

SOCIO-ECONOMIC PROFILE OF FARMERS CULTIVATED GAR-13 VARIETY OF RICE

Ganga Devi¹ and Roshni Bhoi²

1 Asstt. Professor and 2 Senior Research Fellow

Department of Agricultural Economics, B. A. College of Agriculture, Anand Agricultural University, Anand-388 110
Email: gangasaran1982@gmail.com

ABSTRACT

An attempt was made to study socio-economic profile of respondents growing GAR -13 rice variety developed by Anand Agriculture University (AAU), Anand. The present study was conducted for two years (2020 and 2021). From middle Gujarat Kheda district was selected purposively on the basis of concentration of area under GAR-13 variety of rice. Total 120 respondents which comprise 60 respondents of GAR-13 and 60 respondents which grow local variety were selected to make the comparison between two varieties in first year. In the second year 200 respondents comprises 100 respondents of GAR-13 and 100 respondents of local variety were selected for detailed study. It was observed that decision of a farmer cultivated GAR-13 variety mainly depends on the attributes like age of the respondent, education level, family size, farm size, income etc., This indicated that the young farmers, more educated, small family size, large farm size and having more income were more willing to adopt the improved technologies as compared to local variety adopters.

Keywords : socio-economic profile, rice, GAR-13 variety, local variety

INTRODUCTION

The United Nations General Assembly, in a resolution declared the year 2004 as an “International Year of Rice”, which has tremendous significance to food security. Rice is a major food staple and supreme commodity (Churpal, 2015), It very eloquently upheld the need to heighten awareness for the role of rice in alleviating poverty and malnutrition. Rice accounts nearly 40.5 per cent of total food grain production and occupies around one quarter of the total cropped area in the country. As per Food and Agriculture Organization India having second position in the world, among rice producing countries (Agarwal, 2018).

In Gujarat the major rice cultivated districts are Ahmedabad, Kheda, Anand, Valsad, Tapi, Dang, Panchmahal, Surat, Dahod and Mahisagar. Gujarat produces about 1930099 MT from the area of 847283 hectares during triennium ending (TE) 2018-19. The district which accounted highest productivity in Gujarat is Sabarkantha followed by Kheda, Tap, Navsari, Valsad and lowest accounted in Narmada during triennium ending (TE) 2018-19. The middle Gujarat region constituted about 65.32 per cent area and 60.50 per cent rice production during the year 2018-19. The districts which has highest area and production of rice in middle Gujarat is Ahmedabad followed by Kheda, Anand, Panchmahal, Mahisagar, Dahod, Vadodara and Chhotaudepur (Anonymous, 2020).

In recent years farmers shifted towards the new crops from traditional ones, such as cotton, groundnut, jeera, gram etc., replaced by medicinal crop like shatavari (Saran *et al.*, 2020). These crops are also having traditional medicine properties like papaya parts used for disease management specially dengue (Saran *et al.*, 2015). Rice and jal brahmi grew under varying soil and climatic conditions (Saran and Patel, 2019). Soil clay loam to clay in nature is best suited for its growth and development. Both plants perform well in poorly drained soils and waterlogged conditions (Saran *et al.*, 2022).

The major production and marketing constraints being faced by farmers were labour shortage, high cost of planting material, high cost of inputs, high cost of transportation, prices are not remunerative etc., reported by Devi *et al.*, (2020). In the total cost of cultivation, the maximum share of the rental value of owned land, planting material, human labour, and irrigation was reported by Changela *et al.* and Devi *et al.*, (2020) for eucalyptus plantation.

Therefore, with more properties, usefulness and to overcome the constraints, farmers shifting towards diversification but to maintain food production for growing population there is a need to develop high yielding varieties of the traditional crops. Many rice varieties across the country contributed significantly in food grain production, export and other uses. GAR -13 rice variety developed by Anand Agriculture University (AAU), Anand Gujarat, giving

a major boost to rice production in Gujarat. It was released during the year 2009 with special characteristics of mid early, medium slender and fine grain type, multiple resistant to pests and diseases, good cooking quality *etc.* It has recorded yield of about 6000-6500 kg per hectare which is generally higher than other rice varieties in Gujarat. The maturity duration is about 130-135 days, alike any other normal rice variety. Hence, the present study was undertaken to study socio-economic profile which affect significantly the level of adoption of the farmers.

OBJECTIVE

To study the socio-economic profile of GAR-13 rice variety growers vis-a vis local rice variety growers

METHODOLOGY

Kheda district from middle Gujarat was selected purposively on the basis of concentration of area under GAR-13 variety of rice and from Kheda district, two talukas namely Matar and Kheda were selected purposively on the basis of concentration of area under the variety.

The present study was conducted for two years (2020 and 2021). During first year from each selected taluka, 30 respondents were selected randomly those who were cultivating GAR-13 variety of rice released by AAU and 30

respondents who cultivate other local variety of rice. Thus, total 120 (2x60) which comprises 60 respondents of GAR-13 and 60 respondents of local variety were selected. In the second year same sampling procedure was followed with more number of respondents. From each selected taluka, 50 respondents of GAR-13 and 50 respondents of local variety were selected. Thus, total 200 (2x100) which comprises 100 respondents of GAR-13 and 100 respondents of local variety were selected for detailed study.

This study was based on the primary data which were collected from sample households on various parameters of socio-economic profile through well-structured and pre-tested interview schedule. The data were analysed by using tabular analysis, mean, percentage, frequency *etc.*, to draw the meaningful conclusion.

RESULTS AND DISCUSSION

The detail of socio-economic profile of respondents' viz., size of family, age, education, occupation, association with organizations, size of land holding, source of irrigation *etc.* affect the economy of the farm and also the decision making about adoption of inventive techniques to a substantial extent. These aspects of sample respondents have been analyzed and presented as under:

Average family size and age

Table 1: Average family size and age of respondents

(n=200)

Sr. No.	Particulars	Year 2020			Year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1	Male	2.33 (35.68)	2.18 (32.63)	2.26 (34.09)	2.53 (38.05)	2.48 (35.68)	2.51 (36.84)
2	Female	2.22 (34.00)	2.37 (35.48)	2.30 (34.70)	2.09 (31.43)	2.23 (32.09)	2.16 (31.76)
3	Children	1.98 (30.32)	2.13 (31.89)	2.06 (31.06)	2.03 (30.53)	2.24 (32.23)	2.14 (31.40)
4	Average family size	6.53 (100.00)	6.68 (100.00)	6.61 (100.00)	6.65 (100.00)	6.95 (100.00)	6.80 (100.00)
5	Average Income Earners in family	2.10 (32.16)	1.97 (29.49)	2.04 (30.91)	2.22 (33.38)	2.05 (29.50)	2.14 (31.44)
6	Average age of respondents (year)	47.35	52.05	49.70	50.76	53.11	51.94

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

The size of family has a bearing on the supply of labour force on the farm as well as the family consumption needs. It was observed in the first year (2020) of the study

that overall average size of the family of the respondents was 6.61 with 6.53 and 6.68 in GAR-13 and variety, respectively. The overall average male, female and children were 2.26

(34.09 %), 2.30 (34.70 %) and 2.06 (31.06 %) per family, respectively, on sample farms. During second year the overall average family size was accounted about 6.80 with 6.65 and 6.95 in GAR-13 and Local variety, respectively. The share of male, female and children were 36.84, 31.76 and 31.40 per cent, respectively.

It could be also seen from the Table that the average income earners in the family were about 2.04 and 2.14 during first and second year, respectively. Moreover, the results showed that the average age of respondents was found to be 49.70, 51.94 years, respectively in first and second year. In case of the farmers who cultivate GAR-13 variety of rice the average age of respondents were about 47.35, 49.70 years, whereas in case of local variety, it was 52.05, 53.11 years,

respectively, in both the years of study (Table 1). This showed that the younger farmers are willing to more to adopt the new technologies as compared to older one. The study carried out by Khan *et al.*, (2017) and Neupanea, (2002) suggested that age of farmer had significant negative effects on the tree planting on farms.

Educational status

Education plays important role in adoption of improved technologies and innovations. Better education enable better comprehension of farming technologies and their possible adoption in farm enterprises. The awareness and knowledge of the farmers are best reflected through their education.

Table 2: Educational status of respondents

(n=200)

Sr. No.	Particulars	Year 2020			year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1	Illiterate	01.00 (1.67)	01.00 (1.67)	02.00 (1.67)	04 (4.00)	08 (8.00)	12 (6.00)
2	Primary (up to VII)	02.00 (3.33)	06.00 (10.00)	08.00 (6.67)	11 (11.00)	21 (21.00)	32 (16.00)
3	Secondary (VIII to XII)	43.00 (71.67)	41.00 (68.33)	84.00 (70.00)	59 (59.00)	53 (53.00)	112 (56.00)
4	College	14.00 (23.33)	12.00 (20.00)	26.00 (21.66)	26 (26.00)	18 (18.00)	44 (22.00)

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

Table 2 indicated that in the first year of the study about 98.33 per cent of the total sample farmers were literate and remaining 1.67 per cent farmers were illiterate. Among the literate respondents 70.00 per cent had education up to secondary level, 21.66 per cent up to college and 6.67 per cent up to primary. During second year also similar type of observations was found with about 94.00 per cent respondents were literate and about 6 per cent were illiterate. Moreover, in both the years majority of respondents were educated up to secondary level followed by college and primary level of education.

Further, it could be inferred from the Table that more or less same pattern was found in both the category of respondents.

The study conducted by Changela *et al.*, (2019) found that age and family size has negative influenced on adoption decision of eucalyptus whereas, education and

farm size has positive influence on adoption of eucalyptus plantation. Similar type of studies was also conducted by Ashraf, (2015) Khan *et al.*, (2017) and John *et al.*, (2020).

Occupation

Table 3 depicted the source wise occupation of respondents. The results exposed that in first year (2020) of the study in overall category majority of the farmers (45.00 %) adopted farming with animal husbandry as their main occupation followed by farming (28.33 %), farming + service (13.33 %), farming + animal husbandry + service (10.83 %), farming + business (1.67 %) and farming + animal husbandry + business (0.83 %). The farmers who were cultivating GAR-13 variety of rice, majority of them (38.33 %) engaged in farming + animal husbandry and least numbers are engaged in farming + animal husbandry + business (1.67 %). The similar pattern was observed in the case, those who were cultivate Local variety of rice.

Table 3: Distribution of respondents according to their occupation

(n=200)

Sr. No.	Particulars	Year 2020			Year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1	Farming	15.00 (25.00)	19.00 (31.67)	34.00 (28.33)	21.00 (21.00)	25.00 (25.00)	46.00 (23.00)
2	Farming + Animal Husbandry	23.00 (38.33)	31.00 (51.67)	54.00 (45.00)	29.00 (29.00)	37.00 (37.00)	66.00 (33.00)
3	Farming + Animal Husbandry + Business	1.00 (1.67)	0.00 (0.00)	1.00 (0.83)	8.00 (8.00)	7.00 (7.00)	15.00 (7.50)
4	Farming + Animal Husbandry + Service	10.00 (16.67)	3.00 (5.00)	13.00 (10.83)	17.00 (17.00)	10.00 (10.00)	27.00 (13.50)
5	Farming + Business	1.00 (1.67)	1.00 (1.67)	2.00 (1.67)	9.00 (9.00)	8.00 (8.00)	17.00 (8.50)
6	Farming + Service	10.00 (16.67)	6.00 (10.00)	16.00 (13.33)	16.00 (16.00)	13.00 (13.00)	29.00 (14.50)
7	Experience of Rice cultivation (Years)	21.39	19.56	20.47	22.59	20.94	21.77

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

During the second year also majority of the farmers (33.00 %) adopted farming with animal husbandry as their main occupation followed by farming (23.00 %), farming + service (14.50 %), farming + animal husbandry + service (13.50 %), farming + business (8.50 %) and farming + animal husbandry + business (7.50 %). The similar observations were found across the varieties.

Further, it was noticed that the farmers had on an average 20.47 and 21.77 years of experience of rice cultivation during first and second year, respectively. The farmers who were cultivating GAR-13 variety had more experience (21.39, 22.59 years) as compared to the farmers who were cultivating local variety (19.56, 20.94 years) in both the years, respectively. This clearly indicated that more experience plays an important role in adoption of technologies.

Social participation

Farmer's participation with different organizations

is an indication of their widened horizons and their active participation and involvement not only in farming but also in the welfare of the societies. The respondents social participation with different organizations presented in Table 4. During first year of the study, among the different organizations, the highest participation was observed in milk cooperative societies (37.50 %) followed by participation in multi-organizations (35.83 %) indicated the participation with more than one organization, Seva Sahakari (4.17 %) *etc.*, and lowest with farmers club (0.83 %). Overall 16.67 per cent of the farmers were not linked with any of the organization. In second year also the highest participation was found in milk cooperative societies (29.00 %) followed by participated in multi-organizations (22.00 %), Seva Sahakari (10.50 %), ATMA (10.00 %) *etc.*, and lowest with village panchayat (5.00 %). Overall 17.00 per cent of the farmers were not linked with any of the organization. Across the farmers category more or less same pattern was observed.

Table 4: Social participation of respondents with organizations

(n=200)

Sr. No.	Particulars	Year 2020			Year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1.	Village Panchayat	2.00 (3.33)	1.00 (1.67)	3.00 (2.50)	7.00 (7.00)	3.00 (3.00)	10.00 (5.00)
2	Milk co-operative society	19.00 (31.67)	26.00 (43.33)	45.00 (37.50)	25.00 (25.00)	33.00 (33.00)	58.00 (29.00)
3	Farmers Club	1.00 (1.67)	0.00 (0.00)	1.00 (0.83)	7.00 (7.00)	6.00 (6.00)	13.00 (6.50)
4	ATMA	2.00 (3.33)	1.00 (1.67)	3.00 (2.50)	11.00 (11.00)	9.00 (9.00)	20.00 (10.00)
5	Seva Sahakari	3.00 (5.00)	2.00 (3.33)	5.00 (4.17)	13.00 (13.00)	8.00 (8.00)	21.00 (10.50)
6	Multiresponse	24.00 (40.00)	19.00 (31.67)	43.00 (35.83)	24.00 (24.00)	20.00 (20.00)	44.00 (22.00)
7	Not associated	9.00 (15.00)	11.00 (18.33)	20.00 (16.67)	13.00 (13.00)	21.00 (21.00)	34.00 (17.00)

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

Land holding

The overall average size of land holding possess by the farmers were 5.71 and 5.21 hectare in first year and second year of the study, respectively, out of which 100 per cent of land was irrigated. Further, it was observed that during the first year average size of land holding was found slightly more in case of GAR-13 respondents (5.89 ha) as

compared Local (5.54 ha). The similar trend was also found in second year. It was also observed that the average area allocated by farmers under rice cultivation was about 3.01 hectare (52.71 %) and 2.90 hectare (55.57 %) in first and second year, respectively. Proportion of land allocation under GAR-13 variety was found to be more as compared to area under Local variety in both the study years (Table 5).

Table 5: Operational size of land holding

(n=200)

Sr. No.	Particulars	Year 2020			Year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1	Irrigated land (ha)	5.89 (100.00)	5.54 (100.00)	5.71 (100.00)	5.49 (100.00)	4.93 (100.00)	5.21 (100.00)
2	Un-irrigated land (ha)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
3	Average land holding (ha)	5.89 (100.00)	5.54 (100.00)	5.71 (100.00)	5.49 (100.00)	4.93 (100.00)	5.21 (100.00)
4	Area under rice cultivation (ha)	3.17 (53.82)	2.86 (51.62)	3.01 (52.71)	3.28 (59.74)	2.51 (50.91)	2.90 (55.57)

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

Source of irrigation

The sources of irrigation of the respondents were presented in Table 6. It could be inferred from the table that in overall category about 35.83 per cent farmers had tube well as a main source of irrigation followed by multisource of irrigation (29.17 %), canal (15.00 %), pond (14.17 %)

and well (5.83 %) in the first year. While, in second year 27.00 per cent respondents had tube well as a main source of irrigation followed by multisource of irrigation (23.50 %), pond (18.00 %), canal (16.50 %) and well (15.00 %). The similar observations were found irrespective of the categories of farmer’s cultivated GAR-13 and Local variety of rice.

Table 6: Distribution of respondents according to source of irrigation

(n=200)

Sr. No.	Source of Irrigation	Year 2020			Year 2021		
		GAR-13 (n=60)	Local (n=60)	Overall (n=120)	GAR-13 (n=100)	Local (n=100)	Overall (n=200)
1	Tube well	26.00 (43.33)	17.00 (28.33)	43.00 (35.83)	30.00 (30.00)	24.00 (24.00)	54.00 (27.00)
2	Well	2.00 (3.33)	5.00 (8.33)	7.00 (5.83)	14.00 (14.00)	16.00 (16.00)	30.00 (15.00)
3	Canal	4.00 (6.67)	14.00 (23.33)	18.00 (15.00)	12.00 (12.00)	21.00 (21.00)	33.00 (16.50)
4	Pond	8.00 (13.33)	9.00 (15.00)	17.00 (14.17)	17.00 (17.00)	19.00 (19.00)	36.00 (18.00)
5	Multisource of irrigation	20.00 (33.33)	15.00 (25.00)	35.00 (29.17)	27.00 (27.00)	20.00 (20.00)	47.00 (23.50)

Source: Field survey

Note: Figures in parenthesis indicates percentage to total in respective column

CONCLUSION

It was observed from the present study that almost the similar trend of results was observed during both the years. The socio-economic profile such as age, education, farm size, size of family, occupation, association with organizations etc. influenced the farmer’s decision in adoption of GAR-13 variety of rice. Moreover, the respondents cultivating GAR-13 were more educated, have less family size, younger and had more experience about rice cultivation as compared to local variety growers. This indicated that education, younger minds and more experience plays an important role in adoption of technologies, since younger farmers are usually more willing to take risk as compared to older farmer. Further, the results indicated that proportion of land allocation under GAR-13 and farmers associated with organizations was found to be more as compared to local variety which reflected the activeness of the advance farmers.

POLICY IMPLICATION

It was observed that the socio-economic profile of farmers playing the important role in adoption of technologies. Therefore, need to educate and aware farmers more about the new technologies and also the policy makers should focus on the further development of socio-economic standard of farmers.

ACKNOWLEDGEMENT

We are very thankful to the members of Agresco sub-committee meeting of social science group for approval of the program. We are also thankful to the Principal of B. A. College of Agriculture, AAU, Anand for providing the facilities at the time of primary data collection. Our sincere thanks to the whole staff of the Department of Agricultural Economics for kind support and help.

CONFLICT OF INTEREST

No conflict of interest among researchers.

REFERENCES

Agarwal, P. K., Yadav, P. and Mondal, S. (2018). Economic analysis of cost and return structure of paddy cultivation under traditional and SRI method: a comparative study. *International Journal of Agriculture Sciences*, 10(8); 5890-5893.

Anonymous (2020). Directorate of Agriculture, Agriculture farmer’s welfare and Co-operation Department, Government of Gujarat.

Ashraf, J., Pandey, R., Jonz, W. D., and Nagar, B. (2015). Factors influencing farmers’ decisions to plant

- trees on their farms in Uttar Pradesh, India. *Small-Scale Forestry*, 14(3); 301-313.
- Changela, P. (2019). *An economic analysis of eucalyptus plantation in middle Gujarat. Master degree (Agri.) thesis*, Department of Agricultural Economics, Anand Agricultural University, Anand, Gujarat.
- Changela, P., & Devi, G. (2020). An economic impact of eucalyptus plantation on farmers' sustainability in Gujarat, *Indian Journal of Economics and Development*, 16(4); 518-525.
- Churpal, D., Koshta, A. K. and Choudhary, V. K. (2015). An economic analysis of rice cultivation and constraint in Dhamtari district of Chhattisgarh, India. *Plant Archives*, 15(2); 651-656.
- Devi, G. (2020). Marketing of turmeric production in middle Gujarat. *Guj. J. Ext. Edu.*, 31(2); 36-41.
- John, G. O., Omede, U. D. and Kalsariya, B. N. (2020) Socio-economic characteristics of small holder farmers in Makurdi local government area of Benue State Nigeria. *Guj. J. Ext. Edu.* 31(1):55-60.
- Khan, M., Mahmood, H. Z., Abbas, G., and Damalas, C. A. (2017). Agroforestry systems as alternative land-use options in the Arid Zone of Thal, Pakistan. *Small-scale Forestry*, 17(3); 1-18.
- Neupanea, R. P., Sharmab, K. R., and Thapaa, G. B. (2002). Adoption of agroforestry in the hills of Nepal: a logistic regression analysis. *Agricultural Systems*, 72; 177-196.
- Saran, P. L. and Patel, R. B. (2019). Plastering technique: An easy and cost-effective way of *Bacopa monnieri* L. Pannell multiplication. *Acad. J. Med. Plants*. 7(8); 181-186.
- Saran, P. L., Choudhary, R, Solanki, I., and Devi, G. (2015). Traditional medicaments through papaya in northeastern plains zone of India. *Indian Journal of Traditional Knowledge*, 14(4); 537-543.
- Saran, P. L., Damor, H. I., Lodaya, D. H., Suthar, M. K., Kalariya, K. A., and Roy, S. (2022). Identification of potential accessions of *Bacopa monnieri* L. for herbage yield and bacosides A content. *Industrial Crops & Products*, 176: 114348. <https://doi.org/10.1016/j.indcrop.2021.114348>.
- Saran, P. L., Singh, S., Solanki, V. H., Devi, G., Kansara, R. V. (2020). Identification of potential accessions of *Asparagus racemosus* for root yield and Shatavari IV content. *Heliyon*, 6(2000); 1-9.

Received : May 2022 : Accepted : June 2022