Best Practice

WSD

Ridge to Valley Approach in Watershed

Experience of Teliamba Village of AKRSP, Netrang

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INTRODUCTION

The scientific method to treat degraded land under watershed programme—is to begin at the top and come down the slope. The approach intends to conserve every drop of water starting at the ridge and reduce to a considerable extent both the surface run-off volume and the velocity of water. This, in turn, allows better management of water flowing from the ridge to the valley and ensures efficacy, economical stability and durability of soil and water conservation structures downstream.

The guidelines for implementing the watershed development programme (WDP) were originally formulated in 1994 by the Ministry of Rural Development (MoRD). MoRD guideline specified the Ridge to Valley concept for watershed implementation. The principle of the watershed is to treat the area from the highest point to the lowest point.

PARA 6 of Ministry of Rural Development (MoRD) Revised Watershed Guidelines(2001) say, "A watershed is a geo-hydrological unit, which drains into common point. The watershed approach is a project based, ridge to valley approach for in- situ soil and water conservation, afforestation etc".

It is very important that treatment begins at the ridge and progresses downwards. Treating the rest of the watershed area without treating the ridge may damage the water and soil conserving measures and water harvesting structures at downstream. If the area at the ridge is not treated in the beginning of the watershed implementation then it results in reduced efficiency of the physical structures. Treatment plan will not give desirable results because of the exclusion of certain portion of land in the natural watershed.

NEED FOR DOCUMENTATION

The ridge to valley treatment of watershed is one of the most desirable options for ensuring overall development and maximizing the benefits from watershed. However, experiences from the field suggest that watershed is not being implemented following the ridge to valley concept. This is violation of the basic principles of watershed that states, “A watershed is commonly defined as an area in which all water drains to a common point. From a hydrological perspective a watershed is a useful unit of operation and analysis because it facilitates a systems approach to land and water use in interconnected upstream and downstream areas”. Since this basic principle is neglected due to several reasons, the approach in this paper is to orient the implementers and practioners about the successful case of Teliamba village in Sagbara Taluka of Narmada district, Gujarat where Aga Khan Rural Support Programme (AKRSP-I) is implementing watershed programme following the ridge to valley approach.

BACKGROUND OF TELIAMBA VILLAGE

Teliamba is a tribal village located 20 K.M. from Sagbara Taluka of Narmada District. The terrain is hilly with steep elevation and the soil is sandy loam. Teliamba is a hamlet of revenue village Khopi. Total area of Khopi village around 1120 Ha, of which 441.84-hectare area fall under Teliamba watershed. The slope of the private land is approximately 4 to 8% where as the slope of the wasteland and forestland is 15 to 25%. The area receives annual average rainfall of 1150mm. Before the watershed implementation there were many small streams that originated in the area ***during the monsoon*** and flowed downward unchecked along the steep slope causing widespread soil erosion. The flowing water had caused severe soil erosion and at places it had causes gully erosion ***upto a depth of 6-7feet***. This process resulted in depletion of soil fertility, lower agriculture output and drinking water scarcity. Rain fed agriculture is predominant source of livelihoods in the area. The main crop of the region is cereal such as pigeon pea and cotton in Kharif and to some extent wheat in Rabi. The area under crop was 309 Ha in Kharif and 25 Ha in Rabi before watershed

implementation. Migration out of village for more than 9 months in search of work to nearby cities like Surat was widespread due unavailability of work within the village.

INTRODUCING THE PRACTICE

AKRSP interventions began in the nearby Kophi village in 1995. Teliamba is a falia (hamlet) of Kophi revenue village. Villagers from Teliamba came to know that AKRSP (I) staff regularly visits Kophi village and conduct meetings on importance of soil and water conservation. In Kophi village watershed committee was formed and contour bunds were constructed to check soil erosion and stop the unchecked flow of rainwater down the steep slopes. The success of the Kophi village created interest in the villagers of Teliamba and they requested AKRSP (I) to carry out watershed activities in their village. AKRSP (I) initiated the process by jointly organising monthly meetings alternatively at Kophi and Teliamba villages. Six watershed committee members from Teliamba and five watershed committee memebers from Kophi attended these monthly meetings. Since Kophi revenue village area was more than 1120 hectare so AKRSP decided to take up two projects one at Khophi and another at Teliamba. After four monthly meetings, villagers from Teliamba decided to organise their own meeting at Teliamba rather than having joint meetings with Kophi village. Initially for six to seven months AKRSP (I) organised monthly meeting with the objective of sensitizing the villagers about the importance of village institutions and participatory approach of watershed development.

The villagers started participating in the monthly meetings and expressed their needs and expectations from the watershed project. AKRSP (I) started physical work with the Entry Point Activities (EPA) in the year 1995-96. As a part of EPA three hand pumps and a tank was constructed to mitigate drinking water needs of the village. AKRSP (I) then informed the villagers that District Rural Development Agency (DRDA), Bharuch has sanctioned the watershed project for the Teiamba village and villagers have to work together to make programme

successful. After the initial meeting village level meetings were held, here in PRA exercises were conducted and based on the PRA with feedbacks from villager's watershed development plan was formulated. Thereafter villagers formed social and resource map of the area and conducted joint transect walk to validate the depictions in the map.

Though in the watershed development plan it was decided what activity to do and accordingly sites were selected. However, in the first year of the project farmers were not convinced to construct farm bunds in their own field. In the first year of the project bunds were constructed in the field of those farmers who were forthcoming and had access to stones. But all the farmers in the ridge area were not ready to treat their fields. The concept of treating at the top in the beginning of the watershed was not followed. Soil and water conservation work started sporadically and spread at several areas not necessarily at ridge area of the watershed. The flowing water had caused severe soil erosion and at places it had causes gully erosion ***upto a depth of 6-7feet*** and they had to be plugged. In 1997 seven gully plugs were constructed as few farmers showed interest, as very few villagers had exposure to the benefits of successful watersheds outside Netrang. This year there was heavy rainfall and water flowed with great force from the top, as there were few treatments done at the ridge. The force of water was such that three out of seven gully plugs broke.

The experience of the first year was eye opener for the villagers. They realised that unless the treatments are done at the top, the water will flow unabated and hence whatever work they will construct will be broken. Members of the watershed committee along with the AKRSP (I) staff took up the challenge of convincing the villagers about the need to treat the ridge area initially. The problems of convincing the villagers were difficult because villagers feared that AKRSP or government would encroach upon their lands after constructing the gully plugs.

The other problem was that of topography of the area that was rocky and hard. In AKSP (I) did not allow the use of tractors for excavation works as a result few farmers were ready to take up the trouble. To convince the farmers, youths of the village lead by Extension Volunteers (EV) decided to work on the fields of the farmers to help them in physical work. Extension Volunteers are villagers selected by the village organisations trained by AKRSP (I) in specific subjects and they work with the AKRSP (I) to implement the watershed project. However, this also did not bring the desired result as farmers were not ready to cooperate and dominant farmers demanded that works should be taken up in their land first even though it did not fall in the ridge area. In 1996-97 farmers contributed 10% for the construction made on their field.

In the second year i.e. 1997-1998, AKRSP (I) asked villagers to contribute more i.e. from 10% to 50% for the watershed treatments in private lands which was flatly refused. This also became a demotivating factor for the farmers to take up the watershed activities. AKRSP (I) wanted to treat from the ridge area but it was finding it difficult to convince the farmers at the ridge to initiate the process. The farmers who were ready ware scattered along the drainage line and AKRSP (I) wanted to treat the lands in scientific way but in vein.

AKRSP (I) soon understood that it was difficult to convince the villagers about the ridge to valley treatment of watershed along with contribution from farmers. To resolve the difficult situation AKRSP (I) thought of experimenting with the tested process of exposure visits to successful watershed. Farmers of Teliamba were taken to AKRSP (I) successful watersheds where villagers were voluntarily contributing and following the ridge to valley approach for watershed. In 1998 farmers of Teliamba village were taken to Ralegaon Siddhi watershed village. Farmers were briefed about the programme and they had a first hand experience in understanding how the ridge to valley approach of watershed treatment helped in conserving soil and water at every point and contributing to the overall development of the village economy.

After returning back from Ralegaon Siddhi, AKRSP (I) organised a meeting of the villagers. Villagers who were taken on exposure visit explained to their fellow villagers about the concept of watershed as followed at Ralegaon. They also explained the importance of village institutions and concept of ridge to valley approach in watershed development. They said that Ralegaon is the live example of villagers working together and cooperating among them to ensure that all ripe the benefit from the watershed programme.

Villagers understood that main reason for the watershed programme not succeeding in their area was that they were not following the scientific method for watershed and they lacked cooperation among themselves. Villagers decided to work together and cooperate with the watershed committee and AKRSP (I) staff in reworking the watershed treatment plans and give physical and financial contribution for watershed development programme.

THE APPROACH

Terrain of the Teliamba watershed is undulated and slope is very steep. The area faces the acute problem of soil erosion due to unchecked flow of running water down the steep slopes. Agriculture and common land has been highly degraded due to the soil erosion and this has lead to the decrease in the agriculture productivity. The problem of the area demanded that measures for soil and water conservation to be taken on the priority basis. Therefore it was decided that in agriculture land, contours bunds to be constructed for in-situ moisture conservation and in gully plugs to check gully erosion to be taken on major scale. The plantation activities and trenches to be done on common land. Villagers started work in the Teliamaba by doing construction work on drainage line. Villagers constructed contour bunding and gully plugging at right angle to the flow of the stream.

Contour bund is stone or earthen walls built across a slope (along) the contours to act as a barrier to runoff called contour bunds. These are suitable for shallow slopes (2-5 percent) and are frequently used in conjunction with contour plantations. Contour bunds help in reducing soil erosion and increasing water retention capacity of soil. (Khanna, 1997)

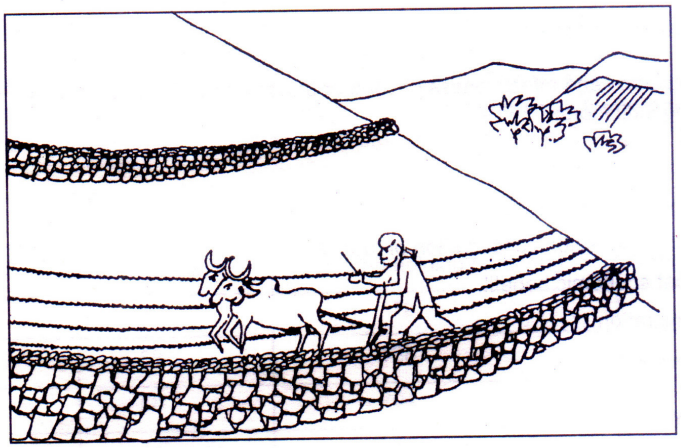


Fig 1: Contour Bund

Gully plugs can be defined as stones placed across gullies or valleys, so as to capture nutrients, silt, and moisture. Stones are often embedded into the upper surface of spillway aprons and wells to provide support to the next layer. The principle is to capture runoff from broad catchments area thus transferring low rainfall into utilizable soil moisture, and to prevent soil erosion. Slowing of the flow of water helps in settling down organically rich soil. A well maintained gully plug creates a flat, fertile and moist field, where high value crops and trees can be grown. (Khanna, 1997)

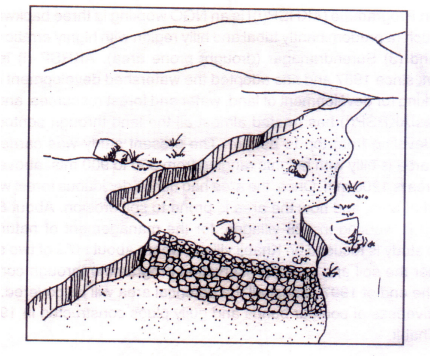


Fig 2: Gully Plug

One of the approaches that were unique was the ***Block Approach*** of dividing the entire watershed in several blocks based on water outlets. Farmers of each block treated their own block from ridge to valley and considered it as small watershed. The block approach was adopted to concentrate more on work to control flow of water on small streams rather than on land leveling and other treatment generating private benefits.

Summary of treatment work at Teliamba watershed

Activity	**Treatment in Ha.**
Contour Bund	371.1
Gully Plug	67.4
Nursery	3.1
Farm Forestry	3.5
Horticulture	107

AKRSP (I) emphasised that all the activities under the watershed programme should be implemented through village institutions with active participation of all stakeholders in planning, implementation and monitoring of the programme. AKRSP also stressed on capacity building of the village institutions and its functionaries so that they can themselves play an important role in the watershed implementation. This process of involving stakeholders and their capacity building played an important role in making the villagers understand the concept of ridge to valley approach and hence ensured the success of the programme.

OPPERATIONALISING THE APPROACH

AKRSP approach was to form village institutions and then select Extension Volunteer (EV). Villagers themselves selected 3 EV's who were given training about watershed and its technicalities. AKRSP (I) realised that EV serves as the vital link between the villagers and Project Implementing Agency (PIA) and hence EV's needs proper orientation about the programme and as well as technical training for proper implementation. EV's were given three days orientation

training on how to implement watershed programme. In the first two days of the orientation programme EV's were taught about the watershed concept, various treatment measures of watershed development, and its design and dimension and implementation procedure. In the third day, EV's had a practical orientation in the field where they themselves supervised the construction of contour bunds, gully plugs and other soil-water conservation measures. EV's were also given orientation on how to convince the beneficiaries about the benefits of watershed and how to resolve the queries of stakeholders.

EV's after receiving the training organised a meeting in village with support from watershed committee and AKRSP (I) staff. In this meeting villagers were again given clarification about the objectives and expected outputs of the watershed programme. Participatory Rural Appraisal (PRA) was done with the villagers. The resource map was again drawn and treatment plan prepared. The meeting also formulated some basic rules so that ridge to valley concept can be implemented in the watershed programme.

RULES FOR WATERSHED IMPLEMENTATION AT TELIAMBA VILLAGE

1. Villagers decided that the watershed treatment work would start at the ridge at the beginning.
2. Block Approach for treatment of watershed to be followed wherein each micro watershed will be divided into small blocks on the basis of water outlet and treated from ridge to valley.
3. Farmers at the lower ridges will work in the land treatment of farmers at the farms of those who are at upper ridges.
4. Farmers at the lower ridges should not complain why their farms are not being treated at the beginning.
5. The treatment of the land will progress from top to bottom and farmers of the upper ridges will also work on the farms in the lower ridges when the treatment work starts there.

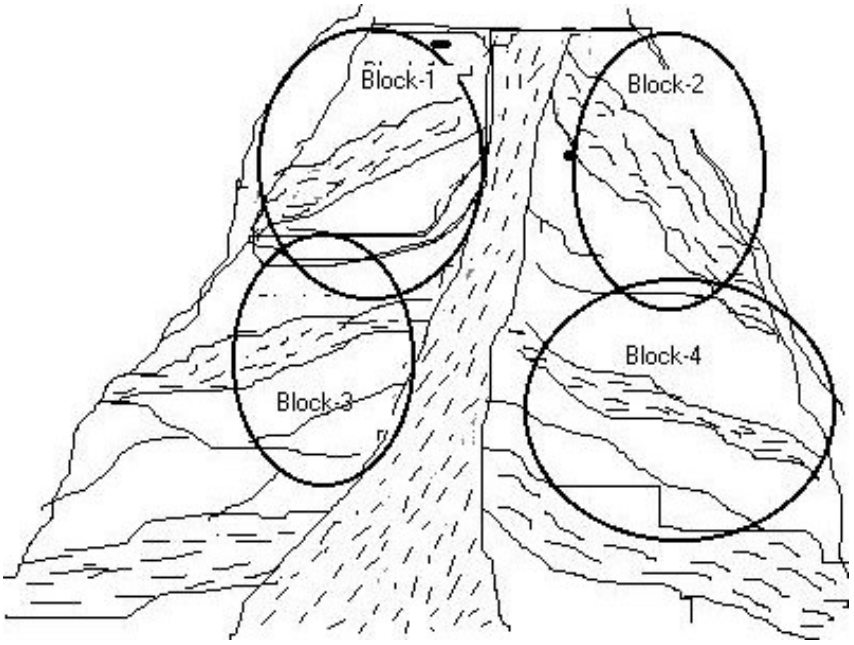
6. They also decided that each year first the maintenance of damaged structures will take place in the beginning and then subsequently new treatment work will be taken up.
7. Beneficiaries have to share 50% of the cost incurred on treatment activities of contour bunds and gully plugs as contribution for the watershed programme.

FACTORS THAT ENSURED RIDGE TO VALLEY APPROACH

1. **Learning from failures:** When AKRSP (I) started work at Teliamba there were very few villagers that were interested in the programme. Though AKRSP (I) tried to make these villagers understand about the ridge to valley concept of treatment, there were few takers for this idea in Teliamba. AKRSP (I) realised that it was futile to pressurize the villagers to accept the concept and it allowed the villagers to continue with the treatment event though it was against the scientific approach of watershed treatment. AKRSP (I) staff could foresee the consequences of such approach but it wanted the villagers to learn from their mistakes. After the heavy rains when 50% of the structures were washed away and crops damaged then only villagers realised the importance of ridge to valley approach for treatment. Villagers understood their mistakes and agreed to accept the scientific method of watershed treatment to make the programme successful.

2. **Exposure visits:** In the second year 1998, AKRSP (I) decided to take the villagers on exposure visit to Ralegaon Siddhi and other successful watershed. The objectives of these exposure visits were to make the villagers understand about the reasons that have contributed in making these watersheds successful. The exposure visit served their purpose and helped in sensitizing the villagers about the concept of watershed. The exposure visit also acted as a catalyst in uniting the villagers together and working a new plan for watershed implementation at Teliamba village.

3. **Block Approach:** This approach of watershed treatment requires that a micro watershed be divided into several blocks depending upon flow of stream in that block. Each block has separate watershed committee and they look after treatment of that block. One representative from each block is part of the village watershed committee. Farmers of this block consider each block as a separate watershed unit and they treat it from ridge to valley. The benefit of this approach is that it facilitates greater cooperation among the farmers because all of them live together as a part of smaller unit. In this approach they don't need to go to the fields of farmers away from their blocks and hence there is less chance of conflict of interests. Within each block, farmers work in the field of other farmers when watershed treatment work is in progress. Block approach also facilitates treatment at different sections of the watershed at the same time. Since this approach involves checking the flow of streams within the block from ridge to valley mainly through gully plugging and contour bunding there are less chance of structures being damaged. Block approach greatly contributed in making the ridge to valley approach to succeed and checking soil and water erosion.



4. **Training and capacity building of watershed committee members:** AKRSP (I) had ensured in the initial stages of the project that project implementers specially watershed committee members and beneficiaries get regular feedback and training about the watershed programme. As a part of this approach watershed committee members have been given extensive training on concepts of watershed that included social as well as technical attributes. They were also given training to sensitize them about equity and gender concerns in watershed, participatory approaches, leadership development, institutional building, book keeping and repair and maintenance of the structures.

5. **Role of Extension Volunteers (EVs):** Extension volunteer have direct interface with villagers and his role was to convince the villagers to adopt the right practices to make the watershed programme successful. EVs are part of the village community and villagers accept his idea more eagerly. EVs being from the same village understands the problems of the village in depth and most of his solutions are though traditional methods following the local parameters but very effectively meets the technical criteria's to make watershed programme successful. The role of the EV was very critical in persuading the village to adopt the concept of ridge to valley approach in Teliamba village. AKRSP (I) through its experiences in watershed implementation had understood the important role of the EV and accordingly EV had been given proper orientation training on watershed implementation.

6. **AKRSP (I) role as facilitator:** The role of AKRSP (I) at Teliamba was more of a facilitator than that of hardcore implementer. AKRSP (I) concentrated on enabling the villagers to become the managers of their natural resource base. AKRSP (I) staff paid regular visit to Teliamaba village, discussed with them their problems and disputes and helped the villagers to resolve their disputes themselves. It facilitated the approach of

letting the villagers learn themselves and AKRSP (I) constantly provided them training and orientation. It took the villagers on exposure visits and let them discuss what were the causes that made the other watersheds to succeed and asked the villagers to devise ways to make the watershed programme at Teliamba achieve its set objectives. This participatory approach helped in building confidence in the villagers and developed a sense of professionalism through agreement and disagreement to arrive at a consensus for overall development of village.

7. **Regular Monitoring**: Monitoring of the implementation is regular process. Monitoring is carried out with the objective to ensure quality and sustainability of the structures created under the project. EV along with the AKRSP staff visits the sites once the farmer has demanded it. Thereafter a technical feasibility is found out and based on that layout and dimension of the treatment is determined. Farmer was oriented about the layout of the bunds; borrow pits and construction quality parameters which are- layout of bund, dimension, barm between borrow pit and bund, top level of bund and provision of outlet. Representatives from WC and AKRSP technical staff regularly visited the sites and randomly monitored the quality of the work carried under the programme. Monitoring had also helped in ensuring all the activities planned to ensure ridge to valley approach is systematically followed. The findings from the monitoring exercises are discussed in watershed committee meetings and based on the quality of the treatment the further plans are finalized.

OUTCOME OF RIDGE TO VALLEY APPROACH AT TELIAMABA

- **Treatment of forestland:** before the commencement of the project forestland that was on the upper ridges was totally degraded with no green cover. The effect of non-treatment of forestland in the ridge was of concern and was creating problem for maintenance of the structures constructed on the downstream as a part of watershed treatment. AKRSP (I) had sought permission from forest department for treatment of forestland but forest department declined permission. Therefore AKRSP (I) started work without treating the forestland in violation of the basic principle of ridge to valley concept. . Villages initiated protection of forest area through social fencing. Through the protection, degraded forest was regenerated with local tree species. The treatment work slowly started giving benefits and soil and water erosion was checked to a large extent, however structure needed lot of maintenance. Seeing the benefits in reality, the forest department acknowledged the role of treatment of forestland at the ridge and they appreciated the work carried out by watershed association facilitated by AKRSP (I). Forest department then gave permission to watershed association to treat the forestland by planting tree and dig contour trenches. This had a positive impact on downstream and the regular maintenance of structures was reduced.

- **Sustainability of the structures (low maintenance**): The watershed approach through ridge to valley treatment has contributed significantly towards ensuring sustainability of the structures. The structures that were damaged due to unchecked flow of water are not being damaged. The gully plugs and contour bunds has considerably checked the flow of water and soil at different stages and hence helped in reducing the damage and increased sustainability of the structures.

- **Role of village youth:** The villagers realised the importance of maintenance and village youths played an active role in making the programme successful. The contour bunds and gully plugs got damaged due to heavy rains in 1997 and they required maintenance. However farmers being busy with their work did not take up the repairing work. EV motivated the village youths and they became sensitive about the importance of repair and maintenance for sustainability of the structures. 15 youths participated in the repair work in their block along with farmers whose earthen structures were damaged. They were able to repair about 20 structures in a day. The work carried out by the youths was discussed in the watershed association meeting and villagers realised that youths have done a good work even though they did not have any direct stake in the watershed programme. The villagers were motivated by the work of youths and then they themselves started taking care of the structures in their own field. Villagers repaired and maintained about 55 structures in their field and they have committed of giving contribution whenever there is a need for maintenance.

- **Sustainability of Village institution**: Village institutions play a critical role in making watershed programme successful. Village institutions like watershed association, watershed committees have been active at Teliamba. The main reason for this is that villagers have realised that the structures will result in added benefits through soil and water conservation. Therefore farmers are ready to take up the maintenance of the work and hence watershed committee is working to meet the set objectives.

- **Increase in Crop productivity, area and season:** The major impact of the ridge to valley approach in watershed at Teliamba has been conservation of soil and retention of the soil moisture within the field. Teliamba village that was dependent on substantive agriculture and was

taking crops mainly in Kharif has shifted to growing cash crops like pigeon pea and cotton. Now villagers can take up crop in Rabi season also due to more availability of water in the wells for a longer period. Even some of the villagers have started water intensive crops like paddy that was a not heard before at Teliamba.

- **Increase in irrigated area (adequate ground water availability):** In Teliamba village the farmers use to cultivate only a portion of their land in Kharif and other they use to leave fallow due to lack of irrigation. In most of the cases they were growing rain fed crop and very much depended on good monsoon. The watershed helped these farmers by increase in water table in their wells as a result were able to get support irrigation that they utilised for irrigating the lands which they had earlier left fallow. Farmers have reported that water table has risen by 3-4 feet after watershed and water is available for 9 months. Watershed helped in checking the soil erosion as a result the potential for irrigation increased due to reduction of slope. The area under Kharif has increased from 308 Ha before watershed implementation to 358 Ha after watershed. The area under Rabi which was 25 Ha. Before watershed has increased to 35 Ha. After watershed implementation. There are cases where farmers cultivating only one fifth of his land due to lack of irrigation but watershed helped in bringing his whole land under irrigation and increased his crop yield.

- **Impact on Livelihoods:** The watershed had a positive impact on the livelihoods of the villagers at Teliamba. Villagers faced acute drinking water shortage for 6 months and the rest of the period they were depended on tankers that use to supply drinking water. Now the villagers have been able get drinking water 9 moths from wells within the village. Drinking water problems which mainly was due to lack of infrastructures therefore to make regular availability of water for drinking purpose both for human and animal Submersible pump set has been put on wells and

water tanks have been constructed. Pipelines were laid and stand post were constructed for easy availability drinking water.

Other benefit from the programme was that it created employment opportunities within the village and helped in reducing out migration. The increased agricultural activity within the village in generating the demand for agriculture labour and this had a positive impact on the livelihood of landless villagers. Landless who use to migrate for 9 months at a stretch are now migrating for a maximum period of 5 months.

Case of Kanthibhai Hunta of Teliamba

Kanthibhai Hunta is a marginal farmer who lives in Teliamba village. In the year 1997 before the watershed treatment he was struggling to meet his daily earning. His family comprises of his four children and his life. He was using only portion of his land and upto 5 times of his land was left barren as there was severe soil erosion and land has undulated. He was growing crop in Kharif only which was enough to provide food for 2months. He use to migrate to Surat for 10 months. The situation at Teliamba was such that no work was available within the village and most of the families use to migrate. He use to grow crops by taking loans and production was very low and as result he had to buy crops for 11 months. Husband and wife use to work as daily wage casual labors and they were earning Rs30 per day. The family was earning Rs.900 approximately each month. The family lived at slums of Surat and use to eat *Jowar na rotla and mirchi* and they use to rarely eat vegetables using oil. Kanthibhai was not even called for social functions within the village, as he was not able to pay for the gifts.

In 1998 under the watershed programme he constructed 2 gully plugs and one contour bund in his field. This helped in checking the soil erosion and moisture retention. The well that he constructed under million well schemes was generally dry after monsoon but the gully plugs and contour bunds helped in retaining the moisture and water table increased by 1.5 feet and depth in his field was considerably filled leading to the increase in production. This year he showed groundnut in 1 acre of his land resulting in production of 13 quintal. He earned a profit of around Rs. 10,000. Seeing the benefits of watershed treatment in Kanthibhai's field, his brother also got motivated and he also constructed contour bund in his field. Kanthibhai's brother field was in upper ridge i.e. at a height from Kanthibhai's field and this created added benefit for Kanthibhai and in next year the water in his wells rose by 4-5 feet.

The next year in 1999 he increased the height of his bund by 3 feet. With the rise of water table in the well, Kanthibhai cultivated wheat along with groundnut. He again cultivated groundnuts and got a production of 13 quintal and this year he also cultivated wheat which fetched him production of 30 quintal. This year he earned a profit of Rs.10,000 from Groundnut and Rs 12,000 from wheat. This year his total income from agriculture was Rs.22,000 but still he use to migrate for 3-4 months.

The following year in 2000 for the first time in his life he was able to cultivate paddy. The moisture in the field has increased to large extent and there was considerable water retained and hence Kanthibhai took the courage to grow paddy. In the following 2 years he could cultivate paddy in 1.5 acre of his land and the production was 22 quintals and in the other areas he could grow wheat and groundnut. This year he earned a profit of Rs.5000 from paddy apart from Rs.22, 000 which he earned previous year by growing wheat and groundnut. He was able to grow vegetables and for the first time he did not migrate.

The very next year in 2001, Kanthibhai divided his field into several sections and took multiple crops. He cultivated cotton, wheat, groundnut, castor and paddy. He cultivated paddy where there was maximum moisture in the field and other crops were sown in between. He also planted 11 mango saplings at the edge of his field and they also contributed in water retention.

Impact

Kanthibhai described the benefits of the watershed as bringing about complete change in the lifestyle. He says that now he can afford have 3 times meal with vegetables. As it is evident from the above data that he could barely earn 900 per month by working as casual labour and he was not earning any profit from agriculture before watershed implementation. However after watershed implementation he is approximately earning Rs.2000 per month which shows that his income has more than doubled. The family doesn't migrate and nor it has to take loans from moneylenders to grow crops. Instead Kanthibhai uses the profit from his agriculture by selling off cash crops to buy hybrid seeds, spends in pesticides and fertilisers to maximize the crop production. Now the family is invited for the social function within the village and they spend upto Rs.2000 per year on social events. The family is able to visit doctor for medicine when they are sick which was rarity around 5 years back. Kanthibhai says that watershed programme has helped to achieve many of his aspirations and now he dreams of constructing a pucca house and he believes that he will be able to achieve his dream very soon.

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