

Management of Water Resources and Coping with Drought in Agriculture

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Abstract. This study is aimed at exploring management water resources and coping with drought in agriculture. This is an applied research with a correlation- descriptive method. Results demonstrated that about %68.5 farmers under study had not attended drought-related training courses %80.5 whom attended in one course. Also, findings indicated that performance application rate to protect of water, especially increasing drought on this county in recent years. Building compacted mud dam, and concert dam, improvement waterway for irrigation, improving sprinkler water system, using pip to transferring water for agricultural project, are the ways to conserve the water.

Key words: Management Water Resources, Coping with Drought

1. Introduction

Different countries' experiences of water management indicate that with correct management activities it is possible to moderate problems and limitations resulting from water shortage. In this regard, integrated water management and coordinating water allocation process is a principle action and practical strategy for achieving water security and sustainable development and finally security. management of water resource is in fact optimized water use (Keshavarz & Sadeghzade, 2000).

Small amount of rainfalls, their irregular dispersal, and temperature increase result in different social, economic, and political crisis. In recent years, drought effects have been high in agriculture, cattle's products, water supplies, migration, pest attack and disease outbreak. Considering the fact that agriculture sector has to be produce more in future while using less water, researches on drought and executive policies are of natural adventures leading to disorders in natural ecological systems in the zone. Accordingly, studies in this regard are recommended.

In a study of drought management and presenting strategies for coping with it, Yazdani and Haghsheno (2007) aimed at recognizing drought management and proposing policies in a way that environmental, social, and economic losses from it can be reduced. Sateri (2002) pointed out drought risk and developmental policies. The article discuss the fact that in countries exposed to drought and even in the areas not seem to be dry, policy-makers have to be aware of the issue and devise strategies to cope with it, otherwise its household susceptibility and effects will intensify.

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General objective of the study is water reservoirs' management and coping with drought, and its specific objectives are exploring correlation existing between executed strategies, its effect in drought phenomenon, and examining extending methods effects in modifying drought.

Present study is an applied one based on descriptive-correlative method. Statistical sample included 3200 farmers of Ashtian county affected by the state recent drought 300 of which have been selected by the means of random sampling method and data from filling up questionnaires were analyzed by SPSS software.

2. Characteristics of Social Interaction

2.1. The Number of Attendance 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.

Table 1: the number of attendance in drought-related training courses

Number of attendance in courses	Frequency	Percent	Valid percent	Cumulative percent
Once	75	25.3	70.6	80.6
Twice	7	2.4	7.5	88.2
Three or so	11	3.6	11.8	100
Non-attendance	204	68.7	-	-
Total	297	100	100	-

Mean=1.41 SD=1.99 Min=1 Max=5

2.2. The Extent of People Participation and Involvement in institutes

From Table 2, it is indicated that the extent of relationship and people participation with urban centers have been at high level, however, they were at low levels regarding agriculture service centers, village Islamic council, and village cooperative.

Table 2: Prioritizing the extent of people participation and involvement in institutes during a month

Institute names	Mean	SD	Coefficient of Variation	Rank
Urban center	4.07	1.22	29.98	1
Agriculture service center	2.67	1.34	50.19	2
Village Islamic council	1.56	1.05	67.31	3
Village cooperative	1.55	1.12	72.26	4

2.3. Administering Water Management and Maintenance

As seen in Table 3, the extent of water management improvement and maintenance strategies execution to cope with drought have been at low level including dense soil construction, non-dense soil construction, irrigation channels improvement and construction, pressurized irrigation system construction, construction of wide-eye wills and sumps for agricultural applications, rain irrigation, river dredging and using pipes for water transportation, and executing agricultural water projects in the county.

Table 3: the extent of water management strategies execution to cope with drought

Executing water improvement and maintenance policies	Frequency					
	N	Very little	Little	Moderate	Much	Very much
Construction and amelioration of irrigation channels	292	83	119	73	9	8

Use of pipe for transporting water	290	175	75	20	9	11
Dense soil construction	294	63	58	135	26	12
Non-dense soil construction	291	83	41	140	20	7
Pressurized irrigating systems execution	292	137	109	31	5	10
Evaporating wide-eye wills and sumps for agricultural use	294	117	131	30	7	9
Pressurized irrigating systems execution	290	93	128	39	18	12
Rain irrigation	289	110	121	38	9	11
Dredging rivers	289	115	100	42	16	16
Executing water transportation projects	293	188	41	38	12	14

2.4. Results from Mann-Whitney Test

comparing mean drought susceptibility of men and women farmers to socio-psychological effects as well as comparison from the table ($z=-0.024$, $u=2633$), it can be say meaningfully ($p=0.981$) there is no meaningful variation at an error level of %5 between susceptibility of two groups. In the same regard and comparing the mean susceptibility of farmers did and did not attend training courses to socio-psychological effects and comparing ($z=-1.910$, $u=6165$) from the table in a meaningful level ($p=0.046$) it can be said that there is a meaningful variation at an error level of %5 between susceptibility of two groups.

Table 4: Results from Mann-Whitney Test regarding research hypothesis

Dependent Variable	Two independent groups mean	U	Z	Sig
socio-psychological susceptibility to drought	Man=131.53 Woman=131.18	2633	-0.024	0.981
socio-psychological susceptibility to drought	Man=136.32 Woman=150.33	2591.5	-0.886	0.376

2.5. Conclusion and Suggestions

Results demonstrated that about %68.5 farmers under study had not attended drought-related training courses %80.5 whom attended in one course. and they have generally been able to cope with drought to some extent. So, it is recommended that administering training programs to be emphasized by government more than ever. Results from Mann-Whitney test showed that farmers' sex is not positively correlated with the socio-psychological 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. Findings indicated that performance application rate to protect of water, especially increasing drought on this county in recent years. Building compacted mud dam, and concert dam, improvement waterway for irrigation, improving sprinkler water system, using pip to transferring water for agricultural project, are the ways to conserve the water.

Reviewing theories and researches by Thompson and Powell (1998), it is indicated that proposed strategies of water supply managements and the number of attendance in training courses have reverse and meaningful correlation with dependent variable of modifying drought phenomenon. Also analysis done by Sasteri (2002) it is demonstrated that agriculture investing incentive decrease, and farmers purchase power reduction are among significant drought effects. Also, findings by Wilhite and Smith (2003) indicate that the farmers' main jobs are effective in modifying drought phenomenon.

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