USE OF COMMUNICATION MEDIA FOR THE ADOPTION OF VETIVER GRASS PLANTENTION TECHNOLOGY IN WATERSHED MANAGEMENT PROGRAMME

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Introduction

Runoff and soil loss are the twin problems for treating the agriculture of rained and hilly tract through watershed management programme. The need is to develop low cost and easily adoptable technology for the conservation of soil and water of these area. After Continuos research, it is proved that contour vegetative hedges of *Vetiveria Zizanioides* are most effective for direct arrest of soil loss as well as serve as guideline for contour cultivation to farmer. The contour vegetative barries of local grasses were more acceptable but not much effective and technically suitable. Vetiver *(Vetiveria Zizanioides)* is an erect grass with stiff stems and very deep, extensive and penetrating root system. It is tolerating wide range of climatic situation, adverse soil conditions, this make Vetiver grass highly suitable for environmental protection as well as soil and water conservation purpose. Hence, in National watershed Development Programme (NWDP) use of Vetiver grass as a soil and water conservation measure was promoted in Maharashtra State. In the Nasik division twelve watersheds comprising two agro climatic zone. i.e. heavy rainfall, sub mountain zone and Scarcity zone, with geographical area of 52952 ha. during the period of 1991 to 1998 approximate 6000 tones Vetiver slips were used for drainage line and land treatment of these watersheds. Live check dams, contour vegetative hedges up to 4 % and 4 – 8% slopes of arable as well non arable land, reinforcement of old earthen bunds, lose boulder structures and spillway of Nala bunds were the major land treatments, while plantation along drainage line for stabilization was also undertaken. The land owners, farmers of these area were trained by staff of agriculture department, about use of Vetiver, i.e. plantation technology. This plantation technology was spread through various Communication media i.e. Inter personal contacts of Friends–Relatives–Neighbour, progressive farmer, Mass media like print material and electronic telecasting of television and radio . The demonstrations arranged by extension agencies and meetings played very important role. The effectiveness of these communication media for the adoption of Vetiver grass plantation technology was measured through personal contacts & Field visit.

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Methodology

There were total 15,470 farmers (we termed them as VGPT growers) who had planted vetiver grass as a soil water conservation measure in 12 watersheds of NWDP, out of them five watersheds were selected for study, from each of them 30 growers were finalized for investigation, interview schedule were prepared, various characteristics of growers selected as a veritable, were age, education, social participation, cosmopolitaness, risk preference, planning orientation, economic motivation, innovativeness, extension contacts, size of land holding and annual income. The extent of adoption i.e. whether complete or partial adoption of technology measured with asking questions during field visit and administering the interview schedule, specific questions were asked about use of various communication media for adopting plantation technic . The collected qualitative data, qualified with the help of various scales available in social sciences. Extent use of media was measured by counting frequencies as regular, frequent or rare use of it, for the purpose of measuring adoption behavior, the indices developed by wilkening (1954) and singh (1974) were used with certain modifications. Socio-psychological variables measured with the help of developed schedule based on scale developed by supe (1969) viz. cosmopolitiness, rise preference, planning orientation, economic motivation. innovativeness, extension contact. The age, annual income, size of land holding these variables are quantitative in nature, hence measurement of these variables was made in terms of actual quantity. Education was measured by scale developed by Bawajir (1984), while social participation was measured by chapins scale (1939) with modification. The developed schedule was pre-tested for its reliability and validity. The schedule was used as a tool for collection of data through personal interviews, data collected was quantified. The statistical tools namely mean, percentage, coefficient of correlations, multiple linear regression and stepwise regression analysis were used to test the significance of the results.

Results & Discussion

A) *Extent of Media Utilization*
The extent of utilization refers to the frequency of use of the available communication media by the VGPT growers to seek information about the technology. In the daily routine of grower, he was using the different media for getting information about his farming, however their extent of use might be either regular, frequent or rare. The availability and credibility of these media play an important role in the extent of media utilization.

Table -1 Extent of use of different Communication media

Sr. No.	Media	Extent of use [N = 150]			Ext. of use (%)	Availability / Credibility
		Regular	**Frequent**	**Rare**		**Index** **Index**
A	**Inter personal mdia_:**	120	22	8	91.56	
	Friends Relative – Neighbour	(80.00)	(14.60)	(5.33)		88.00 80.71
	2. Progressive farmers	93 (62.00)	53 (35.33)	4 (2.67)	84.44	
B	**Mass Media**	81	47	22	82.00	
	3. Print material	(54.00)	(31.33)	(14.67)		73.66 51.52
	4. Electronic media (Radio & TV)	45 (30.00)	54 (36.00)	51 (34.00)	65.33	
C	**Group Media**	125	18	7	92.88	
	5. Demonstration	(83.33)	(12.00)	(4.67)		92.78 82.14
	6. Meetings organised by extension agencies	122 (81.33)	23 (15.33)	5 (3.33)	92.67	

The analysis of communication media utilization by VGPT growers are presented in Table No. 1 It indicates that, Group media (Demonstrations, Extension contacts) were used in great extent (92.78 percent) followed by interpersonal media viz. Friends–Relatives– Neighbours & progressive farmers (88.00 percent) and mass media including print material (82.00 percent) and electronic media (65.33 percent). It was also observed that, the utilization of communication media was associated with easy access and availability to the growers. (r – value 0.190, significant at 1.00 percent level). The credibility index of selected media indicates that, Group media was most credible followed by Interpersonal media and mass media. The electronic media (Radio and Television) had least credibility (45.83 percent). This is due to that, 'There is close and face to face contact between groups and interpersonal media with growers, they could have two way communication, which gives first hand information on matters related to farm and home conditions, there is also not a time and cost bar while interacting to these media, easy access is the most important factor in utilization of these media. Radio and Television have limitation viz. Limited number of local broadcasting stations which are not within the reach of all farmers, the recommendations may not apply to individual need, there is no turning back, if the message is not understood, frequently loses out in competition with entertainment. The extent of use of communication media has strong relationship with credibility of that particular media (r – value 0.618, significant at 1.00 percent). Sandhu (1973) has similar observation in his study about credibility of farm information sources.

From the study, it is inferred that the majority of the VGPT growers used communication media namely, Demonstrations, Progressive farmars Friends-Relative-Neighbours, Seminar- Workshop-Conference, and Literature-Magazines as a important source of information for adoption of VGPT. The study further indicated that interpersonal media played crucial role in the adoption of VGPT. Almost all the initiators sought information from these media, farmers who has wide experience served as 'Demonstrations' to other

VGPT growers and they might also serve as opinion leaders in respect of technology. In the rural area, the farmers use to believe in each other for narration and acceptance of innovations.

Similar observations were recorded by Pawar (1999) in his study of grape production technology in Maharashtra State. (India).

B) *Relationship between CMU and Characteristics of VGPT Growers*

The data pertaining to the relationship between communication media utilization and different characteristics of VGPT growers has been presented in   Table 2 .

Table 2 : Relationship between VGPT Growers and CMU communication media utilization.

Sr. No.	Variable	Pearson's Coefficient (r – values)
x_1	Age	-0.0350
x_2	Education	0.311**
x_3	Social Participation	0.354**
x_4	Cosmopoliteness	0.442**
x_5	Risk Preference	-0.013
x_6	Planning Orientation	0.245**
x_7	Economics Motivation	0.022
x_8	Innovativeness	0.815**
x_9	Extension Contact	0.913**
x_{10}	Size of Land holding	0.153**
x_{11}	Annual Income	0.549**

** Significant at 1.00 percent level of significance

The result of correlation analysis of communication media with independent variables showed that Education, Social participation, Cosmopoliteness, Planning orientation, Innovativeness, Extension contact, Size of land holding, and Annual income were positively correlated and coefficient of correlation was significant at 1.00 percent level of significance, However Age, Risk preference, Economic motivation could not show any significant relationship with the communication media utilization in adoption of VGPT.

C) *Multiple Regression Analysis of Adoption VGPT*

As we have seen earlier that Pearson's correlation merely portrays coexistence of relation between any two variables. This procedure does not capture the complete interaction effect among variables, as also pointed out by Guilford (1953), the actual relationship between measured variables in science are by no means as simple as above. One variable is associated with, or is simultaneously dependent upon several others. Adoption of VGPT was postulated as a linear function of Socio-personal, Psychological and Economic variables. It is not influenced solely by any of these factors taken in isolation, but as a part of complex and interacting systems. Based on this approach, the Multiple Regression Analysis using linear model was carried out to know the important variables with predictive ability in explaining the variation in the dependent variable i.e. adoption of VGPT.

In multiple regression analysis, Eleven independent variables were fitted to explain the variation in the adoption of VGPT. It is seen from Table 3 that the selected Eleven variables explained to the extent of 38.06 percent variation in adoption of VGPT by the farmers. Thus, the present study clearly indicated that the socio-personal, psychological and economic variables assumed greater importance, i.e. as adoption of VGPT increases with an increase in them.

Regression analysis provides estimates of values of dependent variable from the values of the independent variables. It evaluates the proportion of variance in the dependent variable that has been accounted for by the regression equation. In general, the greater, the greater value of R^2, the better is the fit and more useful regression equation of predictive device. Taking this theoretical back ground in consideration, the data were subjected to regression analysis.

When the multiple coefficient (R^2) was estimated on the data, it was found that 38.06 percent of the variation in the adoption of VGPT was explained by the set of eleven independent variables. The 'F' test of statistic showed that this was significant at 1.00 percent level. It was revealed from the data that out of eleven variables, five variables viz., Cosmopoliteness, Extension contact, Innovativeness, Size of land holding and Annual income had significant effect on the extent of adoption of VGPT.

The results of multiple regression analysis clearly indicated that the independent variables viz. Cosmopoliteness, Extension contact, Innovativeness, Size of land holding and Annual income are essential in increasing the farmer's adoption of VGPT because the set of above variables explained 38.06 percent variation. This clearly indicates that adoption VGPT the result of these variables, which is further sustained by the significant 't' values.

Table 3: Multiple Regression Analysis of Adoption of VGPT

Sr. No.	Variable	-Regression Coefficient	SE	't' value
x_1	Age	-0.0450	0.0347	-0.976
x_2	Education	0.6045	0.4130	1.257
x_3	Social Participation	0.6932	1.359	0.635
x_4	Cosmopolilteness	-0.1395	0.1901	-2.034**
x_5	Risk Preference	0.1377	0.1839	0.7583
x_6	Planning Orientation	0.2932	0.2375	0.7295
x_7	Economics Motivation	0.4329	0.4396	0.9848
x_8	Innovativeness	0.8074	0.3754	2.1510**
x_9	Extension Contact	3.0088	1.0618	2.8338**
x_{10}	Size of Land holding	0.0002	0.0005	4.3122**
x_{11}	Annual Income	0.2135	0.0943	4.4381**
		R Square 0.3806	R = 0.6169	F value=8.690**

Similar trend of observations were recorded by Rade (1987), Hossain (1992), Shinde (1997) and Pawar (1999) in the context to the adoption of different agricultural innovations.

D) *Stepwise regression analysis of Adoption*

As per above finding it's confirmed that all eleven variables had combined effect for association of relationship with the adoption of VGPT but it has also essential to know the contribution of each variable and order of their importance among themselves. The stepwise regression analysis gives the answer for this. It was found in the investigation that Innovationess (X_8) was the most important variable in adoption of VGPT followed by Extension contact (X_9), Education (X_2), Annual income(X_{11}), Size of land holding (X_{10}), Cosmopoliteness (X_4), Social participation (X_3), Economic motivation (X_7), Age (X_1), Risk preference (X_5), Planning orientation (X_6) in order of their importance in amount of contribution.

E) *Regression Equation (Adoption of VGPT)*

From the data following regression equation for adoption of VGPT derived-

$$Y_2 = 42.74 - 0.0450X_1 + 0.60455\ X_2 + 0.6932\ X_3 - 0.1395\ X_4 + 0.1377\ X_5 + 0.2932\ X_6 + 0.4329\ X_7 + 0.8074\ X_8 + 3.0088\ X_9 + 0.0002\ X_{10} + 0.2135\ X_{11}$$

Conclusion

Vetiver grass *(Vetiveria Zizaioides)* plantation as a soil and water conservation measure in Watershed management proved to be cost effective. It is mostly recommended in Watershed Management Programmes, Counter vegetative hedge lines, live check dams on small rills, reinforcement of old earthen bunds, loose boulder structures and earthen bunds are the main treatments, where veriver grass is mainly used.

The study of extent of communication media utilization in adoption of VGPT showed that, Group media (Demonstration and Meeting, by extension agencies) were used in great extent (82.14 percent) followed by Interpersonal media (Friends–Relative–Neighbour & Progressive farmers) 80.71 percent, Mass media (print material and electronic media) were least prefered (51.52 percent). The extent of communication media utilization (CMUI) was associated with access & availability. The credibility of media was also important for use of particular media.

It was also found that the correlation between communication media utilization and different characteristics of VGPT adopters was significant, namely variables education, social participation, cosmopolitaness planning orientation, innovativeness, extension contact, size of land holdding & annual income were positively correlated & significant at 1 percent level of significance, However the age, risk preference, economic motivation could not show any significant relationship with CMUI and VGPT adoption.

The result of multiple linear regression analysis of selected eleven variables (Characteristics of cultivator) explained 38.06% variation in adoption of VGPT by cultivators. The independent variables namely innovativeness, contact with extension agencies were most essential for increasing extent of adoption, followed by education, annual income, size of land holding cosmopolitans, social participation, economic motivation, age, risk preference and planning orientation of cultivator.

For the predicted and perfect results of adoption of VGPT, the role of Characteristics of cultivator and extent use of communication media should be kept in mind under different situations.

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