

Innovative approach for technology dissemination among rural community –By KVK, Ambala

UPASANA SINGH*, PRAGATI SINGH AND RAMESH KUMAR
Krishi Vigyan Kendra, AMBALA (HARYANA) INDIA

ABSTRACT : Farm Women of Rural areas generally face lots of problems during their day- to- day life. These problems can be as drudgery burden; high cost; time; energy; fuel consuming and above to all, the problem of health and hygiene. To mitigate these problems to some extent, KVK Ambala innovated some technologies such as Janta Water Filter, Ice-less refrigerator, bhusse ka dibba and hand cloth washing device. These innovations work on different principles. Janta Water Filter work on filtering candle which filters water instantly. This filter can be used to remove suspended particles and harmful bacteria from polluted water. Ice-less refrigerator works without electricity and on the principle that evaporation causes cooling effect. Bhusse ka dibba works on the principle of the thermal insulation which resist the flow of heat from the inside to outside and thereby save and store thermal energy. It keeps food hot for 6-8 hrs. Hand cloth washing device is based on the principle of centrifugal force. Various trainings, trials and demonstrations and extension activities were organized for Aanganwadies workers(120), School's children(30) and Farm women (850) to disseminate these technologies purposively in selected villages of all 6 blocks of Ambala district of Haryana. After testing these innovations, feed-back were collected from different sources (i.e. schools, Aangawadi Kendra and Farm Women) and overall impression was that these innovations are user friendly, sustainable, ecologically viable, drudgery reducing, low costing, time, energy and fuel saving. There is need to promote these technologies on a larger scale specially in rural areas of other states.

KEY WORDS : Drudgery, Technologies, Innovations, Sustainable, Ecologically viable

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INTRODUCTION

Rural women's life in Haryana is a routine of labour and in house drudgery of cooking meals, washing clothes with old techniques i.e. wooden thappi and hatching water from long distance. Several studies documented that

women work for 14-16 hrs. a day and carry out most arduous activities of farm and home which requires tremendous amount of personal energy. Beside consuming valuable time, drudgery is also involved in routine household work as penetration of advancement of technologies in rural area is poor. Rural women are

still using old techniques to accomplish their routine task which lead to high consumption of time, energy and drudgery.

To reduce drudgery, time, energy and to improve health and hygiene of rural community, KVK Ambala has made an effort to Innovate various technologies. There is a need to sensitize and motivate rural women to utilize these technologies which can simplify their work, saving time and energy and their by improve the standard of living (Verma and Grower, 2006). Adoption of New Technologies Scientific tamper plays a crucial role.

So, need here arise to innovate such technologies that are useful for completion of household task more easily, comfortable, saves time, energy and is cost effective too.

Present study has been designed to observe the performance and utility of Innovated Technologies i.e. Ice-less refrigerator, Janta Water Filter, Bhusse ka dibba and hand cloth washing technique with following objectives :

- To study awareness regarding low cost energy saving technologies :
- To introduce modified cost effective technologies in Anganwadies, Schools and Farm Families i.e. Ice-less refrigerator, Janta Water Filter, Bhusse ka dibba and hand cloth washing technique
- To study the acceptability and constraints for the adoption of cost effective technology kit.

METHODOLOGY

The present study was conducted in six blocks of Ambala district of Haryana. Target group were selected purposively from schools (30), Aaganwadies (120) and Farm families (850) to study the working of various technologies i.e.

- Janta Water Filter - School children, Aaganwadies workers and farm families
- Ice-less refrigerator- Farm families
Bhusse ka dibba and
Hand cloth washing
device

The study was carried out in three phases:

Phase I : General information regarding awareness about cost effective drudgery, time and energy saving technologies

Phase II : The existing model of Janta Water Filter, Janta Fridge was modified and Hand cloth washing

device was innovated and introduced among target group.

Phase III : Acceptability for the adoption of technology by rural Community were studied after 3 months of their introduction during summer season. Water Filters were placed at schools, Aagnawadies and farm families for availability of pure cold drinking water during summer. To check the feasibility, technologies were kept in rural houses and check the working of other factors. The data was collected with help of pre-tested interview schedule.

KVK intervention :

Work profile of Farm women revealed 'physical drudgery, low work efficiency devoid of advance tools and technologies'. To overcome this problem KVK, Ambala had made an effort by innovating and modifying technologies useful for rural areas. These technologies work on various principles.

Ice-less refrigerator :

Description :

Material : Laundry Basket with lid, Vegetable Storing Basket, Jute Sack, Lawn Water pipe of low diameter, Pitcher (Matka) and Trolley.

Construction : Laundry basket and lid is covered with the jute(sack).The jute sack is sewn around the rim of basket and a water pipe of low diameter(with holes punctured at half inch distance)is attached with the jute sack. Vegetable storing basket inside laundry basket and inserted water pipe and connected with pitcher for continuous water supply. In such a way that the drop of water falls on laundry basket padded with jute sack. The lower end of jute sack must hang loosely around the bottom, exceeding the length of basket, so that outside relatively hot air does not get chance to enter in the basket through upward movement. Movable trolley is fixed at bottom to move this refrigerator at ease. The total expenditure incurred on its fabrication is around Rs. 500/-.

Working principle : Ice-less refrigerator works on the principle of evaporative cooling.

Benefits :

- An easy and cheap method for increasing the life of perishable food items.
- Keeps food fresh for longer days, easy to operate.

- Keep food safe from flies, mosquitoes and rats.
- Ice-less refrigerator remain 10-15° C cooler than the outside temperature.
- It is easy to build from the locally available materials.
- It can be easily moved from one place to another place with ease.
- It is cost effective.

Janta Water Filter :

Description : It is cost effective, simple and easy to operate.

Material: Pitcher/Plastic bucket, water filter candle, Pitcher stand and Plastic Tap

Practical Utility : Janta Water Filter is one of the easy and cheap solutions to the wide spread problem of polluted water in the village.

Cost : Rs.180-200/- app.

Hand cloth washing device :

Description of innovation :

Material :Aluminum plate with holes, Iron Rod, Handle, tub.

Construction: Round aluminum plate with holes is attached with aluminum rod at the bottom with the help of nut and bolt.

Working : Take one plastic tub filled with water and put detergent and dirty clothes for washing. Now apply force (up and down) with this device while maintaining straight body posture. This upward and downward pressure exerted on the cloth forces dirt particles to detach from clothes and make them clean. This is how manually operated cloth washing device clean the clothes with more comfort.

Benefits of technology :

- Easy to use
- No electricity consumption
- Easy to maintain
- Cost effective
- Easily moveable

Cost : Rs.500/- (cost of Aluminum plate and rod)

Bhussa ka dibba :

Description of Innovation : Wooden Box (18"x16") is filled with hay. Top position of box is covered with jute pillow (16"x 14") filled with hay.

Material :Wooden box, Bhussa packed in a jute bag

Principle : Material entangles air in their mesh which allows very little heat to escape and is bad conductors of heat. Box lined with such material, will retain heat. If food at boiling temperature is kept in it, it will retain at same temperature for a very long time.

Working : Take any food e.g. Rice. Put double amount of water than that of rice and salt for taste. Boil till it reaches at boiling temperature, remove from flame and put in air tight container and place it in a hay box with jute pillow at the top. It will take 30 min. time to cook rice.

Cost : Rs.600-800/- (Wooden Box)

These technologies simplify the work, save time and energy and is cost effective.

OBSERVATION AND ASSESSMENT

The results obtained from the present investigation are summarized below :

Awareness for low cost drudgery, time and energy saving technologies :

The findings of present study was revealed that awareness regarding low cost, drudgery time and energy saving technologies were almost negligible among rural women in pre exposure condition. But in post exposure, maximum respondent were fully aware with material, working principle and practical utility of Janta Water Filter (90%), Ice-less refrigerator (86%), Hand cloth washing technique (84%) and Bhussa ka dibba (80%). The reason for using these technologies by the majority of farm women were might be that filter provide fresh water, Bhussa ka dibba and Ice less refrigerator make food hot and increase shelf life during summer season, respectively and hand cloth washing device improve health and save from body ache.

Awareness for impurities , water born diseases and knowledge of purification system of drinking water among school children :

Majority of respondents were not aware about impurities present in drinking water collected from river, wells and ponds etc. like Insecticides and Pesticides (93) Human excreta and dust (90%), Factory waste (80) during pre exposure. As evident from Table 2 maximum number of respondent were fully aware about impurities in water like dust (90%), insecticides and pesticides (83%), Human excreta (80%), Factory waste (70%) during post exposure.

Majority of respondents were not aware about water borne diseases which may be caused with intake of impure water during pre-exposure period. As evident from Table 2 maximum number of respondents were well aware about diseases like Jaundice (97%) followed by Diarrhea (90%), Gastritis (83%), Vomiting (80%) and Typhoid (70%) during post exposure. As per as water purifying technology awareness is concerned, majority of the respondents were not aware of the water purification techniques. Whereas during post exposure to the Janta Water Filter technology, respondent were well aware of these technologies *i.e.* filter (97%), followed by Boiling (90%), bleaching power (80%) and Chlorine (70%).

Awareness programs to upgrade knowledge of farm women :

To upgrade knowledge regarding household cleanliness, improved time and energy saving technologies, KVK, Ambala had organized various

trainings, camps, campaigns, FLD’s etc. These programs played an important role in adoption of technologies (Fig. 1) thereby improved health status and work efficiency as well as reduced time for completion of work.

Adoption of improved technologies :

Adoption is a mental process. Table 3 revealed that majority of farm families were using innovative technologies for improving their work efficiency and health status. The overall adoption was calculated on the basis of sum of respondents who adopted the technology divided by total number of participants in the training multiplied by hundred.

There were overall adoption percentage of respondents were iceless refrigerator (75%), janta water filter (69.8%), hand cloth washing technique (62.2%) and Bhusse ka dibba (58.8%). The reasons for using these technologies by majority of farm women might be that all technologies can run without electricity. Ice-less refrigerator can retain the freshness of perishable food

Table 1 : Awareness percentage for low cost drudgery, time and energy saving technologies (n=1000)

Sr. No.	Technology	Awareness (%)					
		Pre exposure			Post exposure		
		Fully aware	Partially aware	Not aware	Fully aware	Partially aware	Not aware
1.	Ice-less Refrigerator	--	--	1000 (100%)	860(86%)	140(14%)	--
2.	Janta Water Filter	--	20(2%)	980 (98%)	900(90%)	80(8%)	20(2%)
3.	Hand Cloth Washing Device	--	--	1000 (100%)	840(84%)	140(14%)	20(2%)
4.	Bhusse Ka Dibba	--	--	1000 (100%)	800(80%)	160(16%)	40(4%)

Table 2 : Awareness percentage for impurities, water born diseases and knowledge of purification system of drinking water among school children low cost drudgery, time and energy saving technologies (n=30)

Sr. No.	Water awareness	Pre exposure			Post exposure		
		Fully aware	Partially aware	Not aware	Fully aware	Partially aware	Not aware
1.	Impurities in water						
	Dust	1(3%)	2(7%)	27 (90%)	27(90%)	3 (10%)	--
	Human excreta	--	3(10%)	27 (90%)	24(80%)	4 (13%)	2 (7%)
	Factory waste	--	6(20%)	24 (80%)	21(70%)	6 (20%)	3 (10%)
	Insecticides and pesticides	--	2(7%)	28(93%)	25 (83%)	3 (10%)	2 (7%)
2.	Diseases						
	Diarrhea	--	3(10%)	27 (90%)	27 (90%)	2 (7%)	1 (3%)
	Vomiting	--	--	30(100%)	24 (80%)	4 (13%)	2 (7%)
	Gastritis	--	--	30(100%)	25(83%)	3 (10%)	2(7%)
	Typhoid	--	3(10%)	27 (90%)	21(70%)	6 (20%)	3(10%)
	Jaundice	3(10%)	6(20%)	21(70%)	29(97%)	1 (3%)	--
3.	Awareness of water purifying techniques						
	Boiling	3 (10%)	3 (10%)	24 (80%)	27(90%)	2(7%)	1 (3%)
	Bleaching powder	--	3 (10%)	27 (90%)	24(80%)	4 (13%)	2 (7%)
	Chlorine	--	--	30(100%)	21(70%)	5(17%)	4 (13%)
	Filter	1(3%)	5(17%)	24 (80%)	29(97%)	1 (3%)	--

for long time. Improve shelf-life of raw vegetable 10-11days during summer, through Janta Water Filter they can get pure water free from suspended material, dirt, harmful bacteria and good odour. hand cloth washing technique used less water and effort to wash loads of cloth, Bhusse ka dibba can retain the temperature of cooked food for 6 hours. The flavour, taste, colour, texture of food was superior.

Feed back of technology :

After testing these innovations, feed-back were collected from different sources (*i.e.* schools, Aaganwadi Kendra and Farm Women), it was revealed that (98%) respondents reported these technologies were low cost because it can be prepared by locally available material and according to demand of respondent. (96%) and (89%) respondents reported that techniques were time and energy saving, respectively because these can run

without electricity and fuel. Majority of respondents (93%) and (92%) said these technologies were able to reduce drudgery and need low maintenance and (91%) respondents reported technologies were easy to handle. Majority of maximum number of respondents (84%) were reported these are eco friendly because these technologies never produce any harmful gas.

Conclusion :

The innovative technologies *i.e.* Janta water filter, Bhussa ka dibba, Ice-less refrigerator and hand cloth washing technique can be used in rural community because these are simple to use, fairly affordable, easy to handle and use and low or no maintenance problem, would go a long way in reducing monotony and drudgery, saving precious time and energy, especially of rural women as they attend to numerous tasks in the home. There is need to sensitized and motivate rural women to

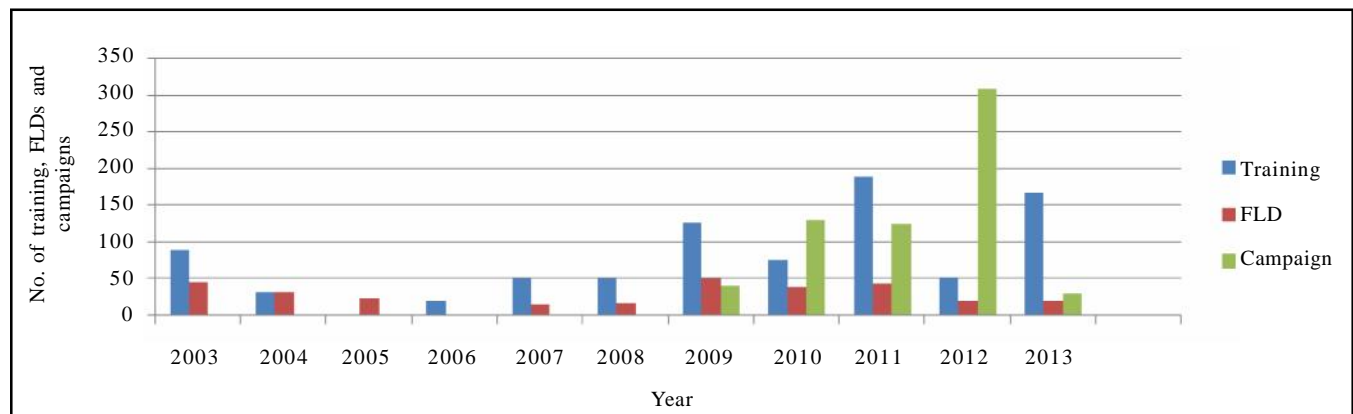


Fig. 1 : Year wise organization of training, FLDs and campaigns by KVK Ambala

Technology	No. of participants	No. of adoption	Adoption (%)
Ice-less refrigerator	109	82	75%
Janta water filter	507	354	69.8%
Hand cloth washing technique	98	61	62.2%
Bhusse ka dibba	136	80	58.8%

Parameters	Yes	No
Easy to handle	910(91%)	90(9%)
High cost of technology	20(2%)	980(98%)
Need maximum time to handle	960(96%)	40(4%)
Require high energy	110(11%)	890(89%)
Low maintenance	920(92%)	80(8%)
Able to drudgery reduce	930(93%)	70(7%)
Eco friendly	840(84%)	160(16%)

utilize these technologies. In the adoption of new technology scientific temper play a crucial role (Verma and Grover 2006 and Kumar, 2006). Hence, when exposure is provided to rural women through training, exhibitions, demonstrations, visits, the adoption of proposed technologies gets boosted. Through such interventions significant gains in knowledge and changes in attitude have been reported (Sandhya and Intodia, 1999; Sah, 2001; Gogoi *et al.*, 2000 and Kumari, 2009).

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