion Rank	Total of Rank	Ranking Coefficient
1	**Hivare Bazar**	5	5	1	2	1	14	2.8

Computed by researcher

Table No 10
Agriculture productivity index (Kendall's Method) : Hivare Bazar..

Ranking Coefficient	Agriculture Productivity Grade	Name of Village Before W.D.	Name of Village After W.D.
0-1	Very High	-	-
1-2	High	-	-
2-3	Medium	**Hivare Bazar** -	**Hivare Bazar** -
3-4	Low	-	-
4-5	Very Low	-	-

Source: Computed by researcher (Sample survey 2015).

The pattern of agriculture productivity of model villages of south Ahmednagar District has been delineated with the help of Kendall's method. In both period of time Hivare Bazar comes under medium agriculture productivity index.

Findings and Recommendations

Major Findings

1. The proportion of average Per Cent of inherited ownership of land from parents (84.3) is very high and from purchased (15.7) and government (00) is very less. These figures indicate that villagers are able to maintain their standard of living from their own occupation. It is positive sign of development in the village Hivare Bazar. The land possessed is also mentioned, where the Hivare Bazar. In general average Per Centof 0 to 5 acre households land holders are high and followed by above 8 acres and in between 5 to 8 acre. It's beneficial to sustain water resource of the village.
2. Hivare Bazar has high Per Cent of land under irrigation, followed by non-irrigation, forest cover, barren and land under gaothan. Land under forest cover is less in model watershed village. Agriculture land 59.4 Per Cent land is irrigated and only 4.7 Per Cent land is non-irrigated. Due to perennial source of water for irrigation the standard of living and economic condition of peoples are increased.
3. The average Per Cent of rain water irrigation before watershed development in the model watershed village was 52 Per Cent, but after watershed development it decreased up to 7.6 Per Cent because of availability of other sources of water for irrigation and implementation of watershed development programs. In general, it is found that after watershed development the main source of water for irrigation is wells. The average Per Centof bore well irrigation is very less due to ban on bore wells in the all-model watershed villages.
4. In general before watershed development availability of water to the agriculture land is

average 05 months and after successfully implementation of watershed development program it increased up to average 05 months and rises up to 10 months Hivare Bazar.

5. The trend of agriculture cultivation methods is shifting from bullock to tractor after watershed development. It is found that after watershed development the use of pesticides and fertilizers is almost doubled in model watershed village Hivare Bazar.

6. Before watershed development in village produced average 2 crops in a year i.e. Kharip and Rabbi One crop in each, but after successful implementation of watershed programs it increased by two Hivare Bazar.

7. The pattern of agriculture productivity of model village Hivare Bazar has been delineated with the help of Kendall's method. Though watershed development takes places in village Hivare Bazar but in agriculture productivity not shows any change in before and after watershed development. During both period of time Hiware bazar comes under medium agriculture productivity index because in the surveyed year this village receiving very low annual average rainfall as well as production of fodder crops increases as compare to remaining crops.

Contribution to the Society

1. Drinking and domestic water problem will solve in the drought prone area.
2. Peoples should know sustainable use of natural resources.
3. Socio-economic status of project beneficiaries is increased through this work
4. Awareness of demographic, social and economic problems is made in study area.
5. Environmental awareness and sustainable development of the area is possible by the present work.

Recommendations

1. For the increasing income of farmers establishment of agro-based industries and use of modern techniques in field of agriculture are necessary.
2. Strong support and technical training from various government departments, such as horticulture, forestry, irrigation, animal husbandry and NGOs is needed.
3. State, Central government and NGOs should work collaborative and give the technical training to project beneficiaries of watershed management.
4. Participatory watershed management approach is essential for proper development of watershed.

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