

Analysis of Effective Drought Structures in Social Conditions of Iran Farmers

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Abstract. Inappropriateness of rainfall and water resources in Ashtian area, low soil fertile, and not appropriate of rainfall distribution caused confusion in development planning, reducing agricultural and animal domestic products, outburst of pest and plant diseases, migration of rural residences to the big cities all had bad impression on their health and their remedy. The main purpose of this study was to assess drought outcomes on social-psychological conditions of farmers in Ashtian, during 2004-2008. This is an applied research with the descriptive-correlation method. Face and content validity of the questionnaire was approved by the experts in this field. To measure reliability of questionnaire a pilot test has been accomplished and 91.5 percent obtained based on Alpha Cronbach formula. Research population consisted all farmers who are affected by drought during these years (N=3200). From this numbers 300 (N=300) were selected through a random simple sampling design. The results showed that between variables (called independent): literacy level, farming performance, orchard production, income, and number of participation in training classes with social-psychological influentiality (called dependent variable) had a significant and meaningful relationship with 1 percent error. Also variable of using information sources, had a significant relationship with 5 percent error. Therefore, as farmers use more of information sources, they are less affected by drought conditions. Results also indicated that those who participated in the training classes about drought were less affected by drought outcomes.

Keywords: Water resources, Drought outcomes, social-psychological influential.

1. Introduction

With an annual average of 252mm rainfall, Iran is taken as one of the world dry zones; that is, about 65% of the country's area includes dry and semi-dry zones with an approximate rainfall of less than 150mm in a year (Shariatmadar, 2004). Small amount of rainfalls, their irregular dispersal, and temperature increase result in different social, economic, and political crisis (Farzandvahy, 2002). Regarding the decreasing amount of rainfall in Sept.-Oct. 2004-5 (272mm), 2005-6 (204mm), 2007-8 (127mm) in an average equal/less than normal years amount and this indicates that the amount has been less than the normal, and since there has been dry farming in the area and very effective in dry farmed yields so that - from 2004 to 2008 - the amount of arable products reached from 39562T to 11144 and because the main product of the area is wheat with about 26000hec dry and 420hec water farming reaching from 31000T in 2004 to 5510T in 2008. The decrease was also observed in garden products reaching from 2248T to 1028T. Inter alia, considering reviews and interviews held with Ashtiyan Agriculture Jihad Office, it was implied a considerable reduction of underground water leading to a decrease in Ashtiyan villages' production and as a result their people migration to big cities such as Tehran looking for employment opportunities (Ashtiyan Agriculture Jihad Office, 2008).

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2. Drought efficient planning obstacles:

2.1. Five main limitations to be examined are (Yahya-abadi & Rezaei, 2001):

1. Clarifying definition of drought

Unexpected obstacles managers and planners believe that phenomena like drought are crystal clear to everybody, because intensity and return period of these events are not known. Although expertise is not required for determining the time of drought, there is an uncertainty about the beginning and end of it.

2. Contingency of drought

Governments do not pay attention to drought, unless it results in water shortage. The major obstacle in determining water shortage from the event is its contingency.

3. Drought phenomenon

Unless people in a society reach an agreement with themselves or governments force them to execute the plans, otherwise drought can make the best policies and programs fail.

4. Cost and effects of drought

The lack of general information regarding drought disadvantages is one of the reasons decreasing interest in drought. It is generally believed that drought-induced losses are less than unexpected events-driven ones. In comparison terms, drought losses are distributed in longer term.

In a study by Hadadi (2001) "Studying the Effect of Agricultural/Extending Policy-making in Moderating Social and Economic Consequences of Drought", aspects and reasons of drought have been addressed. Then, characteristics of the quality and role and mission of expansion-appropriate requirements are expressed based on fundamental principles of expansion. Results from Shokri's (2005) study, "Examining Echo-biological, Economical, and Social consequences of Drought and the Extent of made Policies efficacy in moderating the above consequences in Sistan-va-Balouchestan State in farmers' point of view", demonstrate that among the consequences economic ones were most and then were the echo-biological, and social, respectively. Research findings of Sasteri (2002) are related to agricultural drought management for sustainable agriculture expansion. Findings from Oversight Committee (2009) are concerned with agricultural drought, meteorology, and socio-economic consequences. In this article, intensity levels of drought, its crisis and risk management are addressed. Besides, drought in Arizona and its management and coordination are discussed. In a research by Clay and Benson (2003) - regarding economical and financial effects of acts of God (drought) - highlights many negative income, investment, consumption, production, employment, and financial trends in short-term being addressed again in the present study. In a research by Edward and Gary (2007) socio-economic effects of drought has been studied on 8000 people in rustic areas of Australia. In this article, drought effect is examined in a range of issues including employment and physical health, financial welfare, social integration of societies, and families' relationships. Research findings from Alston and Kent (2004) indicate that social effects of drought are more extensive in long-term than its economical ones.

In fact, examining social consequences of drought, the present study has an attempt to study the extent of the consequences via collecting information from Ashtiyan zone farmers between 2004 and 2008. Accordingly, the following objectives have been formulated:

1. Reviewing social effects and consequences of drought in Ashtiyan zone farmers' point of view
2. Exploring the extent of administered plans efficacy in governing consequences of drought crisis in Ashtiyan zone from the farmers' point of view
3. Examining correlation between executed policies in the zone and its effect in modifying social consequences of drought crisis
4. Describing individual, arable-social, and interactional-social characteristics of the zone's farmers
5. Examining the effect of distributive trainings in coping with consequences of drought in Ashtiyan zone farmers' point of view

2.2. Materials and Methods

Present study is an applied one based on descriptive-correlative method. Theoretical and qualitative parts were document-based and the quantitative part was field-based and conducted through questionnaires. For

narrative analysis of research instrument, questionnaire was submitted to experts and analysis of 30 questionnaires was done as the final examination and Kornbakh alpha coefficient was calculated as %91.5. Statistical sample included 3200 farmers of Ashtiyan zone affected by the state recent drought 300 of which have been selected by the means of random sampling and based on Kukran formula. Describing research variables from statistical characteristics, frequency distribution tables, frequency percentage, cumulative frequency, mean, standard deviation, variance index, minimum and maximum are used. In inferential part, Spearman coefficient, Kruscal Walis test, and Man White Nee test are employed. In the study, social conditions of farmers at the time of drought is dependent variable, and the independent include age, education, marital status, production level, employment background, living place, living estate, agriculture-derived incomes and non-agricultural ones of Ashtiyan province farmers.

3. Results

3.1. Individual Characteristics of Farmers

1. Age: results show that average age of farmers under study was about 47, %46.5 of whom were between 55 and 61 years old; out of the 297, respectively, 270 (%91) were men and 27 (%9) women.
2. Education: their education levels were respectively elementary (%34.5), guidance (%29.5), and secondary (%15.5). And, %12 of them was uneducated.
3. Main Job: %30.8 of them did farming, %26.4 farming and animal husbandry, %14.9 farming and %14.2 were self-employed.

3.2. Arable Characteristics of Farmers

4. Cultivation Background: investigations show that average farming background of the farmers under study was 20 years; %44.4 of whom had 11 to 20-year background.
5. Cultivation Area: average arable area was 14hec, in 5 years of drought. And %27.8 farmers had about 6-10hec cultivation area.
6. Annual Income: results show that average income of the farmers under study was Rls51481481, maximum frequency is related to annual figures of Rls20.1m to 40m.

3.3. The Number of Attending in Training Programs

Results demonstrated that about %68.5 farmers under study had not attended drought-related training courses %80.5 whom attended in one course, per se.

Table 1: Prioritizing the extent of information sources use for attaining drought-related information

Information sources	Mean	Standard deviation	Variation index	Rank
Local leaders' advices	3.45	0.81	23.48	1
Other farmers and neighbors	3.35	0.92	37.46	2
Mass media (radio & TV)	2.29	0.96	32.11	3
Agriculture services center experts	3.05	1.00	32.79	4
Journals of agriculture	2.34	0.92	32.36	5

Very little: 1 A little: 2 Average: 3 Much: 4 Very much:5

Table 2: Prioritizing the extent of drought phenomenon effect in socio-psychological in the zone

Socio-psychological effects	Mean	Standard deviation	Variation index	Rank
Local conflict increase on water	3.73	0.71	19.03	1
General dissatisfaction with government decisions and actions	3.57	0.80	22.41	2
Farmers' families needs and priority changes	3.16	0.86	24.05	3
Reduction in administering social programs	2.42	0.79	32.64	4
Destroying rustic tourism	2.35	0.91	38.72	5
Migration and sub-urbanization increase	2.41	1.01	43.72	6
Malnutrition increase	2.18	0.96	44.04	7
Mental and physical problems from intensive temperature	1.85	1.01	54.59	8
Crime increase	1.69	0.96	56.80	9
Rustic households' structure and integration destruction	1.53	0.89	58.17	10

3.4. Effects of Drought Phenomenon in Socio-psychological Fields

Results show that %47 farmers under study evaluated the extent of the effects as average, %40 much up to very much, and %13 also much and very much. Results from mean table ($\mu=2.73$) demonstrate the effects as average toward low.

Analytical Statistics: results from Spearman correlation coefficient indicate that there is a reverse and meaningful correlation between variables education, cultivation performance, income and the number of attendances in training courses and dependent variables of socio-psychological susceptibility with an error level of %1, and between independent variable of using information sources and dependent variable of socio-psychological susceptibility with an error level of %5. In other words, the more farmers use the above factors, the lower the extent of their socio-psychological susceptibility. Also, there is a positive meaningful correlation between age and the dependent variable.

Table 3: Correlation with of drought socio-psychological effects susceptibility

Hypothesis No.	Independent Variable	Dependent Variable	rs	p
1	Age	socio-psychological susceptibility	0.142**	0.019
2	Education	socio-psychological susceptibility	-0.206**	0.001
3	Farming background	socio-psychological susceptibility	-0.056	0.355
4	Cultivation area	socio-psychological susceptibility	0.103	0.091
5	Income	socio-psychological susceptibility	-0.165**	0.009
6	Number of class attendance	socio-psychological susceptibility	-0.360**	0.001
7	Using information sources	socio-psychological susceptibility	-0.134*	0.029

**P < 0.01 *P < 0.05

Results from Man White Nee Test: comparing mean drought susceptibility of men and women farmers to socio-psychological effects as well as comparison from the table ($z=-0.886$, $u=291.5$), it can be say meaningfully ($p=0.376$) there is no meaningful variation at an error level of %5 between susceptibility of two groups. Accordingly, existence of variation is rejected with %95confidence and null hypothesis is accepted. In other words, the extent of susceptibility of men and women farmers to socio-psychological effects is the same. In the same regard and comparing the mean susceptibility of farmers did and did not attend training courses to socio-psychological effects and comparing ($z=-1.98$, $u=6832$) from the table in a meaningful level ($p=0.047$) it can be said that there is a meaningful variation at an error level of %5 between susceptibility of two groups. Accordingly, existence of variation is accepted with %95confidence and null hypothesis is rejected. In other words, the extent of susceptibility of farmers did was lower than farmers who did not attend in training courses to socio-psychological effects.

Table 4: Results from Man White Nee Test regarding research hypothesis

Dependent Variable	Two independent groups mean	U	Z	sig
socio-psychological susceptibility	Attending in class=126.65	6165	-1.91	0.046
	Not attending in class=143.38			
socio-psychological susceptibility	Attending in class=131.77	6832.5	-1.98	0.047
	Not attending in class=150.68			

Results from Oscar Wallis Test regarding mean variance of susceptibility of farmers to socio-psychological effects based on the main job and comparing $X^2=5.070$, $p=0.280$ from the table it can be said that the amount gained is not meaningful at error level of %5. In other words, research hypothesis - regarding the existence of variance – is rejected and null hypothesis is proved. Accordingly, it can be concluded that farmers' main jobs did not affect the extent of their susceptibility to drought socio-psychological effects.

Table 5: Results from Oscar Wallis Test regarding research hypothesis

Dependent Variable	Independent variable	Sig	Chi-square	DF=k-1
socio-psychological susceptibility	Main job	0.280	5.070	4

4. Conclusion

Results indicated that mean farmers' age was 47 with the youngest 20 and the oldest 78 years old, and mean farming background was 20 years old. Over %90 of the sample was men and less than %10 women most of which had elementary, guidance and secondary school education and a small percentage at diploma

or higher levels and %12 uneducated. The main job of most of them was farming and animal husbandry with an arable cultivation area of 14hec and 1.6T/hec arable performance. Observations showed that most of farmers in the study (%68.5) had not attended in drought-related training courses, and the extent of their use of neighbors' information, information sources, local sources, and other farmers was from moderate to high. Inter alia, using mass media (radio & TV), agriculture experts and in particular journals of agriculture was low. In farmers' point of view, the extent of drought susceptibility of men and women farmers to socio-psychological effects was from average to higher levels. In the meanwhile, local conflict increase on water, lack of general satisfaction with government actions and decisions, change of farmers' families needs and priorities are among socio-psychological effects of drought. Results from Man White Nee test showed that farmers' sex is not positively correlated with the effects, and also there is a meaningful variation between farmers who attended in training courses and those who did not, regarding the extent of susceptibility to the same effects. Results from Kruscal Wallis test demonstrated that there is no correlation between farmers' job and the extent of susceptibility. Results from Shokri's (2005) study indicated that economic and then social effects have been the most effective. Sasteri's (2002) study implied that drought management in socio-economic regards will result in sustainable development.

5. Suggestions

1. Results from Man White Nee Test show that the extent of training program farmer attendants' susceptibility to socio-psychological effects of drought was lower than those who did not. Accordingly, it is proposed that in the area under study classes and training programs are administered regarding how to cope with drought so that whole farmers can attend them.
2. Descriptive results demonstrate that the extent of the farmers' use of drought-oriented information sources including mass media (radio and TV), agricultural services centers' experts, and in particular journal of agriculture was low. So, it is proposed that TV programs regarding drought and its consequences to be prepared further, and agriculture centers experts contact increased with these farmers and the drought-related journals agriculture also distributed among them.
3. Considering the fact that the extent of the farmers communication with agriculture services centers, village cooperative and Islamic council was low; , it is proposed that required material and spiritual supplementations to be devised considering enrichment of village cooperative and Islamic council regarding dealing with drought.
4. Regarding the farmers' comments to reduction of socio-psychological consequences of drought in the zone, it is recommended that – to reduce local problems of water supply and provision of public satisfaction concerning programs and actions taken – briefing programs to be taken in the zone.

6. Resources

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