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Advantages of improved mustove as perceived by rural women

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ABSTRACT

Present study, an action-oriented research was undertaken in randomly selected Singran and Bhojraj villages of Hisar district to assess the advantages of improved mud stove covering 45 households wherein improved mud stoves were installed The two direct advantages reported by quite high majority of the respondents were equal distribution of flame and decrease in soot deposition on utensils. Other direct advantages in descending order were consistency of fire burning, increased ease in cooking, better quality chapatis and decrease in fuel and time consumption In terms of reduction in smoke generation and feasibility of using any size utensils were top ranked indirect advantages very closely followed by decrease in blowing frequency to burn fire and reduction in wavering of flame. Decrease in contact of flame with hands and reduced health hazards were other indirect advantages of improved mud stove.

Key words : Mud stove, Fuel, Flame, Direct and indirect, Advantages

Women are the head cook of family cooking system who bear the responsibility of not only cooking meals but also collecting fuel for meeting cooking needs. Cooking is done in smoky environment on traditional mud stoves with high fuel consumption and lower thermal efficiency. Firewood, crop residues and dung cake are the major fuel sources for meeting household level cooking purpose energy needs. Of these, the single most important source for fuel is firewood. Due to deforestation, women have to travel longer distance by spending many hours in collecting firewood to burn mud stoves. Batliwala (1995) observed that one of the most serious costs of energy scarcity for poor women and children is the range of health problems caused directly and indirectly. Srivastava and Rajput (1999) further reported that on an average health of 23.50 per cent households' women was affected due to cooking on traditional mud stoves and maximum percentage of them were affected by eye diseases. In order to provide an alternate cooking device with high fuel burning and thermal efficiency, department of Family Resource Management, CCSHAU, Hisar developed an improved stove for rural homes. Adoption of any technology is largely governed by the views /opinion of end users about its advantages therefore present pilot study was undertaken with the following objectives to study direct advantages of improved mud stove, to assess indirect advantages of improved mud stove.

Perception of regarding low cost solar bed:

Rural women play a significant and contributory role in production and management activities of crop production, animal husbandry, horticulture, and forestry in addition to their traditional responsibility as homemakers. Women are believed to be pioneer in agriculture but with the advent of mechanization women have been displaced by mechanization, which are generally operated by male folk. In spite of their displacement in various operations, grain storage still remains the domain of rural women. Grains are stored either for household consumption or for seed. Large amount of grains are lost every year due to faulty storage practices. Spoilage contamination or attack by insect pest. Pulses especially gram is very sensitive to infestation and being measure protein providers to vegetable population. Efforts are require to prevent storage losses.

Drying of grains is the most commonly followed practice to increase shelf life. This method is a slow process requires considerable amount of attention in order to provide an alternate low cost drying technology (Grover, 2000) developed low cost solar technology for safe storage of gains and was find effective in checking infestation in grains in order to promote this technology among actual users and to assess the perception of respondents, present study an action research was conducted with the following objectives to assess the perception of the respondents towards solar bed and to assess adoption feasibility of solar bed.

METHODOLOGY

The study was conducted in Hisar district of Haryana state where the only Agricultural University of the state is located. Considering the ease in approach and familiarity with the area, two villages of Hisar district *i.e.*Singran and Bhojraj were purposively selected to carry out the research activities under state funded research project.

The study was an action-oriented research wherein the improved mud stove developed by the department of Family Resource Management, College of Home Science; CCSHAU, Hisar was propagated among rural women by organizing training through lecture-cum-demonstration method. Intervention programme in the form of actual installation of improved mud stove was planned and implemented at household level. Mud stoves were installed in randomly selected 45 families where mud stove was the only cooking device and who were willing to participate in intervention programme.

The improved mud stove is a double walled structure having fuel concentration plate on top and iron gauge with four legs in the bottom. The fuel concentration plate provides base for tava /patila while iron gauge provides base for fuel placement The mud stove so developed was reported to have comparatively higher thermal and fuel efficiency than traditional mud stove. Direct as well indirect advantages of improved mud stove were studied with the help of open-ended inventory on three point continuum of increase, same and decrease with the scores of 3,2 and 1 for positive statements and reverse scoring for negative statements. Frequency of each cell was multiplied with respective scores to calculate mean and weighted scores, which paved guidelines for ranking of respective advantage in relation to remaining one.

RESULTS AND DISCUSSION

Due to its functional features, it was considered imperative to assess the advantages of mud-stove from user point of view. Efforts were made to assess the direct as well as indirect advantages in order to have a comprehensive insight from all angles.

The users *i.e.* rural women got directly benefited in seven ways by using improved mud stove as presented in Table 1. Quite high majority of the users reported decrease in soot deposition on utensils (91.11%), equal distribution of flame (93.33%), increased ease in cooking (75.55%) and increase in fire burning consistency (88.88%) as the direct advantage of improved mud stove. Most of the respondents reported no change in time and fuel consumption while doing cooking on improved mud stove (64.44% and 53.33%, respectively). Slightly less than half of the women (48.88%) reported quality of chapatis prepared on improved mud stove to be of superior quality in terms of taste and appearance than traditional mud stove.

Table 1: Direct advantages of improved mud stove (N=45)

Sr. No.	Forms of impact	Response category		
		Increase	Same	Decrease
1.	Soot deposition on utensils (-)	00	04(8.88)	41(91.11)
2.	Time consumption (-)	04(8.88)	29(64.44)	12(26.66)
3.	Equal distribution of flame (+)	42(93.33)	03(06.66)	00
4.	Quality of chapatis (+)	22(48.88)	23(51.11)	00
5.	Ease in cooking (+)	34(75.55)	11(24.44)	00
6.	Fuel consumption (-)	14(31.11)	24(53.33)	07(15.55)
7.	Continuity of fire burning (+)	40(88.88)	05(11.11)	00

Figures in parenthesis indicate percentage

The data in Table 2 incorporate ranking of direct advantages of improved mud stove on the basis of mean scores. It can be observed from table that women reported seven direct advantages of improved mudstove. Out of seven direct advantages, equal distribution of flame was ranked first (M.S.2.93) followed by decrease in soot deposition on utensils (M.S.2.91). These two aspects were reported by quite high majority of the respondents. Other direct advantages in descending order were consistency of fire burning (M.S. 2.88) followed by increased ease in cooking (M.S.2.75), better quality chapatis (M.S.2.48) and decrease in fuel and time consumption (M.S.2.15 and 1.82, respectively). It can be observed that advantage of mud stove in terms of time consumption in cooking was assigned lowest rank by rural women.

Respondents view regarding indirect advantages of mud stove as contained in Table 3 indicated the fact that quite high majority of the respondents reported decrease in smoke generation and blowing of fire (95.55% each) while 91.33 per cent respondents reported feasibility of using any size utensils and 91.11 per cent reported reduction in wavering of flame as major indirect advantages of improved mud stove. Decrease in contact of flame with hands and reduction in health hazards due to usage of improved mud stove were also perceived by majority of the respondents (84.44% and 82.22%, respectively). As far as blackening of walls and ceiling due to improved mud stove in comparison to traditional mud stove is concerned it was found that slightly more than half of the respondents (53.33%) reported reduction in this problem while 46.66 per cent observed it to be of same magnitude. The indirect advantage was also reported in terms of fine quality ash which can further be used for cleansing utensil (17.77%) but only by a small fraction of the respondents and majority of the users reported no change in ash quality

Rank wise ordering of indirect advantages of improved mud stove is incorporated in Table 4. It was found that reduction in smoke generation and feasibility of using any size utensils both were ranked first with equal

Table 2 : Ranking of direct advantages of improved mud stove (N=45)

Sr. No.	Forms of impact	Increase	Same	Decrease	T.S.	M.S.	Rank
1.	Deposition of soot on utensils (-)	00	04(08)	41(123)	131	2.91	II
2.	Time consumption (-)	04(12)	29(58)	12(12)	82	1.82	VII
3.	Equal distribution of flame (+)	42(126)	03(06)	00	132	2.93	I
4.	Quality of chapatis (+)	22(66)	23(46)	00	112	2.48	V
5.	Ease in cooking (+)	34(102)	11(22)	00	124	2.75	IV
6.	Fuel consumption (-)	14(42)	24(48)	07(07)	97	2.15	VI
7.	Consistency of fire burning (+)	40(120)	05(10)	00	130	2.88	III

Table 3: Indirect advantages of improved mud stove (N= 45)

Sr. No.	Forms of impact	Response category		
		Increase	Same	Decrease
1.	Blackening of walls and ceiling (-)	00	21(46.66)	24(53.33)
2.	Smoke generation (-)	00	02(4.44)	43(95.55)
3.	Wavering of flame (-)	00	04(8.88)	41(91.11)
4.	Feasibility of using any size utensils (+)	43 (95.33)	02(4.44)	00
5.	Quality of ash (+)	08(17.77)	37(82.22)	00
6.	Contact of flame with hand (-)	00	07(15.55)	38(84.44)
7.	Fire blowing frequency (-)	00	03(6.66)	42(95.55)
8.	Health hazards due to smoke (-)	00	08(17.77)	37(82.22)

Figures in parenthesis indicate percentage

Table 4: Ranking of indirect advantages of improved mud stove (N=45)

Sr. No.	Forms of impact	Increase	Same	Decrease	T.S	M.S	Rank
1.	Blackening of walls and ceiling (-)	00	21(42)	24(72)	114	2.53	VI
2.	Smoke generation (-)	00	02(04)	43(129)	133	2.95	1
3.	Wavering of flame (-)	00	04(08)	41(123)	131	2.91	III
4.	Feasibility of using any size of utensils (+)	43(129)	02(04)	00	133	2.95	I
5.	Quality of ash (+)	08(24)	37(74)	00	98	2.17	VIII
6.	Contact of flame with hand (-)	00	07(14)	38(114)	128	2.84	IV
7.	Fire blowing frequency (+)	00	03(06)	42(126)	132	2.93	II
8.	Health hazards due to smoke (-)	00	08(16)	37(111)	127	2.82	V

T.S -Total score, M.S.-Mean score

mean score values (M.S.2.95 for each) and were very closely followed by decrease in blowing frequency to burn fire (M.S.2.93) and reduction in wavering of flame (M.S.2.91). It was followed by other two indirect advantages of improved mud stove *i.e.* decrease in contact of flame with hands (M.S.2.84) and reduced health hazards (M.S.2.82) which were very closely rated in terms of mean score. It goes to suggest that indirect advantage in terms of these two aspects was reported to be of almost similar extent. The last ranked indirect advantage of mud stove was availability of fine quality ash for cleansing utensil (M.S.2.17).

Conclusion:

Improved mud stove was perceived to be advantageous in 15 ways by rural women who reported seven direct and eight indirect advantages of this technology. Improved mud stove was reported to be directly advantageous in terms of equal distribution of flame, decrease in soot deposition on utensils, continuity of fuel burning and ease in cooking by majority of the respondents. Out of eight indirect advantages, six of them were reported by very high percentage of the respondents. The most commonly felt indirect advantages were reduction in various problems like blackening of wall and ceiling, smoke generation, wavering of flame, contact of flame with hands, frequency of blowing and health hazards as an outcome of improved mud stove. Some of the indirect advantages like reduced contact of flame with hands or bangles and frequency of blowing to burn fire

were those which were not even reported by the researchers involved in development of improved mud stove but the users perceived these advantage which is the beauty of action research. As action research helps to analyze the particular research problem from all possible angles therefore comprehensive analysis of improved mud stove advantages could be made possible. Keeping the advantages, if improved mud stove in view, it is suggested to propagate it among rural women to improve their cooking conditions.

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