

Farmland Fragmentation and Consolidation Issues in Iran; an Investigation from Landholder's Viewpoint

G. Abdollahzadeh^{1*}, Kh. Kalantari², A. Sharifzadeh¹, and A. Sehat³

ABSTRACT

Iran is one of the countries facing the most severe farmland fragmentation (FF) in rural areas and farmland consolidation (FC) is generally regarded as being a suitable instrument to solve this problem. A case study in the central area of Iran was conducted to explore landholder's attitudes towards issues related to FF and FC. Randomized stratified sampling frame was used to select 146 landholders in 10 villages that operated under Land Renovation and Development Schemes (LRDS). A questionnaire in several sections was developed to address main issues concerning FF and FC. Findings showed that increasing production input costs (labor, fuel, and machinery) is the most severe predicament caused by FF. Landholders believed that partial inheritance system, population increases and lack of job opportunity in off-farm interrelated together are main determinants of FF. Also reduction of land in the process of consolidation operates as a key restraint factor against FC. Physical investments by government and access to credit and loan operate as promoter factors of FC according to landholders' view. Their most preferred options of FC are the government sponsored farming in rural production cooperative units including traditional cooperatives and informal peasantry societies to facilitate voluntary land consolidation.

Keywords: Farmland fragmentation, Farmland consolidation, Land renovation, Landholders' attitude

INTRODUCTION

The phenomenon of FF and FC has been widely studied by economists, geographers, soil scientists, anthropologists and politicians in the last three decades. There were a considerable number of studies on definition, causes and disadvantages of FF and related FC in the early 1980s (King and Burton, 1981; McPherson, 1982). Since the early 1990s, discussions have been focused on its long term and short term effect. As FF was created from various factors FC as well was carried out under different procedures in many countries.

The classical form of FC involves changing the land tenure structure and providing the necessary infrastructure, such as roads and irrigation networks, for efficient agricultural development (Demetriou et al., 2012). FC has achieved little success in Iran (Shabazi, 1988; Bafekr, 1989; the Iranian Ministry of Agriculture (MoA), 1992). Most of Iranian land consolidation schemes fail to meet farmers agreement on land reallocation as a critical phase in planning process (Ashkar-Ahangarkolaei et al, 2006; Haidari, 1996), since it considered as the completion of the land consolidation project (Alario, 1991).

¹ Department of Agricultural Extension and Education, Faculty of Agricultural Management, Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Islamic republic of Iran

* Corresponding Author, e mail: Abdollahzade1@yahoo.com

² Department of Agricultural Management and Development, Faculty of Agricultural Economics and Development, University of Tehran, Karaj, Islamic republic of Iran

³ Islamic Azad University, Science and Research Branch, Tehran, Islamic republic of Iran.



Therefore, they may not be accepted by farmers. New approaches in terms of Land Renovation and Development Schemes (LRDS) via legislation and external financial and services assistance provided by Ministry of Agriculture and undertaken by provincial governments aimed at consolidating dispersed land plots. LRDS are carried out through reallocating of the private ownership and location of spatially dispersed parcels of farms to form new holdings containing a single parcel, with the same size as the original area. The process was accompanied by some technical improvement measures for farm road, farm water management, land leveling and/or ecological measures (MoA, 2004). While these new approaches definitely caused an improvement over the previous strategy and appeared well-intentioned, they remain limited by disregarding farmers' perception and opinions on these interventions. All part of the project financed and planned by the provincial government. Therefore, participation is not important for the stakeholders.

Consolidation is still implicitly defined as reduction of dispersed ownership to achieve a single parcel as few as possible, ignoring other dimensions of land consolidation which is likely to lead to a failure in current approaches due to lack of emphasis on improving complementary services for producers (MoA, 2004). Abdollahzadeh (2005) points out that the process of reallocation of land plot in pilot land consolidation projects is very time consuming with social challenges and conflict among landholders to access the original ownership if some ways to gain landholders' agreement to assist consolidation activity, establish appropriate farming systems and formations of farmers associations are not sought. Notwithstanding, many studies have investigated the FF and FC issues from various angles (economic, sociological and environmental, etc.) and used various measurements and criteria to assess their impacts (Crecentea et al., 2006), effects

(Najafi and Bakhshoodeh, 1992; Sklenicka, 2006; Tan et al., 2010), causative factors (Tan et al., 2006; Niroula and Thapa, 2005), advantages (Wu et al., 2005; Monke et al., 1992), risk (Yu et al., 2010) and success (Cay et al., 2010). However, there has been little work based on farmers' attitudes and perception as the main actors in agricultural production systems. Farmers' attitudes have identified as important factors in a wide range of issues related to agricultural practices and management from risk aversion, innovation, diversification, off-farm work, environment, production, management, legislation, stress, pessimism, Integrated Pest Management (IPM) to FF and FC. Farmers are certainly the primary and, thus, most important stakeholders in the context of land consolidation. Also identifying farmers' attitudes provides precise knowledge of the existing situation and the problems facing the development of agriculture, which is essential to make a reliable plan to develop the agriculture of a region (Rasooli Sharabiani and Ranjbar, 2008).

Any attempt on FF should be based on thorough analyses of main issues of land fragmentation and consolidation from the viewpoint of concerned stakeholders, particularly landholders. Otherwise, any type of FC scheme will have the same destiny as the plan executed in previous decades. Since the scheme directly influences individuals' private property structures, it will encounter severe opposition by land owners. This will cause serious socioeconomic and political impacts. Exploration of farmers' attitudes towards the FF and FC issues is therefore necessary to understand how project design may affect the pattern of agricultural ownership. Unfortunately, in Iran the FC projects have ignored the landholders' views. Considering the need for FC and inherent problems emerging from FF, the objective of this study was to explore landholders' attitude toward and perception on FF and FC issues with reference to the following: 1) Constraints caused by FF; 2) Causative

factors of FF; 3) Inhibitory factors of FC; 4) encouraging factors of FC, and 5) Preferences for FC procedures.

Khor plain in central Iran, which is currently undergoing FF and has good experience in performing LRCD was selected as a case study. The paper is organized as follows: the next section describes material and methods including questionnaire design, survey data collection and some descriptions of the study area. Section three reports the results and section four contains a summary of conclusions.

METHODOLOGY

This study was carried out in Khur Plain located in Esfahan province where LRDC which aimed to FC was accomplished by the Ministry of Agriculture. The geographical location of the Khor Plain is shown in Figure 1. This region was chosen as a case study area for this study due to three main reasons. Firstly, it is an area with high fragmentation both in number and size of plot. The average size of farm plot in this region is 0.07 hectares and average number of plot is 5.29. Secondly, it was among the first of LRDS to be established in the Iran and thus, provides a long record of farmer interactions both with the field-staff of the scheme and governmental administrators. And thirdly, surveys by the provincial agricultural organization suggest that the LRDS has a relatively large number of participants, thus enabling attitudinal analysis of all the possible issues regarding farmland fragmentation and consolidation.

The main source of data for the study was the questionnaire completed by 146 participants who practiced farming in 10 villages of Khor plain. The target population was defined as 1600 landholders who operated under LRDS and samples were selected using randomized stratified sampling method (stratified by villages). A questionnaire, in six sections, was developed. The first section focused on challenges and problems caused by FF. The

second section addressed causative factors of FF. The third section contained questions on processes working against FC project or inhibitory factors of FC. The fourth section was developed to cover factors and processes encouraging FC among farmers and the final section investigated farmers' assessments of performance and effectiveness of alternative options for FC. The remaining part of the questionnaire gathered socioeconomic information of respondents, including gender, age, educational level and land area. The questionnaire was pre-tested with several focus groups over a period of 2 months. Firstly, general and academic university staff with no experience in farmland issues were used ($n = 5$); secondly, field-management staff with extensive experience in farmland issues; and thirdly farmers with various farmland plots and sizes were interviewed ($n= 20$). Descriptive statistical analyses, including percentage of frequency, were performed to find the priorities of the items.

RESULTS

Socio-economic Characteristics

The average age of farmers was 58.3, the majority of them (87.5%) were male and their educational level was low. About 22.4% of farmers were illiterate and most farmers (63.7%) did not have an education level higher than formal elementary school, and could be classified as semi-illiterate with poor reading skills. The family size was 5.2 people, with about 55.6% of the household members on average, belonging to the labor force. Most of them worked full-time on their farms (84.3%) and had worked on their farms for an average of 21.9 years. Considering the share of off-farm income of the households in the sample (mean value: 26.4%), it is confirmed that farming was the main activity, and it was the major source of income for the majority of farmers. According to the results, average number of



crops planted by farmers was 4.6 that indicated the characteristics of livelihood and no trade agriculture. Total land area available for the household was 3.21 ha, from which 1.74 ha was arable.

Constraints caused by FF (current problem and disadvantages of FF)

If the farmed land is fragmented, the following diverse negative processes are presented by landholders (Table 1). The most severe predicament is increases in production input costs for labor, fuel and machinery (54.81%). Economic disadvantages are a key to decide whether FC is necessary. In the study area, cultivation is highly dependent on labor force. An increase in labor costs comes from two sources. Firstly, farmers lose time traveling between dispersed parcels which increases costs of production and a considerable agricultural time is spent on traveling between parcels. Secondly, the small dispersed plots may increase the cost of more productive techniques such as machinery and irrigation. There are technical and economic constraints for the use of certain techniques. Tractors, for example, cannot be used in very small parcels without road access. On a small plot a tractor can waste a substantial time simply by turning round. As the implementation of

productive techniques normally involves a large capital investment, relatively high fixed costs may not be justified financially on a small plot. In addition, irregular shapes and small sizes of land may prevent the application of such machinery. Fragmentation also complicates pest control since successful control depends on the neighbor's activities. In some cases when farmland is inaccessible except by trespass on someone else's land, social tension is caused by disputes over access, rights of way and damage. Apart from these two constraints, FF also causes the waste of land since more land is used as boundary hedges and corners, and a small parcel of land is easier to be abandoned. Correspondingly, it is expected that FC will increase the land use, reduce production labor cost and facilitate the use of machinery.

Causative Factors of FF

Although FF commonly results when implementing agrarian reform, the phenomenon has developed in different ways in different countries. In Iran, the major reason identified by landholders is partial inheritance system under Islamic law (78%) and off-farm employment opportunities (Table 2). Islamic law of inheritance dictates an equal division of paternal property among all heirs (girls are given half the size of the boys' land) after the

Table 1. current problems and disadvantages of FF

Disadvantages of farmland fragmentation	%
Increases production input cost (labor, fuel, machinery)	54.81
Destroys parts of farmland to construct farm road, irrigation channel and farm borders	40.71
Prevents performing timely operations such as water control, transplanting, and pest control.	34.62
Restricts application of modern technology (mechanization, irrigation)	32.69
Wastes farmers' time by imposing unnecessary travel among land plots	29.17
Crop production and yield decline	25.64
Problem of monitoring farming activities	23.72
Complicates pest control and integrated farm management	18.27
Waste of runoff	7.69
Increased social conflict, dispute and quarrel	7.05
Difficulty in land drainage	3.53

Table 2. Determinants of FF according to landholders' viewpoints

Determinants of farmland fragmentation	%
Partial inheritance system under Islamic law	78.21
Few off-farm employment opportunities in the villages (predominant subsistence economy)	76.28
Dissimilarity in land quality (fertility, irrigation capacity, cropland type)	47.76
Land donation to dowries, gifts and religious organizations named Vaqf	45.83
Spatial variations in land types and shapes	42.63
Breakdown of common property system under the pressure of population growth	35.26
Exchange, purchase or sale of plots or part-plots	26.92
Lack of commercial markets for produced crops	23.40
Physical structures in farmland (road, buildings, permanent storage, fence)	17.31
Natural reasons (river, flood, well, spring, hill)	10.58
Distance to village center	6.73

death of the landowner. According to Islamic law of inheritance, heirs receive equal patches in the entire plot, or some heirs get the land while others get the trees on that land, further aggravating FF. Fragmentation of land under horticultural production in the study area is more rapid than fragmentation of cropland and pastures. Each heir receives an equal share both in size and soil quality in this way. Other causes of FF include land used for dowries, new buildings, gifts, charities or religious organizations (45 %). An additional factor of similar influence for the greater fragmentation is the established physical structures within farmland (road, buildings, permanent storage and fence) (17%). Usually heirs would seek an equal share of all available physical structures within the farmland estate.

Although these problems were common in all regions of Iran, they are most serious in the study area because of the predominant subsistence economy and lack of off-farm employment opportunities which lead to population pressure on farmlands. In this manner, the land plots gradually increase in number and shrink in size. It is logical to argue that partial inheritance leads to FF when land with similar quality is equally divided among heirs. Therefore, these processes working either together or independently intensify fragmentation. In the case of existing incentives suggested by FF projects, the FF was explained as failures in commodity market by some respondents (23.40%). In livelihood economy, the fragmented land enables farmers to better acquire their seasonal

food requirements and consequently to obtain higher output. When there is a missing market for the commodities, holders have a tendency to diversify their cropping mixture to meet their consumption needs, which will be best suited by fragmented land. Indeed this is an extension of risk reduction examples.

Inhibitory Factors of FC projects

Data were collected from an open-ended question that asked key informants and other stakeholders of the projects to list major problems encountered in the carrying out of FC. Our findings showed that the most serious obstacle was the reduction of land (78%) and variation in quality, fertility, topography and type of land parcels (74%) (Table 3). These problems are associated with physical structures of land and can be more problematic when they accompany other social issues such as sentiment interest to owned land and achieving farmer's consensus. Although these constraints were common in Iran, the main problem reported by the stakeholders responsible for FC in the study area was the insistence of landholders on having land in previous locations in the process of land reallocation. The worries of farmers can be explained by the fact that farming is their main (often only) source of income and that any change in size, location and other land quality indices can be prohibitive for the establishment of LRDS. Landholders lean to those consolidation schemes that are combined

**Table 3.** Main problems listed by farmers as inhibitory factors of FC projects.

Barriers to carrying out land consolidation	%
The reduction of land in the process of consolidation	78.53
Variation in quality, fertility, topography and type of land parcels	74.04
The sentiment interest to owned land	69.87
Problem to achieve farmer's consensus	66.03
Variation in the size and geometrically irregular shape of land plots to be consolidated	62.50
The territory where the land is situated (distance to rural center)	58.01
Difficulty in the documentation of the new land plots	57.37
Installations and constructions situated on farmland plots	54.17
Lack of information on the possibility of land consolidation	42.31
Unawareness of advantages and objectives of land consolidation program	41.67
New law on land consolidation might not be acceptable in the short term	32.05
Inadequate information on the view of other farmers regarding land consolidation	29.49
Long process for formal land exchange	17.31
Changes in property right of water resources	14.74
No experience of land consolidation at village level	5.13
Problem in measuring size of land parcels	2.88

with rural engineering work, such as land leveling, irrigation and drainage net, and road net. The new land structures may be rejected by heirs in the short term if FC is accomplished without determination of any ownership border (land title with formal document). In some cases, consolidation of water resources should be taken into consideration in FC plans (listed by 14% of respondents), providing it is technically, economically, and socially often is infeasible. Therefore access to success in formal FC schemes occurred in a long process which is reported by 17% of the farmers. Other problems identified by landholders include; lack of information on the possibility of FC (42%), unawareness of advantages and objectives of the FC plan (41%), inadequate information on the view of other farmers regarding FC (29%) and no experience of FC at village (5%).

Processes Encouraging FC

The major feature reported by landholders was physical investments as part of the FC scheme in order to unify quality of land (93%) (Table 4). The collected data showed that landholders also believed that access to credit and loan that allow for consolidating

dispersed lands encourage formal plans that are supported by governmental policies (78%). Financial credits to be used only for consolidation by landholders are more effective instead of direct expenditure by government. Farmers need to be ensured about their own pieces of land. They do not consider enlargement or consolidation of their land because of diving factors such as nostalgia for land, distrust of governmental officials, and difficulty in formal registration of new arrangements because of the lack of legal framework to secure land titles. The FF plan should consist of a framework that analyzes the present situation and considers landholders' opinions to be incorporated in the process of consolidation. Based on this knowledge, FF strategies will be developed, offering landholders the basis on which to make appropriate choices. These facts reveal that FC should be voluntary, participatory, and democratic and community driven. In addition, it has to consider geographical and cultural differences to implement a tailor made FC practices. The legal regulations with regard to consolidation in Iran are quite unsystematic. There is no special consolidation law in force. Consolidation projects are implemented in line with various legal regulations (within the Fifth Agricultural Development Plan), which has

Table 4: Landholders' opinions on promoting factors of FC.

Driving forces of farmland consolidation	%
Physical investments as part of the land consolidation scheme (e.g. rehabilitation or reconstruction of the irrigation network, agricultural roads, erosion control measures) by the government in order to unify quality of land	93.27
Regulations that allow credit and loan for land purchase to be used only for consolidation	78.21
Involving rural personnel and other community groups (civil society, rural council etc.) in land consolidation program	74.68
Preparation and correction of current farmland cadastral record	74.04
Setting up agro-processing industries at village level	73.08
Providing legal framework to secure land titles	65.06
Creating information and documents confirming the sizes and boundaries of real property	62.18
Establishment of legal system to assess cadastral values and valuation principles corresponding to the current situation	44.55
The land registration process should not be bureaucratic	42.95
Training program about land consolidation should be put in place	41.03
The legal framework for land consolidation should be created	29.81
Reduction of cost for the implementation of land consolidation scheme	26.60
Redistribute land as secured size of ownership of holdings	2.88

no priority for voluntary consolidation. Hence, the majority of landholders highlight that participation of local leaders and the elite is essential to guarantee continuous success of the plan (80%). Participation of farmers and other rural groups must be defined in the institutional framework. While most of holders agreed that fragmentation was harmful and that land should be consolidated, when asked especially regarding appropriate methods to do so, they replied that the government should inform them about the experience of other regions and provide options for FC (41%). Local institutions and organizations should provide educational programs on fragmentation and consolidation with the help of extension agents and local groups including farmer councils, experts and representatives of Ministry of Agriculture to support the process of FC.

Farmers' Preferences for FC Methods

In order to identify farmers' preferences to adopt FC choices, a number of alternative options were exposed to the farmers. As shown in Table 5, regulation and

harmonization of cultivation schedule and land use in an annual cropping period have the highest priorities (84%). Also other suggested options with high priorities among farmers in the study area include; the purchase or sale of farmland or parts of them by farmers (64%), exchanges of dispersed parcels by farmers (58%), leasing of land for a determinate time (48%) and farmer's consensus of planting the same crops (43%). All these methods highlight that the type of FC, especially in the simple methods, may be organized and executed by the farmers themselves. This is called "indigenous", and it is done without external assistance. On the contrary, other purposed options such as farming in collective groups namely *Mosha* (*Mosha*; this is a shared or the cooperative unit with collective ownership right which was established after 1979 Islamic revolution. All members of *Mosha* have to work personally to cultivate the group's land. It covers 7 family heads each owning 7 hectares.) (9%), transferring land to inheritance as *Mosha* and preventing dispersion (7%), transferring land to the eldest person in the family and sharing the gain among heirs to keep consolidation (5%) and removing ownership right and creating a span tenure system (3%) have the lowest priority

**Table 5:** Landholder's priorities to adopt FC.

Options of farmland consolidation	%
Regulation and harmonization of cultivation schedule and land use	84.94
The purchase or sale of plot or parts of them by farmers	64.42
Exchanges of dispersed land plots by landholders	58.65
Leasing of land for a determinate time	48.40
Farmer's consensus of planting the same crops	43.59
Farming in rural production cooperative units including traditional cooperatives and informal peasantry societies	29.49
Exchanges of dispersed private lands with consolidated land by the governmental organization	23.08
Legislation of law for reallocating input based on size and number of plots	16.67
The purchase or sale of land only as bond in cooperation	10.90
Farming in collective groups namely Mosha	9.62
Transferring land to heirs as Mosha and preventing dispersion	7.05
Transferring land to the eldest person in the family and sharing the gain among heirs to keep consolidation	5.45
Removing ownership right and creating a span tenure system	3.21

among farmers. Because these methods are carried out with the assistance of external officials, especially in obligatory manner by the Ministry of Agriculture and are based on an "exogenous" approach, landholders do not consider these items as personal choices.

Effectiveness and efficiency of "regulation and harmonization of cultivation schedule and land use" is verified for FC process. When holders cultivate and plant their own land at the same time, production is better as compared to when they carry out these actions at different times. It allows reducing expenditures in farm management operations especially using pesticides and herbicides. When farmers do not match up with the cultivation schedule on the same field therefore they will have difficulty in using tractors and other machinery as well as irrigation, drainage and transport nets.

"The purchase or sale of plot or parts of them by farmers" and "leasing of land for a determinate time" in order to enlarge the size of farmland, are associated with the land market (purchasing, selling, or leasing land). This is a process fostering FC. Because of the financial incapability of farmers to purchase, this method cannot be impressive, unless the government pays some incentives or provides other supports. Despite the fact that many landholders are having a tendency toward legalizing the land market, the land market is

still in its immature status in Iran and moreover, FC purposes can only be achieved if the land for sale, purchase or rent is directly adjacent to one or more of the exchanger's existing plots. These prerequisites hamper the ability to consolidate effectively through a land market. Legislation should be approved and executed in order to resolve the difficulties of formal land titling and registration, to develop production, to reduce cost, and to reduce tension among people. Governmental agencies should support these processes of consolidation.

"Exchanges of dispersed land plots by landholders" is agreed upon in many cases (58%) and widely performed, but farmers question the legitimacy of this task. It is easier to exchange land plots when a family has ownership split parcels in the same farming area. This alternative should be supported by the legal system. As a practical way in this process, providing the local leadership's helps could be effective, especially it could be more useful when the land ownership is not transferred.

DISCUSSION AND CONCLUSIONS

Our findings demonstrated that there were wide consensuses among respondents that FC was essential to cope with complexities

arising from FF. Benefits of FC due to expansion of farm scale and the simple change of land quality were clarified (Najafi and Bakhshoodeh, 1992). Experience from other countries revealed that farmers expressed a desire to consolidate their land holdings (Childress 2001; Sabates-Wheeler, 2002). These opinions are consistent with the opinions of the many scholars who consider FC indispensable for the promotion of agricultural development (Niroula and Thapa, 2005; Crecentea et al., 2002).

However, the investigation of landholders' attitudes toward their preferred choices for FC specifies that this is a complex process. It involves the willing and active participation of all actors: landholders, tenants, local administrators, and leaders. The current FF causes economic losses for farmers. Costs of inputs (labor, fuel, machinery) increased significantly because of plots being too small and far from each other. In addition, regarding causative factors of FF, the farmers pointed out to the partial inheritance system under Islamic law. An additional factor of similar influence is lack of off-farm job opportunities for heirs that plays a key role for the greater fragmentation so that farming can be considered as a merely livelihood alternative for the household member. Normally heirs would ask for an equal patch of all available land uses within the farm land estate. Therefore, few off-farm employment opportunities at the village level, as a sign for traditional and livelihood agriculture plays an important role in FF. Thus, FF in Iran is the result of several processes (social, cultural, economic, physical and operational processes) working either together or independently and is caused to a large extent by the traditional and livelihood agriculture structure.

As discussed in the text, the reduction of land in the process of consolidation operates as the main inhibitory factor against FC projects. Also variations in quality, fertility, topography and type of land parcels have lead to the intensification and diversification of cultivation in the study area. In this case,

farmers tend to obtain equal shares of plots to ensure final profit margin. This is why farmers are interested in their own land and they resist taking the risk of new processes such as FC. In some countries such as Cyprus, FC programs are plagued by problems of long duration, high operational costs and potential conflicts between stakeholders which are associated with the land reallocation process (Demetriou et al., 2012). Despite several inhibitory factors of FC projects, landholders believe some interventions can promote current efforts for FC. However, the analyses of opinions of holders about driving forces of FC indicate that these are not easy tasks. Physical processes including rehabilitation of the irrigation and drainage network, agricultural roads, erosion control measures, access to credit when accompany civic community groups in FC program, can act as motivating factors. Other experiences confirm this claim and emphasize that these processes should be supported by public authorities (Van Huylenbroeck et al., 1996).

Of the numerous options of FC provided for the landholders, the government sponsored farming in rural production cooperative unit including traditional cooperatives and informal peasantry societies to facilitate voluntary FC. The regulation and harmonization of cultivation schedule and land use is better done in this case. While subdivision and sale or purchase of land parcels below a stipulated size appeared to be the most viable, and are restricted by the government, they are one of the favorite choices among farmers and provide a voluntary option for them. This is primarily for the reason that these options help farmers to reduce the vulnerability to increased costs and to facilitate farm management practice. Also options; allowing voluntary purchase, sale, exchanges and lease of dispersed plots land, as a response to 'free market' forces assure farmers of ownership rights and help them to keep the existing land structure intact, preventing possible problems of landlessness and pauperization. Therefore, if



the government makes any move towards addressing the problem of FF immediately, these four options of FC are likely to gain broad support from the farmers as well other stakeholders. With this background, it is clear that obligatory land consolidation schemes, with an undemocratic decision-making procedure such as the government sponsored Iranian LRDS are not a viable option, and in the short term are virtually impossible to implement. In the same case from Slovenia in 1996, small farmers resisted the government's decision to proceed with compulsory consolidation (Reddell, 1996). Therefore, democracy and sufficient participation by landholders in deciding whether to carry out consolidation are important. Also, the public attitude toward the idea of the rearrangement and redistribution of ownership rights seems to be extremely negative. Moreover, voluntary consolidation without government assistance is slow and unsatisfactory. Some experiences have revealed that where the consolidation process has been left entirely to the landholders, it has been ineffectual. Slow and incomplete progress under voluntary consolidation according to experiences in France (1697-1888), Denmark (1820-1917), Switzerland (1884-1911), India (1900-1951), and Netherlands (before 1920) was also evident (Zhou, 1999). Therefore, government intervention was called for. Under these circumstances, it will be practical to apply both obligatory and voluntary approaches to achieve viable farm units through FC.

REFERENCES

1. Abdollahzadeh, G. 2005. Factor affection on land fragmentation and formulate appropriate method to its consolidation. Unpublished thesis. University of Tehran.
2. Alario, M. 1991. Significado espacial y socioeconomico de la concentracion parcelaria en catilla y leon. Ministerio de Agricultura Santiago. In; Crecente, R. Alvarez, C. Fra, U. (eds). Economic, social and environmental impact of land consolidation in Galicia. *Land Use Policy*, **19**: 135-147.
3. Ashkar-Ahangarkolae, M. A., Asadpour, H. and Alipour, A. 2006. Investigating farmer attitude toward land consolidation Scheme in paddy of Mazandaran. *Agric. Econ. and Deve. Quarterly J*, **14(55)**: 135-153.
4. Bafekr, H. 1989. A Paper on Land Fragmentation. Rural and Agricultural Economic Research Center, MOA, Tehran.
5. Cay, T., Aytan, T. and Iscan, F. 2010. Effects of different land reallocation models on the success of land consolidation projects: Social and economic approaches. *Land Use Policy* **27**:262-269.
6. Childress, M. 2001. Land Consolidation and Agricultural Services in Albania, Centre for the Study of Transition and Development (CESTRAD) Conference: Transition, Institutions and the Rural Sector, The Hague, Institute of Social Studies.
7. Crecentea, R., Alvareza, C. and Fra, U. 2002. Economic, social and environmental impact of land consolidation in Galicia. *Land Use Policy*, **19**: 135-147.
8. Demetriou, D., Stillwell, J., See, L. 2012. Land consolidation in Cyprus: Why is an Integrated Planning and Decision Support System required? *Land Use Policy*, **29**:131-142
9. Haidari, G. R. 1996. Land Consolidation and Agriculture Development of Iran. *Agric. Econ. and Deve. Quarterly J*, **4(13)**: 145-204.
10. King, R. L. and Burton, S. 1981. An Introduction to the Geography of Land fragmentation and Consolidation. Occasional Paper 8, Leicester University Geography Department.
11. Lopes, P. M. 1962. Principles of Land Consolidation Legislation: A Comparative Study, FAO, Rome.
12. McPherson, M. F. 1982. Land Fragmentation; A selected Literature Review. Development Discussion Paper, No. 141, Harvard Institute for International Development, Harvard University.
13. Ministry of Agriculture (MoA) 1992. The Feature of Farmlands in Iran. Department of Productive Units and Agro-industries, Tehran.
14. Ministry of Agriculture (MoA) 2004. Farmland Consolidation, Renovation and Development. No 2. Department of land affairs. Tehran.

15. Monke, E., Avillez, F. and Ferro, M. 1992. Consolidation policies and small-farm agriculture in Northwest Portugal. *European Rev. of Agric. Econ*, **19**: 67-83.
16. Najafi, B. and Bakhshoodeh, B. 1992. Effects of land fragmentation on the efficiency of Iranian farmers. *J. Agric. Sci. Technol*, **1(1)**: 15-22.
17. Niroula, G.S. and Thapa, G.B. 2005. Impacts and causes of land fragmentation, and lessons learned from land consolidation in South Asia. *Land Use Policy*, **22 (4)**: 358-372.
18. Rae, J. 2002. An overview of land tenure in the Near East Region. Part I; Part II, individual country profiles; and Bibliography. Rome, FAO.
19. Rasooli Sharabiani, V. and Ranjbar, I. 2008. Determination of the Degree, Level and Capacity Indices for Agricultural Mechanization in Sarab Region. *J. Agric. Sci. Technol*, **10**: 215-223.
20. Richards, H. 1975. Land Reform and Agribusiness in Iran. *MERIP Reports*, **43**: 3-24.
21. Riddell, J. 1996. Information from a Mission to Slovenia. Food and Agriculture Organization of the United Nations, Rome.
22. Sabates-Wheeler, R. 2002. Consolidation initiatives after land reform: responses to multiple dimensions of land fragmentation in Eastern European agriculture, *J of Int. Deve*, **14(7)**: 1005-1018.
23. Tan, S., Heerink, N. and Qua, F. 2006. Land fragmentation and its driving forces in China. *Land Use Policy*, **23**: 272-285.
24. Tan, S. Heerink, N., Kuyvenhoven, A. and Qu, F. 2010. Impact of land fragmentation on rice producers' technical efficiency in South-East China. *NJAS -Wageningen J of Life Sci*, **57**: 117-123.
25. Trivedi, K. D. and Trivedi, K. 1973. Consolidation of Holdings in Uttar Pradesh. *J of Admin Overs*, **12(2)**: 179-187.
26. Van Huylbroeck, G., Coelho, J. and Pinto, P.A. 1996. Evaluation of land consolidation projects (LLCs): a multidisciplinary approach. *J. Rur. Stu.* **12 (3)**: 297-310.
27. Wu, Z., Liu, M. and Davis, J. 2005. Land consolidation and productivity in Chinese household crop production. *China Econ. Rev*, **16**: 28-49.
28. Yu, G., Feng, J., Che, Y., Lin, X., Hu, L. and Yang, S. 2010. The identification and assessment of ecological risks for land consolidation based on the anticipation of ecosystem stabilization: A case study in Hubei Province, China. *Land Use Policy* **27**: 293-303
29. Zhou, J. M. 1999. How to Carry Out Land Consolidation; an International Comparison. EUI Working Paper ECO No. 99/1.

مباحث پراکندگی و یکپارچه‌سازی اراضی زراعی در ایران: یک بررسی از دیدگاه بهره‌برداران

غ. عبدالله‌زاده، خ. کلاتری، ا. شریف‌زاده، ع. صحت

چکیده

ایران نیز مانند سایر کشورها با پراکندگی گسترده اراضی کشاورزی در نواحی روستایی مواجه است و یکپارچه‌سازی اراضی نیز ابزاری است که عموماً برای حل این مشکل مناسب تشخیص داده شده است. این مطالعه موردی با هدف بررسی نگرش و دیدگاه بهره‌برداران زمین نسبت به مباحث مرتبط با پراکندگی و یکپارچه‌سازی اراضی زراعی در نواحی مرکزی ایران انجام شده است. به روش نمونه‌گیری تصادفی طبقه-ای، ۱۴۶ نفر از بهره‌برداران زمین در ۱۰ روستایی که طرح تجهیز و نوسازی اراضی زراعی در آنجا اجرا شده بود انتخاب شدند. پرسشنامه‌ای در بخش‌های مختلف توسعه داده شد که موضوعات اصلی مرتبط با



یکپارچه‌سازی و پراکندگی اراضی را پوشش می‌داد. یافته‌ها نشان دادند که افزایش هزینه‌های تولید (نیروی کار، سوخت و ماشین‌آلات) به عنوان چالش اصلی ناشی از پراکندگی اراضی از دیدگاه بهره‌برداران بود. به اعتقاد بهره‌برداران اراضی، نظام ارث‌بری جزئی، افزایش جمعیت و فقدان فرصت‌های شغلی خارج از مزرعه با اثر هم‌افزایانه مرتبط با هم به عنوان عوامل اصلی ایجادکننده پراکندگی اراضی عمل می‌کنند. همچنین کاهش اراضی در حین انجام فرآیند یکپارچه‌سازی به عنوان عامل عمده بازدارنده علیه یکپارچه‌سازی عمل می‌کند. سرمایه‌گذاری فیزیکی دولتی و دسترسی به اعتبارات و وام نیز به عنوان عوامل پیش‌برنده یکپارچه‌سازی اراضی، طبق نظر بهره‌برداران شناخته شدند. گزینه‌هایی مانند تنظیم و هماهنگی برنامه کشت، خرید و فروش قطعات و معاوضه قطعات پراکنده به وسیله بهره‌برداران برای تسهیل یکپارچه‌سازی داوطلبانه نیز به عنوان اولویت‌های اصلی بهره‌برداران برای اجرای یکپارچه‌سازی اراضی شناخته شدند.

Archive of SID