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Resilience of small farmers from drought prone area

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Abstract
The changing climate and weather variability has caused invariable drought condition in India, especially in Maharashtra. The increasing challenges and effects of climate change are exploiting on land use and other land resources. Events such as drought are notably shifting growing seasons meanwhile exposing the population to food insecurity. Majority of agricultural land in Maharashtra is rainfed and considerable area is drought prone. Drought has been a severe cause of numerous farmers suicide in Maharashtra. Droughts are believed to affect the small and marginal farmers to a larger extent. Hence, there was a need to study and access the resilience of small farmers from drought prone area to face the drought situation. Present study was purposively conducted in Ahmednagar district of Maharashtra based on least annual rainfall received. From Ahmednagar district Parner and Pathardi tehsils were selected for the study and further five villages were selected from each tehsil. Total 140 respondent small farmers were interviewed.

Keywords: small farmers, drought, resilience, climate, rainfed

Introduction
Drought, a hydro-meteorological phenomenon, is as natural as climate and its variability. Droughts are believed to be creeping phenomena because of their slow onset (Gillette, 1950), intensity and uncertainty of duration. Droughts can be meteorological, hydrological, agricultural or socio-economic depending on rainfall or run-off deficiencies, the availability of water for crops in the growing season or the impact of drought on human activities, both, direct and indirect (O'Farell *et al.,* 2009). Yevjevich *et al*. (1978) have suggested the term "sociological drought" which refers to the meteorological and hydrological conditions in which less water is available than anticipated and relied on for a normal level of social and economic activity in the region. In a country like India where rain-fed agriculture is the dominant source of food production, drought inherently coexists with farmers, society and the economy. Approximately 16 per cent of India's geographical area which is mostly arid, semi-arid and sub-humid land is drought prone (Reserve Bank of India, 2013). Irrigated agriculture is no different because most irrigation systems rely on surface water, so they are also linked to precipitation. With the reality of climate change, rainfall is predicted to become more variable in India and dry regions are expected to become drier; extreme and intense droughts are expected at higher frequencies in the coming years.
Drought in India has resulted in tens of millions of deaths over the 18th, 19th and 20th centuries. Indian agriculture is heavily dependent on the country's climate: a favourable southwest summer monsoon is critical to securing water for irrigating crops. Recurring drought is a major challenge in drought prone area of Maharashtra state in India. Decrease in yield of cereals, horticultural crops, livestock production and loss of employment, all associated with decreased income of farmers, were the most immediate impacts of drought. Small farmers owning smaller land holdings are affected more and acutely by droughts. Farmers commit suicide because they lose hope to face difficulties.
The study was carried out to determine small scale Farmers reaction of drought conditions, how their perception and attitude determine their decision to undertake adaptation measures that further result in resilience or vulnerability. The study focused on small scale farmers from drought prone area of Ahmednagar district of Maharashtra.
Resilience always plays a key role to face adversities of climate. Measurement of resilience i.e. psychological trait of farmers, especially small farmers, to face drought situation have always received less attention from the government and policy makers. Research studies relating to the resilience of small farmers are very less in number.

Detailed information about resilience of small farmers from drought prone area will be an asset for the researchers and policy makers for imparting and implementing action that will ultimately boost farmer's resilience to drought conditions.

Methodology

A. Place of research work

- Ahmednagar district
- Tehsils – Parner and Pathardi (Five villages from each Tehsil)

B. Sampling procedure

- Purposive and random sampling

C. Sample size

- 14 small farmers from each village were selected randomly
- Total = 140 respondents

D. Data collection tool

- Interview schedule

Result

Resilience of small farmers from drought prone area

The resilience of small farmers from drought prone area was measured on the basis of scale developed by Lal *et al.* (2014) [10] in which scores were given as 3, 2 and 1 for the positive statements for agree, undecided and disagree response while for negative statements scores were given as 1, 2 and 3 for agree, undecided and disagree response of the small farmers.

Resilience Scale statement wise resilience of small farmers from drought prone area

In this section, results on resilience of small farmers has been discussed in detail with respect to the statements included in the scale and are presented under following Table 1.

Table 1: Resilience Scale statement wise distribution of small farmers from drought prone area

Sr. No.	Statements	Agree	Undecided	Disagree
1	I always hope for the best while being mentally prepared for the worst. (+)	135 (96.43)	0 (0.00)	5 (3.57)
2	I am easily influenced by what other people think or say about me. (-)	34 (24.29)	0 (0.00)	106 (75.71)
3	I see difficulties as a God's/ nature's way to check my patience and endurance. (+)	112 (80)	10 (7.14)	18 (12.86)
4	I completely depend on others in taking my decision. (-)	23 (16.43)	14 (10.00)	103 (73.57)
5	I can find a solution to every problem, no matter what may be the gravity of the problem. (+)	96 (68.57)	7 (5.00)	37 (26.43)
6	I avoid participation in public welfare scheme that is being run in my village. (-)	13 (9.29)	4 (2.86)	123 (87.85)
7	I prefer to spend money on my children's education than to expand my land holdings or livestock numbers. (+)	131 (93.57)	3 (2.14)	6 (4.29)
8	I don't rely on trust, reciprocity and values in the present world. (-)	26 (18.57)	19 (13.57)	95 (67.86)
9	I have bounced back to my normal life (or much better than before) after the calamity. (+)	98 (70.00)	7 (5.00)	35 (25.00)
10	I am in the company of those people who always demotivate me. (-)	44 (31.43)	9 (6.43)	87 (62.14)
11	I stand up for myself without putting others down. (+)	104 (74.29)	2 (1.43)	34 (24.28)
12	I spend more than my capability on the marriage/ceremony due to peer pressure. (-)	24 (17.14)	12 (8.57)	104 (74.29)
13	Life is not smooth path for me and that's what makes it more interesting. (+)	115 (82.14)	0 (0.00)	25 (17.86)
14	I don't have other kinds of job, during agricultural 'lean season'. (-)	76 (54.29)	7 (5.00)	57 (40.71)
15	In the coming years, I am going to opt for non-farm enterprise, which is more remunerative than Agriculture. (+)	49 (35.00)	18 (12.86)	73 (52.14)
16	I know my weaknesses but it is very difficult for me to sort them out. (-)	39 (27.86)	21 (15.00)	80 (57.14)
17	I have a good sense of humour to deal with the situation of criticism. (+)	98 (70.00)	15 (10.71)	27 (19.29)
18	I endorse other farmers taking extreme steps like suicide due to series of problems faced by them. (-)	7 (5.00)	8 (5.71)	125 (89.29)

Resilience of small farmers from drought prone area

The overall resilience of the respondents was measured, analyzed, tabulated and is presented in the following Table 2.

Table 2: Distribution of Small Farmers from Drought Prone Area according to overall Resilience

Sr. No.	Resilience	Frequency (N=140)	Percentage
1	Low Score (Score up to 46)	67	47.90
2	Medium (Score 47 to 50)	56	40.00
3	High (Score 51 and above)	17	12.10
	Total	140	100

Table 2 brings to the notice that 47.90 per cent of the small farmers from drought prone area had low level of resilience to fight back adversities caused due to drought conditions. Forty per cent and 12.10 per cent of the respondents had medium and high level of resilience, respectively. Thus, it can be concluded that majority (87.90 per cent) of the respondents had low to medium level of resilience.

This study puts forth the important finding that small farmers from drought prone areas have low to medium resilience and, hence, the respective State Governments should enact and implement measures instilling resilience and confidence amongst these small farmers through the line departments like, Agriculture, Animal Husbandary and Dairying, Sericulture, etc.

Conclusion

The conclusion of the study is as follows-

- Majority of the small farmers from drought prone area showed low level of resilience to face drought conditions.

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