



Investigating Water Conflict Management Strategies among Irrigated Wheat Growers of Doroudzan Dam Network

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Abstract

Purpose- The irrigated wheat farms of Doroudzan District in Marvdasht County, Fars Province face agricultural water deficit challenges due to mis-management of water resources. This research aims at investigating water conflict strategies among the irrigated wheat farms of Doroudzan Dam Network.

Design/methodology/approach- The study was descriptive regarding its nature and used survey research procedure. The statistical population included 803 wheat farmer households residing in Ramjerd 2 and Abarj Dehestans in Doroudzan District. According to Krejcie and Morgan's (1970) sample size table, the samples were 260 wheat farmers selected based on simple random sampling technique. Systematic questionnaires were used to collect data by means of face-to-face interviews. The validity of the questionnaire was confirmed by a panel of experts, and a pilot study was also done to assess the reliability of the questionnaire. The estimated Cronbach's alpha coefficients were between the accepted range (i.e. 0.50 - 0.75) for the different measures used in this study.

Findings- Results revealed that the most prevalent conflicts were intra-group conflicts among the counterparts. Verbal conflicts were the current form of water conflicts regarding the conflict intensity in the region. Physical attacks and third party (police) controls were placed in the second and third position. The results of cluster analysis indicated three clusters of farmers; "educated aggressors", "low-literate aggressors" and "peace-oriented farmers". All the clusters were statistically different regarding their demographic characteristics (age and education level), farming-system portfolio (area under cultivation, annual income and cost) and water conflict in response to water shortages. According to the contingency table, collaboration strategy was the prominent conflict management strategy among the three groups followed by compromising strategy.

Research limitations / implications- The lack of institutional support to get information on conflict attacks among the rural residents and the time-consuming nature of the survey study are the most important challenges in this study.

Practical implications- According to the findings, it is of prominent importance to provide the context of problem solving with counterparts. As a result, it needs more attempts to share all the stakeholders' interests to reach a common decision. It seems that reaching a satisfactory solution needs drawing out different parties' expectations to help them get organized through collaboration.

Originality/value- Numerous studies have been carried out on water deficiencies. However, this study is the first in the context of rural settlement and valued based on the analysis of the conflict management strategies among farmer groups that has not been addressed in previous studies.

Key words- Conflict Management Strategies, Drought, Shared Water Resources, Wheat Growers, Doroudzan.

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1. Introduction

Among the cereals, "wheat is one of the strategic commodities needed for human beings and known as the main components of Iranian food diet" (Ghiasi, Hosseini & Hosseini, 2007).

In this regard, "as most of the Iranian wheat lands are located in arid and semi-arid regions, wheat production is affected by fierce drought, water deficit and lack of soil moisture" (Ghajar Sepanlou & Siadat, 2000). This fact is worrying when one considers that drought is the climatic reality in Iran (Amirkhani, Chizari & Hosseini, 2012), while the country's ranking was 14th in terms of water deficit within 116 countries in 1993 (IIMI, 1993).

Fars Province water department faces serious challenges every year due to irregular rain distribution, drought continuation and ground water harvesting. In particular, Marvdasht County located in Fars Province, the agricultural pole of the country (Fotoohi, 2017), has faced dramatically reduced rainfall and fierce drought. Water department surveys in this country reveals a 10.60 m groundwater drop in a 14-year period from August 2003 to August 2008 and 0.76 m on average (Fars Regional Water Authority, 2015). Over exploitation, groundwater table decline and salinization have seriously occurred in this region which is more fundamental in Doroudzan District, Marvdasht County (Nowzari, 2012). As a result of water deficit and the recent drought challenge, water conflict was duplicated in this district. In fact, water deficit has direct and indirect effects on agriculture and home economics and causes tensions in water resources allocation (Bijani & Hayati, 2011; Hosseinzadeh, Kazemieh, Javadi & Ghafouri, 2013; Rajabihashjin & Arab, 2007). In other words, agricultural water conflict described as disputes and contrasts among stakeholders over an access to common water resources and the disputes over limited water sources may make multi-actor dissonance and even intra-regional conflicts (Bijani & Hayati, 2013; Wolf, 2007).

Therefore, irreversible water resource exploitation with no alternatives (FAO, 1996) not only is the source of conflict among farmers but also makes behavioral tensions among users and related macro-level organizations. At the macro level, water conflict is a term for describing disputes and contrasts over an access to water resources among nations, governments and related groups (Wolf, Natharius, Danielson, Ward & Pender, 1999). It is

apparent that conflict management aims to limit and avoid future violence by promoting positive behavioural changes in the parties involved (Hamad, 2005). Disputes over water resources in regions seriously affected by water deficit is regarded as a social difficulty and its management needs great effort of experts and officials.

Obviously, the awareness of intensification or attenuation and the frequency of droughts play an important role in planning to adjust or cope with drought. However, in many countries water conflict management is a multi-organizational function regarding the level of conflict perhaps through the overlap, and intra-organizational competition (between beneficiary organizations) influences the water conflict intensity. Likewise, collective decision making often needs different management approaches. Therefore, identifying conflict management strategies and utilizing the appropriate strategy will lead to suitable management decisions. As better water conflict management among farmers will enhance the equilibrium of water consumption among wheat growers, this study attempts to identify conflict management solutions among wheat growers in Marvdasht Plain.

2. Research Theoretical Literature

It is clear that man affects his environment, but the question is what about the reverse and how the environment affects the human beings. The response depends on the depth of relationship between the environmental threat and the life structure of men, and this relation affects the identification of conflict process caused by environmental shocks and their solutions (Wolf, 2007). In fact, if environmental shocks cause serious damage to the environment, conflict over common resources may arise at the macro level, even it may involve the governments and in the case of less damage, the conflicts would appear to lie in the micro-level calls for easier management.

All in all, water conflict management in agricultural sector involves efficient strategies for minimizing dysfunctional conflicts and maximizing functional conflicts to enhance agricultural productivity although the literature on conflict has not investigated the relation between conflict management and productivity. Most of the available literature in this context refers to Wittfogel (1956). In his fundamental research in the field of conflict, he showed the close relation between the quality of conflict management in society and its dominant

socio-cultural structure. In other words, from his viewpoint the quality of conflict management is closely associated with the culture of each of the society's members and their perception of life structures. As [Homer-Dixon \(1991\)](#) revealed, "the upstream-downstream conflict was situational and would resolve in the case of appropriate strategies over the time". He believes that these conflict patterns would lead to cooperation over time. [Postel \(1999\)](#) noted that conflict management on limited natural resources was depended on the interests of the involved parties, and providing the quality of domestic, agricultural and environmental benefits would resolve micro-level conflicts in the case of appropriate conflict resolution strategies. Some researchers argued that conflict management depends upon conflict type and pattern, its side effects on individuals and parties based on their attitudes and context, and learning how to resolve conflicts ([Amason, 1966](#); [Jehn, Neale & Northcraft, 1999](#); [Rahim, 2000](#)). In addition to investigating conflict patterns, a wide literature has focused on conflict management solutions. Much of this literature has focused on different conflict styles to analyze individual conflict management methods and styles.

According to these findings, there are different methods for peacemaking and resolving conflicts to be executed locally or broadly. Apparently, success in common resource management requires the mass participation, achieving information on the nature of inter-individual conflicts, assessing conflict management strategies to solve disputes and problems ([Newton & Burgoon, 1990](#)) and complete recognition of the current conflict management strategies ([Ndelu, 1998](#)). In a study on conflict management [Sillars \(1980\)](#) revealed three avoidance, competition and collaboration strategies applied by individuals to solve conflicts. [Feizi, Shahbahrani & Azhandeh \(2011\)](#) suggested that non-confrontation, control, and solution orientation are the key approaches to conflict management in organizational settings. According to the principles of the control style, conflicts would be resolved by forcing one's position on an adversary through persistent arguing. In solution orientation style parties discuss on their alternative conflict resolutions using collaboration strategy. The non-confrontation style concentrates on avoiding or smoothing over the discussion of a conflict in a compromising manner. In this style, one party

attempts to consider the other's interest irrespective of their own interest. The results revealed by [Canary & Spitzberg \(1989\)](#) and [Canary & Cupach \(1988\)](#) indicated that collaborate approach correlated positively with relative satisfaction of individuals, while competition and avoidance strategies are negatively associated with relative satisfaction. [Rahim \(1983\)](#) identified five styles of handling interpersonal conflict management including avoiding, obliging, dominating, integrating and compromising. Results of another research by [Rahim \(2000\)](#) revealed that conflict management strategies depend on the perception of different interests among people. He showed that conflict management style depends on environmental context, and this context would produce further conflicts. He advocated the need for an integrative (problem-solving) method for managing conflict, while handling avoidance strategy would be ineffective in dealing with conflict.

To sum up the above content, conflict over common water resources relies on incompatible needs, disparities in demands, contradictory intentions, opposite opinions, and or diverse interests of users and stakeholders and would contribute to the formation of interpersonal/group hostility. These conflict situations lead to a range of different behavioral responses from assertive verbal attack to physical assault; in fact, solving these challenges needs varied strategies depending on the social position of the involved parties. Results reveal that according to the socio-psychological approaches and the level of importance of self versus others' interests and also the satisfaction caused by accompanying self-interest, the five strategies of collaboration, compromising, accommodation, avoidance and competition would take place for managing conflicts.

3. Research Methodology

The present study was done in Doroudzan District, Marvdasht County. The county is located 45 kilometers far from Northeastern Shiraz, on a wide fertile plain with the cold climate in the mountainous regions and the mild climate elsewhere. The main surface water resources are Kor, Sivand and Maeen rivers. The average annual temperature in Marvdasht region is about 17.7 degrees Celsius (with the min and max of 11.5 and 23.9 degrees Celsius, respectively). According to of De Marton, the coefficient of atmospheric humidity is 17.8 for the region and the region is classified as

semi-arid in Iran accordingly (Nowzari, 2012). The average annual rainfall is 180 mm and the county is divided into 4 districts of Kamfirouz, Markazi, Doroudzan and Seydan. Doroudzan District with the population of 37836 lying in the mild climate fertile site of 1025 Km² has the central location. The field study took place in two townships (Dehestans) of Doroudzan District utilizing common water resources. This survey study was cross sectional in nature. The statistical population was the irrigated wheat farmers in Doroudzan District, Marvdasht County, who were almost 3200 based on the statistics made by Marvdasht county's Agri-Jihad Organization in 2016. In the first phase of the research, the population was categorized into the similar groups. The criteria for categorization was based on Sullivan's (2002) water poverty index in the study area. Likewise, the villages were categorized into five strata, including safe, relatively safe, critically safe, unsafe and extremely unsafe. The wheat farmers of the extremely unsafe stratum were 803 households residing in the villages of Abarj (Hashem Abad, Malicheh, Galezan, and Darehbad) and Ramjerd 2 (Ramjerdi, JahanAbad, and Razmanjan) townships (Dehestans). In the second phase, Krejcie and Morgan's (1970) table for determining sample size was used and 260 households were selected randomly as such.

The data gathering instrument was a structured researcher-made questionnaire. The first part of the questionnaire analyzes water conflict management strategies among users (irrigated wheat farmers) of Doroudzan dam network. Rahim's (1983) conflict inventory was also used to make the measures. The inventory is designed to measure five dimensions of handling interpersonal conflict with superior, subordinates and peers, including integrating, obliging, dominating, avoiding, and compromising. The instrument uses self-reports for measuring the

styles of handling interpersonal conflict handling styles. The respondents answer each statement on a 5-point Likert scale (very low to very high). The integrating style, also known as problem solving, indicates high concern for self and others. This style involves collaboration between the parties (i.e., openness, exchange of information, and examination of differences to reach a solution acceptable to both parties) and allows everybody to win the situation. The obliging style (known as accommodating) indicates low concern for self and high concern for others. It is associated with emphasizing commonalities to satisfy the concern of the others. The dominating (also known as competing) style indicates high concern for self and low concern for other parties (win-lose orientation). Here the competing person aims to win his or her objective and ignores the needs and expectations of the other parties. The avoiding style (also known as suppression) indicates low concern for self and others. An avoiding person may postpone an issue until a better time, or simply withdraw from a threatening situation. As a result, she fails to satisfy her own concern as well as the other party's concern. The compromising style indicates intermediate concern for self and others. It involves give-and-take or sharing whereby both parties give up something to make a mutually acceptable decision. In this style the person may seek a quick, middle-ground position; therefore, a compromising person gives up more than a dominating but less than an obliging person. The second part of the questionnaire assesses the demographic characteristics of the respondents. After translating the inventory into Farsi and developing it for the Iranian farmers' context, the reliability of the measures was examined in a pilot study and was confirmed by calculating the Cronbach's alpha estimates (0.5-0.75). Data were then processed using SPSS-22 software.

Table 1. Introducing the statistical population and sample size

(Source: Statistics Center of Iran, 2017)

Township (Dehestan)	Village	Number of households	Sample size
Abarj	Hashem Abad	45	14
	Malicheh	36	12
	Galehzan	117	37
	Dareh Abad	259	83
	<i>Sum</i>	457	146
Ramjerd 2	Ramjerdi	105	35
	Jahan Abad	101	33
	Razmanjan	140	46
	<i>Sum</i>	346	114
Total		803	260

4. Research Findings

The demographic characteristics of the sample in terms of age reveals that wheat farmers' average age is 46.28 (SD= 8.62, with the min of 29 and max of 62 years). Of all the respondents, 25 farmers were illiterate, 166 farmers had finished only primary school, 58 farmers had diploma, and 11 farmers had academic degrees of Bachelor of Sciences or lower. The average annual income from the sale of wheat was 45443093.12 (Iranian Rials per ha) with a range from 90453190.48 to 26666666.68 Rials per ha. The average annual harvesting cost was 14796243.86 Rials per ha (with a range from 90453190.48 to 26666666.68 Rials per ha). To investigate water

conflict types in the present research, disputes were categorized into three intra-group (farmers resided in one village), farmer-organization and inter-group (farmers of different villages) levels (see Table 2). As presented in Table 2, most of the conflicts reported by wheat farmers were related to the intra-group conflicts in comparison with the farmer-organization and inter-group conflicts. This fact shows that most of the conflicts in the study area happened among the neighboring farmers resided in one village (\bar{x} =2.21, SD= 1.07). The coefficient of variation is also estimated to show the priority of this type of conflict in this study.

Table 2. water conflict types among wheat farmers (n=260)

(Source: Research findings, 2019)

Conflict type	Mean*	SD	CV	Rank
Intra-group	2.21	1.07	0.48	1
Farmer-organization	1.18	0.92	0.77	2
Inter-group	0.85	1.13	1.32	3

*The mean range is between 0-4 for the conflict types.

To analyze the type of the water conflict in the present research, the nature of intra-group, farmer-organization and inter-group disputes were investigated. Each of these levels was further analyzed regarding the intensity of conflict, including verbal attack, physical attack, police intervention, dispute resolution council and judicial court intervention. The results presented in Table 3 reveal that almost 39.2 percent of the farmers had a dispute over water with large-scale farmers. This is true while 46.5 percent of the disputes was found between the neighboring farmers. The context of this kind of dispute was common water canals. Likewise, 0.7 percent of the dispute was due to dam water stress; therefore, counter-farmers follow their self interest to promote their own access to water sources for their lands. However, 65.4 percent of the farmers had some dispute with agricultural workers of the neighboring lands. Almost half of the farmers (53.5 percent) had dispute with organizations. The farmer-organization dispute is usually formed between farmers and the water distribution organization, which is the local authority responsible for water delivery. Farmers blame this organization for low discharge rates in canals. Some farmers' (46.9 percent) dispute was due to the

process of licensing agreement on deepening their wells at the county's organizational level, 16.2 percent had dispute with provincial Agri-Jihad organization, and 1.9 percent of the dispute was related to other organizational bodies. The inter-group dispute for 16.9 percent of the farmers were farmer-farmer dispute among the residents of adjacent villages. This low number of inter-group dispute was due to dewatering adjacent water canals. Parts of the dispute (20.4 percent) were farmer-nomad disputes. This was due to the invasion of privacy in rural agricultural lands by nomads. Nomads usually use third canals to water their livestock. In fact, 29.2 percent of the farmers had dispute with rural community councils for water right and water supply share. Regarding the intensity of dispute, most of intra-group farmer-large-scale landlords' dispute (81.4 percent) were verbal attacks; 6.9 percent were physical attacks and 11.8 percent were referred to dispute resolution councils. Most of the dispute (89.3 percent) regarding the farmer-adjacent lands was in the form of verbal attacks; 5.8 percent was physical attacks; and 5 percent was referred to dispute resolution councils. 79.1, 14.8 and 6 percent of the farmer-counter farmer dispute was also in the form of

verbal, physical attacks and dispute resolution council interventions, respectively. Furthermore, 54.1, 36.5 and 9.4 percent of farmer-adjacent land farmers were in the form of verbal, physical attacks and dispute resolution council interventions. Most of the farmer-organization's (water distribution organization) dispute was verbal attacks (97.1 percent), while 2.2 percent was physical attacks and 0.7 percent of this type of dispute was referred to resolution council interventions. Farmer-water authority, farmer-Agri-Jihad and farmer-other

related organizations dispute were mostly (99.2, 97.6, and 100 percent, respectively) verbally attacks. The inter-group dispute was mostly verbal attacks (90.9, 96.2, 80.3, and 89.4 percent for adjacent village farmers, nomads, rural community councils, and adjacent village residents, respectively). According to the results, verbal attacks was dominant in all types of dispute followed by the intervention of dispute resolution councils.

Table 3. the intensity and type (level) of conflict (n=260)

(Source: Research findings, 2019)

Type (Level) of conflict		Frequency (percent)	Conflict intensity				
			Verbal attack	Physical attack	Police intervention	Dispute Resolution Council	Judicial Court
			n(p)	n(p)	n(p)	n(p)	n(p)
Intra-group	Large-scale farmers	102(39.2)	83(81.4)	7(6.9)	0(0)	12(11.8)	0(0)
	Adjacent farmers	121(46.5)	108(89.3)	7(5.8)	0(0)	6(5.0)	0(0)
	Counter farmers	182(0.70)	144(79.1)	27(14.8)	0(0)	11(6.0)	0(0)
	Agr. workers of adjacent lands	170(65.4)	92(54.1)	62(36.5)	0(0)	16(9.4)	0(0)
Farmer-organization	Regional Water Authority	139(53.5)	135(97.1)	3(2.2)	1(0.7)	0(0)	0(0)
	Water experts of the county	122(46.9)	121(99.2)	0(0)	0(0)	1(0.8)	0(0)
	Provincial Agri-Jihad org.	42(16.2)	40(97.6)	0(0)	0(0)	1(2.4)	0(0)
	All related organizations	5(1.9)	5(100)	0(0)	0(0)	0(0)	0(0)
Inter-group	Farmers of adjacent villages	44(16.9)	40(90.9)	2(4.5)	0(0)	2(4.5)	0(0)
	Nomads	53(20.4)	51(96.2)	0(0)	0(0)	2(3.8)	0(0)
	Village council members	76(29.2)	61(80.3)	2(2.6)	0(0)	13(17.1)	0(0)
	Residents of adjacent villages	47(18.1)	42(89.4)	0(0)	0(0)	5(10.6)	0(0)

To analyze water conflict strategies, Rahim's conflict inventory (Rahim, 1983) was applied to identify five integrating, obliging, dominating, avoiding, and compromising conflict management strategies among wheat farmers. Table 4 shows

that the integrating conflict strategy was mostly used by respondents to manage water conflicts. Obliging, avoiding and compromising stayed between the second and fourth ranks.

Table 4. The frequency of water conflict management strategies among wheat farmers

(Source: Research findings, 2019)

Conflict management strategies	Frequency	Percent
Integrating (collaboration)	112	43.1
Avoiding	33	12.7
Dominating (competition)	0	0
Obliging (accommodation)	98	37.7
Compromising	17	6.5
Total	260	100

However, the question is that do all wheat farmers equally apply the above-mentioned strategies or

different stakeholders use especial conflict management strategy? To analyze water conflict

strategy among wheat farmers, the cluster analysis was used along with a cross-tabulation table.

Cluster analysis is the common term for a wide range of classification methods. In this study, K-mean clustering technique was used. The clustering was based on five variables of age, level of education, the area under cultivation of irrigated wheat, annual income from the sale of wheat, and water conflict. Finally, three clusters of wheat farmers were identified according to the z-scores of each variable. As illustrated in Fig. 1, wheat farmers are categorized into three groups of educated aggressors, low-educated aggressors, and peace-oriented farmers.

The first cluster: educated aggressor farmers includes the youngest age group and the lowest area under cultivation of wheat, the lowest cost for wheat land and the highest level of education identified with their aggressive relation with their counterparts as compared with the other groups. The cluster contains 68 members of wheat farmers. It seems that conflict is natural in this cluster due to their low level of experience caused by their youngness. In other words, low level of patience and tolerance towards bad times, problems and the crises lead

them to make more conflict-promoting attributions and as a result, tend to more water conflict initiation. The second cluster: low-literate aggressor farmers included 152 members with the highest frequency. The wheat farmers in this category had higher age (average age) but lower level of education as compared with the first cluster. The cost of wheat production was low, because it had more lands under wheat cultivation and lower annual wheat income as compared with the first cluster. However, the members of this cluster reported lower level of conflict.

The third cluster: peace-oriented farmers with 40 members, had desirable status regarding area under wheat cultivation and annual income as well as higher age average compared with the other clusters. Despite their lower level of education, these farmers cost more in wheat cultivation inputs and tend lower level of conflict in comparison with the other groups. This shows that the older farmers in this cluster interact more with their counterparts, participate and compromise in supportive and efficient manners, which leads to a low level of conflict.

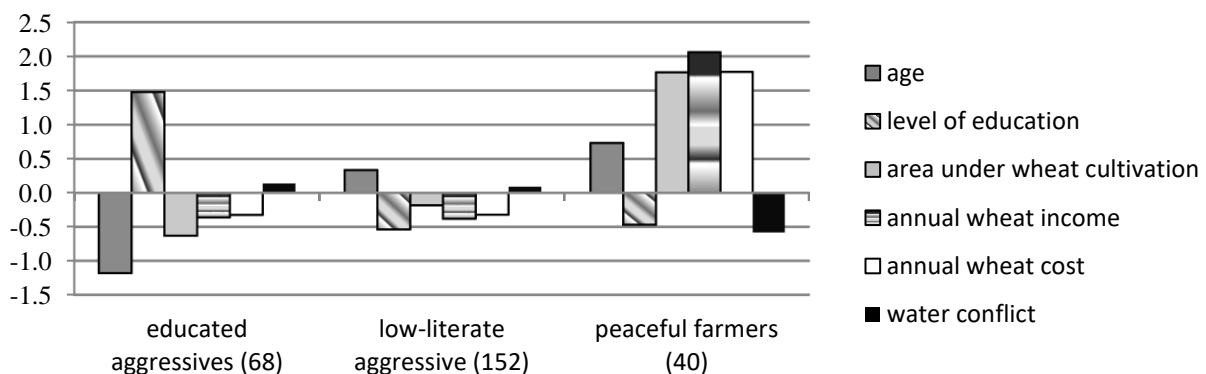


Figure 1. The clusters of wheat farmers

(Source: Research findings, 2019)

After clustering the respondents, the analysis of variance (ANOVA) and Duncan post hoc test were used to compare the resulted groups regarding their attributions. Results are presented in Table 5. The findings in this Table reveal that the clusters are statistically different regarding all the attributes. Wheat farmer groups were statistically different regarding their average age ($F=136.71$, $P<0.01$), the peace-oriented farmers had the highest mean ($\bar{x}=52.6$). Results also show that the educated

aggressor cluster is significantly different with the other clusters with respect to the level of education ($F=448.41$, $P=0.001$). This cluster had the highest average ($\bar{x}=12.31$). Table 5 reveals a significant difference regarding the area under cultivation among the clusters ($F=218.72$, $P=0.001$) with the highest mean value occurring in peace-oriented farmers ($\bar{x}=10.00$ ha) followed by low-literate aggressors ($\bar{x}=5.84$ ha) and educated aggressor

clusters (\bar{x} =4.88 ha), respectively. However, it shows that the experienced farmers had higher amount of land under cultivation of wheat. There was a statistical difference between both aggressor farmer clusters and peace-oriented farmer cluster ($F=443.47$, $P=0.001$). The highest income was recorded in peace-oriented cluster (\bar{x} =74.5 million Rials, Iranian currency), followed by educated aggressor (\bar{x} =40.1 million Rials) and low-literate aggressor clusters (\bar{x} =40.08 million Rials), respectively. This was associated with the area under wheat cultivation. Regarding the annual

costs, the both of the aggressor clusters were significantly different from peace-oriented farmers ($F=173.10$, $P=0.001$) with the highest mean value among peace-oriented farmers (\bar{x} =23.7 million Rials) and the lowest for the educated aggressors (\bar{x} =13.9 million Rials) and low literate aggressors (\bar{x} =13.1 million Rials), respectively. The three clusters were significantly different regarding their conflict ($F=8.55$, $P=0.001$). More conflict was recorded for educated aggressors (\bar{x} =4.51), followed by low-literate aggressors (\bar{x} =4.42) and peace-oriented farmers (\bar{x} =3.12), respectively.

Table 5. Mean comparison of clusters' attributes

(Source: Research findings, 2019)

Variable	Educated aggressors	Low-literate aggressors	peace-oriented farmers	F-value	Sig.
	[*] (SD) \bar{x}	(SD) \bar{x}	(SD) \bar{x}		
Age (years)	36.09 ^a (5.15)	49.17 ^b (6.02)	52.60 ^a (7.29)	136.71	0.001
Level of education (years)	12.31 ^a (1.35)	4.48 ^b (1.84)	4.75 ^b (2.43)	448.41	0.001
Area under cultivation of irrigated wheat (ha)	4.88 ^c (1.37)	5.84 ^b (1.30)	10.00 ^a (1.42)	197.65	0.001
Annual income (million Rial/ha)	40.1 ^b (6.9)	40.08 ^b (5.9)	74.5 ^a (8.7)	443.47	0.001
Annual cost (million Rial/ha)	13.9 ^b (2.07)	13.1 ^b (3.0)	23.7 ^a (4.8)	173.10	0.001
Conflict [#]	4.51 ^a (2.10)	4.42 ^a (1.88)	3.12 ^b (1.30)	8.55	0.001

* Similar alphabets within the row represents non-significant differences at ($p<0.05$) probability level according to Duncan post hoc test.

Mean range between 0 and 16.

Results presented in Table 6 show that conflict management strategies applied by educated aggressors were collaboration ($n=30$, $p= 44.1$), followed by obliging ($n=25$, $p= 36.8$), avoiding ($n=10$, $p= 14.7$) and Compromising ($n=3$, $p= 4.4$), respectively. Due to the highest level of conflict in this cluster, the collaboration strategy was more dominant. It is clear that the educated respondents attempt to solve their problems satisfactorily. Some of members of this cluster applied obliging strategy as a mild and moderate response for managing conflicts. Table 6 results also reveal that low-literate aggressor respondents mostly used collaboration

strategy to manage their conflicts ($n=62$, $p= 40.8$). Obliging strategy ranks the second place among the members of this cluster ($n=59$, $p=38.8$), followed by avoiding and compromising strategies. Albeit lower level of conflict among peace-oriented farmers, collaboration strategy was dominant ($n=20$, $p=50$), showing that collaboration strategy plays a key role in managing probable conflicts among the members of this cluster. Likewise, obliging ($n=14$, $p=35$), avoiding ($n=5$, $p=10$) and compromising ($n=2$, $p=5$) were placed in the following ranks (see Table 6):

Table 6. The cross-tabulation of conflict management strategies among wheat farmer clusters

(Source: Research findings, 2019)

Clusters	Strategies				
	Collaboration	Avoiding	Obliging	Compromising	Total
	n (%)	n (%)	n (%)	n (%)	n (%)
Educated aggressors	30 (44.1)	10 (14.7)	25 (36.8)	3 (4.4)	68 (100)
Low-literate aggressors	62 (40.8)	19 (12.5)	59 (38.8)	12 (7.9)	152 (100)
Peace-oriented farmers	20 (50)	4 (10)	14 (35)	2 (5)	46 (100)
Total	112 (43.1)	33 (12.7)	98 (37.7)	17 (6.5)	260 (100)

5. Discussion and conclusion

Water disaster caused by water deficit stress forces Iranian farmers to apply water resource management mechanisms in a sustainable manner. Water access and use, as one of the important sources of agricultural sector, is the source of conflicts and disputes among the stakeholders of this natural resource. Frequent recent droughts in Marvdasht County in Fars Province caused severe damage to farmers, which often resulted in tensions, disputes and conflicts among farmers. The term conflict has different meanings; however, in this study it implies bothering other parties and disagreeing with them about common resources. Conflicts on common property water resources among wheat farmers represent incompatible needs, different demands, opposing beliefs and or divergent interests of wheat farmers and other stakeholders and cause individual/group hostility and often lead to attacks. These conflict situations lead to different range of behavioral responses from verbal attack to physical violence.

This study aims at investigating water conflict management strategies among Doroudzan Dam Network stakeholders, Marvdasht County. Results revealed that among wheat farmers in the study area, intra-group conflict was dominant in comparison with farmer-organization and inter-group conflict. In these three levels of conflict, verbal attack was dominant, followed by physical attack and a few conflicts intervened in the conflict resolution councils. Few conflicts were in the form of police interventions against conflict parties. The collaboration strategy was the dominant style of water conflict management strategies. Clearly, according to the dominant cultural base of the study area, this was the best strategy to access conflict parties' wants. In addition, participating in information communication leads to appropriate and satisfactory decision among wheat farmers. The obliging, avoiding and compromising strategies also obtained the following ranks. [Bijani and Hayati \(2011\)](#) analyzed water conflict and revealed that farmers strategies used for coping with conflict were avoiding and compromising, while the experts used compromising and accommodating styles. This finding is consistent with our observation. Results by [Fayyazi \(2010\)](#) on the understanding of conflict and conflict management styles in

organizations showed that the major conflict management styles by employees were compromising and avoiding styles. [Dargahi et al. \(2008\)](#) in their research on conflict management strategies found that conflict had positive and negative impacts. However, the results of their study were consistent with our observation, showing that collaboration was the dominant style of conflict management.

According to the current results, among wheat farmer clusters (based on demographic characteristics, farming attributes and water conflict), collaboration was the dominant conflict management strategy. Clusters were compared with each other in terms of their demographic characteristics (age, level of education), farming attributes (area under wheat cultivation, annual income, and annual costs) and water conflict. The analysis of variance results revealed that the three clusters of educated aggressors, low-literate aggressors and peace-oriented farmers were significantly different regarding their age, level of education, the area under wheat cultivation, annual income, annual wheat costs, and their water conflicts. The cross-tabulation results showed that the collaboration style had the maximum frequency in all aforementioned clusters with obliging, avoiding, and compromising styles. This result was also consistent with [Dargahi et al. \(2008\)](#)'s findings. To be consistent with wheat farmers' orientation to select win-win collaboration strategy, it is necessary to empower the context to facilitate the empowerment of farmers to use collaboration style to resolve conflicts. It is obvious that reaching a common decision for an appropriate problem solution needs more attempt to carry out the necessary problem solving skills among the counterparts. Such decisions need drawing out the different parties' expectations to help them become organized through collaboration. Hence, it seems that communication of information is a necessity. On the other hand, other motives such as weekly and perhaps monthly joint wheat farmers-related organization meetings not only could play an important role in promoting farmers' social status but also could promote their social mobility and empower farmers to select win-win strategies to solve their problems. However, since the lack of conflict tendency in peace-oriented farmers led to

the stable peaceful environmental situation, it is suggested that meetings be held in the rural mosques by the members of this cluster as well as large-scale farmers. This may extend the collaboration and participation of farmers in solving water conflicts among the youths. Although water conflict can be modified by human reasonable behavior and a balanced action, it seems that water conflict is a permanent environmental feature due to ground water deficiencies. As the wheat farmers' conflict intensity was operationalized as the verbal attacks, it is suggested that some meetings be held to share information, solve problems and communicate solutions. Promoting related organizations' capacity to solve problems and suggesting an immediate

response to problematic situations need continued regular and organized relationships as well as timely delivery of information to the stakeholders. Thus, it is suggested that we establish regular weekly/monthly committees composed of the stakeholders and the organizational officials and experts to assist the stakeholders and promote their close relations and also the trust in the proposed solutions regarding water consumption skills in crisis times.

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واکاوی راهبردهای مدیریت تضاد آب در بین گندم‌کاران آبی شبکه آبیاری سد درودزن

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چکیده مبسوط

۱. مقدمه

مبنای نوع نگرش و بستری که آنها در آن واقع شده اند، و یادگیری برای رفع تضاد دانسته اند. علاوه بر بررسی الگوهای تضاد، بخش وسیعی از تحقیقات بر راهکارهای مدیریت تضاد متمرکز شده است. بسیاری از این تحقیقات با تمرکز بر سبک‌های مختلف درگیری به بررسی سبک‌ها و شیوه‌های مدیریت تضاد در بین افراد می‌پردازند.

۳. روش تحقیق

در این پژوهش به منظور واکاوی تضاد آبی در بین ذینفعان شبکه آبیاری سد درودزن از روش اثباتی یا کمی در قالب پیمایش استفاده شد. جامعه مورد مطالعه پژوهش حاضر شامل کشاورزان گندم‌کار آبی بخش درودزن، در دو دهستان رامجرد دو و ابرج است. در این دهستان‌ها وضعیت تضاد آب کشاورزان گندم‌کار روستاهای واقع در منطقه ناامن از نظر فقر آبی مورد سنجش قرار گرفت. جامعه آماری کشاورزان گندم کار آبی در این روستاها ۸۰۳ نفر بودند که بر اساس جدول کرجسی و مورگان ۱۹۷۰ تعداد ۲۶۰ نفر به عنوان حجم نمونه به صورت طبقه‌ای تصادفی انتخاب شدند. ابزار گردآوری داده‌ها در این پژوهش پرسشنامه محقق ساخته بود که روایی آن توسط کارشناسان و صاحب نظران دانشگاهی مورد تأیید قرار گرفت. یافته‌های آزمون آلفای کرونباخ با دامنه‌ی ۰/۵ تا ۰/۷۵ نشان از پایایی گویه‌ها داشت. داده‌ها با استفاده از نرم‌افزار آماری SPSS22 در محیط ویندوز مورد تحلیل قرار گرفت.

۴. یافته‌های تحقیق

یافته‌های پژوهش حاکی از آن بود که در منطقه مورد مطالعه، بیشتر درگیری‌ها بر سر منابع آب در سطح درون گروهی و در بین کشاورزان هم‌تراز رخ داده است. از نظر شدت، نیز غالب کشاورزان به طور لفظی با یکدیگر درگیر بوده و زد و خورد و مراجعه به پاسگاه در رده بعدی قرار گرفته است.

بخش کشاورزی در ایران با کاهش منابع آبی و تشدید تضادهای ناشی از آن در سال‌های اخیر مواجه بوده است. استان فارس نیز به عنوان یکی از قطب‌های مهم کشور در تولید محصول گندم، از پیامدهای بحران کم‌آبی در امان نبوده و تضاد در بین بهره‌برداران منابع آب کشاورزی در این استان نیز فزونی یافته است. از آنجا که مدیریت بهتر تضاد آب در بین کشاورزان، تعادل در مصرف آب در بین بهره‌برداران گندم‌کار را به دنبال خواهد داشت، پژوهش حاضر به دنبال شناسایی راهکارهای مدیریت تضاد موجود بین بهره‌برداران محصول گندم در دشت مرودشت این استان می‌باشد.

۲. مبانی نظری تحقیق

عمده‌ی پژوهش‌ها در حوزه تضاد ریشه در این دیدگاه دارد که رابطه نزدیکی بین چگونگی مدیریت تضاد در جامعه و ساختار اجتماعی-فرهنگی حاکم بر آن وجود دارد. به عبارت دیگر، نحوه مدیریت تضاد رابطه نزدیکی با فرهنگ تک‌تک افراد جامعه و ادراک آنها در خصوص ساختار زندگی‌شان دارد. به طوری که از دید هومر-دیکسون (۱۹۹۱)، تضاد بین بهره‌برداران بالادست و پایین دست موقعیتی بوده و در طول زمان با انتخاب راهبردهای تضاد مناسب توسط طرفین رفع می‌شود. از دید وی، الگوی تضادهای این‌چنینی در گذر زمان و با اعمال راهکارهای مدیریتی به همکاری نیز خواهد انجامید. از دید پستل (۱۹۹۹) نیز مدیریت تضاد بر سر منابع محدود طبیعی وابسته به منافع طرفین درگیر است، به طوری که در تضادهای در سطح خرد، این منافع مشتمل بر چگونگی بهره‌مندی خانگی، کشاورزی و محیطی با طرح راهبردهای مناسب توسط طرفین درگیر رفع خواهد شد. برخی محققان (آمیسن، ۱۹۶۶؛ جن و همکاران، ۱۹۹۹؛ رحیم، ۲۰۰۰) مدیریت تضاد را درگرو توجه به نوع و الگوی تضاد، اثرات جانبی تضاد بر افراد و گروه‌ها بر

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خواهد داشت. از آنجایی که بر اساس یافته‌ها، شدت تضاد در بین کشاورزان گندم‌کار بیشتر به صورت لفظی می‌باشد، انتظار می‌رود مدیریت تضاد به تعدیل فضای موجود و مدیریت بهتر منابع آبی بینجامد. لذا پیشنهاد می‌گردد از طریق جلسات گفتگو برای به اشتراک گذاری اطلاعات، حل مشکلات و تبادل راه‌ها همت‌گمارده شود. همچنین افزایش توانایی سازمان‌های مسئول برای رفع مشکلات و ارائه راه‌حل‌های سریع برای مشکلات منوط به برقراری روابط منظم و مستمر و اطلاع‌رسانی به موقع به مردم و بهره‌برداران است. لذا، توصیه می‌شود کمیته‌هایی از کارشناسان سازمان‌ها و ارگان‌های مربوطه با برگزاری جلسات منظم هفتگی یا ماهانه نسبت به برقراری روابط نزدیک‌تر به بهره‌برداران همت‌گمارده و با جلب اعتماد آنان، زمینه آموزش مصرف در مواقع بحران را فراهم سازند.

کلمات کلیدی: راهبردهای مدیریت تضاد، خشکسالی، منابع آب مشترک، گندمکاران، درودزن.

تشکر و قدرانی

پژوهش حاضر برگرفته از پایان‌نامه کارشناسی ارشد نویسنده اول (فاطمه حسینی‌زاده)، گروه مدیریت توسعه روستایی، دانشکده کشاورزی، دانشگاه یاسوج، یاسوج، ایران است.

بر اساس یافته‌های حاصل از تحلیل خوشه‌ای صورت گرفته، گندمکاران به سه گروه ستیزه‌جویان جوان، ستیزه‌جویان میانسال و صلح‌طلبان میانسال تقسیم شدند.

هر سه گروه از نظر ویژگی‌های جمعیت‌شناختی (سن، میزان تحصیلات)، ویژگی‌های زراعی (سطح زیرکشت، درآمد و هزینه سالانه کشت گندم) و تضاد آب با یکدیگر تفاوت معنی‌داری داشته‌اند. نتایج جدول توافقی نشان داد که در هر سه گروه حاصل از خوشه‌بندی راهبرد همکاری بیشترین فراوانی را به خود اختصاص داده و در قیاس با سایر راهبردهای مدیریت تضاد در اولویت قرار گرفته است. به عبارت دیگر، گندمکاران در هر سه خوشه در مواجهه با تضاد آب، بیشتر راهبرد همکاری و به دنبال آن راهبرد مصالحه را اتخاذ نموده‌اند.

۵. بحث و نتیجه‌گیری

وقوع خشکسالی‌های اخیر در شهرستان مرودشت استان فارس خسارات متعددی به کشاورزان منطقه وارد نموده که گاهی اوقات باعث درگیری‌های کلامی، تعارض و تضادهای رفتاری بین کشاورزان شده است. هرچند تضاد آب با هدایت و برقراری رفتار منطقی و متعادل بین انسان‌ها تعدیل می‌گردد، اما در حال حاضر به نظر می‌رسد تضاد آب یک بحران دائمی است، زیرا روند کاهشی مخازن آب زیرزمینی ادامه

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