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Overall Awareness Level of Rural Women about Traditional and Modern Water Saving Methods Used In Western Rajasthan

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Abstract: The present investigation was undertaken to study the profile of rural women and awareness about water saving methods. A sample of 120 women were selected from six villages of two panchayat samities Bikaner and Kolayat of Bikaner district. The findings of the present study revealed that the majority of the respondents were illiterate. The overall awareness level regarding water saving methods of rural women was medium. They were used water saving methods in household activities.

Keywords: water saving methods, traditional methods, modern methods, overall awareness.

I. INTRODUCTION

Water is needed to move, eat, reproduce, work and think, in other words, to survive and to live. Water resources are challenged in our world today due to pollution and overuse of the local resources. There are also fights for water between different users: farmers, people in cities and industries. We are using much more water than what is really needed and available in many locations around the world. Water covers 71% of the Earth's surface. It is vital for all known forms of life. Only 2.5% of the Earth's water is fresh water, and 98.8% of that water is in ice and groundwater. Saving water at home does not require any significant cost outlay. Although there are water-saving appliances and water conservation systems such as rain barrels, drip irrigation and on-demand water heaters which are more expensive, the bulk of water saving methods can be achieved at lower cost. For example, 75% of water used indoors is in the bathroom, and 25% of this is for the toilet. The average toilet uses 4 gallons per flush (gpf). We can invest in a ULF (ultra-low flush) toilet which will use only 2 gpf. "Household water used in conservation" and reported that simulates water use in a single-family res-identical neighbourhood using end-water-use parameter probability distributions generated from Monte Carlo sampling. This model represents existing water use conditions in 2010 and is calibrated to 2006–2011 metered data. Indoor conservation is more widespread, but the savings are lower than outdoor conservation. The most cost-effective widely adopted indoor conservation actions are retrofitting bathroom faucets and showerheads, but retrofitting toilets with HETs holds the greater potential of water savings (cahill, 2013).Water conservation at home is one of the easiest measures to put in place, and saving water should become part of everyday family practice. Human beings cannot survive more than 3 days without any source of water. Neither can other animals or plants. Water is life.We are also wasting our water resources when we are discharging our wastes and sewage into it, making the receiving waters unsuitable for life.

Therefore, study was conducted for to access the level of rural women towards the water saving methods traditional and modern methods. Present investigation entitled "Awareness level of rural women about water saving methods used in household sector in western Rajasthan" in Bikaner District of

Rajasthan was undertaken with the objective-To find out water saving methods used in household activities.(a) Traditional methods (b) Modern methods.

II. RESEARCH METHODOLOGY

The study was conducted in Bikaner district of Rajasthan there are seven panchayat samities in Bikaner District Bikaner, Nokha, Kolayat, Lunkaransar, Shree Dungargarh, Khajuwala, Panchu. Among these, two Panhayatsamities were selected purposively- Kolayat and Bikaner, Kolayat being highly water scared panchayat samities among all six panchayat samities and Bikaner giving a modern touch.For selection of respondent, random sampling method was used. From the selected villages a list of farm families using water saving methods was prepared. Then from these families sample of twenty farm women from each village was selected randomly, thus making a sample size of 120 respondents.

III. RESULT AND DISCUSSION

The data in the Table-1 reveals that 16.67 per cent respondents belonged to scheduled caste

scheduled caste and 45 per cent belonged to other backward caste, whereas, 38.3 per cent found from upper caste.

Table 1. Distribution of respondents by their caste (N=120)

S.No.	Categories	f	(%)
1.	Scheduled caste	20	16.67
2.	Other backward caste	54	45.00
3.	Upper caste	46	38.30

The Table -2 reveals that majority of the respondents 56.67 per cent had Medium family size, whereas, 36.67 per cent from large family size and 10 per cent of the respondents had small family size.

Table 2. Distribution of respondents by their family size (N=120)

S.No.	Categories	f	(%)
1.	Small (up to 4 member)	12	10.00
2.	Medium (5-8 member)	68	56.67
3.	Large (more than 8 member)	44	36.67

The data in Table- 3 clearly indicated that majoritywere using well, Tanka and rainfed with 17.5, 16.5 and 12.5 per cent, respectively. While in modern methods they were using sprinkler irrigation, micro sprinkler, and drip irrigation with 35.83, 12.5 and 13.33 per cent, respectively.

Table- 3. Distribution of the respondents on the basis of water saving methods during agriculture (n=120)

S.No.	Water saving methods during agriculture					
	Traditional methods	f	(%)	Modern methods	f	(%)
1.	**Well	21	17.5	Sprinkler Irrigation	43	35.83
2.	**Tanka	20	16.7	Micro sprinkler	15	12.50
3.	*Rainfed (by nature)	15	12.5	Drip irrigation	16	13.33

Traditional and Modern Water Saving Methods in Agriculture

Tankas

Tankas(small tank) are underground tanks. This built in the main house or in the courtyard with circular holes made in the ground, lined with fine polished lime, in which rainwater is collect, so tanka is an important component of integrated rural water supply system in western Rajasthan (Goyal and Issac, 2009).

Well

A water well is a hole, shaft, or excavation used for the purpose of extracting ground water from the subsurface. Water may flow to the surface naturally after excavation of the hole or shaft. Such a well is known as a flowing artesian well. More commonly, water must be pumped out of the well (Thomas, 2003).

Drip irrigation

'Drip irrigation, also known as trickle irrigation, is an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants, either onto the soil surface or directly onto the root zone, through a network of valves, pipes, tubing, and emitters. It is done through narrow tubes that deliver water directly to the base of the plant (Anonymous, 2012b).

Sprinkler irrigation

Sprinkler irrigation the sprinkler system irrigates the field and thus it is widely used in sandy areas as it checks the wastage of water through seepage and evaporation. Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground. The pump supply system, sprinklers and operating conditions must be designed to enable a uniform application of water (Anonymous, 2012c).

Micro-sprinkler

In micro-sprinkler irrigation, water is applied to the soil surface as a small spray, jet, fog, or mist. Micro-sprinkler have discharge water typically less than 175 litre/hr per micro-sprinkler and are used to irrigate tree or other wide spaced crops. Micro-sprinkler, provide better freezer protection than drip irrigation system (Lamm*et al*., 2007).

Table 4. and Fig. 1 reveals that majority (90.8%) of the respondents were depended on rainfed (traditional method) for irrigation, while in modern methods 13.7 per cent of the respondents used 1 time irrigation in moth crop, and 83.7 per cent of the respondents used 15 time irrigation in groundnut, and 28.7 per cent of the respondents used 35 time irrigation through traditional methods, and 66.2 per cent of the respondents used 3 time irrigation in gram crops through modern methods, while 33 per cent of the respondents used 5 time irrigation in gram through traditional methods, and 65 per cent of the respondents used 6 time irrigation in wheat crop through modern methods, and 35 per cent of the respondents used 7 time irrigation in wheat through traditional methods, and other majority 80 per cent of the respondents were depended for irrigation on traditional methods (rainfed), and 30 per cent of the respondents used 2 time irrigation in guar through modern methods.

In other, table shows that water applied to the crop vary from 5 times to 3 time depending upon the crops. Groundnut crop has maximum water requirement followed by wheat and gram, whereas guar and moth crops were grown as rainfed crop, modern methods of irrigation save water many times as compare to traditional methods of irrigation in all the crops. Maximum respondents were adopted the modern methods of irrigation in groundnut, gram and wheat crop.

On comparing both the tables it shows that under traditional methods respondents were applying more irrigation but getting fewer yields in wheat, gram and groundnut crop.

This clearly indicates that modern methods of irrigation save water many times, which may be used in others crops or to irrigated more area for more production.

Study conducted by Chhaba (2013) also showed that the farmers also depended on rain fed agriculture. This study was in line with the results obtained.

Table 4. Distribution of the respondents on the basis of water applied under traditional v/s modern methods of irrigation (n=120)

S.No.	Water requirement (no. of irrigation)						
	Traditional method (no. of irrigation)		f	(%)	Modern methods (no. of irrigation)	f	(%)
	Crop	Irrigation					
1.	Wheat	7 time	28	35.0	6 time	52	65.0
2.	Gram	5 time	27	33.7	3 time	53	66.

							2
3.	Guar	Rain water	96	80.0	2 time	24	30.0
4.	Moth	Rain water	109	90.8	1 time	11	13.7
5.	Groundnut	35 time	23	28.7	15 time	67	83.7

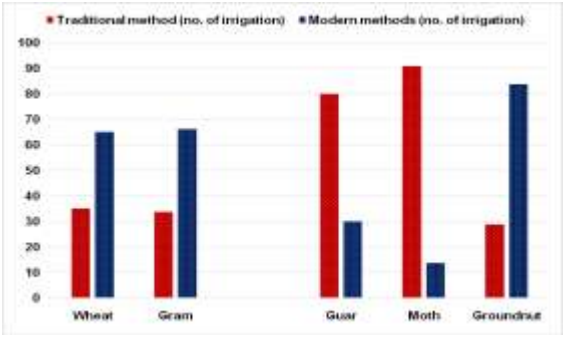

Fig. 1 : Distribution of the respondents on the basis of water applied under traditional v/s modern methods of irrigation (n=120)

Water saving in household sector

- **For drinking purpose**

The data given in Table 5 and Fig.2 clearly indicates that majority (76.67%) of respondents had used drinking water after one day of collection, while 23.3 per cent respondents were not in this practice.

Table- 5. Distribution of the respondents on the basis of using water for drinking purpose (n=120)

S.No.	Using of drinking water	f	(%)
1.	Same day/fresh water	28	23.30
2.	After day of collection	92	76.67

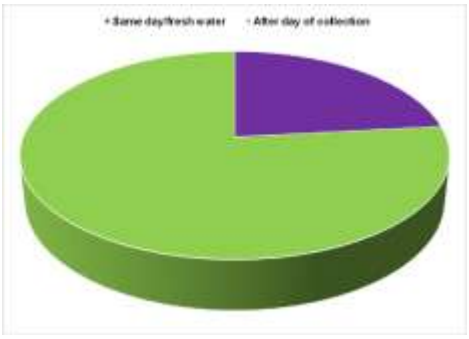

Fig. 2 : Distribution of the respondents on the basis of using water for drinking purpose (n=120)

Data given in Table 6 and Fig. 3 depicts that majority (41.67%) of respondents used wash vegetables in utensils, and 25 per cent used under running tap for vegetables washing. 33.3 per cent of the respondents wash vegetables by others strategy like with the help of clean cloth.

Due to lack of availability of water traditional method of cleaning vegetables i.e. cleaning vegetables by dry cloth still prevalent. But with availability of water and shift towards more hygienic conditions respondents have started adopting modern methods i.e. washing vegetables under running tap.

Table -6. Distribution of the respondents on the basis of strategy during washing vegetables (n=120)

S.No.	Strategy during washing vegetables	f	(%)
1.	In Utensils (Traditional method)	50	41.67
2.	Other method (Traditional method)	40	33.30
3.	Under running tap (Modern	30	25.00

	method)		

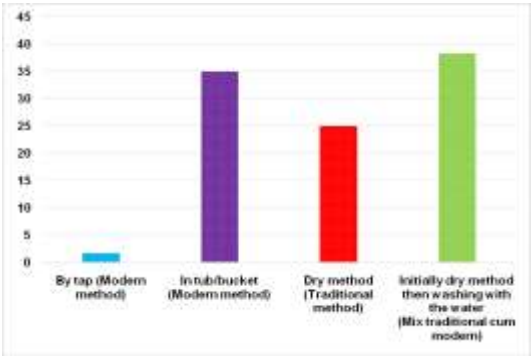

Fig. 3: Distribution of the respondents on the basis of method used for washing utensils (n=120)

- **Methods used in washing the utensils**

The data given in Table-7 and Fig. 4 reveals that majority (38.3%) of the respondents used Mix methods for wash utensils, and 35 per cent of respondents used tub/bucket method for wash utensils, 25 per cent of respondents used dry method for wash utensils, only 1.67 per cent of the respondents used tap for wash utensils.

Table 4.2.2 (IV). Distribution of the respondents on the basis of method used for washing utensils (n=120)

S.No.	Method used for washing the utensils	f	(%)
1.	By tap (Modern method)	2	1.67
2.	In tub/bucket(Modern method)	42	35.0
3.	Dry method(Traditional method)	30	25.0
4.	Initially dry method then washing with the water (Mix traditional cum modern)	46	38.3

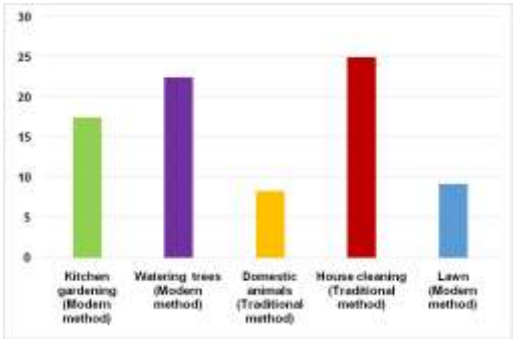

Fig. 4: Distribution of the respondents on the basis of used Kitchen waste water in different activities (n=120)

- **Re-use of kitchen waste water**

The data given in Table 8 reveals that majority 82.5 of the respondents were using re-use of kitchen waste water. One of the main reason to undertake kitchen waste water re use was the declining availability of fresh water. Only 17.5 per cent of the respondents did not re- use of kitchen waste water. The regular supply of water was the main reason of this category.

Table -8. Distribution of the respondents on the basis of re-use of kitchen waste water (n=120)

S.No.	Re-use kitchen waste water	f	(%)
1.	Yes	99	82.5
2.	No	21	17.5

- **Kitchen waste water use in different activities**

The data given in Table 9 revels that out of the 120 respondents, majority (25%) of the respondents pointed out that they used kitchen waste water in house cleaning, 22.5 per

cent of the respondents used kitchen waste water in watering in trees, and 17.5 per cent of the respondents used it in kitchen gardening, 9.17 per cent of the respondents used kitchen waste water in lawn, 8.33 of respondents used kitchen waste water for domestic animals. Due to scarcity of water kitchen waste water is fed to domestic animals. This practice is being followed traditionally to conserve water and to avoid labour associated with collection of portable water. Still respondents have started showing same inclination towards adopting Modern methods where by the kitchen waste water is being fed in the kitchen garden and watering trees, house cleaning and lawn used.

Table -9 . Distribution of the respondents on the basis of used kitchen waste water in different activities (n=120)

S.No.	Activities	f	(%)
1.	Kitchen gardening (Modern method)	21	17.5
2.	Watering trees (Modern method)	27	22.5
3.	Domestic animals (Traditional method)	10	8.33
4.	House cleaning (Traditional method)	30	25.0
5.	Lawn (Modern method)	11	9.17

Water storage mode

The Table 10 reveals that majority (78.3%) of the respondents had kundi for water storage as well as water saving, and 12.5 per cent of the respondents had underground tank, and 5 per cent of the respondents had plastic tank. Only 4.17 per cent of the respondents did not use any method for water storage made so they used direct water.

Table -10. Distribution of the respondents on the basis of water storage mode (n=120)

S.No.	Water storage practices	f	(%)
1.	Kundi (Traditional method)	94	78.3
2.	Underground tank (Modern method)	15	12.5
3.	Plastic tank (Modern method)	6	5.0
4.	Tap (Modern method)	5	4.17

Traditional methods of water storage is still prevalent amongst respondents as it is not only easy to store rain water but also leakage and evaporation of water is minimal. Respondents have also started constructed cemented underground tank, overhead plastic tank and even PHED (Public Health and Engineering Department) supply through tap.

1. Overall awareness level of respondents about the water saving methods in agriculture

The awareness of respondents with regard to water saving methods in agriculture field were measured in term of mean score, mean score percent, standard deviation.

Table 12. Distribution of respondents on the basis of awareness level about water saving methods in agriculture (n=120)

S.No.	Level of awareness	f	(%)	MS	SD
1.	Low (<3)	16	13.3	15.00	12.5
2.	Medium (3-8)	95	79.1	94.92	79.1
3.	High (above 8)	9	7.5	10.08	8.4

Pooled mean percent score = 6.37 Pooled SD= 1.72

It is evident from the Table 12 that majority of the respondents 95 (79.1%) possessed to medium level of awareness followed by 13.3 per cent of respondents possessed low level of awareness and 7.5 per cent of the respondents with frequency 9 belonged to high level of awareness regarding water saving methods in agriculture.

2. Overall awareness level of respondents about the water saving methods in household activities

The awareness of respondents with regard to water saving methods in household activities were measured in term of Mean score, Mean score percent, Standard deviation.

Table 13. Distribution of respondents on the basis of awareness level about water saving methods in household activities (n=120)

S.No.	Level of awareness	f	(%)	MS	SD
1.	Low (<3)	20	16.67	19.80	16.5
2.	Medium (3-8)	86	71.67	86.52	72.1
3.	High (above 8)	14	11.67	13.68	11.4

Mean percent = 6.60 mean percent score= 8159.57 SD= 1.80

It is evident from the Table -13 that majority of the respondents 86 (71.67%) possessed to medium level of awareness followed by 16.67 per cent of respondents possessed low level of awareness and 11.67 per cent of the respondents with frequency 14 belonged to high level of awareness regarding water saving methods in household activities.

IV. CONCLUSION

It is clear from the above findings that respondents have shifted towards water saving technology in the field of agriculture. This has led to save time, energy and money. Previous water which has been a scarce commodity in western Rajasthan is being used optimally to take higher yield, cash crops with less participation of family members and labour. This saved man power is diverted to take advantage of allied activities. Government led programmes and subsidies have paid rich dividends for increasing awareness amongst respondents to adopt modern methods of water of water saving and irrigation through sprinklers etc. still more to be done especially with regard to management and control of ground water through various acts. Responds have realized the importance of water which led to adoption of saving of water in household activities. Water used in various household activities like cooking, bathing etc. is being reused for appropriate purpose.

Even in other places like school, temple, Ashram, Aganwari, Primary Health Centre, marriage place and Dharmshala respondents have started realizing importance of saving water.

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