

Factors Affecting the Adoption of Modern Agricultural Practices in Marathwada Region

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ABSTRACT

The study of 200 farmers in the drought affected Marathwada region reported several challenges, including labor, scarcity, irregular electricity, supply, water shortage, rising fertilizer prices, increasing production costs, and crop disease. Despite these problems, most respondents remain optimistic and motivated to improve their farming systems. Many farmers received awards and recognition for progressive agriculture, which served as inspiration for others in society. The study also found that farmers aimed to increase income through innovation, modern technology and sustainable farming practices, especially those with smaller land holdings. This study focuses on the positive outcomes of the efforts of various farmers. Farmers who have accepted the challenges and overcome it with management and proper guidance.

Keywords: Marathwada, disease, innovation, guidance.

INTRODUCTION:

India's dependence on agriculture since independence became more relevant as its contribution to GDP and employment engaged in it both were very significant. The 20th century brought significant changes in the economies of the global agriculture. With the opening up of our economy in the year 1991 the world's doors opened for us. Farmers were encouraged to shift from growing of traditional crops to cash crops like chilli, cotton, sugarcane, oilseeds, tobacco, soybean, wheat, groundnuts. etc.

Liberalisation policies reduced the subsidies on pesticide, fertilizer and elasticity. As a result prices increased at a larger extent. But farmers couldn't reap the benefit from it the way they should have. Incidence of draught and famine was one of the calamitous features of the colonial period that ravaged Indian economy. What is most abominable is that it becomes a recurrent experience in Maharashtra till now And that impacts the socio-economic life of the farmers.

Though the waves of farmer suicides have taken place mostly in the states of Karnataka, Andhra Pradesh and Maharashtra Madhya Pradesh & Chhattisgarh but Marathwada & Vidarbha region was the epicentre. The reason which Ashwini Kulkarni et al mentioned in their research paper is that the impact of the drought of the summer monsoon of 2015 has been particularly large in the Marathwada region of Maharashtra which is now facing unprecedented water scarcity and more than one thousand farmers have committed suicide. In fact, the water scarcity in the Marathwada region in the aftermath of the drought of 2015 is far more severe than that associated with the more severe deficit rainfall in 1972, which also succeeded a drought in the previous year. In 1972, food and fodder was the predominant concern, not water and there were no suicides by farmers.

This has brought the need look at the farmers issues from a different perspective. Looking a solution in traditional way is not going to answer the farmers' plight. Marathwada being the central region which lacks the farmable conditions few of the farmers have overcome this issue and have highlighted how to do farming with scarce resources. This research is dedicated to the efforts of all those farmers who have not only determined to stay relevant but also made an impact with their grit and determination. The soil and climatic conditions of the region is favourable for development but the traditional agricultural practices and lack of irrigation facilities resulted in low productivity. The

land failed to produce any surplus, which in turn prevented any economic activity. There was no industrialization because of traditional agricultural practices and lack of moderate entrepreneurial class. The people from the region, therefore, had little or no industrial background as compared to other developed region. At present, agriculture is the main occupation of the people of Marathwada. But irrigation covers only one tenth of the net sown area of the Marathwada region. Because of limited sources of water and low level of rainfall near about two fifth of the land remains under the drought prone zones. Agriculture in Marathwada means chiefly cultivation of crops which are less water intensive like Bajra and Jowar. Cultivation of cash crops like cotton, sugarcane and oil seed is restricted.

The study focuses on understanding the factors that contributed to their success, including the adoption of modern agricultural techniques. By examining the experiences of 200 successful farmers, the research paper highlights the resilience, adaptability, and socio - economic transformation occurring within the farming, community of Marathwada and provides insights for sustainable rural development in route affected regions. This research provides insights into the adoptive measures and challenges faced by farmers in sustaining agriculture under drought prone conditions. The present research would set a new approach against the backdrop of plethora of research concentrating on farmer's suicide, displacement, migration, scarcity of resources, lack of modern methods and technology, lack of skilled labour, environmental imbalances and irregularities, social unjust structure and improper division of labour. The approach believes that the positivity of thought and positive attitude would sustain the agriculture in the drought prone conditions.

The present study has the following objective:

- To study the socio-economic factors affecting the adoption of modernization in agriculture sector in Marathwada region.
- To study the problems faced by the respondents while adapting modern technology in agriculture sector in Marathwada region.
- **Research Methodology :**

This study is confined Marathwada Region in Maharashtra state. The study is based on primary data. Interview schedule was administered for collecting the primary data. 200 farmers using modern technology like water management techniques were selected by using stratified random sampling technique and snow ball method from the region. 25 farmers were selected from each district from Marathwada region. Collected data was analyzed by using SPSS.

Data Analysis:

Table No. 1

Reasons of Modern Farming

Factor Preference		Story of successful farmers	Moody nature	Failure in other sector	Attraction towards Govt. Schemes	Agriculture Education	High Education	Total
1	No	72	76	25	10	5	12	200
	Per	36.0	38.0	12.5	5.0	2.5	6.0	100.00
2	No	25	44	33	25	50	23	200
	Per	12.5	22.0	16.5	12.5	25.0	11.5	100.00
3	No	45	26	52	28	25	24	200
	Per	22.5	13.0	26.0	14.0	12.5	12.0	100.00

Source: Field Work

The above table explains the factor wise preferences given by the respondents, which are the causes to move towards the modernization in the farming. According to the majority of the respondents moody nature is the main reason followed by inspirational stories of successful farmers. Failure in other sector is also a reason reported by 12.5% respondents. To agricultural education, the highest number of respondents (50) gave second preference. The reason 'attraction towards government schemes' is reported by 14% respondents as the third preference. It is found from the survey that moody nature is the main reason reported by the highest number of respondents for first and second preference. 'Inspirational stories of successful farmers' is also main factor to move towards the modernization in agriculture sector reported by the respondents.

Table No. 2 Changes after adoption of Modernization in Income and Expenditure

		Nil	1-50 Thous and	51-1 Lakh	1-1.5 Lakh	1.5- 2 Lakh	2-2.5 Lakh	2.5-3 Lakh	3-3.5 Lakh	3.5- 4 Lakh	Abov e 4 Lakh
Before Modernizatio n- Income	Numbers	17	34	56	34	40	4	17	3	14	37
	Percentag e	6.6	13.3	21.9	13.3	15.6	1.6	6.6	1.2	5.5	14.5
Before Modernizatio n- Expenditure	Numbers	17	116	66	18	15	3	5	9	3	4
	Percentag e	6.6	45.3	25.8	7.0	5.9	1.2	2.0	3.5	1.2	1.6
First Year- Income	Numbers	22	3	12	18	33	20	17	21	6	104
	Percentag e	8.6	1.2	4.7	7.0	12.9	7.8	6.6	8.2	2.3	40.6
First Year - Expenditure	Numbers	25	38	79	27	33	7	13	9	9	16
	Percentag e	9.8	14.8	30.9	10.5	12.9	2.7	5.1	3.5	3.5	6.3
Second Year- Income	Numbers	22	2	4	5	5	18	12	22	24	142
	Percentag e	8.6	0.8	1.6	2.0	2.0	7.0	4.7	8.6	9.4	55.5
Second Year - Expenditure	Numbers	25	16	48	50	38	13	16	1	12	37
	Percentag e	9.8	6.3	18.8	19.5	14.8	5.1	6.3	0.4	4.7	14.5
Third Year- Income	Numbers	22	4	5	1	6	6	9	6	12	185
	Percentag e	8.6	1.6	2.0	0.4	2.3	2.3	3.5	2.3	4.7	72.3
Third Year - Expenditure	Numbers	25	11	30	32	44	13	14	21	23	43
	Percentag e	9.8	4.3	11.7	12.5	17.2	5.1	5.5	8.2	9.0	16.8

Source: Field Work

The above data shows a clear shift in the income and expenditure pattern of respondents after modernization. Before modernization, the majority of respondent were concentrated in the lower income categories, with 21.9% earning between ₹51,000 and ₹1,00,000 and only 14.5% earning above ₹4 lakh expenditure level, were also relatively low, as 45.3% of respondents spent only up to ₹50,0 25.8% spent between ₹51,000 and ₹1,00,000. After modernization, there was a remarkable improvement in income distribution. In the first year, 40.6% of respondents moved into the above ₹4,00,000 income category, which further increased to 55.5% in the second year and 72.3% in the third year. This indicates substantial and continuous growth in earnings over time due to modernization. At the same time, expenditure patterns also shifted upward. In the first year, the majority of respondents 30.9% spent between ₹51,000 and ₹1 lakh, while by the second and third years, higher expenditure categories became more common, especially between ₹1,00,000 and ₹2.5 lakh. The percentage of respondent spending above ₹4,00,000 rose from only 1.6% before modernization to 16.8% in the third year. It means the modernization not only increased income levels, but also encouraged greater investment, operational expansion and spending capacity among respondents.

Table No. 3 Benefits of Modernization in Farming to Others

Sr.no.	Benefits		Yes	No	Can't tell	Total
1	Change in Method of their farming	Frequency	183	03	14	200
		Percentage	91.5	1.5	7.0	100.00
2	They received free guidance	Frequency	138	34	28	200
		Percentage	69.0	17.0	14.0	100.00
3	Increase in their income	Frequency	174	13	13	200
		Percentage	87.0	6.5	6.5	100.00
4	Received more knowledge about market	Frequency	168	27	35	200
		Percentage	69.0	13.5	17.5	100.00
5	Investment in farming is increased	Frequency	169	19	12	200
		Percentage	84.5	9.5	6.0	100.00
6	Addictively decreased	Frequency	88	91	21	200
		Percentage	44.0	45.5	40.5	100.00
7	Prestige among villagers increased	Frequency	60	112	28	200
		Percentage	30.0	56.0	14.0	100.00
8	Employment in village increased	Frequency	174	13	13	200
		Percentage	87.0	6.5	6.5	100.00
9	Number of agro based industries increased	Frequency	106	50	44	200
		Percentage	53.0	25.0	22.0	100.00
10	Allied business increased	Frequency	117	31	52	200
		Percentage	58.5	15.5	26.0	100.00
11		Frequency	103	38	59	200

	Increase in number of cargo vehicle	Percentage	51.5	19.0	29.5	100.00
12	Started production of agriculture tools	Frequency	96	47	57	200
		Percentage	48.0	23.5	28.5	100.00
13	Healthy competition among farmers for increase in income and development	Frequency	144	21	35	200
		Percentage	72.0	10.5	17.5	100.00

Source: Field Work

The above table explained about benefits of modernization in farming to others. The table presents the opinion of 200 farmers regarding the benefits they experienced due to agricultural development and support activities. The findings indicate that most farmers observed positive changes in their farming practises and social economic conditions. A large majority of respondents 91.5% reported a change in their farming method, showing that modern techniques and improved practises were widely adopted. Similarly 80% of farmers stated that their income increased and employment opportunities in the village also increased. About 84.5% responders felt that investment in farming had increased. Regarding knowledge and guidance, 69% farmers see they received free guidance while another 69% reported gaining better market knowledge. Healthy competition among farmers for higher income and development was observed by 72% of respondents Moderate benefits were seen in the growth of Allied business 58.5%, Agro based industries is 53% increase in Agro vehicles, 51.5% and production of agricultural tools, 48%. However, few respondents agree that prestige among villagers increased 30%, while 56% such changes.

Table No. 4 Change in the Families Social Growth after Modernization

Sr.no.	Social Factors		Yes	No	Can't tell	Total
1	Social Prestige	No.	191	5	4	200
		Per	95.5	2.5	2.0	100.00
2	Health	No.	120	41	39	200
		Per	60.0	20.5	19.5	100.00
3	Children Education	No.	172	13	15	200
		Per	36.0	6.5	7.5	100.00
4	Standard of living	No.	185	5	10	200
		Per	92.5	2.5	5.0	100.00
5	Shelter	No.	167	23	10	200
		Per	83.5	11.5	5.0	100.00
6	Diet	No.	116	48	36	200
		Per	58.0	24.0	18.0	100.00

Source: Field Work

The above table explains about the changes happened in the families of the respondents in *Marathwada* after adopting the modern technology in agriculture sector. It is found from the survey that social prestige of 95.5% farmers is increased. According to the highest number of respondents health, children education, standard of living,

shelter and diet also increased after the modernization in agriculture sector. Very less number of respondents reported that the above factors did not change in their life / family.

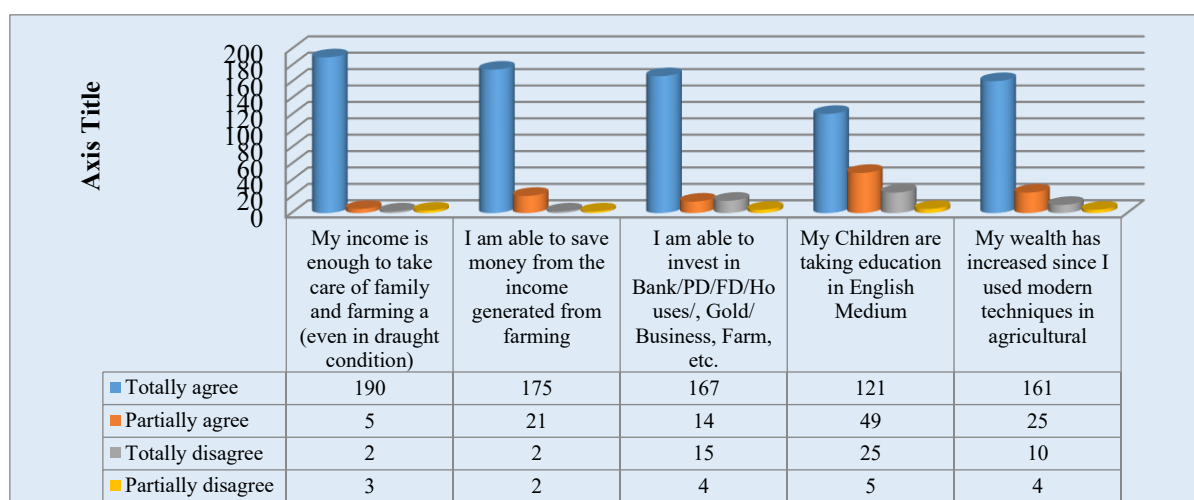
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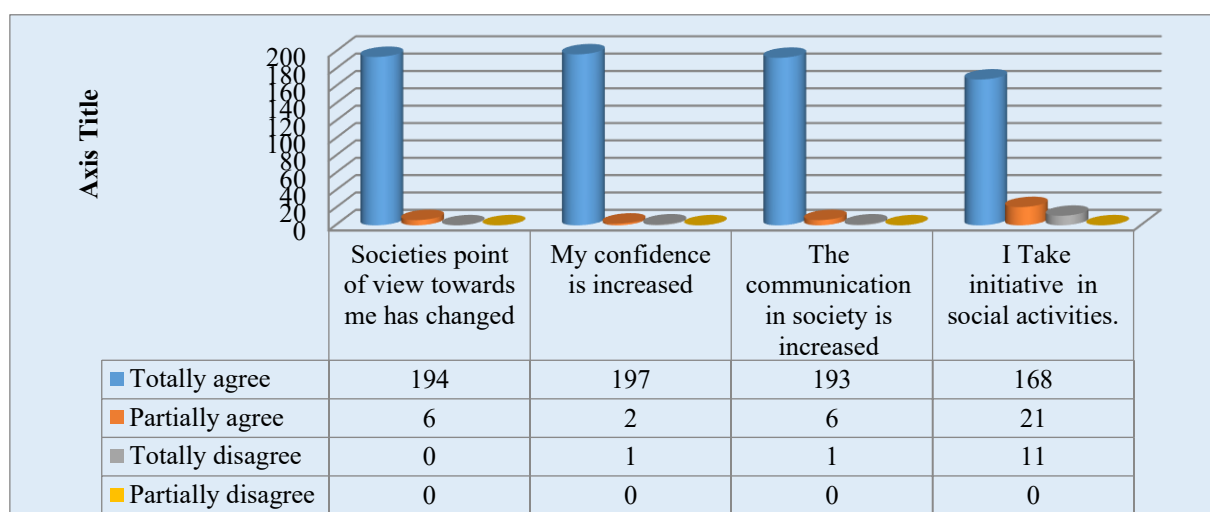
Graph No.1 About Income Level



Source: Field Work

The above chart explains the psychometric response with Likert scale about the income of the respondents. These graphs explain about changes and 95% respondents totally agree that they are able to take care of family during the drought condition as well with current income. 87.5% are able to save money and 83.5% are able to invest in FD / House / Gold or business and farm also.

Graph No.2 Social Relation



Source: Field Work

The above chart explains about the changes in social relation after move towards the modernization in farming. According to all the respondents societies point of view towards them totally changed and also it has been reported by them that their confidence is also increased as the income level increased. The communication in society is also increased and so that they are taking initiative in social activities. It means all the things in society are positively influenced by increase in the income level.

Table No. 6
Problems Faced by the Respondents

SN	Problems	Frequency	Percentage
1	Unavailability of labour	05	2.5
2	Increasing production cost and price of fertilizers	55	27.5
3	Not getting proper price and lack of electricity	09	4.5
4	Increasing production cost & Price of fertilizers and scarcity of water	28	14.0
5	Increasing production cost & price of fertilizers, lack of electricity, increasing disease	37	18.5
6	All of the above	66	33
	Total	200	100.00

Source: Field Work

The above table explains about the problems faced by the respondents. It is found from the survey that farmers are facing the problems like scarcity of labour, electricity, and water also. They are also facing problems of increasing process of fertilizers and production cost and diseases aswell. 33% respondents reported that they are facing the above problems. 27.5 respondents have enough water, labour and electricity but at the same time, they are facing the problem of increasing production cost and increasing prices of fertilizers. According to the respondents, if we could solve the problems then other farmers from *Marathwada* will be able to increase their income from farming.

Table No.7 Problems Faced While Doing Progressive Farming

Sr. No.	Problems Faced While Doing Progressive Farming	Frequency	Percentage
1	No Problems	89	44.5
2	Opposition of Family	7	3.5
3	Lack of Capital	64	32
4	Insult by Sociaty	11	5.5
5	Lack of Capital & Insult by Society	17	8.5
6	Other	12	6
Total		200	100

Source: Field Work

Above table gives information about problems faced by respondents while doing progressive farming. 89 respondents said they dont faced any problem while doing profressive farming. 64 respondents stated that they faced problem of lack of capital when they started to doing progressive farming. 17 respondents said they dont faced family opposition but they faced problems of lack of capital as well as they are insulted by sociaty. 11 respondents found that insulted by sociaty and 7 respondents are found that they have faced family opposition. 12 respondents said they faced othe

problems. The numbers of respondents who do not faced problems while doing progressive farming is higher followed by respondents who faced problems of lack of capital.

Table No.8 Table No. Reasons to move towards the Modernization in Farming

SN	Reasons	Frequency	Percentage
1	Traditional farming is not affordable	36	18.0
2	Like the invention & agriculture	23	11.5
3	Availability of sustainable and financial sources	16	8.0
4	Natural disaster & the failure in other sector	19	9.5
5	New diseases are increasing	08	4.0
6	Wanted high income within less area of land	66	33.0
7	Unavailability of warranty price	04	2.0
8	Increasing income level	22	11.0
9	Above 1 st and 11 nd	04	2.0
10	Above 8 th and 5 th	02	1.0
	Total	200	100.00

Source: Field Work

The above table explains the reasons of modernization in agriculture sector in *Marahtwada*. It is found from the survey that the highest number farmers i.e. 33% own less land and they want to increase their income. These farmers reported that they realize traditional farming could not give them the maximum income. 11.5% farmers are have interest in farming as well as innovation. 9.5% respondents report that they are working in another sector but because of failure in another sector they moved towards the traditional business i.e. farming. 16% have enough financial support from family, so that they were not worried about the income and other things but they could think about the society and sustainability in it. 4% farmers report that new diseases are increasing because of global warming and climate change and traditional ways are not enough to face it. According to 22 respondents acceptance of modern technology will be helpful in increase the income level within the available land area.

Table No. 9 Suggestions given by the Respondents

SN	Suggestions	Frequency	Percentage
1	Crops should be taken according to market demand	11	5.5
2	Good relations between farmer to consumer	14	7.0
3	Necessary goods should be available easily	13	6.5
4	Help from Government	18	9.0
5	Use of modern technology	52	26.0
6	Use of scientific method	15	7.5
7	Help for drought area	09	4.5
8	Small scale industries as allied business	42	21.0

9	Change in crop & guidance	09	4.5
10	Organic farming and	06	3.0
11	Modern method and allied business	07	3.5
12	Above 1 +2	02	1.0
13	Not applicable	02	1.0
	Total	200	100.00

Source: Field Work

The above Table explains the suggestions made by the respondents to improve the quality of farmers in draught affected *Marathwada* region. According to 52 respondents, farmer should increase the use of modern technology to increase the income level & output level. According to 21% respondents, farmers should accept small-scale industries as an allied business. 7.5% respondents reported that farmers should use scientific methods for cropping and overall farming. Crops should be taken according to market demand suggested by 5.5% respondents. There should be change in crop and this change should be done with the proper guidance. According to 6.5% respondents, necessary goods for farming should be available easily.

CONCLUSION:

In conclusion, the study of 200 farmers in the drought affected region of *Marathwada* reveals that effective management of water, crops, fertilizers and market plays a crucial role in sustaining agricultural livelihoods under challenging climatic conditions. Farmers have adopted various adoptive strategies such as efficient water use, selection of drought- resistant crops, balanced fertilizer applications, and improved market planning to reduce risks associated with recurring drought and unstable market conditions. However, limited irrigation facilities, rising input cost, fluctuating market, prices, and inadequate institutional support continue to affect agricultural productivity and income stability. The study focuses on understanding the factors that contributed to their success, including the adoption of modern agricultural techniques, irrigation practices.

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REFERENCES:

- [1] Kulkarni, Ashwini&Gadgil, Sulochana&Patwardhan, Savita. (2016). Monsoon Variability, the 2015 Marathwada Drought and Rainfed Agriculture. *Current Science*. 111. 1182-1193. 10.18520/cs/v111/i7/1182-1193.
- [2] Government of India. (2021). Journey of nurse to become a farmer. In *Inspiring Stories of Progressive Woman Farmers*. Ministry of Agriculture & Farmers Welfare.
- [3] Maria S. Bowman and David Zilberman ,Economic Factors Affecting Diversified Farming Systems Source: *Ecology and Society* , Mar 2013, Vol. 18, No. 1 (Mar 2013) Published by: Resilience Alliance Inc. Stable URL: <https://www.jstor.org/stable/26269286>.
- [4] Meena, B. S. (2018). Prosperous dairy farming through crossbreed in Karnal. In *Inspiring Stories from Innovative Farmers*. Telangana: National Institute of Agricultural Extension Management (MANAGE).
- [5] P. Sainath, „Farmers Suicides and Way Forward“, RytuSwarajyaVedhika and Tv9 on 8th January, 2011 at Jubilee Hall, Hyderabad.
- [6] Sharma, P. (2013). Increasing income through value addition in tur. In *Krishi Sutra 2: Success Stories of Farmer Producer Organisation*. New Delhi: Small Farmers Agribusiness Consortium.
- [7] Suryawanshi, A. A. (2016). Sustainable agriculture in Maharashtra: A case study of Satara District. *Advances in Economics and Business Management*, 3(5), 426-429.