

International Journal of Agriculture Extension and Social Development

Volume 7; Issue 8; August 2024; Page No. 469-472

Received: 25-05-2024
Accepted: 30-06-2024

Indexed Journal
Peer Reviewed Journal

Navigating climate change: Challenges and strategies for women rice farmers

¹Sampreetha HN, ²K Ravi Shankar, ³B Savitha, ¹Ankit Mahapatra and ¹Rishabh Singh Gaur

¹Ph.D, Scholar, Agricultural Extension, ICAR- National Dairy Research Institute, Karnal, Haryana, India

²Principal Scientist (Agricultural Extension.), ICAR- CRIDA, Hyderabad, Telangana, India

³Associate Professor, Department of Agricultural Extension, PJTSAU, Hyderabad, Telangana, India

DOI: <https://doi.org/10.33545/26180723.2024.v7.i8g.971>

Corresponding Author: Sampreetha HN

Abstract

Women farmers encounter several significant challenges in adapting to climate change in rice cultivation, primarily due to gender-based inequalities, limited resources, and environmental impacts. This study, conducted in the major rice-producing regions of Shimoga and Hassan in Karnataka, aimed to assess these constraints. Data were collected from women farmers using a pre-tested structured interview schedule. The constraints identified were categorized into four groups: technical constraints, labor and financial constraints, personal and social constraints, and situational constraints. Each constraint was ranked based on cumulative frequency and percentage. Major constraints included the high cost of essential agricultural inputs, inadequate financial support from the government, expensive labor costs, difficulties working in high temperatures during summer, and insufficient training programs on climate-resilient agricultural technologies etc.,. Respondents suggested several policy improvements: better market prices (ranked I), subsidies or compensation for crop losses due to weather aberrations (ranked II), and the development of early maturing, flood, and drought-tolerant rice varieties (ranked III).

Keywords: Adaptation, climate change, constraints, Karnataka, rice crop, women farmers

1. Introduction

Climate change poses significant constraints to rice cultivation, impacting various aspects of production from seedling to harvest. These constraints arise from alterations in temperature, precipitation patterns, and extreme weather events, all of which can disrupt the delicate balance required for optimal rice growth. Women farmers play a vital role in rice farming around the world, helping to ensure family food security and rural economies. Women farmers are often responsible for a wide range of tasks related to rice production, such as planting, weeding, harvesting, and post-harvest chores. Climate change can compound the burden by increasing pest demands, creating unpredictable weather patterns, and necessitating new water management strategies. This increased effort may cause a strain on women's time and energy, affecting their overall well-being and capacity to engage in other income-generating activities or complete their education. Women farmers are often more vulnerable to climate risks due to their reliance on rainfed agriculture, limited access to climate information and technologies, and restricted mobility. Erratic rainfall patterns, droughts, floods, and storms can directly impact women's livelihoods by reducing crop yields, destroying infrastructure, and increasing food insecurity.

Moreover, women's roles as caretakers of families and communities make them particularly susceptible to the secondary impacts of climate change, such as changes in water and food availability, which can exacerbate household burdens and food insecurity. Extension services and training

programs are critical for promoting climate-smart agricultural practices and technologies. However, women farmers frequently encounter difficulties to receiving these programs, including limited outreach, cultural norms that limit their involvement in training events, and practical challenges such as childcare duties. As a result, women may miss out on vital opportunities to learn about climate-resilient farming techniques, making them more vulnerable to the effects of climate change. To address these limits, gender-responsive policies and programs must acknowledge and address the unique needs and objectives of female rice producers. Empowering women by improving their access to resources, extension services, decision-making opportunities, and climate information will help them adapt to climate change and contribute to more sustainable and equitable agricultural systems.

Chandra *et al.* (2017) ^[2] in their study reported that Women and men are affected differently and hence, changes in farming patterns and coping strategies. Women face greater disadvantages and, as a result, tend to farm in smaller plots, work for fewer hours, or limit their farming to cash crops. Extreme weather events appear to subject women to forced migration, increased discrimination, loss of customary land rights, poor resource and food insecurity in conflict-prone agrarian communities. Ramesh (2017) ^[5] in their study identified that the major constraints faced by the rice farmers are water shortage during critical growth period (95.83%) and it was considered as major constraint followed by lack of information about accurate weather forecast

(91.66%), continuous drought from last few years (77.50%), change in date of sowing (70.83%), weed infestation in direct seeded rice (69.16%), difficulty to work in the field during summer due to high temperature (55.83%), labour shortage during peak requirement (20.83%) and lack of storage facility (13.33%). Chanana-Nag and Aggarwal (2020) ^[1] in their research work on “Woman in agriculture, and climate risks: hotspots for development” mentioned about the main barriers for women farmers are labour, credit, and market access, as well as lower wage rates for female labourers in those hotspots.

Materials and Methods

The Karnataka state was chosen for the study purposively because the researcher is from the state, making it easier to

establish a good rapport with the women farmers. The districts of Shimoga and Hassan were selected intentionally due to their large areas of rice cultivation in the Southern Transition Zone of Karnataka, a region frequently affected by floods. Two taluks from each district were randomly chosen, followed by two villages from each taluk, also selected at random. From each selected village, fifteen women farmers were chosen using the random number table method, resulting in a total sample of 120 respondents. Data was collected through a pre-tested, structured interview schedule and analyzed using SPSS. The researcher conducted personal interviews with the women farmers.

Results and Discussion

Table 1: Constraints faced by the women farmers due to climate change in rice crop

Sl. No	Constraints	F	%	Rank
Technical constraints				
1	Unpredictable and erratic rainfall	106	88.33	II
2	Non availability of flood and drought tolerant rice varieties	100	83.33	III
3	High cost of required agri inputs (viz., quality seeds, chemical fertilizers and pesticides)	110	91.66	I
4	Lack of awareness about adaptation strategies (viz., adjusting sowing dates, water saving technologies like drum seeded and SRI method)	95	79.16	IV
5	Lack of information about accurate weather forecast	92	76.66	V
Operational constraints				
6	Labour shortage during peak period	89	74.16	III
7	High cost of labour	96	80	II
8	Low annual income	78	65	IV
9	Inadequate financial support from government	106	88.33	I
Personal and social constraints				
10	Difficulty to work in summer due to high temperature	90	75	I
11	Lack of coordination to share ideas among the members of the community	74	61.66	II
12	Poor community action for the promotion of CRA technologies	63	52.5	III
Others/ Situational				
13	Insufficient number of trainings on CRA technologies.	105	87.5	I
14	Lack of technical guidance from extension staff	68	56.66	IV
15	Lack of storage facility	88	73.33	III
16	Distress sale	92	76.66	II

The women farmers identified several major challenges under technical constraints. The highest-ranked issue was the high cost of essential agricultural inputs (such as quality seeds, fertilizers, and pesticides), possibly due to a shortage of quality supplies. The unpredictability and irregularity of rainfall ranked as the second-largest obstacle, hindering adoption efforts. The lack of flood- and drought-tolerant rice varieties was ranked third, as the districts involved in the study frequently experience extreme weather conditions. A lack of awareness of adaptation strategies (such as adjusting sowing dates and using water-saving technologies like drum seeding and the SRI method) due to insufficient training programs was the fourth major challenge. The lack of accurate weather forecasts ranked fifth, compounding the difficulties women farmers face in rice cultivation due to climate change. Similar issues were highlighted by Singh and Varshney (2010) ^[7] in their study, which identified constraints such as the absence of suitable high-yielding varieties, heavy weed growth, the complexity of new practices, and the high cost of inputs and labor. Regarding operational constraints, the lack of adequate financial support from the government was the top-ranked

issue, followed by the high cost of labor and a shortage of workers during peak seasons, ranked second and third, respectively. These labor issues may be due to many workers moving to nearby cities in search of employment. Low income from rice cultivation was ranked as the fourth major challenge. This finding is consistent with Chanana-Nag and Aggarwal's (2020) ^[1] research, which identified labor shortages, limited access to credit and markets, and lower wages for female laborers as the primary barriers for women farmers.

In terms of personal and social constraints, the most significant challenge was the difficulty of working during the summer due to high temperatures, as daytime temperatures have risen in recent years. The second-ranking issue was a lack of coordination within the community to share ideas, while poor community action to promote climate-resilient agricultural (CRA) technologies was ranked third. Kumari *et al.* (2016) ^[4] also found that women farmers face substantial challenges, including balancing farm and household responsibilities, male dominance, limited access to credit, and a lack of decision-making power, extension services, and education.

Under situational constraints, the most significant issue was the insufficient number of training programs on CRA technologies, which failed to cover the diverse needs of the respondents. This was followed by distress sales, where women farmers were forced to sell their produce at very low prices to avoid spoilage or pay off debts. The lack of storage facilities ranked third, and the lack of technical guidance from extension staff was ranked fourth, as many women farmers are unfamiliar with climate change adaptation

strategies. Eze (2017) ^[3] also reported similar challenges for cassava women farmers in Nigeria, citing the lack of institutional support, insufficient socio-cultural adaptation, and poor managerial skills as key obstacles to climate change adaptation. He recommended that the government provide basic infrastructure, better access to inputs, and improved extension services to support climate change adaptation and resource management among women farmers.

Table 2: Suggestions by the women farmers to combat climate change in rice crop

Sl. No	Suggestions	f	%	Rank
1	Early warning has to be given about environmental changes	70	58.33	X
2	Creating awareness about appropriate adaptation measures against climate change	80	66.66	VIII
3	Development departments should ensure supplying of production inputs at appropriate time in the villages	90	75.00	V
4	Crop insurance has to be given for the crops to overcome the crop damage due to weather aberrations	106	88.33	III
5	Better market price	112	93.33	II
6	Development of early maturing, flood and drought tolerant varieties	97	80.83	IV
7	Conduct regular women farmers training programmes on CRA technologies	84	76.66	I
8	Increase subsidies for rice farming	87	72.50	VI
9	Provision of storage facilities at low cost	92	70.00	VII
10	Increase the more number of female extension staff	77	64.16	IX

Based on the findings in Table 4.27, the suggestions provided by respondents during the investigation highlighted several key strategies to support women farmers in adapting to climate change. The top-ranked suggestion was conducting regular training programs for women farmers to increase their involvement in adaptation activities and decision-making related to climate change. This would help them protect their crops from adverse weather conditions by educating them on new technologies to combat climate change. The focus should be on low-cost, user-friendly, and locally compatible technologies, as many women farmers face technical challenges. It was also suggested that regular demonstrations of these new technologies be conducted regularly.

The second-ranked suggestion was ensuring better market prices for women farmers, as they often do not receive fair prices for their produce. Government intervention is needed to provide improved marketing facilities that enable women farmers to sell their produce directly to consumers and reduce the high costs of inputs like seeds and fertilizers. Subsidies and compensation for crop losses due to weather anomalies ranked third. The government should implement crop insurance schemes to help offset these losses.

Development of early-maturing, flood, and drought-tolerant crop varieties was ranked fourth, as women farmers face challenges such as dry spells and terminal floods, particularly affecting rice crops. There is a need for research institutes to develop suitable varieties for these conditions. Ensuring timely supply of production inputs was ranked fifth, while increasing subsidies for rice farming was ranked sixth.

The seventh suggestion was to provide low-cost storage facilities to improve the knowledge and skills of women farmers. Eighth, it was emphasized that creating awareness and providing regular training on appropriate climate change adaptation measures is essential, as many farmers are unaware of these strategies. Increasing the number of female extension staff was ranked ninth, as women farmers

often feel insecure and refrain from attending trainings where male farmers dominate. Finally, early warning systems for environmental changes were ranked tenth. These findings align with the study by Rondhi *et al.* (2019) ^[6], which reported that female farmers in Indonesia demonstrated greater resilience than male farmers in dealing with the effects of climate change. According to socialization theory, women tend to have stronger personal traits related to climate change action (mitigation and adaptation) than men. Therefore, enhancing the participation of female farmers in adaptation activities and climate change-related decision-making is crucial for building resilience to climate change among farmers.

Conclusion

In conclusion, the challenges faced by women farmers in rice cultivation due to climate change are complex and deeply intertwined with gender inequalities, further intensified by environmental stressors. These obstacles not only hinder women's capacity to adapt to climate change but also contribute to ongoing cycles of poverty and food insecurity in rural areas. Tackling these issues requires comprehensive, gender-responsive solutions that focus on empowering women farmers and acknowledging their essential role in agriculture and food security. Key to building their resilience is improving women's access to vital resources such as land, credit, seeds, and agricultural inputs. Furthermore, offering customized extension services, training, and climate information that address women's unique needs and priorities can empower them to adopt climate-smart agricultural practices more effectively. Strengthening women's voices and decision-making power in agricultural development will unlock their potential as leaders of change and resilience in the face of climate challenges. Ultimately, investing in gender equality and empowering women in rice farming is not just a matter of fairness but a strategic necessity for developing resilient and sustainable agricultural systems capable of withstanding

climate pressures. By addressing the constraints women farmers face, we can pave the way for a more equitable, resilient, and food-secure future for everyone.

References

1. Chanana-Nag N, Aggarwal PK. Woman in agriculture, and climate risks: hotspots for development. *Climatic Change*. 2020;158(1):13-27.
2. Chandra A, McNamara KE, Dargusch P, Caspe AM, Dalabajan D. Gendered vulnerabilities of smallholder farmers to climate change in conflict-prone areas: A case study from Mindanao, Philippines. *Journal of Rural Studies*. 2017;50(1):45-59.
3. Eze S. Constraints to climate change adaptation among cassava women farmers: implications for agricultural transformation and food security in Ebonyi state, Nigeria. *International Journal of Ecosystems and Ecology Science*. 2017;7(2):219-55.
4. Kumari P, Kumari A, Singh M. Analysis of constraints faced by farm women in agriculture- A study in Samastipur district of Bihar. *International Journal of Science, Environment and Technology*. 2016;5(6):4522-4526.
5. Ramesh I. A study on perceived impacts of climate change and coping mechanisms by rice farmers in Raichur district of Karnataka state [M.Sc. (Ag) Thesis]. Hyderabad: College of Agriculture, PJTSAU; c2017.
6. Rondhi M, FatikhulKhasan A, Mori Y, Kondo T. Assessing the role of the perceived impact of climate change on national adaptation policy: The case of rice farming in Indonesia. *Land*. 2019;8(5):81.
7. Singh PK, Varshney JG. Adoption level and constraints in rice production technology. *Indian Research Journal of Extension Education*. 2010;10(1):91-94.