# Natural Resources Management for Sustainable Development in Western India

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# Constraints Faced by Farmers in Soil and Water Conservation Programme for Watershed Development

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Our country is facing serious environment problems due to urbanization as well as deforestation in rural areas. The rural people cut down the forests tremendously for their own consumption. By cutting down the forests the environmental imbalance is created and the water level of the area also decreases. This leads to the agricultural land converted in barren land due to lack of water and environmental hazards. Therefore, to increase the agricultural production, the soil and water conservation is at most required. Hence, the local people in the rural areas should participate in conserving the natural resources like soil and water conservation for re-converting the barren land into the productive land. Since soil and water are the natural resources essential for survival people should realize the importance of conserving the soil and water. This requires participation of people at all levels of soil and water conservation programmes.

Watershed development concept has been taken up by the Govt. of India through various agricultural development programmes mostly in arid and semi arid areas for sustainable agricultural production. The important watershed development programmes launched by the Govt. of India were Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), National Watershed Development Programme for Rainfed Areas (NWDPRA) and Integrated Wasteland Development Project (IWDP). It is evident that the watershed development programmes have increased agricultural production by conserving natural resources. However, Constraints will be there in implementing the programme. The constraints faced by farmers developmental programme in general and watershed development in particular may be grouped as: (i) economical, (ii) technological, (iii) input availability and (iv) situational constraints. Considering this, the present study was taken up with the main objective to analyze interrelationship between male and female beneficiary respondents and the problems faced by them during the execution of Antisar watershed development programme in Gujarat state.

## Materials and Methods

The study was conducted during 1998–2001 in the Integrated Wasteland Development Project (IWDP), Antisar, financed by the Ministry of Rural Area and Employment, Govt. of India, and implemented by the Central Soil and Water Conservation Research and Training Institute, Research Centre, Vasad. The Antisar watershed is spread over 812 hectares. Out of which 736 hectares belong to individual farmers and 76 hectares was owned by Panchayat/ Government. The farmers and farm-women who possessed land in the Antisar watershed as well as membership of Antisar Watershed Development Society were selected as the respondents for the study. Therefore, 284 male farmers and 108 female farmers of Antisar watershed area were considered as the sample for the study. Antisar Jalstrav Vikas Samiti (ANJVIS) was formed and registered with Assistant Charity Commissioner, Nadiad on 15.10.1998 (Registration No. GUJ/1483/Kheda). A watershed executive committee was constituted through election out of the members of the society for looking after, execution and implementation of all type of works carried out in the watershed. A chairman was also elected out of the executive committee members.

A structured schedule was developed for collecting data to assess the constraints faced by farmers during Antisar watershed development programme. Spearman ranks coefficient of correlation $\rho^{(rho)}$ was used to compute the correlation between ranks assigned by male and female farmers towards constraints faced by them during development of Antisar watershed in adopting soil and water conservation practices. To compute the spearman rank order coefficient of correlation, the following simple formula was used (Best & Kahn, 1999).

$$\rho = 1 - \frac{6\sum D^2}{N\left(N^2 - 1\right)}$$

where, $D$ = The difference between paired ranks
$N$ = Number of paired ranks.

## Results and Discussion

### *Constraints faced by the Male Respondents*

The data of the Table 1 revealed that the majority of the male respondents faced the constraints during Antisar watershed development programme. The important constraints faced by the male respondents were lack of finance, high cost involved in adoption of technology, shortage of labour in watershed area, lack of knowledge about watershed management practices, inadequate transport facilities and lack of cooperation of people.

### *Constraints faced by the Female Respondents*

The data of Table 2 revealed that majority of the female respondents also faced the constraints during Antisar watershed development programme. The important constraints faced by them were lack of finance, shortage of labour in

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watershed, high cost involved in adoption of technology, lack of knowledge about watershed management practices, lack of cooperation of people and inadequate transport facilities The above findings may lead us to conclude that due attention and importance needs to be given to take care of the constraints faced by farmers. A due priority should be decided for each of them so that more crucial constraints may be resolved quickly, to prevent damage of any kind to the programme and also to ensure its smooth function.

**Table 1.** Constraints faced by the male respondents in Antisar watershed (N = 284)

| Sr. No. | Constraints | Percentage | Rank |
|---|---|---|---|
| | **(A) Economical Constraints** | | |
| 1. | Lack of finance | 86.26 | I |
| 2. | High cost involved in adoption of technology | 84.50 | II |
| 3. | Lack of marketing facilities | 50.00 | XI |
| | **(B) Technological Constraints** | | |
| 4. | Lack of knowledge about watershed management practices | 65.49 | IV |
| 5. | Complexity of technology | 59.15 | VII |
| 6. | Lack of technical guidance | 55.98 | VIII |
| | **(C) Input Availability Constraints** | | |
| 7. | Shortage of labour in watershed | 75.00 | III |
| 8. | Inadequate transport facilities | 65.14 | V |
| 9. | Inadequate availability of inputs needed | 46.47 | XII |
| | **(D) Situational Constraints** | | |
| 10. | Lack of cooperation of people | 62.32 | VI |
| 11. | Lack of good leadership in the watershed | 55.63 | IX |
| 12. | Political interference | 52.81 | X |
| 13. | Factionalism of population | 40.49 | XIII |

The Spearman ranks coefficient of correlation $\rho^{(rho)}$ was calculated in the study to measure the correlation between the ranks assigned by the male and female respondents to the constraints faced by them during the developmental stages of the Antisar watershed project. The Spearman ranks coefficient of correlation was calculated as 0.962, which is significantly correlated. This means the problems faced by both the male and female respondents are on most grounds similar and identical.

Such problems include that farmers of Antisar watershed face shortage of money for adoption of costly SWC structures. The majority of rural male and female farmers have land holdings and cultivation as their main occupation. But there was non-availability of landless labourers for agriculture occupation. It is also interesting to note that the rich farmers do not like to work in their fields because of their prestige in the society. Apart from these constraints, there was no institution in nearby area to guide the farmers about soil and water conservation technologies.

**Table 2.** Constraints faced by the female respondents in Antisar watershed (N = 108)

| Sr. No. | Constraints | Percentage | Rank |
|---|---|---|---|
| | **(A) Economical Constraints** | | |
| 1. | Lack of finance | 92.59 | I |
| 2. | High cost involved in adoption of technology | 85.18 | III |
| 3. | Lack of marketing facilities | 42.59 | XII |
| | **(B) Technological Constraints** | | |
| 4. | Lack of knowledge about watershed management practices. | 84.25 | IV |
| 5. | Lack of technical guidance. | 63.88 | VIII |
| 6. | Complexity of technology | 61.14 | IX |
| | **(C) Input Availability Constraints** | | |
| 7. | Shortage of labour in watershed | 88.88 | II |
| 8. | Inadequate transport facilities | 70.37 | VI |
| 9. | Inadequate availability of inputs needed | 52.45 | XI |
| | **(D) Situational Constraints** | | |
| 10. | Lack of cooperation of people | 78.70 | V |
| 11. | Lack of good leadership in the watershed | 64.81 | VII |
| 12. | Political interference | 59.61 | X |
| 13. | Factionalism of population | 35.18 | XIII |

## Conclusion

It can be concluded that major constraints faced by the male and female respondents during Antisar watershed development programme were lack of finance, high cost involved in adoption of technology, shortage of labour in watershed area, lack of knowledge about watershed management practices, inadequate transport facilities and lack of cooperation of people. Therefore, to avoid such constraints during the execution of watershed development programme, loan facilities should be provided in rural area to meet the cost involved in adoption of the SWC structures. Farmers should be motivated to do labour work on their own farm. Low cost or no cost technologies should be developed. Skilled oriented formal or informal trainings for target group farmers should be organized to improve upon the awareness among the rural farmers regarding SWC technologies besides exposure visits for farmers to see the results of soil and water conservation technologies must be organized. Farmers should also be motivated to cooperate with each other during the adoption of SWC technologies.

## Reference

Best, J.W. and Kahn, J.V. (1999). *Research in Education*, Seventh Edition, Prentice Hall of India, New Delhi, pp. 305–307.

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