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Adoption of Mass Media Information for Decision-Making Among Vegetable Growers in Uttar Pradesh

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I

INTRODUCTION

The food and agricultural sectors in developing countries have undergone significant changes, where the relative importance of grains and staple foods is declining while that of high value agricultural products such as fruits, vegetables, milk, meat and eggs is significantly increasing (Gulati *et al.*, 2007). As high value agricultural products are comparatively more perishable in nature, it requires greater coordination in the way the food is produced, processed, marketed and consumed (Busch and Bain, 2004; Deshingkar *et al.*, 2003; Henson and Reardon, 2005; Swinnen and Maertens, 2007). Due to structural changes in global food consumption and demand, the production of these high value commodities is also responding in a similar manner. India is the second largest producer of vegetables in the world with over 122.3 million tonnes, after China and accounts for about 15 per cent of the world's production of vegetables. Around 7.7 million hectares of area is under vegetable cultivation, which is about 5.4 per cent of the total area under cultivation in the country. With the advancement and adoption of new techniques conducive to different soil and climate types, vegetable production in the country has significantly increased in the recent decade.

With the emerging consumer market for vegetables and vegetable products and growing organised retailing of fresh products, the production of vegetables needs new directions on cultivation practices, use of high-yielding and modern variety seeds, fertilisers, pesticides and insecticides, irrigation technologies, post-harvest management and logistics and distribution. Although the future of vegetable production in the country seems very bright, for realising the full potential of the vegetable sector, efforts need to be made in delivering skills and knowledge through effective extension services. The empirical evidence suggests that farmers with resources and skills to produce high value commodities are increasingly getting better opportunities for increasing their income and employment (Birthal *et al.*, 2005). In

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developing countries including India, where most of the vegetables supplied to the market are produced by small scale farmers using traditional method of farming, immediate intervention for improving the cultivation practices become more important.

Mass media, which comprises both electronic and print media such as television (TV), radio and newspapers, play an important role in creating awareness about new agricultural technologies among farming communities across the world. India has realised the potential of mass media for efficient delivery of extension services to the farming community and took a bold initiative by introducing a centrally sponsored scheme on Mass Media Support to Agriculture Extension in 10th Five Year Plan under the Ministry of Agriculture, Government of India. In order to strengthen the initiative, agricultural research and extension professionals need to be trained so as to utilise the mass media sources to communicate about new agricultural practices with the farming community in a better way. It is estimated that there are around 81.6 million homes with TV in the country, of which about 48 per cent are rural homes. About 65 per cent of these rural homes are exclusively terrestrial homes, where only Doordarshan can be viewed and cable TV based programmes are not available. Keeping the concerns of about two-third rural TV homes in mind, the scheme has included the Regional and National Programmes in terrestrial mode for delivering well designed agricultural extension content. Moreover, there are already 110 million radio receivers in the country of which two-third are from the rural areas. The radio stations covering the rural areas provide a continuous and sustained means of information and education to the remote villages. Most of these villagers either do not have electricity or cannot watch TV due to lack of power supply.

Considering the prominent role of information adoption in decision-making, it is important to understand the factors that influence the adoption of mass media based information among vegetable growers. As vegetable cultivation, due to comparatively smaller crop cycle, is highly information intensive for undertaking effective and efficient operations across the vegetable value chain, a study on analysing the factors affecting adoption of media information becomes imperative. This paper empirically analyses the factors affecting the adoption of information, based on primary data of 556 vegetable growers. The socio-demographic, farm and market related factors that have a significant impact on mass media adoption have been identified using a Logistics Regression Model. This study provides practical insights into designing and implementing policies on mass media based information dissemination system as per the informational needs of the vegetable growers. The results will also enhance our understanding of the extension agencies in identifying appropriate mass media for strengthening the information delivery services by targeting the vegetable growers in a better way.

II

RESEARCH HYPOTHESES

A number of studies have indicated that different sources of information have varied influence on the adoption of agricultural technologies and practices across various stages: mass media (i.e., radio, newspapers, television, and magazines) play an important role during the initial stages of creating awareness on agricultural innovations, while interpersonal communication (e.g., crop consultants, extension agents, demonstrations, input suppliers, other growers, etc.), which typically involves face-to-face contact, play an important role in promoting adoptions (Korsching and Hoban, 1990; Longo, 1990; McBride and Daberkow, 2003). However, an effectively designed content of mass media has potential to serve the roles of awareness generation as well as influence on adoption processes. Several studies have analysed the factors that affect the information technology adoption by agricultural producers (Agwu and Anyanwu, 1996; Alvarez and Nuthall, 2006; Batte, 2005; Doss and Morris, 2001; Park and Lohr, 2005; Ramirez and Shultz, 2000; Agwu *et al.*, 2008; Taragola and Van Lierde, 2010), which can broadly be categorised into socio-demographic profile of the farmers, their farm characteristics and market linkage. Based on the literature survey, the following three hypotheses have been formulated and empirically tested for analysing the factors influencing adoption of mass media information:

- Hypothesis 1 (H1): The vegetable growers' characteristics such as age, education, social category and income are more likely to have an influence on mass media based information adoption in their cultivation decisions. It is assumed that the age of vegetable growers is inversely related to the adoption of mass media information, while education and social category are assumed to have a positive relationship.
- Hypothesis 2 (H2): Farm characteristics of vegetable growers such as landholding size, lease pattern, availability of irrigation facility, use of hired labour, and number of crop grown are more likely to have an influence on mass media based information adoption in cultivation decisions. It is assumed that most of the farm related indicators will have positive relationship with the adoption of mass media information except land lease as insecured property rights provide direct disincentive to undertake investments on leased-in land and adopt modern agricultural practices.
- Hypothesis 3 (H3): The vegetable growers adopting processing technologies and better market linkages are more likely to have an influence on mass media based information adoption in cultivation decisions. It is assumed that vegetable growers adopting primary processing – sorting and grading or secondary processing – making vegetable-based products, are more likely to adopt information for enhancing their business. Similarly, vegetable growers

with forward market contract for selling their produce are more likely to adopt information for meeting the contract requirement in terms of quality and quantity.

III

MATERIAL AND METHODS

This study is based on a comprehensive survey of fruit and vegetable producers through a structured questionnaire, administered personally during the last quarter of 2007, covering six districts of Uttar Pradesh, namely, Agra, Allahabad, Gorakhpur, Jhansi, Lucknow and Moradabad, representing various geographical regions of Uttar Pradesh, under an externally funded research project. A multi-stage sampling approach was adopted to select the representative fruit and vegetable growers for the study. At the first stage, districts were selected based on the largest production share of fruits and vegetables in the state. At the second stage, four villages were selected after discussions with the functionaries of district regulated fruit and vegetable markets. At the third stage, 25 fruit and vegetable growers from each village were randomly selected for the final survey. In the project, a total of 642 fruit and vegetable growers were surveyed. However, this study is based on the primary survey of 556 vegetable farmers, after excluding the fruit growers. The vegetable growers' responses to various questions related to mass media usage were obtained and recorded with the help of a structured questionnaire. Mass media based information users were categorised based on the usage of information from one or more than one mass media sources, i.e., television, radio and newspapers for decision-making in vegetable cultivation.

Based on literature review, an empirical model has been developed to identify the factors affecting farmers' information adoption using mass media, i.e., television, radio and newspapers to improve vegetable cultivation practices. The usage of any of the mass media, i.e., television, radio and newspapers for cultivation decision-making is considered as a dependent variable whereas the socio-economic factors such as age, education, income level and social category and farm practices related factors such as landholdings and leasing-in of agricultural land, availability of irrigation facility, number of crops grown, hiring of labour, adoption of processing techniques and contract arrangement for selling the vegetables are considered as independent variables.

The Logistics Regression Model is used to analyse the factors influencing the adoption of mass media based information on various agricultural practices. The empirical model is defined as:

$$Y_i^* = \alpha + \sum_{i=1}^n \beta_i X_i + \varepsilon_i \quad \dots(1)$$

where Y_i^* is unobserved response on adoption of mass media based information for vegetable cultivation decisions, X_i is matrix of explanatory variables comprising socio-demographic factors, farm characteristics and market linkage, β is a vector of unknown parameters, α is the intercept and ε_i is the error term.

Based on the variables used in the present study, the empirical model was specified and estimated to predict the likelihood or probability of the factors influencing adoption of mass media in vegetable farming decisions, as follows:

$$\begin{aligned} \text{Log } \lambda_i = & \alpha + \beta_1 \text{AGEY} + \beta_2 \text{EDU} + \beta_3 \text{SOC} + \beta_4 \text{INCOM} \\ & + \beta_5 \text{LAND} + \beta_6 \text{LEASE} + \beta_7 \text{IRRG} + \beta_8 \text{HLAB} \\ & + \beta_9 \text{CROPNO} + \beta_{10} \text{PROCESS} + \beta_{11} \text{CONTSELL} + \varepsilon_i \end{aligned} \quad \dots(2)$$

The description of the variables used in the model is given in Table 1. The expected directional effects of each independent variable are also indicated. The logit model is based on the cumulative logistic probability function and is specified as:

$$P = F(Z) = \frac{1}{(1 + e^{-(\alpha + \beta_i X_i)})} \quad \dots(3)$$

where Z determines a set of explanatory variables X ; $F(Z)$ is the cumulative logistic function; e represents the base of natural logarithms and P is the probability of success when explanatory variable has the value X . Logit models are interpreted using Odds and Odds ratios. The odds ratio indicates the multiplicative impact in the odds for a unitary change in the explanatory variable, holding other variables as constant. If the exponentiated coefficient is greater than unity, it explains that the odds are increasing, and on the other hand negative value indicates that the odds

TABLE 1. VARIABLE DESCRIPTIONS AND SUMMARY STATISTICS

Variables (1)	Description (2)	Mean (3)	Std. Deviation (4)	Expected Sign (5)
Dependent variables				
MEDIA	Use of Mass Media based information on agricultural practices (Yes=1, otherwise=0)	0.41	0.92	
Independent variables				
AGEY	Farmer's age (Years)	40.33	15.68	-
EDU	Farmer's education (High School and above = 1, otherwise=0)	0.43	0.49	+
SOC	Social category of farmers (General/ Other backward class =1, otherwise=0)	0.86	0.34	+
INC	Monthly household income (> Rs. 5000 = 1, otherwise=0)	0.38	0.48	+
LAND	Farmer's operational landholding (ha)	1.72	2.34	+
LEASE	Leased-in land with the farmers (Yes=1, No=0)	0.32	0.46	-
IRRG	Irrigation facility (Yes=1, otherwise=0)	0.82	0.38	+
HLAB	Use of hired labour (Yes=1, No=0)	0.26	0.44	+
CROPNO	Number of crops grown	5.29	2.47	+
PROCESS	Adoption of processing technique (Yes=1, No=0)	0.28	0.45	+
CONTSELL	Arrangement of contract selling (Yes=1, No=0)	0.08	0.27	+

decrease. Deviation of the exponentiated coefficient value from one indicates the magnitude of impact on the odds for a unit change in independent variable.

IV

RESULTS AND DISCUSSION

4.1 *Profile of Mass Media Users and Non-users*

Table 2 provides summary profile of mass media user and non-user sample vegetable growers with respect to age, education, social category, household income and landholding size. Of the 556 vegetable growers, 118 respondents reported the use of mass media information for vegetable cultivation decision-making, i.e., 22 per cent of the total vegetable growers. Majority of the respondents were in the age group of 26 to 60 years, indicating a mature group involved in vegetable cultivation. However, the average age of both mass media users (39 years) and non-users (41 years) are showing no significant differences, implying that both the groups have same level of farming experiences ($\chi^2 = 5.658$, $p=0.129$). The results of chi-square tests also revealed no significant difference in the education levels between users and non-users of mass media information ($\chi^2 = 3.181$, $p=0.365$). As far as social groups are concerned, majority of the mass media users belong to socially backward groups ($\chi^2=6.961$, $p=0.073$).

With regard to income, most of the mass media users belong to comparatively higher income groups ($\chi^2 = 32.596$, $p=0.000$) than non-users. Regarding land ownership, average landholdings of mass media adopters were estimated to be 1.71 hectares which is relatively lower than non-users (1.73 hectares). The results of chi-square tests between users and non-users with landholding size indicated no significant difference ($\chi^2 = 1.650$, $p=0.648$). The distribution of vegetable growers by landholding category clearly indicates that majority of them are marginal and small (77 per cent) farmers. The results suggest that the two categories of vegetable growers (mass media users and non-users) exhibited statistically significant differences only with respect to social category and income level (Table 2).

4.2 *Cultivation of Major Vegetables*

Primary data collected on vegetable cultivation across various landholding categories of farms show interesting insights (Table 3). Majority of the vegetable growers belonged to marginal and small landholding categories, together constituting about 77 per cent of the total sample vegetable farms. However, these vegetable growers hold only 54 per cent of the total area. Potato and cauliflower are the important vegetables grown by majority of the farmers across the landholdings and constitute 57 per cent of the area under vegetable cultivation. It is also interesting to note that vegetable growers with large landholdings are less diversified as compared to smallholders. This implies that the marginal and small vegetable growers are comparatively more enterprising and cultivate a variety of vegetables.

TABLE 2. SAMPLE DEMOGRAPHIC CHARACTERISTICS

Socio-demographic variables (1)	Overall (N=556)		Mass media users (n=122)		Mass media non-users (n=434)		Chi-square statistics (8)
	N (2)	Per cent (3)	N (4)	Per cent (5)	N (6)	Per cent (7)	
Age group (years)							
<25	118	21.3	28	23.7	90	20.7	5.658
26-40	197	35.6	36	30.5	161	37.0	df=3
41-60	179	32.4	46	39.0	133	30.6	p=0.129
>60	59	10.7	8	6.8	51	11.7	
Total	553	100.0	118	100.0	435	100.0	
Average age (years)	40		39		41		
Education category							
Illiterate	155	28.2	30	25.2	125	29.0	3.181
Junior high school and below	156	28.4	30	25.2	126	29.2	df=3
High school/Intermediate	165	30.0	38	31.9	127	29.5	p=0.365
Graduate/Post Graduate	74	13.5	21	17.6	53	12.3	
Total	550	100.0	119	100.0	431	100.0	
Social category							
General	119	23.2	20	18.0	99	24.6	6.961*
Other Backward Class (OBC)	361	70.2	79	71.2	282	70.0	df=3
Schedule Caste (SC)	32	6.2	12	10.8	20	5.0	p=0.073
Schedule Tribe (ST)	2	0.4	0	0.0	2	0.5	
Total	514	100.0	111	100.0	403	100.0	
Monthly household income							
<Rs. 2000	139	25.4	9	7.7	130	30.2	32.596***
Rs. 2000-5000	201	36.7	42	35.9	159	36.9	df=5
Rs. 5001-10000	108	19.7	35	29.9	73	16.9	p=0.000
Rs. 10001-15000	39	7.1	11	9.4	28	6.5	
Rs. 15001-25000	33	6.0	12	10.3	21	4.9	
>Rs. 25000	28	5.1	8	6.8	20	4.6	
Total	548	100.0	117	100.0	431	100.0	
Distribution of land holdings							
Marginal (upto 1 ha)	244	44.0	50	41.3	194	44.7	1.650
Small (1-2 ha)	183	33.0	40	33.1	143	32.9	df=3
Medium (2-4 ha)	95	17.1	21	17.4	74	17.1	p=0.648
Large (>4 ha)	33	5.9	10	8.3	23	5.3	
Total	555	100.0	121	100.0	434	100.0	
Average landholding (ha)	1.73		1.71		1.73		

***, ** and * Significant at 0.01, 0.05 and 0.10 level, respectively.

TABLE 3. CULTIVATION OF MAJOR VEGETABLES BY FARM SIZE

Vegetables (1)	Marginal (<1 ha)		Small (1-2 ha)		Medium (2-4 ha)		Large (>4 ha)		Total	
	N (2)	Area (3)	N (4)	Area (5)	N (6)	Area (7)	N (8)	Area (9)	N (10)	Area (11)
Area under major vegetables (ha)	244	221.06	183	270.99	95	156.60	33	260.36	555	909.00
Potato	108	99.74	85	127.24	38	35.57	20	169.27	251	431.83
Cauliflower	100	26.64	49	21.23	30	24.06	11	13.07	190	84.99
Tomato	68	20.80	68	19.88	45	26.00	12	11.20	193	77.88
Eggplant (<i>Brinjal</i>)	72	10.55	64	11.59	22	4.42	9	3.92	167	30.47
Pumpkin	42	6.41	44	9.26	29	5.69	6	6.64	121	27.99
Ridge Gourd (<i>Torai</i>)	60	12.52	35	9.66	10	3.63	2	0.34	107	26.15
Chilli	25	5.10	35	25.11	22	6.13	7	4.32	89	40.66
Bottle Gourd	47	9.21	20	6.40	13	5.79	--	--	80	21.40
Lady finger	31	5.24	37	5.72	9	2.19	--	--	77	13.15
Radish	16	1.92	7	6.54	5	3.26	1	0.16	29	11.88
Onion	13	1.64	7	0.98	6	0.61	1	0.27	27	3.50

N=Number of vegetable growers; area is indicated in hectares.

4.3 Sources of Information in Vegetable Cultivation

Information on technological change and new practices in farming system is disseminated by a number of sources or communication agents. According to the recent Situation Assessment Survey of Farmers conducted in 2003 by the National Sample Survey Organisation (NSSO), mass media do play an important role in information delivery to the farming community. Radio served as a source of information on modern agricultural technology to 13.0 per cent households, television to 9.3 per cent and newspapers to 7.0 per cent households, whereas only 5.7 per cent households received information from extension workers. Radio and television have been acclaimed to be the most effective media for diffusing scientific knowledge to the masses (Purushothaman *et al.*, 2003). Newspaper and magazine and other print mass media are being used by literate farmers and increasing rate of literacy in the country offers new opportunities for utilising print medium as a means of mass communication in farm decision-making. It is argued that mass media information has great potential for transforming the backwardness of agriculture into a more profitable farm business by generating knowledge for efficient and effective agricultural decision-making (Batte and Arnholt, 2003; Galloway and Mochrie, 2005; Nuthall, 2004; Rao, 2006). As compared to other sources of agricultural information, mass media also has the ability to provide frequent information to farm families at low cost, with greater reliability and convenience. However, the mass

media only provides one-way communication from information source to the farming community and lacks customisation of information as per the individual farmer's requirement.

TABLE 4. SOURCES OF INFORMATION IN VEGETABLES CULTIVATION

Sources (1)	High yielding seeds		Fertiliser use and price		Pesticides use and prices		Crop production techniques		Market price of produce		Change in agri-policy	
	N (2)	Per cent (3)	N (4)	Per cent (5)	N (6)	Per cent (7)	N (8)	Per cent (9)	N (10)	Per cent (11)	N (12)	Per cent (13)
Mass Media (TV/Radio/Newspapers)	12	2.2	9	1.6	15	2.8	24	4.4	3	0.6	110	20.4
Relative/Friends/Progressive Farmers	84	15.4	77	14.1	94	17.2	120	22.1	74	13.7	93	17.3
Input Dealers	240	44.0	240	44.0	212	38.9	160	29.5	195	36.0	150	27.9
Cooperative Societies	46	8.4	50	9.2	69	12.7	115	21.2	27	5.0	94	17.5
Block Office/Extension Workers	14	2.6	12	2.2	24	4.4	30	5.5	11	2.0	23	4.3
NGOs	1	0.2	4	0.7	2	0.4	10	1.8	12	2.2	9	1.7
Local markets/Mandi	149	27.3	154	28.2	129	23.7	83	15.3	220	40.6	59	11.0
Total	546	100.0	546	100.0	545	100.0	542	100.0	542	100.0	538	100.0

N=Number of vegetable growers.

Table 4 provides the details of types of information used by vegetable growers in decision-making on various cultivation practices. Most of the farmers reported that the information on major inputs such as high-yielding seeds, fertilisers and pesticides is primarily acquired from the input dealers followed by local market/mandi and relatives, friends or progressive farmers. This implies that the input dealers and output procurers are two major points of contacts for seeking information on vegetable related input decisions. Vegetable growers use diverse sources of information on crop production techniques. However, input dealers and relatives, friends or progressive farmers have been reported to serve majority of the farmers for supply of information on production techniques. Information on market prices for selling the produce is acquired from the local market/mandi followed by input dealers. Moreover, the farmers receive most of the information on change in government policies on agriculture from input dealers followed by the mass media.

4.4 Factors Affecting Mass Media Adoption

Mass media communication plays a very important role in progress and development of agriculture across the world (Muhammad and Garforth, 1999; McBride and Daberkow, 2003; Butt *et al.*, 2008; Ani and Baba, 2009). Escalada *et al.* (1999) argued that with the shortage of extension personnel, the inaccessibility of large numbers of farmers living in remote areas and poor transportation facilities, farmers' access to new information is limited and mass media have been considered to be an effective means of information delivery. With the extension services experiencing problem of human resources unavailability, more emphasis is being laid on the use of mass media for information transfer through various government initiatives. As adoption of information through mass media on various agricultural decisions is not very common among the farming community, this study tries to identify the important factors which are more likely to influence the adoption of mass media information.

The producers' characteristics such as age, education, social category and income were investigated as the important socio-demographic considerations that affect the information adoption in agricultural decisions. The results on coefficient estimate, standard errors, significance levels and odd ratio for the parameters of the Logistics Regression Model on the adoption of media based information for vegetable cultivation decision-making is presented in Table 5.

Among the factors on socio-demographic profiles of the vegetable growers, social category and income level are more likely to affect the adoption of media based information. Though age and education of the farmers in adopting modern agricultural practices are considered to be important factors, the coefficient for these variables are not significant. This is mainly because of no significant differences in age and education profiles of the users and non-users of media-driven agricultural information services (Table 2). Regression results indicate that social category of the vegetable growers is likely to play a significant role in the adoption of media information for improving cultivation practices and access to market for their perishable produce. The negative coefficient of regression for social category implies that the vegetable growers belonging to socially lower classes are more likely to use media for their decision-making on vegetable cultivation. This indicates that vegetable growers belonging to socially lower group are comparatively more enterprising in enhancing their cultivation practices for better income and employment. The adoption of information is positively influenced by the income level as these growers are in a better position to invest in innovative farm technologies. The predicted estimates indicate that vegetable growers having more than Rs. 5000 monthly income are about twice as likely to use media information for decision-making than those with less income. These results indicate that hypothesis 1 which assumes positive influence of the growers' characteristics on the information

adoption in cultivation decisions, can be partially true as two out of four indicators are non-significant.

TABLE 5. PARAMETER ESTIMATES OF LOGISTICS REGRESSION

Parameters (1)	Description (2)	Dependent Variable: Mass Media Usage (Yes=1, No=0)			Exp(B) (6)
		B (3)	Std. Error (4)	Sig. (5)	
(Intercept)		-1.948***	0.614	0.002	
AGEY	Farmer's age (Years)	-0.007	0.008	0.333	0.993
EDUC	Farmer's education (High School & above = 1, otherwise=0)	0.085	0.242	0.726	1.089
SOC	Social category of farmers (General/ Other backward Class =1, otherwise=0)	-0.739**	0.311	0.018	0.478
ICOM	Monthly household income (> Rs. 5000 = 1, otherwise=0)	0.617***	0.244	0.011	1.853
LAND	Farmer's operational landholding (ha)	-0.095*	0.058	0.101	0.909
LEASE	Leased-in land with the farmers (Yes=1, No=0)	0.211	0.244	0.387	1.235
IRRG	Irrigation Facility (Yes=1, otherwise=0)	.0599*	0.341	0.079	1.820
HLAB	Use of hired labour (Yes=1, No=0)	0.824***	0.258	0.001	2.280
CROPNO	Number of crops grown	0.027	0.046	0.558	1.028
FOODP	Adoption of processing technique (Yes=1, No=0)	0.907***	0.236	0.000	2.478
CONTSELL	Arrangement of contract selling (Yes=1, No=0)	1.185***	0.352	0.001	3.270
-2 Log Likelihood		502.711			
Chi-Square		72.756	Df=11	0.000	
Correct prediction (per cent)		78.3			

***, ** and * Significant at 0.01, 0.05 and 0.10 level, respectively.

Farm characteristics are another set of variables influencing the adoption of media information. Though several empirical studies indicated strong positive relationship between farm size and adoption of farm technologies (Caswell *et al.*, 2001; Fedder *et al.*, 1985; Rahelizatova and Gillespie, 2004), the results of this study indicated that the vegetable growers with comparatively smaller landholdings are more likely to use media information than farmers with larger operational landholdings. It is quite interesting to note that small vegetable growers are becoming more conscious and adopting modern agricultural practices for better productivity and profitability from their small farms.

Adoption of media information is significantly higher among those farmers who are having better irrigation facilities. Vegetable growers with irrigation facility of their own are about twice more likely to adopt media based information in vegetable cultivation as compared to those growers who depends on rental irrigation facilities. As vegetable cultivation is labour intensive, the use of hired labour is another

important factor that influences the information adoption. Vegetable growers using hired labour are about 2.3 times more likely to adopt media information for effective cultivation. Hypothesis 2, which assumed that farm characteristics of vegetable growers influence the adoption of media information on cultivation decisions, also gets partial acceptance as three out of five indicators are statistically significant.

In general, business in perishable vegetables requires greater attention on the post-harvest management and market linkage. The findings clearly indicate that those vegetable growers who adopt processing of their vegetables such as sorting and grading or other form of processing for making vegetable based products are two and a half times more likely to adopt media based information. Market linkage is considered to be another important factor which necessitates acquisition of information on price and market due to perishable nature of the produce. The vegetable growers with contractual arrangements for selling their produce are more than three time more likely to adopt media information in improving vegetable cultivation practices. These findings clearly indicates that Hypothesis 3, which assumes that the vegetable growers with processing technologies and better market linkages are more likely to have influence on the information adoption in cultivation decisions is statistically accepted.

The livelihood ratio test statistics indicate that the explanatory variables used for predicting the adoption of media information in vegetable cultivation decision-making explain a fairly good-fit in the model. It is also important to note that the expected signs for the partial effects of most of the explanatory variables are typically consistent in the direction of relationship except in case of farm size.

V

CONCLUSION AND IMPLICATIONS

The study concludes that with rising demand in high value agricultural products coupled with rapid increase in organised retailing of fresh produce, vegetable cultivation has increasingly become an information-dependent sector requiring a wide range of scientific and technical information for effective decision-making at the farm level. In most of the developing countries including India, information on improved agricultural technologies and practices are primarily delivered by the publically funded agricultural extension services, which has largely failed to meet the changing informational requirement of the farming community in general and vegetable farmers in particular, due to various reasons. To strengthen the dissemination of agricultural information, the Ministry of Agriculture, Government of India has initiated the usage Mass Media in Agriculture Extension through a Centrally Sponsored Scheme in the 10th Five Year Plan.

The present study empirically analyses the factors affecting adoption of mass media based information system in vegetable cultivation using the Logistics Regression Analysis. The results of regression analysis clearly identify the social

category and income level of the vegetable growers as important socio-demographic factors affecting the adoption of mass media information system. Similarly, vegetable growers with small landholdings, irrigation facility and using hired labour at their vegetable farms are more likely to adopt mass media information. The use of processing techniques and contract arrangement for selling the vegetables are the other significantly important factors, which are more likely to influence the adoption of mass media based information for decision-making in vegetable cultivation.

The results of this study provide a practical insight into designing an effective information delivery strategy for vegetable cultivation based on the requirements of the farming community. It is important to note that mass media penetrations for providing information to farming communities are at a nascent stage as only 22 per cent vegetable growers indicated use of mass media; this study provides an indication on how to move ahead in designing an information dissemination vehicle for vegetable growers and who are going to be the potential takers. As vegetable growers largely belong to socially backward and asset poor segment, the mass media based extension system needs to be designed keeping in mind the opportunities and challenges faced by these vegetable growers.

The use of mass media methods of information transfer has the potential to greatly help the farming community. However, designing the delivery content becomes critical because of one way communication. Therefore, in order for extension practitioners, agricultural researchers and policy planners to effectively utilise the mass media methods for dissemination of agricultural information, more attention needs to be given to educate them for becoming more competent and confident in designing effective communication content for mass media which meets the requirements of the farming community.

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