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## RESEARCH NOTE

## Progressive and Non-progressive Farmers Apropos Utilizing ICT to Advance Agriculture in Samastipur District of Bihar

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### ABSTRACT

*In the age of information and communication technology, one receives and transmits information from daylight till night & it also important in the rapid transmission of information to a large audience at a fair price. The current study was conducted in the Samastipur district of Bihar. There are a total of 20 blocks in Samastipur district in which two villages selected from Kalyanpur block were Ramouli and Fulhatta and from Pusa block Harpur and Morsand village were chosen. There were 80 respondents in all, including both progressive and non-progressive respondents who were chosen for the study. Majority of the progressive and non-progressive farmers used radio and television as ICT tools for gaining information to develop the agriculture. None of the respondents were using internet and mobile for gaining any type of information related to agriculture although everyone claims that various portals are available related to agriculture. The media continues to be the primary source of information for Agricultural Extension. Information gained from ICT related to agriculture for progressive farmers mean value ( $\pm$ standard error) was 74.05 ( $74.05 \pm 0.43$ ) whereas, for non-progressive farmers it was 56.03 ( $56.03 \pm 0.47$ ). The z- test explored that there was a significant difference between the mean value of progressive farmers i.e., 74.05 and mean value of non-progressive farmers i.e., 56.03 with 'Z' value 28.26 which was found to be positively significant at 1% level with p-value of  $1 \times 10^{-5}$ . From this, it may be inferred that progressive farmers gained far more information about agriculture-related ICT than the non-progressive farmers. By accelerating development and bringing transparency to systems and operations, ICT hold the promise to offer creative solutions to the issues of poverty and inequality among the farmers so it should be given new momentum.*

**Key words:** Comparative study; ICTs; Progressive farmers; Utilization pattern;

In the age of information and communication technology, we receive and transmit information from daylight till night. According to *Burke and Sewake (2008)*. *Goyal (2010)* discovered that different populations utilize ICTs in different ways. For example, farmers prefer to watch television and regularly obtain weather and market information. However, farmers also rely on other forms of communication for information. Many developing nations have set up various communication technology centers, as evidenced, to give farmers information on agriculture. However, among farmers in poorer nations, television is a reliable source of information about agriculture. According to *M. Tahir et al. (2013)*, *Javaid et al. (2013*

*& 2011)*, weather monitoring systems also incorporate mobile communication technology and wireless sensor networking, which has benefited various communities by raising awareness and income. Similar technology should be used in the agricultural sector so that farmers can benefit from fresh perspectives on the development of their fields. Mobile phone users have made wireless multi-hop available so that various features can connect with one another without being disturbed by other users. According to the NSSO, 2005, just 40.4 per cent of farmers have access to some sources of information, and more than 50 per cent of farmers do not have any access to extension information in the villages. Out of this, 22% access the extension information via radio

(13%), television (9%), and other sources (NSSO, 2005). The recent testimony of ICT intervention was emphasized by *Bandhavya et al. (2022)* that how in e-NAM System payment on the same day of the trade is being done? By accelerating development and bringing transparency to systems and operations, ICT hold the promise to offer creative solutions to the issues of poverty and inequality. An attempt has been made in this study, to study information gained from the ICT to develop the agriculture by farmers in Samastipur district of Bihar.

## METHODOLOGY

The current study was conducted in the Samastipur district of Bihar by collecting the primary data from following ex-post facto research design. In the Samastipur district, there are a total of 20 blocks, and two of them were chosen at random for the study. Ramouli and Fulhatta were chosen from the Kalyanpur Block, while Harpur and Morsand were chosen from the Pusa block. 20 progressive and 20 non-progressives' farmers were purposefully chosen from each village. Thus, there were 80 respondents in all through which primary data were collected (*Workneh, & Ponnusamy, 2016*), including both progressive and non-progressive respondents that were chosen for the study.

In a hypothesis experiment, a z-test was used to determine whether or not a finding or association is statistically significant. If the population variance is known and the sample size is 30 or greater, a z-test can only be applied smoothly (*Lal, 2014; Lal, et al., 2015*). In this experiment Z-test (two sample tests for mean) was used to compare Progressive and Non-progressive farmers apropos Utilizing ICT Information.

## RESULTS AND DISCUSSION

ICTs are operationally defined as the degree of frequency and purpose of use of ICTs by the individual respondents for agriculture and rural development at the time of investigation.

It appeared from Table 1 that respondents gained information from the ICT to develop the agriculture in different agricultural activities, like viz., pre-harvest & post-harvest agricultural activities. Out of 80 respondents, among progressive farmers the mean score value of information gained for land preparation from radio were 18 and T.V were 17. Whereas, among non-progressive farmers, the mean score value of information gained for land preparation from radio

and T.V were 15.33. Out of 80 respondents, among progressive farmers the mean score value of information gained for soil testing from radio were 18.66 and T.V. were 16. Whereas, among non-progressive farmers, the mean score value of information gained for Soil testing from radio were 14.66 and T.V. were 13. Out of 80 respondents, among progressive farmers the mean score value of information gained for know about methods of sowing and transplanting from radio were 16.33 and T.V were 18. Whereas, among non-progressive farmers, the mean score value of information gained for know about Methods of sowing and transplanting from radio were 14.66 and T.V. were 14.33. Out of 80 respondents, among progressive farmers the mean score value of information gained for land preparation from radio were 14.66 and T.V were 15. Whereas, among non-progressive farmers, the mean score value of information gained for land preparation from radio were 10 and T.V were 10.33. Out of 80 respondents, among progressive farmers the mean score value of information gained for seed treatment from radio were 18 per cent and T.V were 17. Whereas, among non-progressive farmers, the mean score value of information gained for seed treatment from radio and T.V were 12.33. Out of 80 respondents, among progressive farmers the mean score value of information gained for disease control from radio were 15.33 and T.V were 16.33. Whereas, among non-progressive farmers, the mean score value of information gained for disease control from radio and T.V were 11. Out of 80 respondents, among progressive farmers the mean score value of information gained for HYV seeds or improved varieties from radio were 15.33 per cent and T.V were 15.66. Whereas, among non-progressive farmers, the mean score value of information gained for HYV seeds or improved varieties from radio were 11.66 and T.V were 13.33. Out of 80 respondents, among progressive farmers the mean score value of information gained for optimum seed rate from radio were 17.66 per cent and T.V were 17.33 per cent. Whereas, among non-progressive farmers, the mean score value of information gained for optimum seed rate radio were 11.33 and T.V were 10 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for recommended dose of chemical fertilizers from radio were 16.33 per cent and T.V were 17.33 per cent. Whereas, among non-progressive farmers, the mean score value of information gained for know about

**Table 1. Distribution of respondents into different categories with respect information gained from ICT related to agriculture (N=80)**

Information Gained/ ICT	PF (40) Mean Score	NPF (40) Mean Score
<i>Land preparation</i>		
T.V	18	15.33
Radio	17	15.33
Internet	-	-
Mobile	-	-
<i>Soil testing</i>		
T.V	16	13
Radio	18.66	14.66
Internet	-	-
Mobile	-	-
<i>Methods of sowing and transplanting</i>		
T.V	18	14.33
Radio	16.33	14.66
Internet	-	-
Mobile	-	-
<i>Weather information</i>		
T.V	15	10.33
Radio	14.66	10
Internet	-	-
Mobile	-	-
<i>Seed treatment</i>		
T.V	15.33	12.33
Radio	15.33	12.33
Internet	-	-
Mobile	-	-
<i>Disease control</i>		
T.V	16.33	11
Radio	15.33	11
Internet	-	-
Mobile	-	-
<i>Improved varieties</i>		
T.V	15.66	13.33
Radio	15.33	11.66
Internet	-	-
Mobile	-	-
<i>Optimum seed rate</i>		
T.V	17.33	10
Radio	17.66	11.33
Internet	-	-
Mobile	-	-
<i>Recommended dose of chemical fertilizers</i>		
T.V	17.33	11.33
Radio	16.33	11.33
Internet	-	-
Mobile	-	-
<i>Weeds and weed control</i>		
T.V	11.33	13.33
Radio	17	10.33
Internet	-	-
Mobile	-	-
<i>Herbicide</i>		

T.V	17	12.33
Radio	15.66	11.33
Internet	-	-
Mobile	-	-
<i>Insects or pest control</i>		
T.V	16.33	10.66
Radio	15.00	9
Internet	-	-
Mobile	-	-
<i>Information about pesticides or fungicides</i>		
T.V	25	11
Radio	15.00	8.66
Internet	-	-
Mobile	-	-
<i>Nursery raising</i>		
T.V	16.00	9.66
Radio	17.00	8.66
Internet	-	-
Mobile	-	-
<i>Availability of quality seed material</i>		
T.V	17	9.66
Radio	17.33	9.33
Internet	-	-
Mobile	-	-
<i>Use of bio-fertilizers and organic manure</i>		
T.V	15.66	11
Radio	17.00	8.00
Internet	-	-
Mobile	-	-
<i>Recommended dose of chemical fertilizers</i>		
T.V	16.00	9.66
Radio	17.00	10
Internet	-	-
Mobile	-	-
<i>Intercultural operations</i>		
T.V	15.00	13.33
Radio	15.33	12.66
Internet	-	-
Mobile	-	-
<i>Infestation of insect pests</i>		
T.V	14.00	13.33
Radio	13.66	12.66
Internet	-	-
Mobile	-	-
<i>Infestation of diseases</i>		
T.V	13.66	13
Radio	15.33	12.33
Internet	-	-
Mobile	-	-
<i>Market arrivals</i>		
T. V	15.66	13.33
Radio	13.66	11.33
Internet	-	-
Mobile	-	-
Mean±SE	74.05±0.43	56.03±0.47

PF=Progressive farmers; NPF= non-progressive farmers

recommended dose of chemical fertilizers from radio and T.V were 11.33 percent. Out of 80 respondents, among progressive farmers the mean score value of information gained for weeds and weeds control from radio were 17 per cent and T.V were 11.33 per cent. Whereas, among non-progressive farmers, the mean score value of information gained for weeds and weeds control from radio were 10.33 and T.V were 13.33 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for herbicides from radio were 15.66 per cent and T.V were 17. Whereas, among non-progressive farmers, the mean score value of information gained for herbicides from radio were 11.33 and T.V were 12.33 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for insects or pest control from radio were 15 and T.V. were 16.33. Whereas, among non-progressive farmers, the mean score value of information gained for Insects or pest control from radio were 9 and T.V were 10.66 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for pesticides or fungicides from radio were 15 per cent and T.V. were 25. Whereas, among non-progressive farmers, the mean score value of information gained for pesticides or fungicides from radio were 8.66 and T.V were 11 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for nursery rising from radio were 17 and T.V were 16. Whereas, among non-progressive farmers, the mean score value of information gained for nursery rising from radio were 8.66 and T.V. were 9.66 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for availability of quality seed material from radio were 17.33 and T.V were 7. Whereas, among non-progressive farmers, the mean score value of information gained for availability of quality seed material from radio were 9.33 and T.V. were 9.66 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for use of bio- fertilizer and organic manure from radio were 17 and T.V. were 15.66. Whereas, among non-progressive farmers, the mean score value of information gained for use of bio- fertilizer and organic manure from radio were 8 and T.V. were 11 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for recommended dose of chemical fertilizer from radio were 17 and T.V. were 16. Whereas, among

non-progressive farmers, the mean score value of information gained for recommended dose of chemical fertilizers from radio were 10 and T.V were 9.66 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for intercultural operations from radio were 15.33 and T.V. were 15. Whereas, among non-progressive farmers, the mean score value of information gained for Intercultural operations from radio were 12.66 and T.V were 13.33 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for infestation of insect pests from radio were 13.66 per cent and T.V. were 14. Whereas, among non-progressive farmers, the mean score value of information gained for infestation of insect pests' radio were 12.66 and T.V were 13.33 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for infestation of diseases from radio and T.V were 15.33 and 13.66 per cent. Whereas, among non-progressive farmers, the mean score value of information gained for infestation of diseases from radio were 12.33 and T.V were 13 per cent. Out of 80 respondents, among progressive farmers the mean score value of information gained for market arrivals from radio were 13.66 and T.V. were 15.66. Whereas, among non-progressive farmers, the mean score value of information gained for market arrivals from radio were 11.33 and T.V. were 13.33 per cent. Information gained from ICT related to agriculture for progressive farmers mean value was  $74.05 (74.05 \pm 0.43)$  whereas, for non-progressive farmers it was  $56.03 (56.03 \pm 0.47)$ . At last, it was revealed that none of the respondents were using internet and mobile for gaining any type of information related to agriculture although recent research suggests that now farmers are using mobile to fetch on time need-based information (Shukla *et al.*, 2022).

Z-test (two sample tests for mean) was used to verify whether there was a significant difference between the mean values of the information gained from ICT related to agriculture between progressive farmers & non progressive farmers (Table 2). After applying the test, the results in Table 2 indicated that there was a significant difference between the mean value of progressive farmers i.e., 74.05 and mean value of non-progressive farmers i.e., 56.03 with 'Z' value 28.26 which was found to be positively significant at 1% level. From this it can be revealed that the prevalence of information gained from

**Table 2. Comparison between information gained from ICT related to agriculture among progressive farmers & non progressive farmers (N=80)**

z-Test	PF	NPF
Mean	74.05	56.03
Known Variance	7.38	8.89
Observations	40	40
Hypothesized Mean Difference	0	
z	28.26	
P(Z<=z) one-tail	0 (1*E-5)	
z Critical one-tail	1.64	
P(Z<=z) two-tail	0	
z Critical two-tail	1.96	

ICT related to agriculture intervention among the progressive farmers is much higher than the non-progressive farmers and the difference was found to be highly significant at 1% level with p-value of 1\*E-5 (Srivastava et al., 2022).

## CONCLUSION

Based on the results, it can be deduced that among the total respondents, majority of the progressive and non-progressive farmers used radio and television as ICT tools for gaining information to develop the agriculture. None of the respondents were using internet and mobile for gaining any type of information related to agriculture although everyone claims that various portals are available related to agriculture. Information gained from ICT related to agriculture for progressive farmers mean value was 74.05 (74.05±0.43) whereas, for non-progressive farmers it was 56.03 (56.03±0.47). After applying the z- test, it was found that there was a significant difference between the mean value of progressive farmers i.e., 74.05 and mean value of non-progressive farmers i.e., 56.03 with 'Z' value 28.26 which was found to be positively significant at 1% level. From this it can be deduced that information gained from ICT related to agriculture is much higher among the progressive farmers than the non-progressive farmers.

## CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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