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Adoption of Kelo Watershed Project in Raigarh District of Chhattisgarh

Trilochan Prasad Patel* and Dipak Kumar Bose**
**M. Sc. (Ag.) Extension **Associate Professor, Department of Agricultural Extension and Communication Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad 211007*

ABSTRACT: Development rainfed areas in India is one of the prime concerns of the Goverment as 60 percent of agriculture is rain-fed. Rainfed areas are the hot spots of of poverty, water security, malnutrition and prone to severe land degradation. Watershed development programme is concidered and adopted as an effective tool to addren problem of rain-fed areas in the country. The persent study focused on benefit of Kelo watershed project in selected blocd of Raigarh district of Chhattisgarh which was selected purposively. Descriptive survey research design was followed and data was collected by using personal interview method. The study infered that majority of respondents had medium level of adoption towards paddy cultivation during Kelo Watershed Project. Education, family Type, annual income were found positive and significant correlation with their adoption of paddy cultivation under Kelo Watershed Project. The result reveled that Kelo watershed project is providing multiple benefits in terms of augmeting income, generating rural employment, increasing crop yields, increasing cropping intensity (38.4%), reducing run-off (42%), soil loss and reducing proverty.

Key word: *Adoption, Paddy cultivation , Watershed.*

I. INTRODUCTION

Arid and semi arid regions in the world are characterized by low and erratic rainfall, food insecurity and income poverty. These regions also face the challenge of resource degradation and low agricultural productivity. Watershed management has been seen as a solution to confront such problems **(Wani *et al.*, 2009)**. The principal element in the watershed management is capturing of the rainfall in the wet season and increasing availability of water during dry periods. This offers several potential benefit including increasing soil moisture for rainfed agriculture, augmenting ground water recharge for dry season irrigation or drinking water purposes, arresting runoff in to storage structures (eg. tanks, reservoirs etc.) for various consumptive and productive usages. Benefits from adoption of watershed management approach are reported from many arid and semi arid tropic regions, where it has helped enhancing agricultural productivity, improving livelihoods of the watershed community and alleviating poverty **(Hope, 2007)**.

In India, watershed management is considered as the main vehicle of rural development **(Turton, 2000)**. The approach for watershed management has significantly evolved since itsinitial years of implementation in 1950s **(Reddy *et al.*, 2004; Wani *et al.*, 2008)**. It has progressed from being merely externally imposed biophysical interventions to a more people–centered and participatory approaches encompassing a broader range of activities **(GoI, 2008)**. The integrated watershed management (IWM) is not a new concept **(Heathcote, 1998)** although it implimentation faces many challenges **(Giordano and Shar, 2014)**.

The conservation, use and sustainable management of natural resources on watershed basis have been a high priority for many countries over the past few decades. India also accorded high priority to watershed based interventions as a strategy for improving livelihoods and sustainability in drought-prone areas. Most watershed projects are being implemented with the twin objectives of natural resource conservation and enhancing the livelihoods of the rural poor through enhancement of production levels **(Sharma and Scott, 2005)**. Several studies **(Kerr, 2001; Rao et al., 2004; Palanisami and Suresh Kumar, 2009)**.

II. MATERIALS AND METHODS

The descriptive survey research design was followed to answer the problem taken and control the expected variance. The multistage sampling procedure was followed for this investigation, A total of 120 respondents were selected randomly from six villages in Raigarh block of Raigarh district. It data were collected with the help of pre tested interview schedule specially in the view of objectives set up for the study. The data was analysed by applying simple statistied techniques like frequency, percentage, mean and co-efficient of correlation.

Fig. – Kelo Watershed Project of Raigarh.

Fig. - Interview with the respondents

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents:

The socio-economical, characteristics of the respondents were studied and the data have been given below:

Table 1: ***Distribution of respondents according to their socio-personal chracteristics:***

1.	**Age group**	**Frequency**	**Percentage**
	Young. (< 35 year)	27	22.50
	Meddle. (36-55 year)	59	49.16
	Old. (> 55 year)	34	28.33
2.	**Education**	**Frequency**	**Percentage**
	Illiterate	44	36.66
	Can read & write	11	09.16
	Primary school	12	10.00
	Middle school	22	18.33
	High school	16	13.33
	Intermediate	09	07.50
	Graduate & above	06	05.00
3.	**Income**	**Frequency**	**Percentage**
	Up to Rs. 25000	14	11.66
	Rs. 25001-50000	63	52.50
	Rs. 50001-750000	23	19.16
	Above Rs. 750000	20	16.66
4.	**Overall utilization of information sources**	**Frequency**	**Percentage**
	Low level	73	60.83
	Medium level	35	29.16
	High level	12	10.00

Source: Author's calculation based on survey data.

The table no. 1 infers that 49.16% of the respondents were middle age group (36-55 year), 22.50 percent respondents under young age group (upto 35 year) and 28.33% were of old age group (above 55 year). This finding is in confermity to the finding reported by. **Raghunandan (2004)** and **Sridhar (2002)**.

It is observed that the 36.66 percent of the respondents were illiterate followed as 9.16 percent and were found under the category of can read and write, 10 percent respondents were up to primary school. Where as 18.33 percent respondents were educated up to middle school and 13.33 percent had education up to high school 7.50 per cent wrere up to intermidate level and our 5 per cent respondents were educated up to Greduate as above. This finding were strongly supported by the findings of **Gupta (1999)** and **Sridhar (2002)**.

It was found that 52.50 percent respondents were having their annual income up to Rs. 25,001 to 50,000 followed by 11.66 percent respondents were having their income upto Rs. 25,000 where as 19.16 per cent and 16.66 per cent respondents were found in the income level of Rs. 50,001 to 75,000 and above the Rs. 75,000 respectively. This findings is similar to the finding of **Purushotham *et al.* (1988)** and **Shashidhara (2004)**.

The data fainding is table, indicate that majority of the respondents 60 per cent had low level of exposure to various sources of information for getting the information about verious practices of watershed project followed by 29 per cent of the respondents were found to have medium level of exposure to various sources of information and around 10 per cent respondents were found to have high level use of information sources.

Table 2: Extent of adoption of watershed management practices:
Soil and water conservation practices:

S.N.	Description	Before watershed Before watershed (F & P)			After watershed After watershed (F & P)			% increase
		FA	PA	NA	FA	PA	NA	
1.	Ploughing across the slope	18 (15.00)	28 (23.33)	74 (61.66)	42 (35.00)	58 (48.33)	20 (16.66)	54 (45.00)
2.	Land smoothening	14 (11.66)	27 (22.50)	79 (65.83)	42 (35.00)	52 (43.33)	26 (21.66)	53 (44.16)
3.	Strengthening of existing bunds	13 (10.83)	29 (24.16)	78 (65.00)	31 (25.83)	59 (49.16)	30 (25.00)	48 (40.00)
4.	Water ways	16 (13.33)	26 (21.66)	78 (65.00)	60 (50.00)	35 (29.16)	25 (20.83)	53 (44.16)
5.	Construction of small section bunds	20 (16.66)	28 (23.33)	72 (60.00)	35 (29.16)	45 (37.50)	40 (33.33)	32 (26.66)
6.	Use of improved Ag. Implements	13 (10.83)	26 (21.66)	81 (67.50)	30 (25.00)	62 (51.66)	28 (23.33)	53 (44.16)

Source: Before watershed practices frequency and percentage based on project documents and after watershed practices based on survey data.(f = frequency, p = percentage)

It is clearly indicated from table 2 that there was increase in adoption of soil and water conservation practices by respondents like water ways 44.16%, strengthening of existing bunds 40.00% and ploughing across the slope 45.00% as a results of the programme. It was also evident from the table that there was increase in number of respondents by considerable percentage who adopted land smoothening 44.16%, construction of small section bunds 26.66%, use of improved agricultural implements 44.16% after the programme the finding is similar to the finding of **Sundaraswamy and Bavalatti (1991).**

Table 3: Adoption level of the respondents on integrated watershed management practices

S.N.	Adoption category	Frequency	Percentage
1.	Low (18 - 25)	32	26.66
2.	Medium (26 - 33)	66	55.00
3.	High (34 - 41)	22	18.33

Source: Author's calculation based on survey data.

The data presented in the Table 3 indicated that a majority 55.00% of the respondents belonged to medium adoption level category. Only 26.66% and 18.33% per cent of the respondents belonged to low and high adoption level categories, respectively towards adoption of watershed practices. The findings is in confermity to the finding ireported by **Jondhale *et al.* (2000)** and **Khade *et al.* (1998)**.

Table 4: Relationship between Socio-personal characters and adoption level of respondents about Kelo watershed management practices :

Correlation of selected factors with adoption level of the respondents:

S.N.	Independent variables	Correlation coefficient ('r' value)
1.	Age	0.072712 (NS)
2.	Education	0.178156**
3.	Size of land holding	0.213536*
4.	Extension contact	0.081008 (NS)
5.	Annual income	0.23172*

Table value at 0.01 level =0.213 Table value at 0.05 level =0.165

* &** significant at 0.01 & 0.05 levels of significant. (NS = Non-significant)

The data presented in the table 4 indicates that the Age and extension contact were found non significant relation in adoption of Kelo watershed management practices where as education, annual income and size of land holding were found significant at 0.01 and 0.05 percented level of significant in Adoption of the respondents of Kelo watershed management practices.

CONCLUSIONS

Kelo watershed project is one of the most important strategies to bring socio-economic change in the rain- fed area. The benefits of watershed projects were more where people`s participation was higher. It was noted that the watershed project was contributing in raising income, generating employment and conservig soil and water resources. The adoption level of the different practices of Kelo watershed project were medium level. It was also found that education and income was positively significant with the adoption of Kelo watershed improved practices. Earneast efforts to enthase stakeholders for their voluntary participation would sustain watershed development and bring prosperity in the rain-fed areas.

REFERENCES

[1]. Giordano, M. and Shah, T., 2014. From IWRM back to integrated water resources management. *Inter. J. of Water Resources Development*. Vol. 30(3): 364-376

[2]. GoI, 2008. Common guidelines for watershed development projects, National Rain–fed Area Authority (NRAA), Ministry of Land Resources, India. Heathcote IW (1998). *Integrated Watershed Management: Principles and Practice.* . New York: Wiley.

[3]. Gupta, V., 1999. A study on the knowledge and adoption behaviour of rice growers in Jammu district of Jammu and Kashmir. *M. Sc. (Agri.) Thesis*, University of Agricultural Sciences, Dharwad.

[4]. Jondhale, S. G., Jadhav, S. R. and Fatak, U. N., 2000. Reasons for non-adoption of low cost and no costtechnology in watershed development project. *Maharashtra Journal of Extension Education*, **19** : 117-120.

[5]. Hope, R.A., 2007. Evaluating social impacts of watershed development in India. *World Development* 358, 1436-1449.

[6]. Khade, A. K., Taywade, A. S. and Kale, P. E., 1998. Knowledge and adoption of recommended dryland technology of *kharif* jowar. *Maharashtra Journal of Extension Education*, **17** : 224-228.
[7]. Kerr J 2001. Watershed project performance in India: Conservation, productivity and equity. Am. J. Agri. Econ. 83(5):1223-1230. http://hdl.handle.net/10.1111/0002- 9092.00271.
[8]. Palanisami K, Suresh Kumar D 2009. Impacts of watershed development programmes: Experiences and evidences from Tamil Nadu. Agri. Econ. Res. Rev. 22 (Conference Number):387-396.
[9]. Purushotham,V., Kopputhal, V. and Devi, N., 1988, Nation profile of selected expectant mother and the cost of pregnancy. *Indian Journal of Nutritions Dietat*, 25(8) : 247-248.
[10]. Raghunandan, H. C., 2004. A study on knowledge and adoption level of soil and water conservation practices by farmers in northern Karnataka. *M. Sc. (Agri.) Thesis*, University of Agricultural Sciences, Dharwad.
[11]. Rao MSR, Mondal B, Padmaiah M, Reddy KK, Chandrappa M 2004. Sustainability of watershed development project – A case study at Chinnatekur. Ind. J. Dryland Agri. Res. & Dev. 19(1):04-12.
[12]. Sharma BR, Scott CA 2005. Watershed management challenges: Introduction and overview. In: Watershed Management Challenges: Improving Productivity, Resources and Livelihoods. Sharma et al. (Eds.). International Water Management Institute (IWMI) and International Crop Research Institute for Semi-arid Tropics (ICRISAT), Malhotra Publishing House, New Delhi, pp. 245-257.
[13]. Shashidhara, 2004. A study on socio-economic profile of drip irrigation farmers. *M. Sc. (Agri) Thesis*, University of Agricultural Sciences, Dharwad.
[14]. Sridhar, A. K., 2002. An evaluative study of watershed programme in pavagada taluk of Tumkur district in Karnataka. *M. Sc. (Agri.) Thesis*, University of Agricultural Sciences, Dharwad.
[15]. Sundaraswamy, B. and Bavalatti, V. G., 1991. Knowledge and adoption of dryland farming practices by farmers of Bijapur district. *Maharashtra Journal of Extension Education*, **10** : 137-140.
[16]. Reddy, V.R., Sastry, G., Hemalatha, B., Prakash, O. And Ramakrishna Y.S., 2004. Evaluation of watershed development programmes in India. In: Raine, S.R., Biggs A.J.W.,Menzies, N.W.(eds) Conserving Soil and Water for Society: Sharing Solutions: Proceedings of the 13th International Soil Conservation Organisation Conference, Brisbane, 4-8 July 2004,ASSSI/IECA, Paper 231, pp.1-6.
[17]. Rao MSR, Mondal B, Padmaiah M, Reddy KK, Chandrappa M 2004. Sustainability of watershed development project – A case study at Chinnatekur. Ind. J. Dryland Agri. Res. & Dev. 19(1):04-12.
[18]. Sharma BR, Scott CA 2005. Watershed management challenges: Introduction and overview. In: Watershed Management Challenges: Improving Productivity, Resources and Livelihoods. Sharma et al. (Eds.). International Water Management Institute (IWMI) and International Crop Research Institute for Semi-arid Tropics (ICRISAT), Malhotra Publishing House, New Delhi, pp. 245-257.
[19]. Turton, C., 2000. Enhancing livelihoods through participatory watershed development in India. Working Paper No. 131, Overseas Development Institute (ODI), London, UK.
[20]. Wani,S.P., Joshi, P.K., Raju, K.V., Sreedevi, T.K., Wilson, M.J. and Shah, A., 2008. Community Watershed as Growth Engine for Development of Dryland Areas – Executive Summary. A Comprehensive Assessment of Watershed Programmes in India, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India.
[21]. Wani, S.P., Sreedevi, T.K. ,Rockstroma, J. and Ramakrishna, Y.S., 2009. Rainfed Agriculture– Past Trends and Future Prospects. In: Wani, S.P., Rockstroma, J. and Oweis T. (eds) Rainfed agriculture: unlocking the potential. Comprehensive Assessment of Water Management in Agriculture Series 7. Wallingford Oxfordshire, UK: *CAB International*, pp. 1-35. ISBN 978-1-84593-389-0.