Farmers' Perception Towards Adoption of Bamboo in Ravines – A PRA Study

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According to Rogers, "adoption process is the mental process through which an individual passes from hearing about an innovation to final adoption". Adoption is a sequence of thoughts and actions which an individual goes through, before he finally adopts a new idea (Reddy, 1987). Adoption behaviour varies from person to person according to their knowledge and understandings. Some people in rural villages adopt innovations immediately but some people are slow to adopt innovations. Some people accept innovations and put them into practices quickly, while others are slow to put innovations in practice. Adoption of innovations also depends on situation and needs of the ultimate user.

A PRA study was carried on December 2, 2011 in Khorwad village regarding farmers' perception in adoption of bamboo in ravine areas. A Tree Growers' Cooperative Society (TGCS) was formed by farmers of Khorward village to grow bamboo in their fields. Khorward village area was selected purposively in the study because the Khorward village was adopted by Central Soil and Water Conservation Research and Training Institute, Research Centre, Vasad under National Bamboo Mission project for bamboo plantation. The Khorwad watershed is located in Umreth taluka of Anand district of Gujarat state. The Khorwad watershed is comprised of five villages viz.; Khorwad, Navapura, Timaliyapura, Prabhatpura and Waghmarepura. One ravine watershed at Manikpura village, Baha tehsil, Agra (U.P.) was also selected because a study was also initiated

under same National Bamboo Mission project to evaluate the effectiveness of bamboo at CSWCRTI, Research Centre, Chhalsear, Agra (U.P.). Table 1 shows the details of families adopting bamboo in Khorwad watershed.

Table 1 Bamboo adoption by farm families of Khorwad village in Mahi ravines in Anand district of Gujarat

Khorwad Watershed villages	Total No. of families	Number of families adopting bamboo in ravines	Percent of families adopting bamboo
Khorwad	150	25	16.66
Navapura	80	5	6.25
Timaliyapura	20	2	10.00
Prabhatpura	19	3	15.78
Waghmarepura	15	2	13.33
Overall	284	37	13.02

Table 1 revealed that 16.6 percent of families of Khorwad village were adopting bamboo in their fields in Mahi ravines. Followed by 15.78 per cent of Prabhatpura, 13.33 per cent of Waghmarepura, 10 percent of Timaliyapura and only 6.25 percent of Navapura village families were adopting bamboo in their fields in Mahi ravines. The table also revealed that overall only 13.02 percent families of Khorward watershed were adopting bamboo cultivation in their fields in Mahi ravine wastelands to earn income. It was found out that the very less number of farmers were cultivating bamboo in their fields of ravine. It may be due to that the few farmers were having ravine waste lands and they were not interested to grow bamboo on leveled table lands. The farmers may have lack of knowledge of bamboo cultivation in ravine wastelands and they were also unable to protect bamboo plantation from wild life attack in ravines. After seeing the National Bamboo Mission project in Khorwad village, many farmers are now interested to adopt bamboo in their uncultivated waste lands.

Seasonal analysis of bamboo plantation

Seasonal analysis was carried out to identify patterns of peak and low points in various aspects pertaining to bamboo plantation in village environment. Seasonality was analyzed with the aim to have information regarding fluctuations in social, household and agricultural operations in a year.

Table 2 Seasonal analysis of bamboo cultivation activities by farmers of Mahi ravines

Activities	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Land Cleaning				✓	✓							
Pit making					✓							
Termite Treatment						✓						
Plantation						✓	✓					

Irrigation	✓	✓	✓	✓	✓	✓						
Weeding & Cleaning								✓	✓			
Protection of seedlings						✓	✓					
Apply Fertilizers								✓				

The data in table 2 shows the seasonal analysis of bamboo plantation activity by farmers of Mahi ravine area. The farmers were applying irrigation to bamboo seedlings during January to June months of year. The farmers were busy in the month of April and May in cleaning land and digging pits for plantation of bamboo seedlings. In the month of June and July they carried out the operation of planting of bamboo seedlings after termite treatment in the soil of already dugout pits. The farmers were also applying irrigation to bamboo seedlings from the month of August to December. The weeding and cleaning in the bamboo plantation were carried out during the month of August and September. The farmers were also protecting the newly planted seedlings by surrounding them with bushes in the month of June and July. Farmers were also applying fertilizer during the month of August.

Transect walk

Transect walk was carried out across the village in association with group of old and young practicing farmers and villagers for getting first hand information about the topography, settlement pattern, resources and land use pattern of the whole village. In the PRA process, the transect walk is also performed to verify and observe the information and data supplied by the farmers.

Table 3 Transect walk with farmers in Khorwad village area to observe land use pattern in the watershed area

Particular	Upper	Middle	Lower
Soil type	Sandy loom	Sandy loom	Sandy
Slope	2 to 3 %	2 to 3 %	2 to 3 %
Crop	Tobacco, Pearl millet, Paddy	Papaya, Chillies	------
Fruits	Mango, Jamun, Guava, chiku	Grasses	Grasses
Trees	Neem, Babool, Ardusa, Jangle jalebi	Neem, Babool, Kanaj	Akada, Shrubs, Babool, Bamboo
Wild life attack	Low	High	Very high

The soil type in the upper and middle area of ravines were sandy loam and in the lower bed of ravines the soil type was sandy. The slope of the land was 2 to 3 per cent in the Mahi ravines of Khorwad village. The major crops grown by the farmers in the upper side of ravines were Tobacco, Bajra and Paddy and none of crops were taken in middle and lower side of Mahi ravines. Mango, Black berry, Guava and Sapota fruit plants were cultivated on upper side of ravines on table land and in middle side of ravines farmers were cultivating papaya and in lower beds grasses are grown by the farmers. The most favoured trees were Neem, Babul, Ardusa, and Jungle jalebi. In the lower side of ravines the farmers were planting shrub, babul and bamboo. The wild life attack in Mahi ravine area was highest in lower beds of ravine and less on upper side of ravines on table lands (Table 3).

Farmers' preference ranking towards bamboo

Preference ranking was done to know farmers' attitude towards a particular item of interest. This helped in enlisting the choice of the rural community about bamboo cultivation in Mahi ravines. The table 4 shows the preference of farmers towards bamboo adoption in their fields in Mahi ravine areas. It was find out that maximum 33.3 per cent of farmers of Khorwad village desired to adopt bamboo plantation in their fields in Mahi ravine area. 13.3 per cent farmers of Waghmarepura village also preferred to grow bamboo in their fields and only 12.5 per cent of Navapura village also desired to grow bamboo in their fields in ravines to earn income from the ravine lands.

Table 4 Farmers' preference for bamboo adoption in their fields in Mahi ravines

Khorwad Watershed villages	No. of farmers want to adopt bamboo	Area to be covered	Total population	Percent of farmers preferred bamboo adoption
Khorwad	50	42 Acre	150	33.3
Navapura	10	15 Acre	80	12.5
Timaliyapura	Nil	Nil	20	00.0
Prabhatpura	Nil	Nil	19	00.0
Waghmare pura	2	Boundary plantation	15	13.3

Prioritization of problems faced by farmers in adoption of bamboo in Mahi ravines - a matrix analysis

Matrix ranking of preferences was done to priorities the list of choice of crops, tree species, cattle, list of problems and need of the villagers. This exercise attracted large participation from all the sections of the society.

Table 5 Problems faced by farmers in adoption of bamboo in Mahi ravines: a matrix analysis

Problems	Mark	Good variety	Technology	Seedling	Water scarcity	Protection	Money	Termite attack	Wild life attack	Magnitude of problem
Marketing (P1)	------	P2	P3	P4	P5	P6	P7	P8	P9	P1=0, (0.0%)
Good variety (P2)	P2	------	P2	P2	P5	P6	P2	P8	P9	P2=4, (50.0%)
Lack of Technology (P3)	P3	P2	-------	P3	P3	P6	P7	P8	P9	P3=3 (37.5%)
Seedling (P4)	P4	P2	P3	------	P5	P6	P4	P8	P9	P4=2 (25.0%)
Water scarcity (P5)	P5	P5	P3	P5	--------	P6	P5	P8	P9	P5=4 (50.0%)
Lack of Protection (P6)	P6	P6	P6	P6	P6	------	P6	P8	P9	P6=6 (75.0%)
Money (p7)	P7	P2	P7	P4	P5	P6	------	P8	P9	P7=2 (25.0%)
Termite attack (P8)	P8	P8	P8	P8	P8	P8	P8	-----	P9	P8=7 (87.5%)
Wild life attack (P9)	P9	P9	P9	P9	P9	P9	P9	P9	------	P9=8 (100%)

A matrix analysis was also carried out to assess the problem faced by the farmers in adoption of bamboo in their fields in Mahi ravine area. Table 5 reveals that 100 per cent of farmers perceived that wild life attack on bamboo plants is the most dangerous problem. The wild life attack is most important and it causes maximum damage in bamboo plantation in Mahi ravines. The major damage in the bamboo plantation is due to monkey, blue bulls and pigs. 87.5 per cent of farmers also perceived that termite attack on bamboo plantation in Mahi ravine area was also a major problem and hurdle in bamboo cultivation. 75 per cent of farmers were of the opinion that the lack of protection is also a problem in bamboo cultivation. 50 per cent of farmers also considered the non availability of good variety of bamboo and lack of water scarcity as the problems during cultivation of bamboo in ravines. Availability of seedlings (25%) and lack technology (37.5%) was also the problems faced by the farmers during bamboo cultivation. The marketing facility is not a problem in Khorwad watershed area.

Problems faced by farmers in bamboo adoption in Yamuna ravines

A study was carried out in Manikpur village, Baha tehsil of district Agra in UP by CSWCRTI, Research Centre, Chhalesar, Agra (UP) to study the farmers' perception towards adoption of bamboo in Yamuna ravines and also to evaluate the effectiveness of bamboo in conserving soil and water resources.

The local farmers of Manikpura village were skeptical. Indeed, initially there was some difficulty in convincing the villagers besides being hard efforts. For instance, they could never imagine that the bamboo that they so casually grew in

their backyard mainly for their household use could be an effective crop. After the project of bamboo plantation in Yamuna ravines the farmers realized the advantages of bamboo cultivation in Yamuna ravines and they can also increase their income by growing bamboo in ravine wastelands. The farmers of Manikpura village in Agra district also faced some problems in adoption of bamboo in ravines. The problems faced by farmers in bamboo cultivation are listed below.

1. In Yamuna ravines region, below the soil layer there is calcareous layer with kankar nodules, which does not allow root of bamboo plants to enter into the soil and same time soil is also having low nutrients status (NPK), without any measures plants does not survive in this region.
2. In the ravine beds, growth of other plants affects the bamboo plantation (allelopathic effect).
3. Due to dense population of other plants in the ravine bed, wild animals destroy bamboo plants only, particularly bamboo suckers are damaged.
4. Lack of irrigation water in the initial years affect survival rate of bamboo plantation.
5. Quality of the water is also not good in the Yamuna ravines, which also adversely affect growth of bamboo plants.
6. Bamboo plants are very much prone to termite attack in this region.
7. Due to light texture soil, water erosion seriously affects the bamboo plantation in this region.
8. Adverse local climatic condition also affects the growth of bamboo plantation.
9. Rainfall availability is only for very short duration with less amount and affect plantation of bamboo.
10. Lack of awareness and less interest of the community toward the bamboo plantation.
11. Plantation generally not supported by soil and water conservation measures that also affect the growth of bamboo plantation.
12. Traditional and unscientific (destructive) method of felling and harvesting is practiced in existing bamboo plantation.

References

Reddy, AA 1987. Extension Education, published by Sree Lakhmi Press, Baptala (A.P.) PP 278.