

Profile Analysis of Mixed Farming Adopter Farmers

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Abstract

Mixed farming systems focuses on the use of integrative and holistic mechanisms and rational building on and use of the natural and local resource base without exhausting it, while enhance biodiversity, optimize complementarities between crops and animal systems as well as increase opportunities in rural livelihoods. In an era of instability in agriculture with declining prices, increasing land hunger by increasing population and futile search for an insulating mechanism of farmers against fall in income and employment, interest in integration of farms with any other economic activity has revived. The present study analysing the profile of farmers adopting mixed farming was conducted in Anand taluka of Anand district of Central Gujarat. A random sample of 50 mixed farming adopter farmers were selected from ten villages. The study revealed that majority (96.00%) of the farmers had middle to old age, secondary to higher secondary level of education (76.00%), slightly less than two-third (66.00%) of the farmers had eleven to thirty years of experience, up to four hectares of land holding, majority (82.00%) of the farmers possessed up to 20 animals, very low to low level of social participation (88.00%), medium to very high level of mass media exposure (86.00%), poor to average level of extension contacts (94.00%), high level of scientific orientation (80.00%), high to very high level of economic motivation (96.00%), medium to high degree of achievement motivation (94.00%).

Highlights:

- A total of 50 mixed farming adopter farmers were selected from Anand district of Central Gujarat.
- The data of this study were collected through personal interview method.
- More efforts should be taken to popularise and convince benefits of mixed farming among young farmers.

Keywords: Mixed farming, adoption, farmers

Agriculture is the art of feeding the world-food to humanity, feed to animals and seed to posterity. It is the main stay of Indian economy. In India farms are depending on animals for their farming activities and keeping milch animals is the part of the agriculture; and also major source of income to the small and marginal farmers. Indians are the first to achieve white revolution in the world, with that the background India ranks first in the world milk production (Reddy 2010). In view of low per capita availability of land, increasing population pressure and little scope for mobilization of further land for crop production, agriculture turned to be less dependable to provide adequate livelihood opportunities for a majority of rural population. As milk production enterprises require relatively less land and more labour

to generate a given level of income compared to crop production, mixed farming system suits the small and marginal farmers with less land.

In the report of National Commission on Agriculture (1976) mixed farming has been defined as a system of both crop and animal husbandry for efficient and effective use of land, labour and capital stock. Agricultural economists consider that a farm to be called as a mixed farm, 10%-15% of its gross income must be contributed by livestock components (Sastri *et al.* 1994).

The integration of crop and livestock production is a factor which strongly influences the sustainability of a farm. Thus mixed farming system combining crop production and milch animal is apparently befitting to

our agrarian economy. In this context, subsidiary occupations like rearing of livestock in combination with different crops become a necessity for the farmers to make the maximum use of their limited resources and labour capacity in order to supplement their present income.

The objective of our study was to analyse the profile of the mixed farming adopter farmers in Anand district of Gujarat considering the benefits availed by adoption of mixed farming.

Methodology

The present study was carried out in Anand taluka of Anand district of Central Gujarat. From the selected Anand taluka, ten villages viz. Adas, Boriavi, Kasor, Khambholaj, Lambhvel, Mogri, Ode, Rasnol, Sarsa and Vadod having maximum number of mixed farming adopter farmers were selected randomly. Lists of mixed farming adopter farmers were collected from VLWs or the Village Secretary of Gram Panchayat Office of respective villages. Five farmers who adopted mixed farming were selected randomly from each selected village. Thus, by multi stage sampling technique, a random sample of 50 farmers who adopted mixed farming was selected for the study. The methodological procedure consisted of dependent and independent variables. The independent variables studied were; age, education, farming experience as personal variables; farm size, herd size as economic variables; social participation as social variable; mass media exposure,

extension contact as communicational variables; scientific orientation, economic motivation and achievement motivation as psychological variables. The scale developed by Patel (2007), Supe (1969), Singh (1974) was used in the present study to measure psychological variables like scientific orientation, economic motivation and achievement motivation respectively with due modification. A structured interview schedule was developed in accordance with the objectives of the study and it was translated into Gujarati. The data of this study were collected through personal interview method. The collected data were classified, tabulated, analyzed and interpreted in order to make the findings meaningful.

Results and Discussion

Personal characteristics

The personal characteristics of the respondents play an important role in the adoption of any farm technologies (Khot 2011, Smitha 2013, Mohamad 2014). Some of the following personal variables were selected analysed and are presented in Table 1. From the Table, exactly half (50.00%) of the mixed farming adopter farmers had middle age, followed by 46.00% and 4.00% of them were with old and young age, respectively. The two-fifth (40.00%) of the mixed farming adopter farmers had secondary level of education, followed by 36.00% with higher secondary education, 14.00% with primary level of education and 10.00% with graduation and above

Table 1. Personal characteristics of mixed farming adopter farmers n=50

Variables	Categories	Measurement	Number	Percent
Age	Young age group (up to 35 years)	Years	02	04.00
	Middle age group (between 36 to 50 years)		25	50.00
	Old age group (above 50 years)		23	46.00
Education	Illiterate	Standards	00	00.00
	Primary education (1st to 7th std)		07	14.00
	Secondary education (8th to 10th std)		20	40.00
	Higher Secondary education (11th to 12th std)		18	36.00
	Graduation and above		05	10.00
Farming experience	Up to 5 years	Years	00	00.00
	6 to 10 years		02	04.00
	11 to 15 years		08	16.00
	16 to 20 years		10	20.00
	21 to 25 years		07	14.00
	26 to 30 years		08	16.00
	31 to 35 years		03	06.00
36 to 40 years	06	12.00		
	Above 41 years	06	12.00	



level of education respectively, while none of them was illiterate. The one-fifth (20.00%) of the mixed farming adopter farmers had 16 to 20 years of experience of mixed farming, followed by 16.00, 16.00, 14.00, 12.00, 12.00, 6.00 and 4.00% of them were with 11 to 15 years, 26 to 30 years, 21 to 25 years, 36 to 40 years, above 41 years, 31 to 35 years and 6 to 10 years of the experience of the mixed farming, respectively, while none of them were with less than six years of experience of the mixed farming. Anand is known as the milk capital of India. It became famous for AMUL dairy and its milk revolution. It has been implementing a large livestock development programmes from more than four decades. The adoption of mixed farming through the combination of crop production and livestock is conventional and found sustainable in middle Gujarat. This is an appropriate and sustainable approach which provides higher income from per unit of land with the support of AMUL and government. Thus, mixed farming has been adopted as remunerative farming system by farmers for last many years. This might be the reason to have considerable level of experience in mixed farming system among the majority of the farmers.

Economic Characteristics

In adoption of any farming system economic characteristics like farm size and herd size play major role (Gulkari *et al.* 2014, Singh 2015). In the study Table 2, specify the economic characteristics of the mixed farming adopter farmers. From the Table it is implicit

that, slightly more than one fourth (28.00%) of the mixed farming adopter farmers had medium size of farm holding, followed by 24.00% each of them were with marginal, small and large size of farm holding. Slightly less than one-third (32.00%) of the mixed farming adopter farmers possessed 6 to 10 animals, followed by 22.00, 16.00, 12.00, 10.00, 6.00 and 2.00 had up to 5 animals, between 16 to 20 animals, between 11 to 15 animals, above 31 animals, between 21 to 25 animals and between 26 to 30 animals, respectively. The success and proliferation of the cooperative dairy movement has brought the ownership of dairy cattle and/or buffaloes as an important component of farming system along with crop production on small and medium sized farms in Anand, Gujarat.

Social Characteristics

Social participation brings an individual in close contact with other members of society through social organizations. From the Table 3, it can be observed that slightly more than half (52.00%) of the mixed farming adopter farmers had very low social participation, followed by 36.00% of them with low level of social participation and only 4.00% each of them were with medium, high and very high level of social participation. The probable reason might be that considering milk cooperative society as an important social organization, great majority of the farmers were active members of only milk cooperatives (AMUL) and very less farmers had understood importance of other social organization as

Table 2. Economic characteristics of mixed farming adopter farmers n=50

Variables	Categories	Measurement	Number	Percent
Farm size	Marginal (Up to 1.00)	Hectares	12	24.00
	Small (1.01 to 2.00)		12	24.00
	Medium (2.01 to 4.00)		14	28.00
	Large (Above 4.00)		12	24.00
Herd size	Up to 5 animals	Number of milch animals	11	22.00
	6 to 10 animals		16	32.00
	11 to 15 animals		06	12.00
	16 to 20 animals		08	16.00
	21 to 25 animals		03	06.00
	26 to 30 animals		01	02.00
	Above 31 animals	05	10.00	

Table 3. Social characteristics of mixed farming adopter farmers n=50

Variables	Categories	Measurement	Number	Percent
Social participation	Very low (up to 20)	Arbitrary method	26	52.00
	Low (21 to 40)		18	36.00
	Medium (41 to 60)		02	04.00
	High (60 to 80)		02	04.00
	Very high (above 80)		02	04.00



an important source of sharing useful information or inputs for mixed farming.

Communication Characteristics

The communicational characteristics of the respondents play an important role in the adoption of any farm technologies (Surya *et al.* 2010, Vaidya 2011). The Table 4, showed that slightly less than one -third (32.00%) of the mixed farming adopter farmers had very high level of mass media exposure, followed by 30.00%, 24.00%, 8.00% and 6.00% of them were with high, medium, very low and low level of mass media exposure, respectively. The result showed that majority of farmers had awareness about the significance of agricultural mass media in providing useful agricultural information. Slightly more than half (54.00%) of the mixed farming adopter farmers had poor extension contact, followed by 40.00% of them were with average extension contact, 6.00% with good extension contact and none of them was with excellent level of extension contacts. From this findings it can be stated that majority of the mixed farming adopter farmers had not realized the importance of extension agencies in the development of agriculture.

The probable reason for poor to average level of the extension contacts among farmers might be that there are more number of farmers to be contacted by extension worker to provide information and guidance on proper management in mixed farming; same time farmers who adopted mixed farming might have felt to collect necessary information from fellow farmers instead of contacting them frequently.

Psychological characteristics

In adoption of any farming system psychological characteristics like scientific orientation, economic motivation and achievement motivation play major role (Divya 2013, Patel 2013). In the present study, Table 5 showed the psychological characteristics of the mixed farming adopter farmers. From the table it is implicit that, vast majority (80.00%) of the mixed farming adopter farmers had high level of scientific orientation, followed by 20.00% of them were with very high level of scientific orientation and none of them was with medium, low and very low level of scientific orientation, respectively. It could be stated from the above findings that farmers with high level of positivism towards the use of new

Table 4. Communicational characteristics of mixed farming adopter farmers n=50

Variables	Categories	Measurement	Number	Percent
Mass media exposure	Very low	Arbitrary method	04	08.00
	Low (5 to 8)		03	06.00
	Medium (9 to 12)		12	24.00
	High (13 to 16)		15	30.00
	Very high (above 16)		16	32.00
Extension contact	Poor (up to 7)	Arbitrary method	27	54.00
	Average (08 to 14)		20	40.00
	Good (15 to 21)		03	06.00
	Excellent (above 21)		00	00.00

Table 5. Psychological characteristics of mixed farming adopter farmers n=50

Variables	Categories	Measurement	Number	Percent
Scientific orientation	Very low (up to 14)	Arbitrary method	00	00.00
	Low (15 to 28)		00	00.00
	Medium (29 to 42)		00	00.00
	High (43 to 56)		40	80.00
	Very high (above 56)		10	20.00
Economic motivation	Very low (up to 6)	Arbitrary method	00	00.00
	Low (7 to 12)		00	00.00
	Medium (13 to 18)		02	04.00
	High (19 to 24)		30	60.00
	Very high (above 24)		18	36.00
Achievement motivation	Very low (up to 6)	Arbitrary method	00	00.00
	Low (7 to 12)		00	00.00
	Medium (13 to 18)		21	42.00
	High (19 to 24)		26	52.00
	Very high (above 24)		03	06.00



and scientifically approved high production oriented technology were more involved in the management and adoption of mixed farming. Majority (60.00%) of the mixed farming adopter farmers had high level of economic motivation, followed by 36.00% and 4.00% of them were with very high and medium level of economic motivation, respectively, while none of them was with low to very low level of economic motivation. It might be due to the fact that majority of the farmers might have considered mixed farming system as remunerative compared to mono-cropping system and are ready to invest resources in it towards achievement of maximum economic end. It was observed slightly more than half (52.00%) of the mixed farming adopter farmers had high level of achievement motivation, followed by 42.00% and 6.00% of them were with medium and very high level of achievement motivation, respectively, while none of them was with low and very low level of achievement motivation. The majority of the farmers involved in mixed farming might have understood and realized significance of livestock as complementary to crop production; so as to provide a balance and productive system of farming and provide means to reach up to high level of progressive and prosperous life.

Conclusion

From the above findings it can be concluded that majority (96.00%) of the mixed farming adopter farmers had middle to old age, secondary to higher secondary level of education (76.00%) , slightly less than two-third (66.00%) of the farmers had eleven to thirty years of experience in mixed farming, up to four hectares of land holding, majority (82.00%) of the farmers who adopted mixed farming possessed up to 20 animals, very low to low level of social participation (88.00%) , medium to very high level of mass media exposure (86.00%), poor to average level of extension contacts (94.00%), high level of scientific orientation (80.00%), high to very high level of economic motivation (96.00%), medium to high degree of achievement motivation (94.00%). The study disclosed that majority of the mixed farming adopter farmers belonged to middle to old age group, thus proper strategies should be made understanding the mentality and psychology of these aged farmers to accelerate rate of adoption of mixed farming as well as more efforts should be taken to popularise and convince benefits of mixed farming among youth farmers. The outcome of investigation concludes that majority of the mixed farming adopter farmers had education from secondary to higher secondary level. Thus, modern techniques to be adopted in mixed farming system can be popularized amongst the farmers through printing materials and

media like leaflets, folders, agricultural magazines, newspapers, television and internet. The study disclosed that farmers who adopted mixed farming had poor extension contact, thus it need more efforts of extension personnel to reach up to the last mixed farming adopter farmer. The results of the study indicated that farmers faced difficulty in optimisation of crop-livestock relationship in mixed farming. This divulged the need to formulate ideal mixed farming system model for marginal, small, large farmers and popularise the use of resources in mixed farming system in an effective way.

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References

- Divya, S. 2013. Employability of postgraduate scholars studying in higher agriculture education. M.Sc. (Agri.) Thesis, Anand Agricultural University, Anand.
- Gulkari, K.D., Netravati, G., Onima, V.T. and Gade, Y.R. 2014. Profile analysis of dairy farm women in adoption of scientific practices. *International Journal of Agricultural Extension* 2(03): 159-163.
- Khot, A.V. 2011. Extent of economic gain through drip irrigation system by banana growers. M. Sc. (Agri.) Thesis, Anand Agricultural University, Anand.
- Mohamad, A. and Khan, N. 2014. Adoption of New Agricultural Technology: A Case Study of Buksa Tribal Farmers in Bijnor District, *Western Uttar Pradesh International Journal of Agriculture, Environment and Biotechnology* 7(02): 403-408.
- National Commission on Agriculture, 1976. Mixed Farming. A report. Animal Husbandry – Ministry of Agriculture and Irrigation, New Delhi Part VII 359-381.
- Patel, K.P. 2013. Development of scale to measure attitude of farmers towards green manuring for sustainable agriculture. M.Sc. (Agri.) Thesis, Anand Agricultural University, Anand.
- Patel, M.C. 2007. Construction of scale to measure scientific orientation and risk orientation. Fourth Agresco sub-committee on Social Sciences, Anand Agricultural University, Anand.
- Reddy, B.P. 2010. Growth and Trends Discerning of Indian Dairy Industry. *Asia-Pacific Journal of Social Sciences* 2(2): 105-125.
- Sastry, N.S.R., Thomas, C.K. and Singh, R.A. 1994. Livestock Production. Management. Kalyani Publishers, New Delhi, 642.



- Smitha, S. 2013. Development of scale to measure attitude of the farmers towards greenhouse technology. (Unpublished) M. Sc. (Agri.) thesis, AAU, Anand.
- Singh, D.K., Pandey, N.K., Rana, R.K. and Singh, B.P. 2015. Extent and Correlates of Knowledge of Farmers regarding Scientific Potato Production Technologies in Himachal Pradesh. *International Journal of Agriculture, Environment and Biotechnology* **8**(2): 381-385.
- Singh, S.P. 1974. Planned change in tribal areas. *Ind. J. Public Administration* **19**(3): 363-378.
- Supe, S.V. 1969. Factors Related to Different Degrees of Rationality in Decision-making among Farmers. In: Singh, K.N., Singh, S.N. and Lokhande, M.R. (Eds). *Measurement in Extension Research, Instrument Developed at IARI*. New Delhi: IARI Division of Agricultural Extension.
- Surya, R. and Indu, K. 2010. A trend analysis of farmers communication sources. *J.C.S.* **28**: 63-7.
- Vaidya, A.C. 2011. A study on crisis management practices adopted by the poultry farmers in Anand district of Gujarat. Ph.D Thesis, Anand Agricultural University, Anand.