P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating (2025): 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 12; December 2025; Page No. 528-531

Received: 19-10-2025
Accepted: 23-11-2025

Indexed Journal
Peer Reviewed Journal

Adaptation strategies taken up by the farmers to deal with climate smart agriculture

[1]Kanade SV, [2]Kamble VB, [3]Samrit VB and [4]Gaikwad SR

[1]PG Student, Department of Extension Education, College of Agriculture, Latur, Maharashtra, India

[2]Professor (H.O.D) (rtd.), Department of Extension Education, College of Agriculture, Latur, Maharashtra, India

[3]Ph.D. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

[4]Ph.D. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

DOI: https://www.doi.org/10.33545/26180723.2025.v8.i12g.2806

Corresponding Author: Kanade SV

Abstract

The present study was conducted mainly with the objective to study "Adaptation strategies taken up by the farmers to deal with Climate Smart Agriculture". For the study, Latur district were selected from Marathwada region of Maharashtra. Three talukas *viz*., Latur, Renapur and Ausa were selected randomly and four villages from each Talukas were selected randomly. From each village ten members were selected randomly constituting the sample size 120. Ex-post-facto research design was used for the study. From the study, Adaptation strategies taken by the farmers to deal with climate Smart Agriculture, it has been found that, Majority of the respondents were aware about various adaptation strategies regarding climate smart agriculture such as disease resistant varieties, disease tolerance varieties, change in cropping pattern and calendar of planting, mixed cropping, irrigation scheduling, use of compost, use of animal manure, drought tolerance varieties, crop rotation, about mulching (crop straw, plastic, residue), etc. Meanwhile, majority of respondents also adopted various practices of climate smart agriculture such as disease resistant varieties, disease tolerance varieties, change in cropping pattern and calendar of planting, mixed cropping, use of compost, use of animal manure, drought tolerant varieties, crop rotation, legumes, scheduled fertilizer application, spacing between rows/plants, judicious use of insecticides and pesticides, irrigation scheduling, water efficient crops, choice of irrigation, and micro irrigation.

Keywords: Adaptation strategies, climate smart agriculture, farmers, awareness

Introduction

CSA is characterized as rural practices that reasonably increment profitability and framework strength while lessening ozone harming substance emissions[1]. CSA guarantees that environmental change adjustment and moderation are straightforwardly consolidated into rural advancement arranging and venture procedures. Our point of view on CSA is reasonable farming, in view of incorporated administration of water, land and environments at scene scale.

CSA innovations and approaches alone won't increment strength or improve occupations of huge quantities of little holders who get by inside complex frameworks. Decades and a huge number of dollars put resources into exploration, advancement and innovation move have not changed African smallholders. Proof shows that top-down order and control frameworks for innovation dissemination don't create supportable changes.

What is different about climate-smart agriculture?

What's going on about CSA is an unequivocal thought of climatic dangers that are going on more quickly and with more noteworthy power than before. New atmosphere dangers, require changes in farming advancements and ways to deal with improve the lives of those still secured food uncertainty and neediness and to forestall the loss of additions previously accomplished. CSA approaches involve more noteworthy interest in Managing atmosphere dangers, Understanding and getting ready for versatile advances that might be required, for instance into new cultivating frameworks or occupations, Exploiting open doors for diminishing or evacuating ozone harming substance discharges where plausible. (CCAFS and UNFAO).

Importance of study

As per FAO estimated, by the year 2050 world population will increase by one third and food required for food security by 60%. Climate smart agriculture is a methodology for changing and reorienting rural advancement under the real factors for environmental change.

Three main reasons for this context are

1. **Productivity:** The ultimate aim of Climate smart agriculture is to sustainably increase agricultural

productivity and incomes from crops, livestock and fish, without having a negative impact on the environment.

2. **Adaptation:** Principal way to deal with the impacts of a changing climate is its adaptation. It implies anticipating the unfriendly impacts of environmental change and making suitable move to prevent or limit the harm they can cause, or making the most of chances that may emerge.
3. **Mitigation:** mitigation means implementing policies to reduce greenhouse gas emissions and enhance sinks. Wherever and whenever possible, Climate smart agriculture should help to reduce and/or remove greenhouse gas emissions.

Objective

To study the adaptation strategies taken up by the farmers to deal with climate smart agriculture

Methodology

The present study was conducted in Latur district of Maharashtra state. In Latur district there are 10 talukas, out of which three talukas, namely Latur, Renapur and Ausa were randomly selected on the basis attitude of farmers towards sustainable agricultural practices. From each taluka 4 villages were randomly selected and from each village 10 farmers were randomly selected to comprise 120 respondents. Ex-post facto research design was used for the study. Data were collected by personally interviewing the respondents with the help of pretested structural schedule. Collected data were tabulated properly. Mean and standard deviation, frequency, percentage, coefficient of correlation methods of statistics were used for interpretation of data.

Table 1: Distribution of respondents according to their adaptation strategies regarding climate smart agriculture

Sr. No.	Items	Adaptation strategies of respondents (N = 120)	
		Frequency	Percentage
Varieties			
1	Short duration varieties	40	33.33
2	Direct seeded rice	00	00.00
3	Disease resistant varieties	120	100.00
4	Disease tolerance varieties	120	100.00
5	Drought tolerance varieties	119	99.17
Agro diversification			
6	Crop-tree systems (Agro-forestry systems)	03	02.50
7	Crop-livestock systems	27	22.50
8	Change in cropping pattern and calendar of planting	120	100.00
9	Mixed cropping	120	100.00
10	Crop rotation	119	99.17
11	Reduced tillage	31	25.83
12	Crop-tree-livestock system	01	00.83
13	Fallow land	16	13.33
14	Judicious use of insecticides and pesticide	116	96.67
15	Adoption of integrated farming system model	01	00.83
16	Spacing between rows/plants	118	98.33
17	Cultivation of paddy through SRI technique	00	00.00
Water management			
18	Irrigation scheduling	113	94.17
19	Water efficient crops	110	91.67
20	Choice of irrigation methods	105	87.50
21	Micro irrigation	96	80.00
22	Contour farming	07	05.83
23	Water harvesting	20	16.67
24	Drainage	12	10.00
25	About judicious use of underground water	13	10.83
Soil conservation			
26	Use of cover crops	22	18.33
27	About mulching (crop straw, plastic, residues)	62	51.67
28	Live Barriers/Fence	06	05.00
29	Plantation of trees	49	40.83
Soil management			
30	Organic fertilizer	51	42.50
31	Legumes and green manure	119	99.17
32	Use of compost	120	100.00
33	Use of animal manure	120	100.00
34	Bio-fertilizer	60	50.00
35	Application of integrated nutrient management	10	08.33
36	Scheduled fertilizer Application	119	99.17

From the Table 1, It is implied that, all the respondents that is 100.00 per cent of the respondents disease resistant varieties, disease tolerance varieties, change in cropping pattern and calendar of planting, mixed cropping, use of compost and use of animal manure.
Followed by 99.17 per cent of the respondents adopted drought tolerant varieties, crop rotation, legumes and scheduled fertilizer application.
Followed by 98.33 per cent of the respondents adopted spacing between rows/plants.
Followed by 96.67 per cent of the respondents adopted judicious use of insecticides and pesticides.
Followed by 94.17 per cent of the respondents adopted irrigation scheduling. Followed by 91.67 per cent of the respondents adopted water efficient crops. Followed by 87.50 per cent of the respondents adopted choice of irrigation. Followed by 80.00 per cent of the respondents adopted micro irrigation.
Followed by 51.67 per cent of the respondents adopted mulching (crop straw, plastic, residues). Followed by 50.00 per cent of the respondents adopted bio-fertilizers.
Followed by 42.50 per cent of the respondents adopted organic farming. Followed by 33.33 per cent of the respondents adopted plantation of trees. Followed by 25.83 per cent of the respondents adopted short duration varieties. Followed by 22.50 per cent of the respondents adopted Crop- livestock system.
Followed by 18.33 per cent of the respondents adopted use of cover crops. Followed by 16.67 per cent of the respondents adopted water harvesting. Followed by 13.33 per cent of the respondents adopted fallow land.
Followed by 10.33 per cent of the respondents adopted judicious use of underground water. Followed by 10.00 per cent of the respondents adopted drainage.
Followed by 8.33 per cent of the respondents adopted Application of integrated nutrient management.
Followed by 5.83 per cent of the respondents adopted contour farming. Followed by 5.00 per cent of the respondents adopted live barriers/fence.
Followed by 2.50 per cent of the respondents adopted crop-tree systems (agro forestry systems). Followed by only 0.33 per cent of the respondents adopted crop-tree-livestock system and Adoption of integrated farming system model.
No respondents adopted direct seeded rice and cultivation of paddy through SRI technique.
The Adaptation strategies regarding some of the aspects was high and some was low because the peoples adopt only that strategies which are suitable to them and are available to them rather choosing the one which are difficult to adopt and are less effective to their area.

Extent of Adaptation strategies regarding climate smart agriculture

The overall adaptation strategies regarding climate smart agriculture collected by surveying respondents. The collected data is presented in the table.

Table 2: Extent of Adaptation strategies regarding climate smart agriculture

Sr. No.	Category	Respondents (N= 120)	
		Frequency	Percentage
1.	Low (Up to 18)	13	10.84
2.	Medium (18 to 28)	89	74.16
3.	High (29 & above)	18	15.00
	Total	120	100.00
	Mean= 19.00	S.D.= 04.11	

From the Table 2, it is revealed that, majority of the respondents 74.16 per cent belong to medium category followed by 15.00 per cent respondent belong to high category and only 10.84 per cent of the respondents belong to low category of adaptation.
The findings are similar as that of Verma (2017) [7].

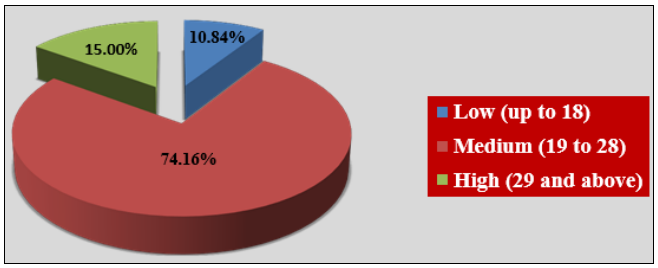

Fig 1: showing distribution of respondents according to their overall adaptation strategies of Climate Smart Agriculture

Conclusion

Majority of the respondents were aware about various adaptation strategies regarding climate smart agriculture such as disease resistant varieties, disease tolerance varieties, change in cropping pattern and calendar of planting, mixed cropping, irrigation scheduling, use of compost, use of animal manure, drought tolerance varieties, crop rotation, about mulching (crop straw, plastic, residue), plantation of trees, legumes and green manure, scheduled fertilizer application, spacing between rows/plants, choice of irrigation methods, micro irrigation, judicious use of insecticides and pesticide and water efficient crops.
Meanwhile, majority of respondents also adopted various practices of climate smart agriculture such as disease resistant varieties, disease tolerance varieties, change in cropping pattern and calendar of planting, mixed cropping, use of compost, use of animal manure, drought tolerant varieties, crop rotation, legumes, scheduled fertilizer application, spacing between
rows/plants, judicious use of insecticides and pesticides, irrigation scheduling, water efficient crops, choice of irrigation, and micro irrigation.

References

1. Abegunde VO, Sibanda M, Obi A. Determinants of the adoption of climate-smart agricultural practices by

small-scale farming households in King Cetshwayo District Municipality, South Africa. Sustainability. 2020;12:195.
2. Adegnandjou MF, Barjolle D. Farmers' adaptation to climate change and its implications in the Zou Department of South Benin. J Environ. 2018;5:1-10.
3. Asrat P, Simane B. Adaptation benefits of climate-smart agricultural practices in the Blue Nile Basin: Empirical evidence from North-West Ethiopia. In: Climate Change Adaptation in Africa. 2017;8(2):45-59.
4. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Climate change and social learning strategy: CCSL initiative. CCSL Learning Brief No. 2. Copenhagen: CCAFS; 2013.
5. Dutta BP. A study on the adoption behaviour of rice farmers towards alternate wetting and drying (AWD) technology in Puri district of Odisha [MSc thesis]. Bhubaneswar: Odisha University of Agriculture and Technology; 2015.
6. Panda AA. Awareness and constraints in adoption of climate-smart agricultural technologies among rice-pulse growing farmers in Puri district of Odisha [MSc thesis]. Bengaluru: University of Agricultural Sciences; 2017.
7. Verma SK. A study on awareness and adaptation strategies of climate-smart agriculture in Sultanpur district of Uttar Pradesh. Varanasi: Banaras Hindu University; 2017.