

## Adoption Constraints of Biogas Plants

S. D. Dhakar<sup>1</sup>, S. N. Ojha<sup>2</sup> and L. S. Bareth<sup>3</sup>

### INTRODUCTON

To popularise the biogas Govt. is providing technical know-how as well as subsidy and banks are giving loaning facility for biogas plant construction. It has been observed that most of the biogas plants installed in rural areas are not working properly. Looking to these the present study was undertaken with the following specific objectives.

### OBJECTIVES

1. To identify the major constraints perceived by biogas plant owners regarding its successful use.
2. To study the relationship between personal attributes of farmers with constraints related to its continuous use.

### METHODOLOGY

The study was conducted in Bhilwara district of Rajasthan because this district has sufficient number of biogas plant holders. From the total 11 panchayat samities of the district, only three panchayat samities viz. Asind, Mandelgarh and Sahada were selected purposively.

Out of total 114 biogas plant holders of three panchayat samities, nearly 50 per cent (60) biogas plant holders were selected

randomly. Keeping in view the objectives of the study, structured questionnaire was developed and the data was collected by personal interview method. To know the comparison among constraints, relationship if any between the variables, percentage, correlation and multiple regression analysis tests were applied to derive the conclusions.

### RESULTS AND DISCUSSION

To findout the major constraints regarding efficient use of biogas plants, the responses received from the respondents were converted into percentage and the results have been depicted in Table1.

#### A. Technical Constraints

Table 1 indicates that majority of the respondents i.e. 90 percent expressed that amount of gas production is low in winter season where as 85 percent reported that formation of scum on top layer of sludge obstructs the gas production. About 83 percent respondents reported that deposition of condensed water in gas pipe line obstruct the flow of gas. Least constraint perceived was related to cover the dom with soil to prevent the cracks.

#### B. Physical Constraints

The Table 1 revealed that about 81 percent of the total respondents reported that

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1&2 Asstt. Prof. Directorate of Extension Education, RAU, Udaipur (Raj.)

3. Asstt. Prof. Krishi Vigyan Kendra, Dholpur (Raj.)

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**Table 1 : Perceived constraints in adoption of biogas plant :**

Sr. No.	Constraints related to	Frequency	Percentage	Rank
<b>A.</b>	<b>Technical</b>			
1.	Amount of gas production is low in winter	54	90.00	1
2.	Formation of scum at top layer of sludge obstruct the gas production	51	85.00	2
3.	More distance between plant and kitchen reduce the gas pressure	48	80.00	5.5
4.	Casting of dom in one day is essential to stop cracks	49	81.66	4
5.	Dom should be covered by soil to prevent cracks & maintain temperature	43	71.66	7
6.	Feeding the plant in 1:1 ratio of dung and water is labour intensive	48	80.00	5.5
7.	Deposition of condensed water in supply pipe line obstruct the gas supply	50	83.33	3
<b>B.</b>	<b>Physical</b>			
1.	Sun light is needed for adequate fermentation	46	76.66	2
2.	Six cubic metre size plant require dung of 10-15 adult cattle	49	81.66	1
3.	It is difficult to manage the required water	43	71.66	3
4.	Sufficient land near kitchen is required for making compost pit	42	70.00	4
5.	The slurry obtained by plant is of improved quality but less in quantity	39	65.00	5
<b>C.</b>	<b>Economic</b>			
1.	Initial cost of installing plant is very high	43	71.66	3
2.	Subsidy provided by Govt. is less	45	75.00	2
3.	The cost of appliances is high	40	66.60	4
4.	The construction material is costly	36	60.00	5
5.	Biogas plant require maintenance and follow-up services	46	76.66	1
<b>D.</b>	<b>Socio-psychological</b>			
1.	Plant is accepted poorly due to its waste utilization	51	85.00	1
2.	Regular slurry making for feeding the plants is laborious job	42	70.00	3
3.	Preparation of maize chapaties on biogas is difficult	47	78.33	2
4.	Gas produced by plant create health hazard	21	35.00	5

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5.	The criticism made by neighbours about biogas plant is intolerable	31	51.66	4
<b>E. Educational</b>				
1.	Timely Kisan Melas are not being organised to popularize to biogas	32	53.33	5
2.	Result demonstration method should be used to develop interest	51	85.00	1
3.	Demonstration should be conducted at small farmers' sight	33	55.00	4
4.	There is a lack of individual contact for effective diffusion of biogas technology	35	58.33	3
5.	There is a lack of community approach for effective diffusion of biogas technology	48	80.00	2
<b>F. Infra-structural</b>				
1.	Biogas programme should be linked with Agricultural Extension Programme	41	68.33	3
2.	Credit facilities provided by the bank are cumbersome in nature	52	86.66	1
3.	Too much bank formalities in providing loan desist in use of loan	48	80.00	2
4.	The masons working in the field are not available timely	39	65.00	4

plant of six cubic metre size requires dung of at least 10-15 cattle and same may not be available with the plant holders thereby creating low feeding in plant resulted less gas pressure. The 46 respondents expressed that sunlight is needed for adequate fermentation. Similarly about 71 per cent respondents reported that it is difficult to manage the water requirement for feeding the plant. The least constraint perceived by the biogas holders was related to improved quality of slurry.

### C. Economic Constraints

The table also revealed that about 76 per cent respondents replied that biogas plant

required regular maintenance and follow-up services. The maintenance of the plant requires more fund. The 45 respondents reported that the subsidy provided by the govt. is too less and same should be raised upto 75 per cent of total cost. The lowest constraint perceived was regarding availability of construction material.

### D. Socio-psychological Constraints

The table further revealed that majority of the plant holders opined that poor acceptance is due to waste utilization. Three-fourth of the total respondents expressed that preparation of maize chapaties on biogas is difficult. Similarly least constraint reported

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was that gas produced by plant is hazardous to health.

### E. Educational Constraints

The Table 1 also indicated that 85 percent respondents reported the necessity of the result demonstration, while 80 percent expressed that there is lack of community approach for effective diffusion of biogas technology. The local leader and extension agents are not paying due attention for effective diffusion of this technology was reported only by 35 respondents.

### F. Infrastructural Constraints

The Table 1 also depicts that about 86 percent respondents reported that credit facilities provided by bank are cumbersome in nature whereas, 48 plant holders expressed that too much bank formalities in providing credit hinder in availing the loaning facility. About 68 per cent respondents reported that biogas programme should be linked with Agriculture Extension Programme so that its diffusion can be made at desired level. The

relationship between independent and dependent variables i.e. technical, physical economic, socio-psychological, educational and infrastructural constraints were worked out with the help of zero-order correlation. The results have been presented in Table2.

The data presented in Table 2 indicate that size of family was negatively significant with technical physical and economic constraints whereas level of education was negatively significant with technical, educational and infrastructural constraints. Number of cattle was negatively significant with economic and infrastructural facilities whereas size of land holding was positively significant with physical and socio-psychological constraints. The sources of information utilized were negatively significant with technical and educational constraints.

## CONCLUSION

On the basis of findings of the investigation the following inferences are drawn :

**Table 2 : Relationship of independent variables with constraints in adoption of biogas plant**

Sr. No.	Independent variables	Constraints related to					
		Technical	Physical	Economical	Socio psychological	Educational	Infra-structural
1.	Size of family	-0.2747*	-0.2731*	-0.3256**	0.2083	0.0204	0.0601
2.	Level of education	-0.3921**	0.2094	0.1758	-0.0144	-0.2611*	-0.3051*
3.	Number of cattle	0.0985	0.0085	-0.2533*	0.0116	0.0962	-0.2810*
4.	Size of land holding	0.0567	0.3359**	-0.2527*	0.2630*	0.0825	0.1491
5.	Sources of information utilized	-0.2569*	-0.0826	0.1448	-0.1116	-0.2511*	-0.1413

\* Significant at 0.05 per cent level.

\*\* Significant at 0.01 per cent level.

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The findings revealed that gas production was relatively low in winter season thereby can't full-fill the requirement of gas for preparation of meal. Size of plant was not match-up with number of the cattle which resulted poor in feeding of plant there by less gas production.

Biogas plant require heavy maintenance and regular follow-up services which need financial assistance. It is also not possible to prepare maize chapaties on biogas which is the major food of the area.

So far educational constraints are concerned, result demonstration must be conducted properly at small farmers sight.

Too much bank formalities for giving the loan and that too of cumbersome in nature were also reported by 48 plant holders.

Size of family, level of education and sources of information utilized were negatively significant with technical constraints.

Size of land holding was positively significant with physical constraints. Level of education and number of cattle were negatively significant with infrastructural constraints, whereas level of education, number of cattle and size of land holding were negatively significant with economic constraints.

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- ❖ The wiseman never discourages nor disturbs but rather appeases and exhorts people
- ❖ Every body lives and acts partly according to his own, partly according to other people's ideas

- LEO TOLSTOY.