

Utility Of Watershed Management in the study area, Horticulture in ravines, Analysis, of the result useful, Development Approach

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The watershed is a manageable hydrological unit that makes a harmonious use of the prevailing climate, soils, water, locally available material and human resources towards stepping up crop yields. The watershed approach provides the ideal means for integrated development of the complex interrelationship between the watershed resources and population of the region and has opened up new vistas in the improving and stabilizing crop production.

There are twenty watersheds in the study area such as, Sahapura irrigation project, Bajana Nekhra, Dharampura, Deholi, irrigation project, Megh sagar, Kookpur, Narpura

Urmilasagar, Ram sagar, DBR lake, Umreh, Nadroli, Talabshahi, Dhor irrigation project, Basari, Parbati dam, Tarba bund.

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| 1. Sahapura irrigation project | 11. Urmil Sagar |
| 2. Bajana | 12. Ram Sagar |
| 3. Nekhra | 13. DBR Lake |
| 4. Dharampura | 14. Umreh |
| 5. Deholi irrigation project | 15. Nadroli |
| 6. Ondla irrigation project | 16. Talabslahi |
| 7. Beripura | 17. Dhor irrigation project |
| 8. Megh sagar | 18. Baseri |
| 9. Kookpur | 19. Parbati dam |
| 10. Narpura | 20. Tarba bund |

They are all project giving utility for area from different ways, the increased under ground water which is the main source of life. Because ground water levels in some areas are falling at the rate of one meter per year and rising some other areas at the same rate.

Watershed given life for both man and animals, and fertility, beautiness, long life and good structure for the land. The resources properly developed only by adopting the watershed approach. The basic unit of development is a watershed, which is a manageable hydrological unit. In this approach, development is not confined just to agriculture lands alone, but covers the area, starting form the highest point of the area (ridge line) to the outlet of the Nalah or the natural stream.

In terms of resources development, it starts from the most important one, that is, water and then extends to the resources of fule, fodder, live stock and all associate components. By adopting watershed, as a unit different measures are adopted and executed carefully in each of toposequeness according to its capability. Mechanical measures for erosion control usually involve construction of mechanical barriers across the direction of flow

of rain water to restored or retain the runoff and there by reduce the soil and water losses. The important principals to be kept in view while studying mechanical control measures are:

1. Increasing the time of connection of runoff and there by allowing more of it to be absorbed and held by the soil.
2. Intercepting a long slope into several short ones so as to maintain less than a critical velocity for the runoff water.
3. Protection against damage due to excessive runoff.

Grassland management on watershed basis involve a package of practices based on ecological principles and scientific practices. Such package includes closure of the area from drastic influences, removal of unwanted and obnoxious vegetation techniques for moisture conservation, upgrading of herbage quality and yield through H.Y.V. and nutrient- rich grasses, legumes and fodder trees forming a multi-tier system, Proper grazing management practices, conservation and carry over a forage for team periods and arrangements for distribution or availability among the watershed farmers in times of droughts and fodder scarcity.

HORTICULTURE IN RAVINES (SPECIAL UTILITY)

Ber appears to be a drought hardy fruit and can be utilized for the reclamation of vast area under ravines for economic utilization. *Zizyphus nummularia* (wild ber) bushes are found growing in the habitates of ravines near Dhaulpur, Agra, Kota. However, their fruit quality is very poor. To improve the fruit quality budding with improved varieties on this wild ber was done out of several budding varieties tested at Dhaulpur, 'Banarasi' has given the highest yield of quality fruits at six year tree ago. Other promising varieties were 'kark', 'Umaran' and 'Mudia' (Bhushan et al, 1981). One hectare of such ber plantation is estimated to given an income of about Rs. 9,000 per annum.

Various fruit types introduced for proper utilization of ravine lands/ marginal land ber, custard apple, lasoda (cordial mixa), jamun and mulberry, with initial irrigation for establishment and pomegranate guaua, sapata, amola, lemon and sweet aranyes under protective irrigation appeared to be suitable. However, lemon has proved to be Highly remunerative.

RUNOFF AND SOIL LOSS STUDIES IN HORTICULTURE CROPS:

While imposing much or contour drains or both in newly established tea orchard, ootacmund, it was found that mulch or contour drains or both helped considerably in preventing the runoff and soil loss over the control (untreated) where the soil loss and runoff was maximum. (Chinnamani et al, 1975).

Agroforestry is also useful land management system which increases the yield of land combines the production of crops (including tress crops) and forest palnts/ or animals or both simultaneously or sequentially on the same unit of land and applies management practices that are compatible with cultural practices of the local population.

ANALYSIS OF THE RESULTS USEFULL

Despite all precautions in planning and execution, an impact of improved technology in the watershed has not yet caught up. The reasons for this slow pace may be assigned to the various constraints which are natural and characteristics of the ravine regions such as-

Ravine watershed –

The watershed is situated in a remote area from Dhaulpur districts. In future, an operational research project may be selected so as to be easily approachable and also has good demonstration value.

Water Resource-

Mainly water resource for the watershed is rain water and Chambal river which can be obtained in proper quality during summer season.

Area under Agriculture –

The short term benefits derived through limited demonstrations in rain fed and irrigated agriculture in the present case, were only limited to the farmers in whose areas the demonstrations were conducted.

A greater emphasis could be laid now on improving all the agriculture lands.

Topographical Constraints –

Applicability of the technologies developed for the plains and the ravines low altitude to the watershed in relatively high elevations, may have to be modified.

While developing rain fed technology for ravine areas, apart from the use of good seeds and fertilizers, one has to think of early late sown cultivation and crops for mid season corrections. Studies include on date of sowing of rain fed crops like Bajra, Jawar, Arhar, their cultural practices and on the basis of prevailing soil moisture condition, rainfall cessation and ambient temperatures.

Alternative Occupation –

In the ravines area than plain area, agriculture productivity is less, so horticulture or animal husbandry could contribute relatively greater income than more production.

The fuel fodder plantations raised in the area have no doubt, demonstrated beneficial value of such measures but did not by themselves as yet generate any resource of significance. The green grass availability in the region has considerably increased. As a result of such enclosures in small demonstration areas.

Some efforts could be made to enlarge the area in which fodder resources have improved through closure. Introduction of new breeds of cattle with the help of state agencies and management of grasslands for production of quality fodder is definitely an important area which needs greater attention, some grasses, which have the potential for development of cottage industries, can also be introduced.

DEVELOPMENT APPROACH

In remote ravine watersheds, where the masses are uneducated and socioeconomic status is very poor, a more demonstrational approach may not be educate and may also not be the right one. The studies at Dhaulpur have shown that even though people of the area may have been convinced by the good result achieved in the various demonstration plots laid by the institute they may still not venture to adopt the same, perhaps owing to their poverty, low receptiveness and the risky climate of the region. They, therefore, resort to their age old practices, once the demonstrator is out of the watershed, hence the demonstration approach may have to be continued for a longer time or replaced altogether by a different strategy such as 'Saturation approach'

PEOPLE PARTICIPATION

For protection of fuel fodder plantations. People should be convinced in protecting them and in adopting such proven practices like rotational grazing. The idea of 'Social fencing' introduced successfully by our scientists in 'Sukhomajri' and 'Nada' could be tried here also for protection of the fuel fodder plantations and soil conservation work in the watershed the protection of catchment, which will be to their benefit ultimately. Women should be involved in these programmes because they constitute the main working force in the ravines.

EVALUTION

The watershed management is capable of generating benefits, both tangible and intangible, some of which are outlined below :

i. Increase in crop yield

The average crop yield of wheat increased from 8 to 24 a/ha with supplement irrigation. The average yield of maize increased from 5 to 15 a/ha with the production of new variety. The risk due to drought in 1979 was minimum because of proper rain water management. Hence they could save their crop with irrigation and could also get sufficient water for their irrigation to wheat. A third crop of moong was also taken up in some areas.

ii. Water yield

About 50% of the total rainfall can be taken as a broad from for determining the total water yield that can be collected from similar areas 60 % of the stored water can be made available for supplemental irrigation after allowing evaporation and seepage losses and dead storage.

iii. Increase in fodder yield

The fodder yield from the catchment is expected to increase from 5 q to 20q/ ha within 3 or 4 years.

iv. Flood control

While 60% of the total rain water and over 300 tones/ha/year of sediment were going out annually earlier, only limited sediment went out with negligible amount of water after soil conservation measures.

v. Employment value

In this area the labour intensive and as much, is capable of providing and gainful employment to the poor people.

Thus utility of watershed can be seen in this area in every part of life. They give protection for soil, increase ground water, give irrigation facilities, water to tank and they give lovely sight for man. So such areas can be very good tourism place for tourists both country or foregneers.

Soil loss can best be tackled by covering the watershed with vegetation trees, shruds and grasses. The deteriorated area or threatened area is covered with quick growing plant species by deep root long maturing appropriate trees to restore the original condition. In the Chambal ravines planting of sheesham, Khair, aleny with fodder grass 'Dicanthum annulatum' has reduced the peak discharge of runoff from 0.27 m³/ sec. within seven years.

PROPOSED PROGRAMME OF WATERSHED

Besides the continued watershed programmes there are some proposed also because in the study area have great atmosphere and need for such programmes. So by the effort of government will be completed. By these programmes the area will be progress in all type. Because the watershed management programme not only gives water for different uses but also they increased underground water which is the great resources.

CONCLUSION

To present study entitled 'The watershed management and ravines a case study of Dhaulpur district'' was conducted on a typical and full of ravines area in eastern part of Rajasthan in Dhaulpur district in order to achieve optimim output from the resources available or by making minimum investment.

The area was surveyed in order to collect data required for planning and estimates. The total area of the district is 300898 hectares as reported during the year 2006-2007. The area ID divided in to four tehsils including Dhaulpur and the area of the district is rocky. Conditions of the Dhaulpur and Rajakhera tehsil are covered by the Aluminum of Chambal Valley. Masonry stone, kankar bajri, sand stone and lime stone are found in the district and a greate area of the district is covered by Chambal ravines.

On the basis of information collected, the following conservation treatment were designed and proposed according to the need Puertorice terrace, contour vegetative hedge, mechanical measures for erosion control, water harvesting and recycling. Agronomic measures in soil and water conservation, grass and management, conservation forestry. Horticulture, agro forestry, loose stone cheek dams, contour trenches and shihi pastral development. Thus the area can be development by following above patterns.

In order words it can say such types all managements work will become difficult without help of local people. So there is a need of good harmony between government and local people.

In short the watershed is a manageable hydrological unit that makes a harmonious use of the prevailing climate, soil, water, locality, available material and human resources towards stepping up crop yields. In this dissertation it represents case and general studies it is a try towards watershed management and development.

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