

IMPACT OF NWDPPRA ON CROP DIVERSIFICATION IN TRIBAL BELT OF CHHATTISGARH

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The National Watershed Development Programme for Rainfed Areas (NWDPPRA) was launched in 1990-91 in 25 states and two union territories. The objectives of the project were restoration of ecological balance in rainfed areas and sustainable biomass production. It focuses mainly in two point, first, the conservation and up-gradation of natural resources in intergrated manner wirth low cost technology and second, the generating employment opportunities for the poverty stricken rural masses in the rainfed areas through directly involving the farmers and watershed beneficiaries in planning and execution of all project works in the watershed by developing self help group of Mitra Krishak Mandals (Gupta,1998), Farming system approach has been adopted in order to conserve rainwater and top soils with people's participation involving activities like animal husbandry, agro forestry, horticulture, fisheries, sericulture, agro-process- ing etc.

Gariyaband, a tribal block of the district constitutes 21873 tribes population. The NWDPPRA was started in Pairi river basin in 1990-91 that covers the projected arable land of 5148 hectares. The watershed is known as Chhaimasi Nala Watershed. The programme has been completed its first phase. Increasing population pressure and decreasing water availability of rain, it's necessary to assess the impact of programme. Keeping this in view, present study was conducted to assess the proximate impact of programmes on adoption of innovative technology and crop productivity.

METHODOLOGY :

In the eight five-year plan 14 blocks of Raipur district were taken under National Water- shed Development Programme for Rainfed Areas. Among the blocks, the Gariyaband block of district was selected as it had the maximum area (5148 ha.) as well as tribal population under a single watershed (Chhaimasi Nala). All the seven villages under "chhaimasi Nala" watershed were selected for the study of the beneficiaries. As regard the study of the non-beneficiaries, four villages were selected from the adjoining area of watershed. Out of the total, 790 benefited farmers, 10% respondents selected as beneficiaries (80 in number) and 5% of the total ben- efitied farmers were selected as non-beneficiary respondents (40 in number) from the adjoining villages of the watershed. In this way, a total number of 120 respondents were selected by random sampling method.

The impact of any technological development can be assessed in two ways viz. proxi- mate and approximate. The proximate impact is the direct effect of technology on the productivity, while approximate impact is underlying or indirect effect and it is pre conditioned. The direct and indirect impact of the new technology can easily be assessed with the help of the following formula using the pre-NWDPPRA and post-NWDPPRA periods of the project area :

$$I = \frac{X_1 - X_2}{X_2} \times 100$$

Where I is impact of new technology, X_1 is post-NWDPPRA position, X_2 is pre-NWDPPRA position.

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The data were collected through structured interview schedule and appropriate statistical tool were used to analyse the data, for meaningful interpretation.

RESULTS AND DISCUSSION :

The changes in production functions between beneficiary and non-beneficiary respondents during last five years are given in Table 1. The total cropped area was slight increased in both non-beneficiaries and beneficiaries and might be probably due to inclusion of forest and/or uncultivated land under cultivation.

Table 1 : Proximate impact of NWDPRRA on crop diversification and adoption of high yielding varieties of paddy

Heads	Beneficiaries		% change*	Non-beneficiaries		% change*
	1990-91	1996-97		1990-91	1996-97	
Crop diversification (in acre)						
• Kharif						
⇒ Total cropped area	435.70	438.00	0.53	120.20	120.70	0.42
⇒ Paddy	434.70	416.45	-4.20	120.20	120.22	0.02
⇒ Soybean	0.00	2.01	-	0.00	0.00	0.00
⇒ Maize	1.00	2.80	180.00	0.00	0.00	0.00
⇒ Urd	0.00	9.02	-	0.00	0.48	0.00
⇒ Til	0.00	4.03	-	0.00	0.00	0.00
⇒ Arhar	0.00	4.99	-	0.00	0.00	0.00
• Rabi						
⇒ Total cropped area	61.50	197.50	221.14	28.50	52.50	84.21
⇒ Gram	14.00	120.00	757.14	8.50	16.50	94.12
⇒ Wheat	0.00	35.00	-	0.00	0.00	0.00
⇒ Lathyrus	47.50	30.00	-36.84	20.00	36.00	80.00
⇒ Linseed	0.00	6.00	-	0.00	0.00	0.00
⇒ Pea	0.00	4.99	-	0.00	0.00	0.00
• Summer						
⇒ Total cropped area	0.00	34.00	-	0.00	4.00	-
⇒ Paddy	0.00	34.00	-	0.00	4.00	-
• Adoption of HYV (no.)						
⇒ Nil	50.00 (62.50)	28.00 (35.00)	-78.57	22.00 (55.00)	16.00 (40.00)	-37.50
⇒ > 50% area	15.00 (18.75)	19.00 (23.75)	26.67	7.00 (17.50)	15.00 (37.50)	114.29
⇒ < 50% area	15.50 (18.75)	33.00 (41.25)	120.00	11.00 (13.75)	9.00 (11.25)	-18.18

* Percentage change in 1997 over 1991 (Figure in parenthesis indicates the number of respondents in percent)

The finding reflects heightening in, gram, wheat, linseed and pea crop in the watershed area. The area under wheat, linseed and pea crop increased from nil (1990-91) to 35, 6 and 4.99 acres, respectively in 1996-97. Where, among non-beneficiary respondents these crops have not been yet introduced. Similarly, the area of lathyrus crop in the beneficiary respondents has decreased up to -36.84%, because the demonstration of chickpea cultivation technology, resulting in increase of area by 757.14%, whereas, among non-beneficiary respondents it increase to only 94.12%. Comparatively, it was observed that the over all cultivated area in Rabi was increased by 221.14% among beneficiary respondents, while there was only 84.21% in the non-beneficiary respondents. The similar findings also reported by Khalache (1994). Also there was drastic change reported by beneficiary respondents in the summer season.

The study revealed that, 120% change in adoption of HYV was reported by beneficiary respondents while, there was negative change reported by the non-beneficiary respondents

(-18.18%), whereas the increase of only 26.67% change was, reported towards the adoption of HYV in less than 50% area by beneficiaries, while, the non-beneficiary respondents were reported by 114.29%. It was also reported that 78.57% of beneficiary respondents were diverted towards the high yielding varieties, whereas only 37.50% of non-beneficiary respondents were changed towards the adoption of high yielding varieties.

It could be observed from Table-2 that production of HYV was increased in both categories of respondent up to 28 to 33 q/ha. This indicates that rice yield was increased with the adoption of high yielding varieties and other agronomic practices. But the creation of water resources and soil and water conservation practices in watershed area had no impact on productivity of rice. Presently, the beneficiaries although not benefited from watershed activities, but in future they may use the created water resources for improvement in production of rice. New crops like soybean, urd, til, maize, wheat, linseed etc. were introduced in the area as the impact of watershed programme. The similar results found by Zaman and Ghosh (1991).

Crop	Beneficiaries		% change*	Non-beneficiaries		% change*
	1996-91	1990-91		1996-91	1990-91	
Paddy						
⇒ HYV	27.93	32.53	16.46	28.00	32.75	16.96
⇒ Local	22.00	28.28	28.52	19.50	24.45	25.38
Gram	8.00	8.02	0.31	6.58	7.13	8.37
Lathyrus	4.58	5.50	20.22	2.65	3.48	31.13
Soybean	0.00	10.00	-	0.00	0.00	0.00
Urd	0.00	7.00	-	0.00	0.00	0.00
Til	0.00	5.00	-	0.00	0.00	0.00
Maize	3.75	3.75	0.00	0.00	0.00	0.00
Arhar	0.00	5.83	-	0.00	0.00	0.00
Wheat	0.00	12.85	-	0.00	0.00	0.00
Linseed	0.00	3.13	-	0.00	0.00	0.00
Pea	0.00	15.50	-	0.00	0.00	0.00
Summerpaddy	0.00	16.95	-	0.00	14.25	-

* Percentage change in 1997 over 1991.

CONCLUSION :

The study clearly indicates that rice yield was increased with the adoption of high yielding varieties and other agronomic practices but creation of water resources, soil conservation practices in watershed area had no impact on productivity of rice. Presently the beneficiaries although not directly benefited from watershed activities. The indirect effect of this programme clearly shows increase in net sown crop area. The result of the study abandon that the programme has not achieved the ultimate goals but the farmers motivated to crop diversification for increasing the net productivity.

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