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Studying consequences of drought on economic condition of farmers in Iran (Ashtian)

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ABSTRACT

The purpose of this study was to analysis consequences of drought on economic condition of farmers at Ashtian area. This is a descriptive correlation research. To collect the data a questionnaire was developed. The results of correlation coefficient indicated that, there is relationship between variables (called independent) of: literacy level, number of participation in meetings, communication with agencies, use information sources, procedures applied for renovate and water conservation, and number of participation in training classes. With variable of economical influential from drought condition (called dependent) had convert relationship. Results of multiple variable regression in relation to studying effect of independent variable on influence from economic consequences of drought show that variables including: number of times participating at training course related to drought and using information resource has reverse role on influence from economic consequences of drought. Aforesaid variables generally explain 53% changes of dependant variable.

Key words: Consequences of Drought, Economic Condition, Farmers.

INTRODUCTION

Drought is among natural dangers that create great loss to agricultural systems of an area including: destruction of physical and environmental condition. Recently effect of drought on water, agricultural and animal products was very high. Ashtian was faced with this problem since many years ago. In spite of absence of exact analysis from consequences of drought in this area, through collecting probable exact statistics of farmers at this area from 2004 until 2008 it is attempted to investigate consequences of drought. Shokri (2005) studied environmental, social and economic consequences of drought and influence of applied solutions in SistanBalouchestan province from attitude of farmers. Results of this study show that effect of drought on economic, environmental and social problems is respectively high Karbasi (2001) studied economic and social effect of drought on farmers of Isfahan province and found out that agricultural crops of this province are generally cultivated by water; which shows great dependency of agriculture to underground waters and water of Zayandehroud River. Research findings show that drought decreases rainfall and increase temperature and with respect to presence of industries requiring great amount of water, decreases level of required water for agricultural application. Results of study by Holden and Shiferaw (2004) showed that indirect effect of drought on welfare of family through influencing price of farm animal and products was higher than direct effect of drought. Research of Clay & Benson (2003) dealt with finding new solutions for

better understanding economic effect of drought and offering answer to this question that why some countries are more exposed to drought and some results consisting of effect of drought on economic problem, differences of area, differences of structural plan. General goal of this research is studying consequences of drought on economic condition of farmers at Ashtian are during years 2004-2008. Specific goals of this research are including:

1) Studying economic consequences of drought on Ashtian area with respect to attitude of farmers
2) Studying effect of fulfilled plans for coping with consequences of drought crisis with respect to attitude of farmers
3) Studying relationship between personal, agricultural and economic properties of farmers and level of their influence from economic effect of drought.

MATERIALS AND METHODS

Present study is an applied research and conducted based on descriptive-correlative method.

Theoretical and qualitative studies are conducted by predictive method and quantitative stage through survey using questioner. A questionnaire was developed based on these interviews and relevant literature. A pilot study was conducted with 30 respondents, interviewed before the earlier exercise ofdetermining the reliability of the questionnaire for the study. Computed Cronbach's Alpha score was 85%,which indicated that the questionnaire was highly reliable.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, KruscalWalis test, and Man White Nee test are employed.

RESULTS AND DISCUSSION

Results of Descriptive Research of Data

- Personal and Agricultural Properties of Farmers

Results showed that job for most of people inhabiting at this area is farmer and husbandry, medium area of land for agriculture is 14 hectare and medium agricultural performance is 1.6ton per hectare, which is evaluated as poor level. (table 1).

Table 1: Describing personal and agricultural properties of farmers

Variable	Average	Standard Deviation	Minimum	Maximum
Age(year)	47	10.10	20	78
Record of agriculture (year)	20	9.56	4	55
Area of land for agriculture (hectare)	14	8.00	1	51.5
Area of gardens (hectare)	1.59	1.09	0.20	5
Performance of agricultural crops (ton per hectare)	1.66	1.40	0.5	6
Performance of garden crops (ton per hectare)	2	1.49	0.2	7
Annual income(Rls Million)	51.481	2823743	5.000.000	270.000.000

-Economic Effect of Drought at Ashtian Area:

Results showed that economic effect of drought with respect to attitude of farmers was medium to high. Some important economic aspects of drought of this area are including: decreasing motivation of investment on farming, decreasing purchase afford of farmers, increasing cost of required fertilizer and poison, decreasing additional income(income of crafts, husbandry…), decreasing income for performance of crops(agricultural and gardening), increasing cost of irrigation and supplying water, increasing debit of farmers, increasing unemployment for impossibility of planting, decreasing price of agricultural and gardening products due to decreasing their quality, increasing price of high quality lands.

Table 2: Priority for economic effect of drought

Economic Effect	Average	Standard Deviation	Minimum	Maximum
Decreasing motivation of investment on farming	3.74	0.85	22.73	1
Decreasing purchase afford of farmers	3.81	0.91	23.88	2
Increasing cost of required fertilizer and poison	3.66	0.94	25.82	2
Decreasing additional income (income of crafts, husbandry…),	3.68	0.95	25.82	4
Decreasing income for performance of crops(agricultural and gardening),	3.97	1.04	26.20	5
Increasing cost of irrigation and supplying water,	3.53	0.98	27.97	6
Increasing debit of farmers	3.73	1.06	27.97	7
Increasing unemployment for impossibility of planting,	3.00	0.87	29.00	8
Decreasing price of agricultural and gardening products due to decreasing their quality,	3.05	1.00	32.79	9
Increasing price of high quality lands	2.47	1.11	44.94	10

-Application of Economic Solutions:

Results showed that application of economic solutions in relation to balancing drought during recent years was poor and insurance of agricultural crops endangered for drought, extending refund of drought loan, non-reimbursable financial assistant, drought loan, banking loan for purchasing pump engine and machineries fall within first to fifth priorities (table 3).

Table 3: Priority for application of economic solutions to balance drought

Variable	Average	Standard Deviation	Minimum	Maximum
insurance of agricultural crops endangered for drought	2.40	1.11	46.25	1
extending refund of drought loan	2.47	1.19	48.18	2
non-reimbursable financial assistant	1.98	1.16	58.59	3
drought loan	1.82	1.09	59.89	4
banking loan for purchasing pump engine and machineries fall within first to fifth priorities	1.79	1.16	64.80	5

-Results of Spearman Correlation Coefficient:

There is reverse significant relationship at 1% error between following variables: number of participating at sessions, relationship of fertilizer and poison, using informational resources, solutions for protection of water, economic influence. In addition there is reverse significant relationship at 5% error between following variables: literacy, number of participating in classroom, economic influence of drought i.e. if farmers maximum apply from aforesaid factors, level of economic influence due to drought will decrease (table 4).

Table 4: Results of spearman correlation coefficient for studying relationship between independent variables in relation to influence of economic consequences of drought

Hypothesis No	Hypothesis	Dependant variable	r_s	P
1	Age	Economic influence	0.088	0.160
2	Literacy	Economic influence	-0.133	0.032
3	Record of agriculture	Economic influence	-0.046	0.460
4	Area of land for agriculture	Economic influence	0.024	0.704
5	Agricultural performance	Economic influence	-0.038	0.536
6	Area of garden	Economic influence	0.021	0.866
7	Performance of garden	Economic influence	0.186	0.138
8	Income	Economic influence	-0.124	0.057
9	Number of participating in class	Economic influence	-0.281	0.014
10	Number of participating at session	Economic influence	-0.388	0.001
11	Relationship with different organizations	Economic influence	-0.194	0.003
12	Using informational resources	Economic influence	-0.199	0.001
13	Applied economic solutions	Economic influence	-0.081	0.203
14	Solutions for protecting water	Economic influence	-0.212	0.001
15	Applied agricultural solutions	Economic influence	-0.059	0.393

-Results of Multi Variable Regression in relation to Effective Factors on Consequences of Drought:

This research applies from multi regression with step by step method to study effect of independent variables about economic consequences of drought, which 2 variables are entered to multi regression. **First step:** In this step a variable is entered into equation x10 means number of times farmer participated at training course about drought, which show that this variable has the highest effect. By observing coefficient in the following table it is concluded

that x10 variable i.e. number of times farmers participated at training course about drought only resulted in 40% change at dependant variable for economic effect of drought. According to coefficients of table 8, it is possible to write regression equation as: Y=a+b1x1+b2x2+… and Y= -5.73x10 +43.86 and the standardized equation is Y=0.64x10

Second step: after specifying variable for number of times participating at training courses another variable (x10) which means using informational resources is entered to equation. According to findings, variables x12 and x10 result in 53% change of dependant variable for economic consequence of drought and according to coefficients of the following table, the regression equation at second step is: $Y= 3.89x_{10} – 0.91x_{12}+ 55.13$ and its standardized equation is $Y= -0.43x_{12}\ 0.42x_{10}$

Table 6: Coefficient of variables entered to multi variable regression equation

Stage	Variable	B	Error for standard B	Beta	T	Sig
First	Number of times participating at training course	-5.73	0.901	-0.641	-6.35	0.000
-	Fixed number	43.86	1.77			
second	Number of times participating at training course	-3.89	0.916	-4.25	-4.25	0.000
second	Using informational resources	-0.913	0.223	-4.09	-4.09	0.000
-	Fixed number	55.13	3.16			

CONCLUSION

Results showed that this area under study has used from economic solutions for balancing drought during recent years including: insurance of agricultural crops endangered for drought, extending refund of drought loan, non-reimbursable financial assistant, drought loan, banking loan for purchasing pump engine and machineries. Results of Pearson correlation coefficient showed that there is reverse significant relationship between literacy, number of times participating at training sessions for coping with drought, relationship with different organizations, using informational resources, water protection and variable of economic influence of drought. Results of multipli variable regression in relation to studying effect of independent variable on influence from economic consequences of drought show that variables including: number of times participating at training course related to drought and using information resource has reverse role on influence from economic consequences of drought. Aforesaid variables generally explain 53% changes of dependant variable. Studying research by Shokri (2005) and Benson & Clay (2003) show that water protection and number of times participating at training course related to drought has reverse significant relationship with influence for economic consequences of drought and this research confirms this issue. Results of study by Holden and Shiferaw (2004) showed that decreasing motivation for investment on farmers, decreasing purchase afford of farmers, increasing cost of required fertilizer are among most important economic consequences of drought at this area. Studying research byKarbasi (2001) showed that sex of persons participating at this study is not influence on their economic influence from drought and this research confirms this issue.

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