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## An in-depth analysis of constraints and suggestions experienced by Maharashtra Project on Climate Resilient Agriculture (PoCRA) project beneficiaries

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### Abstract

A major challenge faced by the farmers is to cope with the changing climate. Farmers in Marathwada and Vidarbha have been facing severe drought for the past few years, all of which are affecting ground water storage and soil health, resulting in reduced agricultural productivity, adversely affecting the production of smallholder farmers.

Maharashtra Project on Climate Resilient Agriculture (The Nanaji Deshmukh Krishi Sanjeevani Prakalp) project has been launched (2018-2019) by the Government of Maharashtra with the assistance of the World Bank with the aim of enabling farmers to adapt to climate change.

The project has worked on four components. A. Promoting climate-resilient agricultural systems in this component A1: Mini-watershed-based planning; A2: Climate-Smart Agriculture and Resilient Farming Systems; and A3: Promoting efficient and sustainable use of water for agriculture - These are the subcomponents. Component B Climate Smart Post Harvest Management and Value Chain Promotion in this component B1. Strengthening Farmer Producer Companies B1.2 Establishment of Customs Hiring Centers (CHC): B2. Strengthening climate-resilient value chains B3. Improving the performance of the supply chain for climate-resilient seeds; these are the subcomponents. Component C is Institutional Development, Knowledge, and Policies for a Climate-Resilient Agriculture, and the last component, D-Project Management. The project has deliberately disseminated climate-friendly technologies through farm school demonstrations, study tours, and enhanced farmer skills and knowledge. Project Objectives an important objective of the project is to enable smallholder farmers in selected districts in the project area to adapt to climate change.

Indian agriculture is completely dependent on monsoons and markets and suffers periodic setbacks, which threaten farmers' livelihoods and farming enthusiasm. Rural prosperity and the overall economy suffer as a result of lower productivity and income. As a result, the state and policy makers have prioritized increasing farm income. This research is necessary to determine the exact beneficiary impact of PoCRA on the beneficiaries. Extreme weather and lack of rain are the main culprits. In such a situation, the government has launched the PoCRA initiative to increase the income and productivity of farmers. It is imperative to determine whether farmers are responding to the project as well as to examine the primary barriers to project adoption and implementation. Farmers in Marathwada division have to face natural calamities like unpredictable rain, drought, hail etc. The PoCRA project implemented by the government helped to overcome this situation.

**Keywords:** PoCRA, climate resilient, Maharashtra

### Introduction

The agricultural sector in Maharashtra is dependent on the uncertainties of nature. Small holder farmers are particularly vulnerable to climate shocks. In Maharashtra, particularly Vidarbha and Marathwada regions are vulnerable to weather shocks for these types of events. Farmers in Maharashtra are facing adverse conditions due to climate change due to all the problems of high cost of production and low profit, fluctuating market prices, lack of market, lack of agribusiness opportunities, increasing scarcity of water and decreasing land productivity.

A major challenge faced by the farmers is to cope with the changing climate. Farmers in Marathwada and Vidarbha have been facing severe drought for the past few years, all of which are affecting ground water storage and soil health, resulting in reduced agricultural

productivity, adversely affecting the production of smallholder farmers.

Project on Climate Resilient Agriculture (The Nanaji Deshmukh Krishi Sanjeevani Prkalp) project has been launched (2018-2019) by the Government of Maharashtra with the assistance of the World Bank with the aim of enabling farmers to adapt to climate change.

The increased amount of carbon dioxide in the atmosphere is an important factor associated with climate change. The planting of forest trees /orchards is going to be very effective in the reaction of stabilizing this carbon gas (Carbon Sequestration). Along with economic up-liftment of farmers, stabilization of Carbon gases that contribute to climate change, some conscious changes in farming practices due to changing climate are expected. The project has deliberately disseminated climate-friendly technologies through farm school demonstrations, study tours, and enhanced farmer skills and knowledge. Project Objectives an important objective of the project is to enable smallholder farmers in selected districts in the project area to adapt to climate change.

### Materials and Methods

The current study was conducted purposefully in Aurangabad (Sambhani Nagar), Jalana, and Osmanabad (Dharashiv) districts of the Marathwada region. In all eight districts in the Marathwada region. The above three districts were selected according to the intervention and maximum number of beneficiaries available under the PoCRA project. Two Tahasil from each district were selected purposively. Thus, total six Tahasil were selected for study area. The Tahasil viz., Osmanabad, parranda Tahasil from Osmanabad (Dharashiv) district, Auranagabad, Paithan from Aurangabad (Sambhaginagar) and Gnasangawi, Ambad Tahasil from Jalana District were selected for the research study.

From each selected PoCRA implemented Tehashil 40 beneficiaries was selected by random method. Total to sum of 240 respondents were selected. To study the impact same beneficiaries was analyzed before and after implementation of project i.e. recall memory of beneficiaries.

Ex-post facto research design was adopted in this study. The data were collected with the help of a pretested interview schedule from the respondents as per their convenience at home or on farms. The independent variables, namely, age,

education, land holding, annual income, irrigation status, social participation, source of information, Extension contact, risk orientation, economic motivation, and training received, were selected for this study. The impact of PoCRA as a dependent variable has been selected for this study.

The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation, multiple regressions, 'Z' test, and path analysis were used for the analysis of the data. The results of the study have been given in conclusive form as follows.

The method of summated rating suggested by Likert (1932) [7] was used to develop and standardize a scale to measure.

The statistical methods and tools such as mean, standard deviation, frequency and percentage, Pearson's coefficient of correlation, multiple regression analysis and path analysis was used for the analysis of data.

### Results and Discussions

#### Constraints faced by the beneficiaries

It was reported from the Table 1 that majority of the beneficiaries were Lack of knowledge about plant protection (97.11%) which Rank I followed by Irregular instalments of subsidy (95.83%) which Rank II, Lack of awareness about benefits of PoCRA (90.83%) which Rank III, Inability to take risk (83.75%) which Rank IV and Lack of knowledge about new technologies (81.25%) which Rank V, Lack of awareness about climate resilience (78.33%) which Rank VI, respectively. Language and technical terms were difficult to understand in training programs (75.83%) which Rank VII, The extension personnel unable to spread awareness about PoCRA (72.91%) which rank VIII, Irregular supply of electricity (70.83%) which IX, Audio-visual aids for training purpose of PoCRA beneficiaries not used by extension workers (70.00%) which X, Lack of effective advisory system on climate change (63.75%) Which rank XI, Unavailability of short duration and drought tolerant crop varieties (62.08%) Which Rank XII, Lack of transport facilities available in villages.(60.83%) Which Rank XIII, Non availability of required inputs (57.91%) Which Rank XIV Resistance to change the conventional practices (56.25%) Which Rank XV, Unawareness to use the farm implements (50.00%) which rank XVI, Labour migration Which Rank XVII? Respectively.

**Table 1:** Constraints faced by the PoCRA project-beneficiaries during PoCRA project

Sr. No.	Constraints	Frequency	Percent	Rank
1	Lack of knowledge about plant protection	235	97.91667	I
2	Irregular instalments of subsidy	230	95.83333	II
3	Lack of awareness about benefits of PoCRA	218	90.83333	III
4	Inability to take risk	201	83.75	IV
5	Lack of knowledge about new technologies	195	81.25	V
6	Lack of awareness about climate resilience	188	78.33333	VI
7	Language and technical terms were difficult to understand in training programs	182	75.83333	VII
8	The extension personnel unable to spread awareness about PoCRA	175	72.91667	VIII
9	Irregular supply of electricity	170	70.83333	IX
10	Audio-visual aids for training purpose of PoCRA beneficiaries not used by extension workers	168	70.00	X
11	Lack of effective advisory system on climate change	153	63.75	XI
12	Unavailability of short duration and drought tolerant crop varieties	149	62.08333	XII
13	Lack of transport facilities available in villages.	146	60.83333	XIII
14	Non availability of required inputs	139	57.91667	XIV
15	Resistance to change the conventional practices	135	56.25	XV
16	Unawareness to use the farm implements	120	50.00	XVI
17	Labour migration	105	43.75	XVII

**Suggestions from the beneficiaries of PoCRA project for overcoming the constraints:** It was reported from the Table 2 that the suggestions obtained from beneficiaries indicate that all farmers of village should be benefited while implementing any scheme (93.75%) which Rank I, followed by Result and method demonstration for improved varieties of crop/ vegetable/ fruits cultivation should be conducted regularly by govt. (87.50%) which Rank II, More encouragement from the government to undertake livelihood development projects in rural areas (85.00%) which Rank III, More technical information and guidance on different aspects

of soil and water conservation practices (81.25%) which Rank IV, Training programme on different crop cultivation should be organized (78.33%) which Rank V, Procedure to be made simple for availing subsidy schemes (70.83%) which Rank VI, More encouragement from the government to undertake livelihood development projects in rural areas (70.00%) which Rank VII, Dairy enterprises also be included in various Govt. programmes (64.58%) which Rank VIII and Many programmes on women empowerment should undertake by various agencies which rank IX Respectively.

**Table 2:** Suggestions by the PoCRA project beneficiaries for overcoming the constraints

Sr. No.	Suggestions	Frequency	Percent	Rank
1.	All farmers of village should be benefited while implementing any scheme	225	93.75	I
2.	Result and method demonstration for improved varieties of crop/ vegetable/ fruits cultivation should be conducted regularly by govt.	210	87.50	II
3.	More encouragement from the government to undertake livelihood development projects in rural areas	204	85.00	III
4.	More technical information and guidance on different aspects of soil and water conservation practices	195	81.25	IV
5.	Training programme on different crop cultivation should be organized	188	78.33	V
6.	Procedure to be made simple for availing subsidy schemes	170	70.83	VI
7.	More encouragement from the government to undertake livelihood development projects in rural areas	168	70.00	VII
8.	Dairy enterprises also be included in various govt. programmes	155	64.58	VIII
9.	Many programmes on women empowerment should undertake by various agencies	135	56.25	IX

### Conclusion

During this study it was found that. Lack of knowledge about insects and Diseases in fruit crops, Non-timely meeting regarding grant instalments, these were the major difficulties face by farmer. It is therefore indicated that Agriculture Dept., Krishi Vidrayapith, KVK, NGO should initiate various activities at different levels to reduce the various problems.

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