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Authors Note

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Abstract

Indian Farmers continue to suffer regularly from Droughts, as a frequent natural disaster and has profound effect individually and collectively. The mental health effects of natural disaster are well known however anxiety and readiness of likely Drought is less well understood. However, in addition to likely anxiety and readiness there is likelihood of revisit of feelings of loss, grief and hopelessness. This research investigates the experience of Drought anxiety and readiness on experienced Farmers and new Farmers, facing threat of Drought for the first time. Farmers took part in focus group discussions of the likely anxiety and readiness of Drought on themselves, their families and their community in districts of Valsad, Navsari, Surendranagar and Savar kundla, Gujarat, India. In addition to anxiety and readiness related to financial and workloads, Farmers reported experiencing significant anxiety and readiness from the emotional impact of environmental degradation, from loss of hope for the future, and from feelings of being isolated and financially weak. Sample of 60 farmers was selected out of 60, 30 were new farmers and 30 were experienced farmers. All the farmers were at least 20 years of age. It was observed that new and experienced farmers do not show significant difference in Drought anxiety and readiness to face Drought.

Key words: *Agricultural Finance, Behavioural finance, Psychology*

Drought Readiness and Anxiety of New and Experienced Indian Farmers

India receives its Rainfall due to South West monsoon. Rains determine levels of food and agriculture output and farmers' income and price stability in India. Serious deficiencies in the monsoon Rainfall result in Drought which has serious implications for livelihood of rural population. Rains account for 75 per cent of natural precipitation in India and they are the principal source of water supply for agriculture and non agriculture uses.

What is Drought? Drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield. Indicators of Drought include below normal soil moisture, reduced stream flow, and, most obviously, lack of precipitation. The first essential characteristic of Drought is that it builds over time with an increasing scarcity of water. The second characteristic says that because Drought builds over time it does not have a well-defined start. And like the beginning, the end of Drought isn't well-defined either. The end comes gradually, except in extreme cases where a long spell of heavy Rainfall causes the end. The effects of Drought are far reaching, even if the Drought itself is localized.

A complete definition of Drought is difficult to find. Drought means various things to various people, depending on their specific interest. To the farmer Drought means a shortage of moisture in the root zone of his crops. To the hydrologist it suggests below average water levels in streams, lakes, reservoirs, and the like. To the economist it means a water shortage which adversely affects the established economy. Each has a concern which depends on the effects of a fairly prolonged weather anomaly.

Agricultural Drought is probably the most important aspect of Drought, but that problem is far more specialized and complicated than some investigators seem to realize. A study of agricultural Drought immediately leads one into the realms of Soil Physics, Plant Physiology, and Agricultural Economics. This is far from being a purely meteorological problem. It is, in fact, more of an engineering problem which involves not only meteorology and hydrology, but geology and other geophysical sciences.

However, most Farmers do not call a "dry spell" a Drought until matters begin to become rather serious. In spite of the differences which exist, the people in humid climates seem to mean much the same thing when they refer to Drought as do the people in a semiarid region; that the moisture shortage has seriously affected the established economy of their region.

While Floods and Droughts are regularly occurring disasters, mental health implications have not been fully recognized, recent disasters and a weak monsoon in current year has thrust mental health issues into the foreground. Monsoon failure is experienced in some parts of the country almost every year. Long term trend shows that Drought is

experienced at least once in five years in all the states except the North East. Periodicity of Drought is as high as once in three years in states like Rajasthan, Andhra Pradesh, Haryana, Tamil Nadu, Gujarat, Jammu and Kashmir and West Uttar Pradesh.

Mental Health and Drought needs to be studied more, anxiety, readiness, and its likely recurrence. Drought affects Farmers and can contribute to severe mental agony due to financial hardship from increased debt. It is difficult for Farmers to plan for crops. This affects other businesses, limiting their ability to expand. Drought affects family relationships. Stress, worry and the rate of suicide increase. Drought can lead to isolation and increased workload as fewer workers take on more work, family members move off the farm for additional income. The phenomenon of Farmers' suicides in India is a typical example of the consequences of climatic vagaries in poor, predominantly agrarian economies.

The farming sector sustains many rural towns. Farmers represent a group at higher risk of a range of health problems. Factors that may influence this risk include poorer access to healthcare services in rural and remote areas in general, and specific barriers to health care among Farmers. In addition to limited access to health services, the level of knowledge regarding mental health problems and effective treatments are important barriers to receiving help for mental health problems and we have Drought anxiety and readiness to be one of most serious as symptoms show before even on set of event just on the basis of a thought.

The serious consequences of unaddressed mental health problems in Farmers and farm workers are evident in suicide rates in these groups. More generally, young men in rural and remote areas have higher suicide rates than their urban counterparts. Studies of farm workers indicate that this group has a higher suicide rate than non-Farmers men in rural areas, and that they represent an important high-risk group for targeting preventive interventions. Suicide continues to be a major cause of death by injury among Farmers in India.

Drought can be seen as a chronic stressor akin to natural disaster experienced over a longer time. Natural disaster can give rise to feelings of loss of control and mastery, fear, helplessness and futility; and in the long term there may be an increased risk of psychiatric problems. While the mental health effects of short-term natural disasters such as fire and flood are well known research is lacking on the effects of a long-term chronic stressor such as Drought.

Issues arising from Drought are likely to be associated with mental health problems such as depression and anxiety. Additionally Drought may affect psychosocial health. Environmental distress caused by negative change in the home landscape, particularly affects the sense of wellbeing and control.

It should be mentioned that man created Drought, created by economic development, for more water than is normally available in an area, is not considered in this study.

Past Literature

It may be mentioned that very little past literature of relevance was available on the subject though there are inconclusive findings on the specific impacts of climate change on regional water resources, many scientists have suggested that climate change is likely to increase the frequency and intensity of extreme climate events such as Drought (IPCC 2007) & (Saadati et al. 2009).

Drought based on frequency of occurrence, severity, affected area, economic damages, environmental and social affects and severe long term impacts is very important and dangerous phenomenon compared to other disasters (Nosrati & Kazemi 2011).

Drought is one of the most important natural disasters which could be defined as- less than average annual Rainfall and discordant distribution of Rainfall in the region. With lack of Rainfall for a long period of time; farms, gardens, pastures, and forests which their required water resources are provided from the atmosphere Rainfall are damaged directly. Particularly, agriculture which has an important role in national economy and is a set of activities that its aim is supplying food needs of community and produce raw materials for other sectors including industry (Karbassi 2001).

Drought can also reduce water quality, because lower water flows reduce dilution of pollutants and increase contamination of remaining water sources. Studies indicate that Drought has priority to other natural disasters in the frequency of occurrence, duration, and extent, loss of life, economic and social impacts and severe effects in the long run (Wilhite 2000). Damages of Drought will affect economic, environmental and social status of communities (Wilhite & Glantz 1985). Drought includes a set of negative effects which not only affect economic and social activities of farmers and related industries, but also affect those who are not actually employed in agriculture but are living in agricultural regions (Edwards et al. 2008). Bimal (1998) in a study titled “coping mechanism practiced by Drought victims (1994-95) in North Bengal, Bangladesh” surveyed the people who were damaged from Drought. The results indicated that Drought is a reversible phenomenon in Bangladesh, affecting plant growth and leading to loss of crop production, food shortage, and; for many people; starvation.

Peter (2008) has studied the impacts of Drought on the social well-being of rural communities and farm families. The results of his studies indicated that Drought has significant impact on individuals in Victoria, particularly in rural and regional areas. The economic impacts of Drought include reduced agricultural production and exports. In fact it decreases activities of each individual and provides base for them to immigrate.

Horridge et al. (2005) in research as the impact of the 2002-2003 Droughts in Australia concluded that the effects of Drought on some statistical divisions are extreme, with 20% of decrease in income. Despite the relatively small share of agriculture in Australian GDP, the Drought has reduced GDP by 1.6%, and has contributed to a decline in unemployment and to a worsening of the balance of trade. Shokri (2005) surveyed

environmental, economic and social effects of Drought and effect of solutions applied in order to reducing its effects in Sistan Province (Iran) and concluded that between the effects of Drought (environmental, economic and socio- psychology) the economic effects are more than others, then environmental impacts and at last the least impacts were socio-psychology effects. Wilhite & Glantz (1985), Bimal (1998), Horidg et al (2005), Peter (2008), Rezayi et al (2011) also state that Drought has several environmental and socio-economic impacts.

Present Study

This paper reports on the anxiety and readiness of Farmers who have seen Drought in past and young Farmer who is just making career in Farming and new to vagaries of nature. Study investigates the Anxiety and readiness of Farmers in districts of Valsad, Navsari, Surendranagar and Savar kundla, Gujarat, India. The research arose from previous consultation by the authors with agriculturists and mental sufferings endured during past Droughts. Researchers wanted to study readiness and anxiety in experienced and new generation Farmers for likely Drought.

Data collection and Analysis

Qualitative data collection was by semi-structured focus groups and, in the follow-up phase, individual interview. The facilitator used an interview schedule to guide discussion. Key questions were- how life might change as a result of the Drought; what effects of Drought participants had noticed in themselves in past, their families, and in others . Record of participant speaking order and took notes on the discussion in each group. Participants were assured that their participation was voluntary and that their responses would not be shared with no one including their family members. This study had ethical approval from all the participants.

Peer Review Process

A peer review process was incorporated into the stage of data analysis in order to provide an external check on the validity of the primary researcher's interpretations of the interview data. The peer reviewer went over the data at every stage of the analysis with an eye to scrutinizing the primary researcher's assumptions and providing feedback. Information was informally exchanged (e.g., via e-mail and telephone) with the peer reviewer/s every 7 to 10 days while face-to-face peer sessions were held 2 to 3 weeks where data was exchanged and ideas were discussed. The peer reviewer suggested new or alternative formulated themes, identified themes that the primary researcher had missed, challenged the primary researcher's interpretations of meaning, and brought significant points concerning the research sample and data analysis process to the fore. At times when the primary researcher disagreed with the suggestions of the peer reviewer, they worked to achieve consensus on the data analysis

through a thorough discussion of the meaning of participant statements as situated within the context of the original narrative.

Validity of the Data Analysis

To ensure that standards for good research were met, strategies addressing the transferability, dependability, and credibility of the data were employed as procedures of verification. Transferability was assessed by the appearance of identical themes across narratives involving different persons in different scenarios. To ensure dependability, the peer review was employed to provide an external check of the data analysis procedures. To address credibility, the primary researcher and the peer reviewer independently reread and carefully examined the scale, the lists of formulated descriptors, the theme, and the exhaustive description to ensure that the themes did not distort or neglect aspects of the original narrative. Seeking the participants' feedback on the exhaustive description provided an additional assurance of credibility.

Papers were checked and validated by team members who were not involved either in facilitating the discussions or performing the analysis. The coding system was then refined and categorized into higher-level themes in the light of this validation and of further reflection by the investigators.

Aims

The main aim of this study is to explore the perceived impact of Drought anxiety and readiness of new and experienced Farmers within farmer community.

Objective

To Study Drought anxiety and readiness experienced by new and experienced Farmers

Hypothesis

There is no difference in the anxiety and readiness experienced by new and experienced Farmers.

Method

This study had ethical approval from the senior Farmers and consent was obtained from all participants. In designing and conducting this study, the authors followed the methodological principles for social analysis.

Location

The study was conducted within and around Farmers communities in Vapi, Navsari, and Surendranagar and Savar kundla districts of Gujarat. All the Farmers were owners of

either Farms or Agriculture fields or both. Agriculturists grew Fruits, Cotton and Ground nut, in their Fields and Orchards. The areas in which the communities are located have seen Drought in past years.

Participants

Participants were chosen and allocated to groups based on likely shared experiences. Within each group, participants were reasonably homogeneous but were largely unfamiliar with each other. Following preliminary consultation with key informants from local agriculturists, separate focus groups were made of new Farmers and experienced Farmers.

In deciding whom to be approached to take part in the focus groups, consideration was given to contacting residents who had personal experience of the Drought. Participants were selected with the help of four key contacts, selected because of their prominent role in the community. Their composition is health worker, a prominent business person, an agricultural worker, and a rural financial consultant. These contacts approached potential participants and obtained their consent for a formal approach from the investigators. Findings from an initial round of discussions were reported back to the community at an informal evening meeting.

Sample

Thirty participants took part, grouped as follows:

- 30 new Farmers
- 30 experienced Farmers

Demographics: The age of participants ranged from 20 to 67 years. Participants were predominantly married ($n = 30$) and had spent times ranging from under one year to 67 years in the area. Number of children in the household of participants ranged from zero to five.

Tools

Data was collected through survey done by Researchers. Question asked is there same readiness to face Drought by new Farmers and experienced Farmers.

Statistical analysis

The statistical device used is Chi square Test

Results

Table below describes the basic statistics for the sample of Farmers. Total observations under study are 60

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Farmerstatus * DroughtReadiness	60	100.0%	0	.0%	60	100.0%

Table shown under displays the cross tabulation between new and experienced Farmers for Drought readiness. New Farmers were equally divided and ready to face Drought against 13 experienced Farmers not ready to face Drought and 17 ready to face Drought. On aggregate 28 Farmers were not prepared against 32 ready to face Drought. As can be seen from the second row that experienced Farmers are more ready (17) than their colleagues (13) whereas new Farmers are equally divided.

Farmerstatus * DroughtReadiness Crosstabulation

			DroughtReadiness		Total
			0	Ready	
Farmerstatus	New	Count	15	15	30
		% within Farmerstatus	50.0%	50.0%	100.0%
		% within DroughtReadiness	53.6%	46.9%	50.0%
		% of Total	25.0%	25.0%	50.0%
Experienced		Count	13	17	30
		% within Farmerstatus	43.3%	56.7%	100.0%
		% within DroughtReadiness	46.4%	53.1%	50.0%
		% of Total	21.7%	28.3%	50.0%
Total		Count	28	32	60
		% within Farmerstatus	46.7%	53.3%	100.0%
		% within DroughtReadiness	100.0%	100.0%	100.0%
		% of Total	46.7%	53.3%	100.0%

Chi square test was conducted to find significance. As can be seen from result that p value is not significant. Yates' Correction for continuity is also used for overestimate of the Chi square value when used in 2x2 table. Test has not violated assumption of chi square test of minimum expected cell frequency of 5.

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.268 ^a	1	.605		
Continuity Correction ^b	.067	1	.796		
Likelihood Ratio	.268	1	.605		
Fisher's Exact Test				.796	.398
Linear-by-Linear Association	.263	1	.608		
N of Valid Cases	60				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.00.

b. Computed only for a 2x2 table

	Value	Approx. Sig.
Nominal by Nominal Phi	.067	.605
Cramer's V	.067	.605
N of Valid Cases	60	

A Chi-square test for independence with Yates correction shows no significance association between Experience Status of Farmer and Drought Readiness, $\chi^2(1, n=60) = .067, p = .796, \phi = .067$

Discussion

Drought-affected Farmers experience anxiety and readiness. This Drought-induced anxiety and readiness has adverse implications for the well-being of affected Farmers. Lack of water has an obvious effect on the local landscape as well as participants' ability to farm. The physical degradation of one's home environment leads to severe anxiety and readiness and anxiety and readiness-like symptoms and also with intense feelings of helplessness. Farmers become increasingly isolated, financial constraints force them to reduce 'extra-curricular' activities. Finally, isolation, particularly the physical isolation of farm work encourages Farmers to repeatedly think over their unpleasant and stressful circumstances.

The difficulties mentioned by participants related to finances, lack of resources, uncertainty and no work. Thus, participants mentioned both operational difficulties and their

emotional responses to those difficulties as major negative consequences of Drought. Financial problems due to the Drought were reported by all groups. A major effect of the Drought was restriction of ability to provide for family and of ability to fulfill expected roles. Participants noted the negative effect on mood reported also reluctance to be outside on their property unless necessary. Participants reported feelings of wanting to avoid and escape being reminded of the Drought, think about how long the last Drought went on and when it might Rain this time. Changes were experienced by participants in their own lives, but were more often reported in relation to participants' families. Farmers reported that children acquire a trade or other qualification before risking farming. Participants' own mood or behaviors attributed to the impact of Drought (e.g. disturbed sleep, irritability, feelings of disillusionment, worrying and negativity).

We were of opinion that experienced Farmers due to their past events would be better prepared to face uncertainty of nature which their occupation very naturally have. We were surprised to find that Farmers who experienced pain in the past forgot to remember that history repeats and they may again will have to fight adversity of Drought, Sadly, pain experienced in past to senior Farmers did nothing for their future preparation. We may keep in mind our small size of sample for generalization.

Conclusions

Farmers experience anxiety and readiness of Drought. This exploratory research identified anxiety and readiness for on coming Drought. Anxiety and readiness experienced by new farmer and experienced farmer is not significantly different. The anxiety and readiness experienced by participants is same to face Drought. Such findings can provide guidance that there is a need, to deal with short- and long-term effects of Drought.

Further investigation on methods to support or promote optimism would be valuable, addressing feelings of helplessness and anxiety and readiness resulting from the uncontrollable nature of Drought.

We hypothesize no positive significant effects on readiness to face Drought between new and experienced Farmers. Thus, the study generates the expected behavioral response and we confirm our findings of no significant effect on Farmers of either type.

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