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Diffusion status of adopted home stead technology among rural women

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Abstract
The present study on "diffusion of home stead technology among rural women" was conducted on 200 women from four villages i.e. Sundawas, Bichpari, Shikarpur, Shahpur villages from Hisar district of Haryana state adopted during last four years under IAHS programme of College of Home Science.. The dependent variables of the respondents were diffusion status, of adopted technologies. Data were collected personally with the help of inventory, schedule and questionnaire and were analyzed by application of frequency, percentages, and other descriptive techniques. Irrespective of the technologies, on an average each IAHS beneficiary who adopted any of the 15 homestead technologies further disseminated the same at least among one woman. Adoption rate of technologies among secondary adopters was maximum for TAD related technologies followed by FN related technology, HDFS related technologies and FRM related technologies.

Keywords: Diffusion, homestead, technology, rural women

Introduction
Development of new technology is not generally a major problem, but dissemination by competent persons and acceptance of these technologies by intended beneficiaries pose problems (Rogers 2003) [9]. In the recent past, government has placed special emphasis on technological empowerment of rural women. A common and driving assumption is that dissemination of technologies will result in technology adoption, and will subsequently generate benefits for women and other stakeholders. Technologies scan empower women on multiple levels and spheres circles of change can be sparked by women's use of a seemingly simple technology (Malhotra *et al.*, 2009) [5]. Technological innovations and their reach to the rural women can result in enhancing women's welfare and their empowerment. Low cost, reliable homestead technologies related to nutrition, health and sanitation, drudgery reduction, post harvest technologies etc. can provide a great leap forward for meeting rural women's practical needs for reducing their drudgery, increasing their efficiency and improving family's health condition (Choudhary and Solanki, 2018) [2].

Methods and Materials
The study was conducted in Haryana state. Considering the objectives of study, Hisar district was purposively selected as the dissemination of complete package of homestead technologies is being done through Internship/Industrial Attachment of Home Science (IAHS) programme of I C College of Home Sciences, CCSHAU, Hisar. Four villages viz; Sundawas Bichpari, Shikarpur and Shahpur adopted under IAHS programme, College of Home Sciences during.. Total 200 rural women/ adolescent girls enrolled under IAHS programme who were selected proportionately for the study. Constituted the sample for present study was diffusion of homestead technologies of the adopted technologies. Data were collected personally with the help of interview schedule. Statistical techniques like frequency and percentages were employed to analyze the data.

Diffusion of technologies: Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a theory that seeks to explain how, why and at what rate new ideas and technology spread through cultures (Rogers, 2003) [9]. In the present study diffusion was operationalized as horizontal sharing/dissemination of selected homestead technologies by the primary respondents (IAHS beneficiaries) among secondary respondents (women/ girls) in the selected villages. Schedule was developed to measure this variable. The respondents were asked to mention the number of

women/ girls with whom they shared the detailed information about a particular technology and whether they adopted the same or not. The percentage of secondary respondents adopting the technology was calculated to assess diffusion of technology. Diffusion of each technology was studied separately.

Results

Diffusion of homestead technologies

Diffusion of FRM related technologies by the respondents: It can be observed from table 1 that information about macramé products was diffused among maximum number of secondary adopters (94) by the first adopters followed by wealth out of waste (75), flower making craft (72), improved cot bag (61) and improved mud stove (44) related information.. Adoption of technologies by secondary respondents was also calculated and maximum percentage of the secondary respondents adopted wealth out of waste (73.3%) followed by macramé products (67.0%), flower making craft (63.8%), improved mud stove (56.8%) improved cot bag (54.0%). The data in last column of the table show that total 346 secondary respondents were covered by the primary 200 respondents for diffusion of these technologies and diffusion index was 1.73, which clearly indicated that more than one secondary respondent was covered by the one primary respondent for diffusion of these technologies. Out of the 346 respondents, 222 of them adopted these technologies and thus the adoption rate of the diffused technologies pertaining to FRM was 64.1%.

Diffusion of homestead technologies

Table 1: Diffusion of FRM related technologies by the respondents (N=200)

Technology	Number of Secondary respondents and Adopters								Total	
	Sundawas		Bichpari		Shikarpur		Shahpur			
	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)
Flower making craft	11	5(45.4)	10	7(70.0)	21	13(61.9)	30	21(70.0)	72	46 (63.8)
Improved Cot bag	8	5(62.5)	8	5(62.5)	20	10(50.0)	25	13(52.0)	61	33 (54.0)
Improved Mud Stove	9	4(44.4)	4	3(75.0)	12	7(58.3)	19	11(57.8)	44	25 (56.8)
Macramé product	17	10(58.8)	11	9(81.8)	28	19(67.8)	38	25(65.7)	94	63 (67.0)
Wealth out of waste	15	11(73.3)	7	5(71.4)	25	18(72.0)	28	21(75.0)	75	55(73.3)
Total	60	35	40	29	106	67	140	91	346	222
									Diffusion index =1.73	Adoption Rate= 64.1%

Table 2: Diffusion of FN related technologies by the respondents (N=200)

Technology	Number of Secondary respondents and Adopters									
	Sundawas		Bichpari		Shikarpur		Shahpur		Total	
	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)
Pearl millet products	15	10(66.7)	10	7(70.0)	26	15(57.6)	30	21(70.0)	81	53 (65.4)
Nutritious Recipe	20	14(70.0)	14	10(71.4)	31	28(90.3)	35	21(60.0)	100	73 (73.0)
Pickle	25	19(76.0)	18	15(83.3)	35	27(77.1)	40	32(80.0)	118	93 (78.8)
Sauce making	10	6(60.0)	8	5(62.5)	15	10(66.7)	20	11(55.0)	53	32(60.3)
Total	91	64	62	47	136	101	160	110	449	322
									Diffusion index= 2.24	Adoption Rate= 71.7%

Diffusion of FN related technologies by the respondents: It was observed from table 2 that information about pickles recipe was diffused among maximum number of secondary adopters (118) by the first adopters followed by nutritious recipe (100), pearl millet products (81) and sauce making (53) related information. Extent of adoption of technologies by secondary respondents was also calculated and maximum percentage of the secondary respondents adopted pickle making (78.8%) followed by nutritious recipe (73.0%), pearl millet products (65.4%), sauce making (60.3%). The data mentioned in last column of the table revealed that total 449 secondary respondents were covered by the primary 200 respondents for diffusion of these technologies with mean value of 2.24 that was indicative of the fact that on an average each IAHS beneficiary disseminated the technical information acquired about FN related technologies among more than two women. Out of the 449 women, 322 of them adopted these technologies and thus the adoption rate of the diffused technologies pertaining to foods and nutrition was 71.7%.

Diffusion of HDFS related technologies by the respondents: It can be seen from table 3 that information about soft toys was diffused among maximum number of secondary adopters (101) by the first adopters followed by teaching aids (72) related information. The total 226 secondary respondents were covered by the primary 200

respondents for diffusion of these technologies with mean value of 1.13 that was indicative of the fact that on an average each IAHS beneficiary disseminated the technical information acquired about HDFS related technologies among more than one woman. Out of the 226 respondents, 151of them adopted these technologies and thus the adoption rate of the diffused technologies was 66.8%.

Diffusion of TAD related technologies by the respondents: It can be observed from table 4 that information about garments construction was diffused among maximum number of secondary adopters (106) by the first adopters followed by tie & dye (69), and fabric painting (58) related information. The data in last column of the table show that total 233 secondary respondents were covered by the primary 200 respondents for diffusion of these technologies with mean value of 1.16 that indicated coverage of at least one woman by the primary adopters for diffusion of TAD related technologies. Extent of adoption of technologies by secondary respondents was also calculated and maximum percentage of the secondary respondents adopted garments construction (77.3%) followed by tie & dye (73.9%) and fabric painting (63.7%). Overall adoption rate of the diffused technologies was 72.7 percent.

Table 3: Diffusion of HDFS related technologies by the respondent (N=200)

Technologies	Number of Secondary respondents and Adopters									
	Sundawas		Bichpari		Shikarpur		Shahpur		Total	
	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)
Soft toys making	18	10(55.6)	12	9(75.0)	36	25(69.4)	35	30(85.7)	101	74(73.2)
Teaching aids	8	5(62.5)	10	6(60.0)	25	13(64.5)	29	20(68.9)	72	44(61.1)
Total	36	22	29	19	77	49	84	61	226	151(66.8)
									Diffusion index =1.13	Adoption Rate= 66.8%

Table 4: Diffusion of TAD related technologies by the respondents

Technology	Number of Secondary respondents and Adopters									
	Sundawas		Bichpari		Shikarpur		Shahpur		Total	
	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)	Diffused	Adopted (%)
Fabric painting	12	8(66.7)	15	11(73.3)	12	7(58.3)	19	11(57.8)	58	37(63.7)
Garments construction	25	20(80.0)	21	17(80.9)	30	22(73.3)	30	23(76.6)	106	82(77.3)
Tie and dye	15	10(66.7)	14	11(78.5)	19	15(78.5)	21	15(71.4)	69	51(73.9)
Total	52	38	50	39	61	44	70	49	233	170(72.9)
									Diffusion index =1.16	Adoption Rate= 72.9%

In total, two hundred primary respondents covered under IAHS diffused the TAD related technologies among 233 secondary respondents. As the diffusion index was 1.73, which clearly indicated that more than one secondary respondent was covered by the one primary respondent for diffusion of these technologies. Out of the 233 respondents, 170 of them adopted these technologies and thus the adoption rate of the diffused technologies was 72.9%.

Discussion and Conclusion

The goal of any techno dissemination programme is to convince the most individuals to embrace a new product, service or idea being disseminated. Diffusion of technology is important to technology generation system because it considers adoption in context of large scale social system. Adopters of various home science technologies (the respondents at confirmation stage of IDP) shared/diffused the acquired technologies further among other women of the villages who were not part of IAHS programme which indicated horizontal diffusion of the technologies. Pickle making technology was diffused among maximum number of rural women however; adoption of garment construction was maximum among secondary adopters. As technologies like garment construction, soft toys, macramé products, wealth out of waste and flower making can be used for income generation, for gift purpose and for home decoration, their diffusion and further adoption was comparatively more than drudgery reducing technologies like cot bag and improved mud stove. Diffusion and further adoption of pickle and nutritious recipes was also observed among majority of the respondents as these were perceived to be advantageous in terms of increasing nutritional intake of the family with nominal expenditure.

Irrespective of the technologies, on an average each IAHS beneficiary who adopted any of the 15 homestead technology further disseminated the same at least among more than one women. Adoption rate of technologies among secondary adopters was maximum for TAD related technologies (72.9%) followed by FN related technologies (71.7%), HDFS related technologies (66.8%) and FRM related technologies (64.1%). It was interesting to observe that adoption of technologies among secondary adopters was better than primary adopters as secondary respondents decided to adopt the technologies on the basis of results achieved by the primary adopters. The process of diffusion takes place through adoption of technologies by members of the community; therefore, the decision to adopt a new technology is based on the potential results achieved by the adopter (Fisher *et al.*, 2000) [4]. Due to less access to various extension programmes and social taboos restricting the movement of women, fellow women, neighbors or relatives are one of the important sources of information for rural women. Various empirical evidence over time have shown that farmers learn about new technologies after adoption of these new technologies by their neighbors (Bandiera and Rasul, 2006; Munshi, 2004; Pratiwi and Suzuki, 2017) [3, 6, 8]. Sharing of information about toll free helpline services with family members (92.0%), husbands (77.0%) friends/ neighbors (63.0%) and relatives (18.0%) by rural women has been observed. The literature also shows the importance of social learning after adoption of a new

technology. In nut shell, importance of social interactions, bonds between women in neighborhood and community has been established in transfer of technologies. Horizontal spread or diffusion of information by more than 40.0 % of the rural women who acquired training on climate smart practices among their family members, friends and relative was also reported (AICRP report, 2019) [1].

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