



Analyses of the Results of Land Consolidation Studies by GIS

Fatih ISCAN


**University of Selcuk, Faculty of Engineering,
Department of Geomatic, Turkey.**

fiscan@selcuk.edu.tr



I. INTRODUCTION


Because of distinctive characteristics of agriculture and of record-keeping problem, data supply is highly hard. Because of that, agriculture must adapt to developing technology and innovations, which technology brings. One of these innovations is Geographic Information System (GIS). GIS, which can be used nearly in all branches, has also a wide application area in agriculture and it provides some considerable convenience. Especially by means of GIS, problems that occur in valuation of agricultural lands can easily be overcome.



Land consolidation is essential for ensuring the economic viability of rural areas, facilitating environmental management, or rationalising urban growth.

For rapidly improving of agriculture in Turkey, land consolidation is one of the foremost applications. In order to be able to carry out land regulation easily and properly and, to reach a higher level in it, it is needed to use GIS.

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The planning studies of land consolidation compose the most important and fundamental part of land consolidation project. The accuracy of the planning depends on the accuracy of data that are obtained. Data, obtained accurately in a short span of time, will enable project designing and application steps to be worked more rapidly and accurately.

To carry out all these planning, project designing and application studies faster and accurately, land consolidation projects must be done in GIS.

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In this study, it is tried to find out whether it is possible the analyses of land consolidation results and planning studies, which is one of most important phase of land consolidation studies using GIS techniques.

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2.APPLICATION

2.1. Introduction of Application Area

The Gumusgun Village, which is linked to Gonen County of Isparta, has been chosen as the application area. The population of the village is 746. Young population left the village to study or work. The population that is over middle age still lives in the village.

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The project area is 215 hectares. There are 397 landholdings in the application area. The number of cadastral parcels before land consolidation is 659 (Figure 1). The number of parcels that occur after land consolidation is 372. While average parcel size was 3,253 m² before land consolidation, it became 5,764 m² after land consolidation.

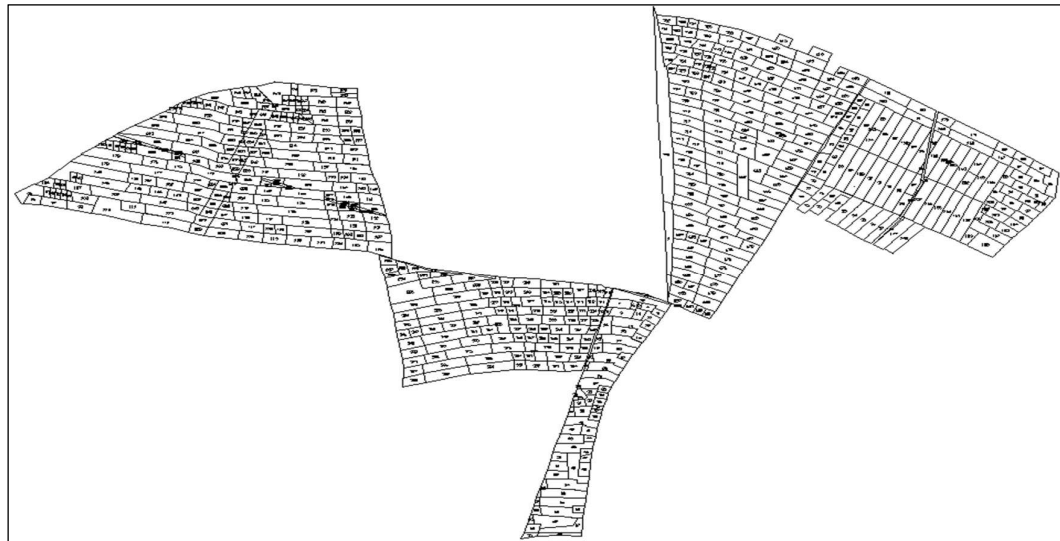


Figure 1: Isparta – Gonen - Gumusgun Village Cadastral Map
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2.2. Inquiry and Analyses

2.2.1. Presentation of Jointly Owned Lands

In the application area, the number of jointly owned cadastral parcels and their presentation is seen in Figure 2. According to inquiry, there are 50 cadastral parcels shared between two.

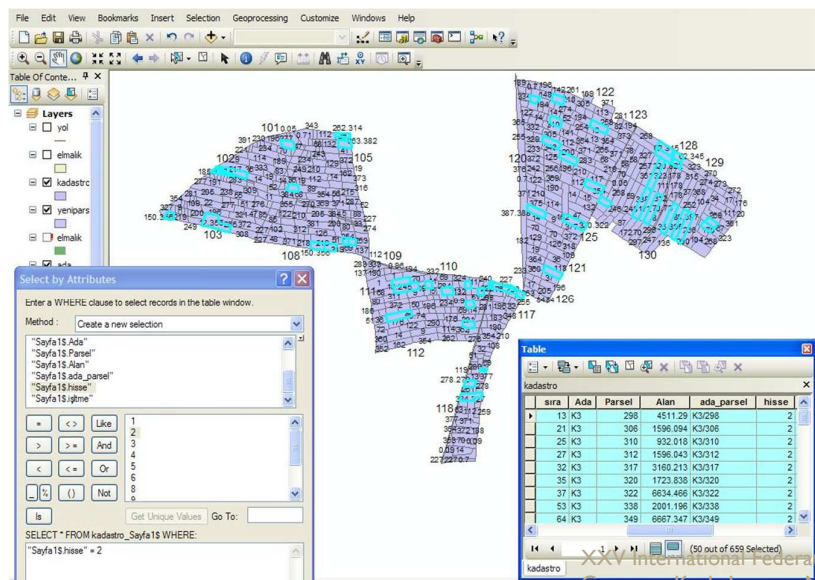


Figure 2: Jointly Owned Cadastral Parcels
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2.2.2. Parcels Larger than 5000 m²

Area inquiries can be done in GIS environment, as well. For instance, information can be obtained about large or small parcels from a particular area. That convenience is highly important in terms of better assessment of the project. In the application area, there are 133 parcels that are larger than 5,000 m² (Figure 3).

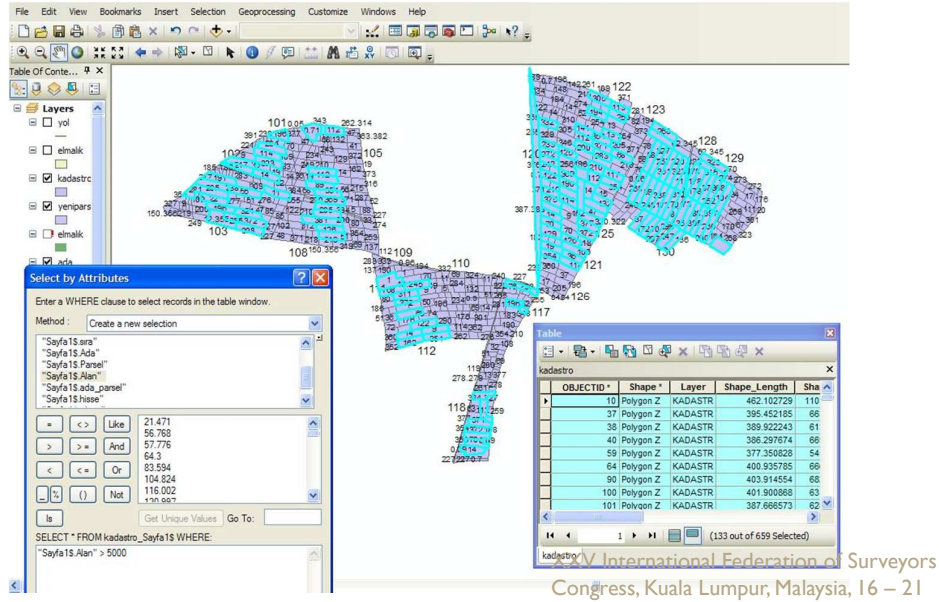


Figure 3: Parcels Larger than 5,000 m²

2.2.3. Parcels belonging to Landholdings with the Family Name of Aksay

How many parcels landholdings have or to whom these parcels belong are highly important in land consolidation projects. Reaching the information in GIS environment is quite easy. For instance; while a landholding with the family name of Aksay had 4 parcels before land consolidation, it had 1 parcel after land consolidation (Figure 4).

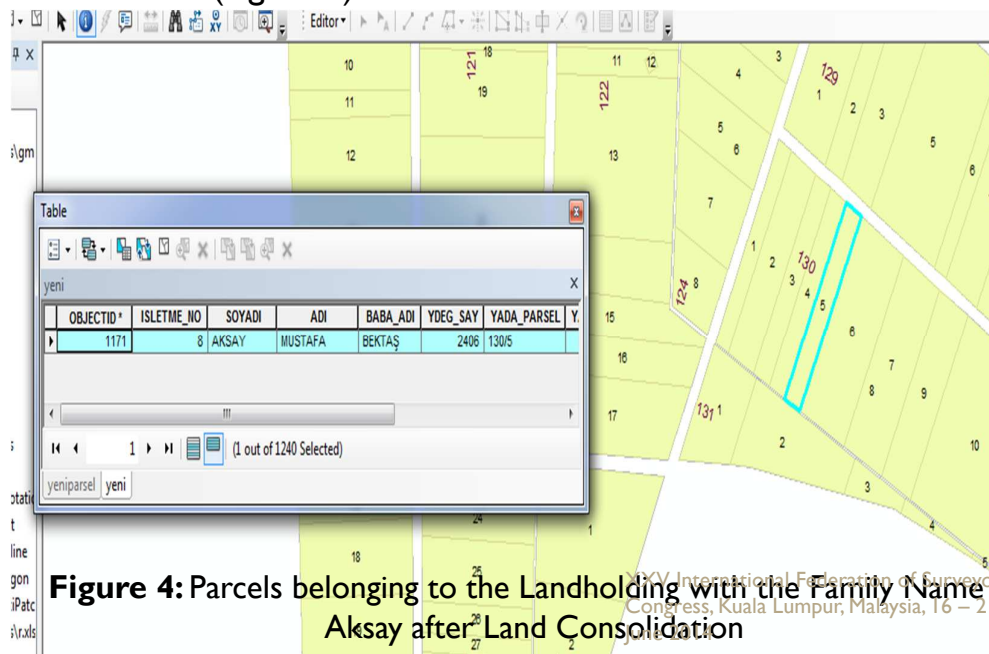


Figure 4: Parcels belonging to the Landholding with the Family Name of Aksay after Land Consolidation

2.2.4. Parcel Number in Block

How many parcels there are in a block can be analyzed. In the block no.120 in the application area, there are 23 parcels (Figure 5).

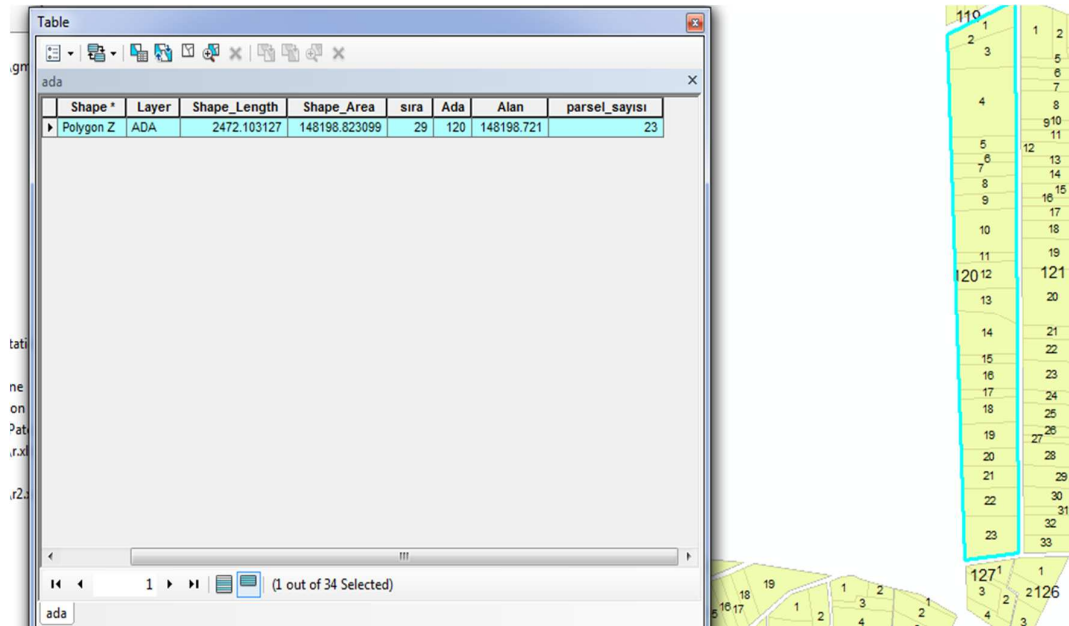


Figure 5: Parcel Number of the Block no.120

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2.2.5. Parcels of Landholdings in Blocks

As a result of the inquiry, it has been fixed that there are 15 parcels of landholding no.5 in the block no.114 (Figure 6).

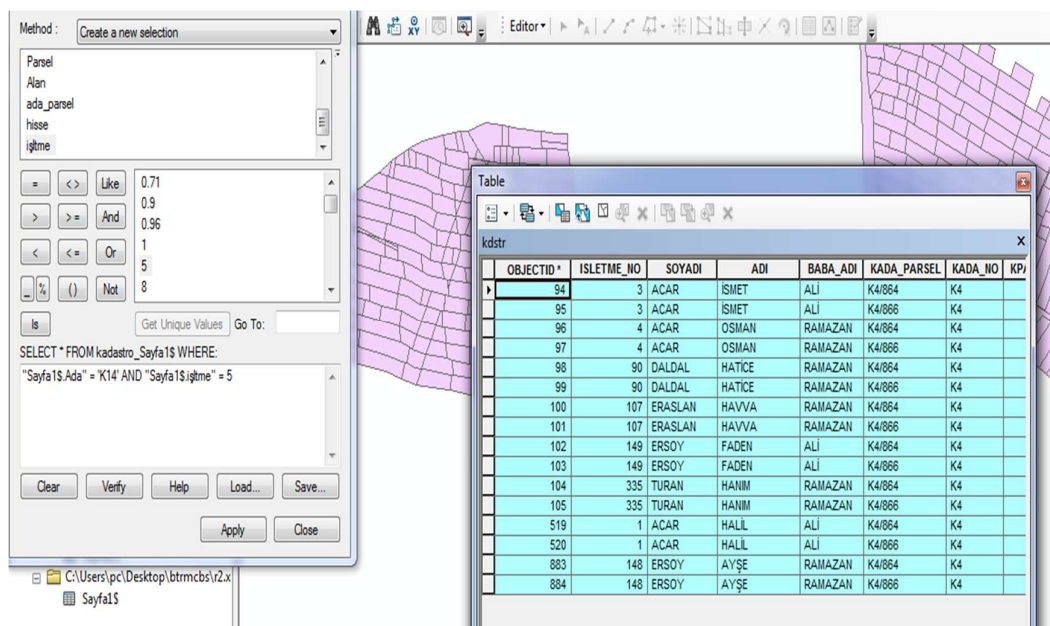


Figure 6: Parcels of Landholding no.5 in the Block no.114

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2.2.6. Creating of Landholding Maps

Creation of landholding maps in land consolidation is of vital importance in terms of determining states of landholding parcels' fragmentation and conveniences that will enable in interview process. By means of GIS, a figure can be obtained very fast and easily. Landholding map of application is given in Figure 7.

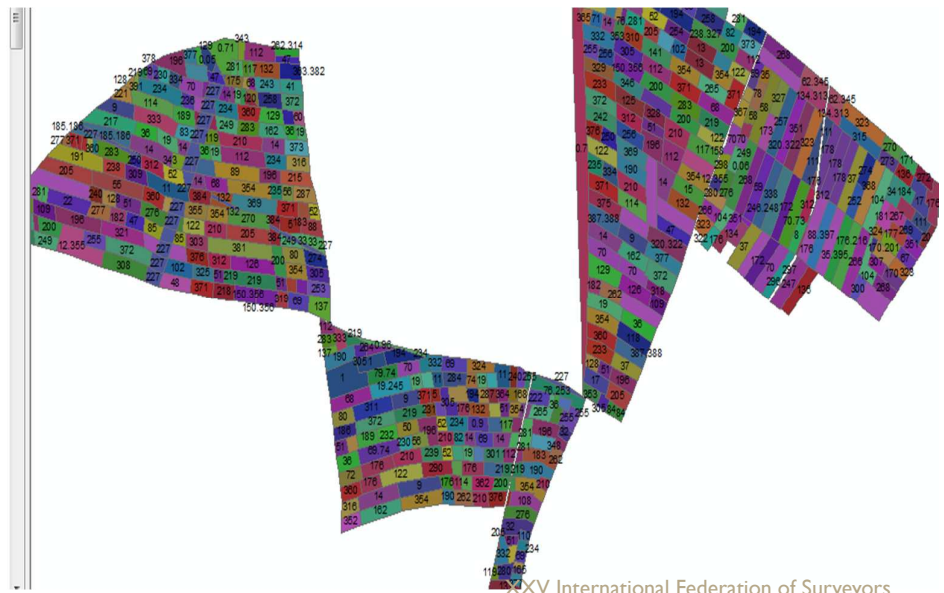


Figure 7: Landholding Map of Gumusgun Village

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2.2.7. Creating Thematic Maps

Thematic map that shows the shareholding status of parcels is as in Figure 8.

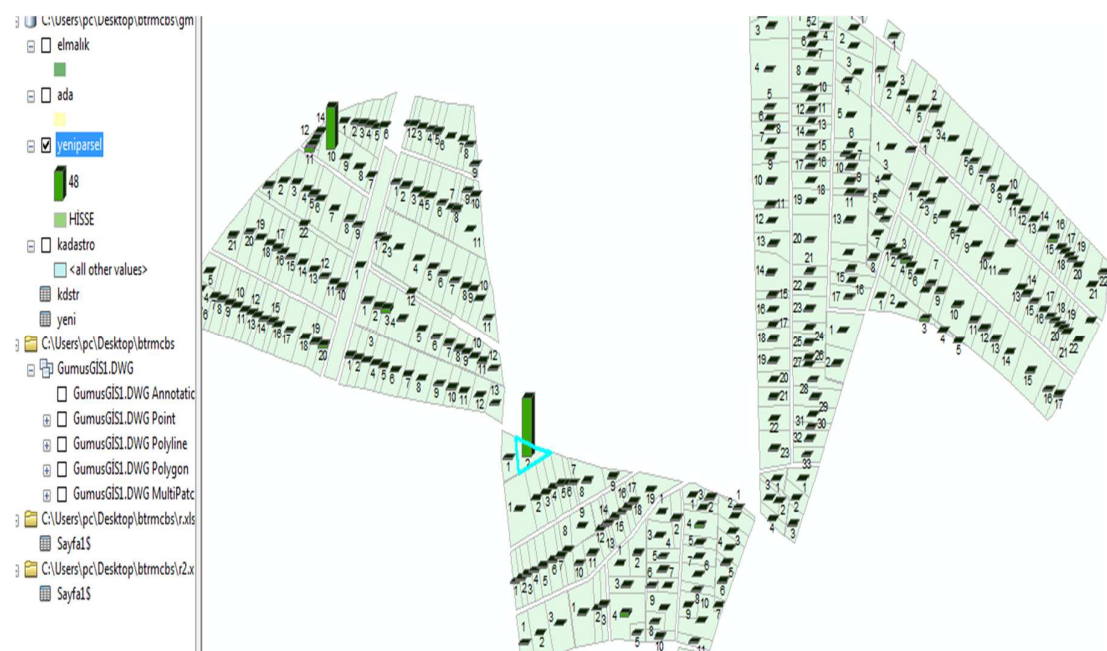


Figure 8: Thematic map showing the shareholding status of parcels

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3. CONCLUSION

It is important in land consolidation process to obtain many raw data in a short time, to process and control them, to keep them ready to use as accessible every time and fast for various purposes, to show results as verbal, numerical and linear. It is possible with GIS to do all these applications fast and accurately.

The study has shown that conveniences, which GIS bring, can be used in every step of land consolidation projects. Besides that, facilities of GIS can be used to interpret success and results of land consolidation projects. That can make contributions in applying land consolidation projects in larger areas. Moreover, more introduction of usage of GIS to consolidation projects will enable created databases to be used in other projects.

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