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Profile and Problems of dryland farmers about dryland technologies in Marathwada region of Maharashtra

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Abstract
The study was conducted to find out the Profile and Problems of dryland farmers related to dryland technologies among farmers in marathwada region of Mahashtra. Total 120 respondents were randomly selected from 6 villages of 1 taluka of Parbhani district. Data were collected using a well-structured interview schedule. Data were analysed by using frequency, percentage, mean, Pearson's coefficient of correlation and standard deviation. The result was concluded that the majority of dryland farmers were middle aged farmers (60%), educated up to higher secondary school level(35.83%), medium size of family (65%), having marginal land holdings (40.83%), with medium level of annual income (87.50%), medium extension participation (52.50%) and belonged to medium level of social participation (75%). Regarding to the problems it was observed that major problems faced by Dryland farmers were 81.66 per cent of farmers stated that, lack of knowledge about soil and water conservation technology is major constraint, 73.33 per cent of farmers stated that lack of technical guidance, 71.66 per cent of farmers stated that high investment for adoption of new technologies, 66.66% per cent of farmers stated that lack of timely and appropriate extension services particularly for soil and water conservation practices, 65.00 per cent of farmers stated that construction of bunds and land levelling is costly, 61.66 per cent of farmers stated that lengthy and too many procedures to avail loan.

Keywords: Profile, Problems, dryland farmers, dryland technology

Introduction
Dry land agriculture is the practice of growing crops in arid, semi-arid, and sub-humid climates solely through rainfall. One type of subsistence farming in areas with insufficient rainfall is dry land agriculture. Through the use of diverse dry land farming technologies, high-yield and high-efficiency agricultural output can be achieved in areas without irrigation and that rely heavily on natural rainfall.
Based on the amount of rainfall received, dry land agriculture has been divided into three categories:

1. **Dry farming:** This is the practice of cultivating crops without irrigation in dry regions with less than 750 mm of annual rainfall and a growth season of less than 75 days. Due to extended dry spells during the crop cycle, crop failures are more common in dry farming. Potential transpiration and evaporation exceed typical rainfall. There are less than 200 days in the growth season.
2. **Dry land farming:** Growing crops in regions that get more than 750 mm but less than 1150 mm of rainfall. Crop failure is less common, however there are dry spells during the crop's lifespan. This category includes semi-arid locations.
3. **Rainfed farming:** Is the method of growing crops without irrigation in regions that receive more than 1150 mm of rainfall annually. There is relatively little possibility of crop failure and water stress here.

Crops can be grown without irrigation using three different agricultural techniques: rainfed farming, dry farming, and dry land farming. Rainfed agriculture, which comprises the majority of Indian agriculture, includes both dry farming and dry land agriculture. Rain-fed agriculture makes up around 65% of India's arable land, and the amount of each crop

produced is determined by the monsoon season. Nearly 75% of India's 143 million hectares of arable land are made up of 108 million hectares of rainfed land. Rainfed agriculture provides almost 40% of India's total food grain production, 75% of its oilseeds, and 90% of its pulses. Dry land agriculture accounts for about two-thirds of India's total cultivated area and generates nearly half of its total agricultural output value.

Maharashtra Dry land agriculture profile

India has nearly nearly 80 Million hectares of dry land area out of 141 Million hectares of total cultivable land area. Dry land constitutes about 52% of total cultivable land area. In Maharashtra nearly 83%- 84% area under dry land agriculture only 16% area has irrigation facility in Maharshtra which cannot be increased to more than 25% of total crop area. Parbhani district comes under Marathwad region. District's more portion is covered by dry land area.

	Total cultivable land (lakh ha)	Dry land area (lakh ha)	Irrigated land area (lakh ha)
Maharashtra	225	184.42 (82%)	40.58 (18%)
Marathwad Region	57	48.9 (86%)	8.1 (14%)

Dryland agriculture in Maharashtra is a vital component of the state's agricultural sector, supporting the livelihoods of millions of farmers and rural communities. Despite facing numerous challenges, including climate change, water scarcity, and soil degradation, dryland agriculture in Maharashtra has tremendous potential for growth and development.

2. Materials and Methods

The present study was conducted randomly in the Parbhani district of the Marathwada region in Maharashtra, where a considerable number of dryland farmers are there. The objective was to study the Profile and Problems of dryland farmers related to dryland technologies among farmers in marathwada region of Mahashtra. One taluka, Parbhani, is selected randomly from the district. From the taluka, six villages with a significant number of dryland farmers who were practicing dryland agriculture were randomly chosen. In each village, 20 dryland farmers who are practicing dryland agriculture were selected randomly, making a total of 120 respondents for the study. Two dependent variables Knowledge and Adoption and seven independent variables viz., Age, Education, Size of family, Land holding, Annual income, Extension participation and Social participation were selected for the study. Data were collected from respondents using an interview schedule through personal interviews. The data were analyzed using frequency, percentage, mean, standard deviation, and Pearson's coefficient of correlation.

2.1 Variables and their empirical measurements

Sr. No	Variables	Measurement
Independent variables		
1.	Age	Actual chronological age(in years) of respondent at the time of interview
2.	Education	Formal education obtained by the respondent
3.	Land holding	Classification as per the state Government of Maharashtra
4.	Size of family	Number of family members of respondent
5.	Annual income	Income in rupees of the farmer family derived from all the resources in a year
6.	Extension Participation	Schedule was developed
7.	Social participation	Schedule was developed
Dependent variables		
1.	Knowledge	Schedule was developed
2.	Adoption	Schedule was developed

2.2 Problems faced by the farmers in adopting dry land agricultural technologies

Problems refer to the items of difficulties faced by an individual in particularly in adopting dry land technology. The farmers were asked to mention their views about constraints faced for adopting dry land technologies. The responses about constraints were obtained, they were summed up. Lastly, the responses were converted into frequency and percentages and based on the percentage, ranks were allotted to the constraints.

3. Results and Discussion

3.1 Profile of dry land farmers

Table 1: Distribution of respondents according to their profile

Sr. No	Category	Frequency	Percentage
A. Age			
1	Young (Up to 30 years)	26	21.67
2	Middle (31 to 57 years)	72	60.00
3	Old (58 years & Above)	22	18.33
B. Education			
1	Illiterate	8	6.67
2	Literate (Can read and write)	9	7.50
3	Primary School	19	15.83
4	Seconadary	28	23.33
5	Higher sec. School	43	35.83

6	Graduation	13	10.83
C. Size of family			
1	Small (Up to 3)	26	21.67
2	Medium (4 to 7)	78	65.00
3	Large (8 & Above)	16	13.33
D. Land holding			
1	Marginal (upto 1.00 ha.)	49	40.83
2	Small (1.01 to 2.00 ha.)	48	40.00
3	Semi medium (2.01 to 4.00 ha.)	18	15.00
4	Medium (4.01 to 10.00 ha.)	3	2.50
5	Large (10.01 ha. and above)	2	1.67
E. Annual income			
1	Low (Up to Rs. 62,000)	3	2.50
2	Medium (Rs 62,001 to Rs 2,52,000)	105	87.50
3	High (Rs. 2,52,001 and above)	12	10.00
F. Extension participation			
1	Low (Up to 3)	42	35.00
2	Medium (4 to 6)	63	52.50
3	High (7 & above)	15	12.50
G. Social participation			
1	Low (Up to 1)	23	19.17
2	Medium (2 to 3)	90	75.00
3	High (4 & above 4)	7	5.83

It was observed from table 1 that, majority of the dryland farmers were middle aged farmers (60.00%), educated up to higher secondary school level (35.83%), medium size of family (65.00%), having marginal land holdings (40.83%), with medium level of annual income (87.50%), medium extension participation (52.50%) and belonged to medium level of social participation (75.00%).

3.2: Distribution of respondents according to their Problems faced in adoption of recommended dry land agricultural practices

The schedule covered possible problems which may hinder the knowledge and adoption of dryland technologies among farmers. The responses were noted in the schedule itself. The frequency and percentage for each constraint was worked out and based on percentage the ranks were allotted.

N = 120

Sr. No	Problems	Frequency	Percentage	Rank
I	**Soil and water Conservation Technology**			
	Technical constraints			
1	Lack of Knowledge about soil and water conservation technology	98	81.66%	I
2	Lack of technical guidance	88	73.33%	II
3	Lack of timely and appropriate extension services particularly for soil and water conservation practices	80	66.66%	IV
	Financial constraints			
4	Construction of bunds and land levelling is costly	78	65%	V
5	High investment for Adoption of new technologies	86	71.66%	III
6	Lengthy and too many procedures to avail loan	74	61.66%	VI

The table showed that, 81.66 per cent of farmers stated that Lack of Knowledge about soil and water conservation technology is major constraint and ranked I. 73.33 per cent of farmers stated that Lack of technical guidance and ranked II. 71.66 per cent of farmers stated that High investment for Adoption of new technologies and ranked III. 66.66% per cent of farmers stated that Lack of timely and appropriate extension services particularly for soil and water conservation practices and ranked IV. 65.00 per cent of farmers stated that Construction of bunds and land levelling is costly and ranked V. 61.66 percent of farmers stated that Lengthy and too many procedures to avail loan and ranked VI.

The findings were similar to Kumbhare *et al*. (2011) [7], Puneet (2016) [11] and Agashe (2017) [14].

4. Conclusion

It was observed that majority of the dryland farmers were middle aged farmers (60%), educated up to higher secondary school level (35.83%), medium size of family (65%), having marginal land holdings (40.83%), with medium level of annual income (87.50%), medium extension participation (52.50%) and belonged to medium level of social participation. The study also identifies that,81.66 percent of respondents have lack of Knowledge about soil and water conservation technology, 73.33 percent of respondents have lack of technical guidance and 71.66 percent of respondents have faced high investment problem for adoption of new technologies are the major problems faced by dryland farmers.

Overall, the study suggests that promoting the adoption of dryland technologies among dryland farmers requires a multi-faceted approach that addresses knowledge gaps, ensures availability and accessibility, and provides policy support. By addressing the knowledge gaps identified in this study, policymakers, extension agencies, and other stakeholders can develop effective strategies to promote the adoption of dryland technologies among dryland farmers.

Ultimately, this can contribute to improved crop productivity, soil health, and environmental sustainability.

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