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Historical Study of the Garden Plots in the Danube Bend from the 19th Century to the Present

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Abstract

In our study we follow the land use changes in the Pilis settlements of the Danube Bend on a historical scale, from the 1800s to the present. The garden plot is a special Hungarian concept, which designated areas that were located outside the settlements. They were not suitable for large-scale agricultural farming, small-scale farming was conducted, ranging from traditional vineyards, orchards and other vegetables grown in the garden. The garden plot is no longer a legal concept, which emerged as a consequence of the political and economic changes in Hungary. The law that contained the garden plots was created in 1959. The fragmented lands were originally created for agricultural production purposes, and later provided holiday and other recreational activities in the 1960s. The modernization of holiday houses in the garden-plot areas and the introduction of public utilities made many people stay, so they moved out of the cities in increasing numbers, creating a permanent population in the garden-plot areas. The pilot area of our study is situated in the Pilis region, the geographic location and soil conditions of which were very favorable for the cultivation of vines. Although the cultivation of vines is practised to this day, significant recreational, later residential garden plots were established. Throughout the study, we will present the process of landscape change, using the available land cover, land use maps and spatial statistics, exploring the socio-economic factors of the change. Our aim is to survey and compare the garden-plot areas of the Pilis Region as a landscape value, in the fullness of these areas, before they had fragmented, and in the 60s-70s, 70s-80s, 80s-90s and the present days.

Key words: Land use, landscape change, garden, garden plot, vineyard

Introduction

Garden plots emerged because of the political and economic changes that took place in Hungary. The legal concept of the garden plots was established in Decree-Law 24 of 1959, a regulation which is no longer in effect. The fragmented lands were originally created for agricultural production purposes and later provided opportunity for holiday and other recreational activities. The modernization of holiday houses in the garden-plot areas and the introduction of public utilities made many people stay, so they moved out of the cities in increasing numbers, creating a permanent population there.

Garden plots – the remnants of the processes of an economic-political era – are not merely areas of small-scale farming. The garden plot is also a spatial planning category and a category of land use. It is a socio-economic space that evolved from the traditional garden and still carries the garden function. The early vine areas, vineyards and vine hills were not suitable for large-scale farming due to their geographical location, thus, they were transformed into garden plots according to the provisions of Decree-Law 24 of 1959 on the establishment of land areas suitable for large-scale agricultural farming (16/1959 (V.30.) FM regulation).

The initial regulation states that the lands suitable for domestic farming (vine areas, orchards, hemp patches and gardens used for growing other vegetables) should be considered garden plots. Later on, Decree-Law IV of 1967 on the development of land ownership and land use is the first regulation that contains detailed provisions for garden plots in a separate chapter. The regulation highlights that these lands are situated on the periphery of the city (town), separate from the lands suitable for large-scale farming.

Nothing illustrates better the importance and relevance of the garden plot in the city-country side functions than its thousand-year history. The garden in Hungary traditionally refers to a “fenced off area”, and in the time of the Hungarian conquest of the Carpathian Basin in the 10th century, gardens were mainly used for animal keeping, which changed when the Hungarian population switched to agricultural farming and the majority of gardens were located next to the arable lands (Ónodi-Cros-Kárpáti, 2004.). Thus, the fenced off vine areas, orchards and vegetable patches on the periphery of, or under cities were protected by roaming livestock. The location of gardens was also affected by factors related to geography and soil: if there seemed to be an area suitable for growing particular plants, patches of hemp, flax, cabbage, and watermelon were established next to the vineyards and orchards (Ónodi-Cros-Kárpáti, 2004).

The form of the Hungarian garden has been changing continuously throughout the centuries, but it kept its socio-economical role, albeit it decreased to a certain extent. Plot gardens means a transition between settlement spaces and agricultural (semi-natural) areas, they have the right to connect to settlements and agricultural spaces as well. These gardens connect settlements, because they are parts of them, with its residential and holiday functions, they connect to agricultural areas because of the agricultural cultivation function. Preservation of these areas is important because they are on the edges of settlements between urban and rural areas (e.g.: these areas have the possibility of rural crop production, preservation of diversity, mosaic land use forms against large scale farming), with that special community lifestyle and other functions they represent also helps strengthening the communication, cooperation between settlements in regional levels. Understanding the original functions of these garden areas can lead us to specify the future landscape planning tasks and define new functions of them. In our study we consider it is important to reveal the origins of plot garden areas, because typing and classifying the current functions can help planning new more functions or preserve present-day conditions of these “dual function” areas.

Background and Literature Review

The gardens were initially unorganized, or at least they could have such an appearance as their shape was not geometric. There still was a kind of order in them due to the crop combinations and the order of planting and the regular repetition of garden works. They planted local species that were appropriate for the season and the characteristics of the land, which created a kind of orderliness and steadiness. Rapaics (Rapaics, 1940, p. 8) claims that “it is the requirement of geometrical shape inherent in humans that is at

play in gardening, and this supernatural, cultural element introduces a kind of artistic requirement to the act of gardening”. According to the below military survey maps from the 18th and 19th centuries, this horticultural order and regularity is characteristic of the arrangement of vineyards, vegetable plots and orchards alike.

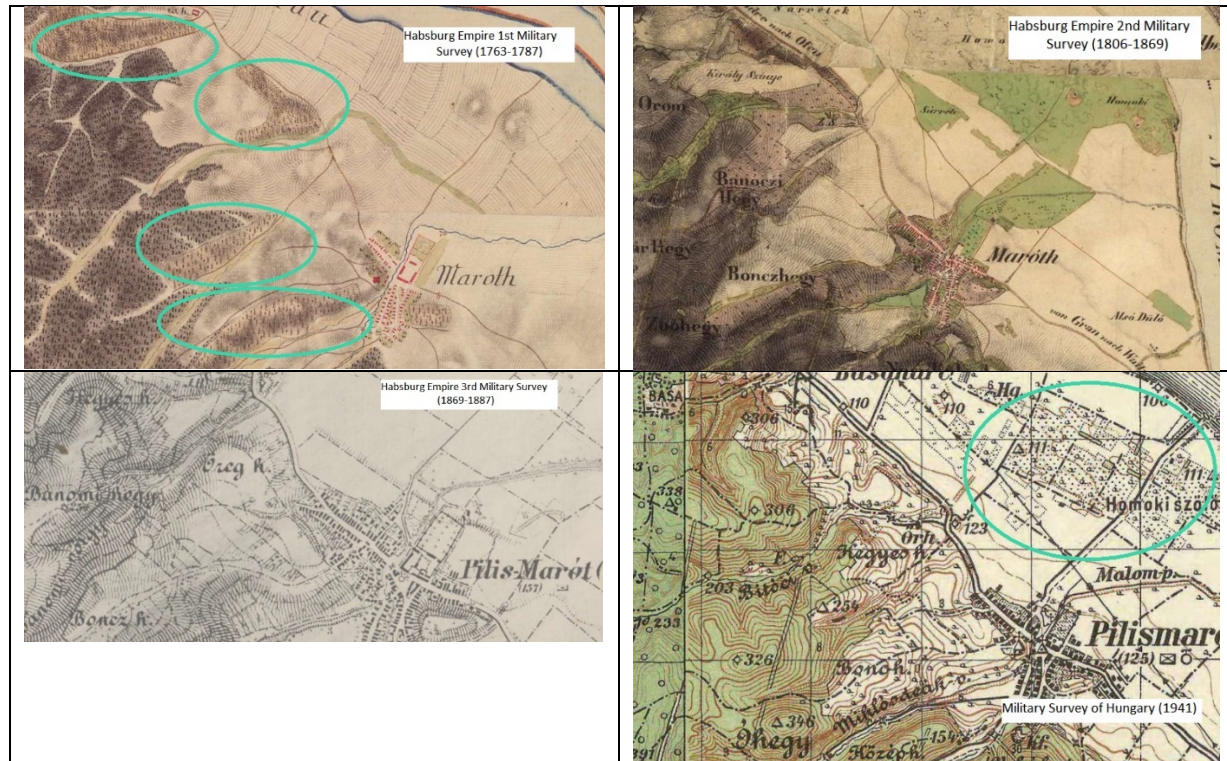


Fig.1.: The changing vine areas of Pilismarót at the time of the first, second, third and 1941 military surveys (Source: mapire.eu)

The name toponymy also carries reference to the past use of gardens and topographical factors (Ónodi-Cros-Kárpáti, 2004). The owner or the user of the plot and the planted species can be seen above, and the utilised areas are as follows: Pilismarót – Alsó Dűlő, Öreghegy; Visegrád – Mogyoró-hegy; Dunabogdány – Pap-hegy, Szentendre – Kőhegy; Esztergom – Duna-dűlő, Zsellér-dűlő, Kiskúria-Czigánykút etc.

Reasons such as ideal soil conditions, the proximity of the Danube and the suitable topological characteristics in the Danube Bend highlight the importance and priority of vine cultivation. The wine made from the grape grown on the slopes along the Danube is of excellent quality. The Vác- Pest-Duna-valley flood valley area has an average height of 98 metres above sea level, with its highest point being at 122 metres. In the Danube Bend in Visegrád, the height above sea level is between 107 and 220 metres, and there is considerable erosion considering the topographical conditions. In addition, there is a risk of movement in the case of the surfaces sloping down towards the Danube between Dömös and Pilismarót, as well as Visegrád and Zebegény-Verőce (Dövényi 2010). Vine cultivation on the vine hills (promontoria) was of primary importance up to the end of the 19th century, when the damage due to phylloxera and peronosporales resulted in the destruction of most vine areas in the country.

Goals and Objectives

For the purposes of the national analysis, we set up a typology. The purpose of the typology of garden plots is primarily to differentiate the groups of gardens that have distinct characteristics and underwent different developmental processes, and to define their expected development paths and the common challenges ahead.

In the pilot area our goals are to determine what the garden was before garden plots were established, and how the “enclosed garden” typified nowadays and what functions represent them. Our questions to be answered are:

1. What could be the definition of the garden in the period before garden plots in the Danube Bend pilot area?
2. How did land use change throughout the centuries, and what social, economic and natural factors played a role in this process?
3. In what way could we describe the garden plot today? What does garden plot mean today, and what are its types?
4. Is there a future for the plots that once were garden plots based on the survey conducted on the Danube Bend pilot area?

Methods

National analysis and typology of garden plots

Based on the available data from 2011, there are garden plots in 1954 Hungarian settlements, which add up to 200 475.87 hectares on the national scale. They can be found everywhere in the country, but their presence is less prominent in the Western Transdanubia and Duna-Tisza Interfluve areas (Fig. 2).

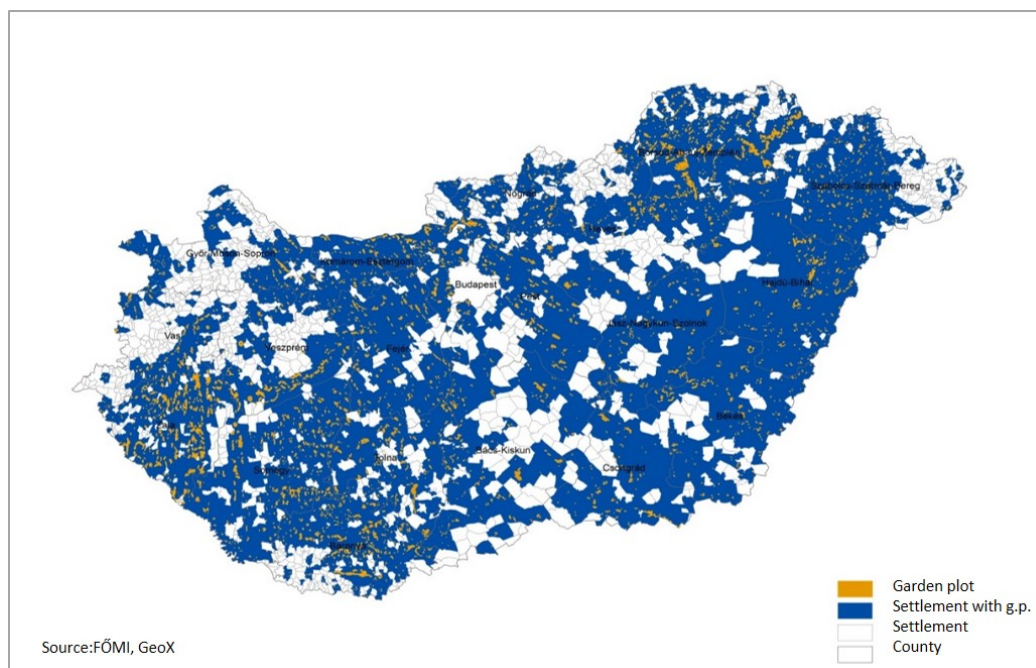


Figure 2.: Garden plots and settlements with garden plots

There are 6,519 garden plot blocks in the country.¹ The smallest gardens among the interconnected areas are just a few square metres, and the largest one in Kiskunhalas covers 31 hectares. The location of garden plots and the distance between them and urban areas are often decisive factors in how the plots are currently used, and this also influences their future utilisation. Therefore, we examined which garden plots are connected to urban areas. Almost half of the garden plot blocks (47%) are connected to current urban areas, thus, they are directly connected to the residential areas of settlements. For our national analysis of the land use of garden plots, we used Corine Land Cover, the 2012 land cover database of the European Environmental Agency. Based on the database, it can be concluded that artificial surfaces cover 6%, while agricultural areas cover 66% of the area. In comparison, garden plots are mostly used for agricultural purposes. The vast majority (85%) of garden plots are used in agriculture, artificial areas cover 5%, and the remaining 10% are covered by forests and semi-natural areas (Fig. 3, below).

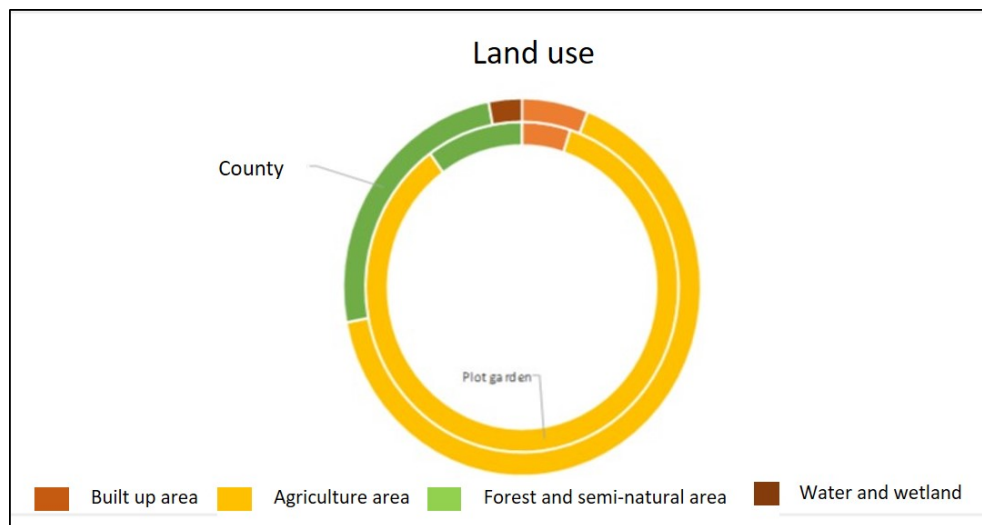


Figure 3. Land use breakdown

The ratios of the different land use types within the larger land cover categories illustrate the typical land uses well. Almost half of our garden plots are characterized by a complex cultivation structure. The second most typical land use is vine cultivation: this applies to 13% of garden plots. Arable lands also take up large areas, altogether 12% of garden plots. It is typical in the case of agricultural areas that agricultural and semi-natural areas appear in a mosaic pattern. Forests are of special importance among semi-natural areas: together with temporary forest-scrubland vegetations, they take up almost 10% of garden plots. The majority of artificial surfaces is covered by areas used for sports, recreation and holiday purposes, which add up to 3%. Non-connected residential areas cover close to 3600 hectares, which constitutes only 2% of garden plots.

The examined land use categories define the dominant land use types within the garden plot unit with relevance to area ratio:

- Intensely built-up and fenced-off garden plot
- Garden plots under the following land use categories: “Primarily agricultural area”, “Agricultural area” and “Mixed agricultural and semi-natural areas”

¹ The sum of garden blocks belonging together

- Garden plots under the following land use categories: “Forest”, “Mostly forest”, “Natural grassland, wetland” and “Water surface”

For examining the land use changes between 1990 and 2012, we used the Corine Land Cover Change database¹. Out of 6,519 garden plots 943 garden plots (1.5% of all garden plots) were affected by a change in term of land use. The tendencies of the examined 22 years suggest that garden plots are more and more affected by transformation. While in the first 10 years the land use of only 983 hectares has changed, between 2000 and 2006, 829 hectares were affected, and between 2006 and 2012, 1,157 hectares of land had a different usage than before. The most garden plots were affected by such a change in North-East Hungary, but a total transformation of land use and function change was especially characteristic of Budapest and the larger cities in the countryside, primarily due to urban sprawl. The transformation may happen in various ways: the most typical land use changes result from urban sprawls or a shift in cultivation methods, during which there is a change in the cultivation method of arable lands, grasslands, vineyards and orchards. In the last years, the method of abandonment gained more and more popularity, which consists of the cultivated agricultural areas being replaced by temporary scrubland areas or natural grassland.

For the analysis of the pilot area we made use of the earliest available maps, literature, archive research results, the relevant land cover maps as well as land statistics, which enabled us to uncover the past and current boundaries and locations of garden plot areas. We processed the land data in the ArcGIS software environment. The historical analysis covers the land use processes that took place on the pilot area between the 19th century and recent times, with special emphasis on the area of current garden plots.

Results

Nationally used garden plot types

While establishing the typology, we selected the current land use as the decisive factor from the nationally available data. Although garden plots primarily had an agricultural function, this changed considerably in a number of cases. Based on the current land use, we have examined which land uses are dominant (above 60%) in the given garden plot block. We set up 3 main garden plot groups according to these land uses. The final form of the typology was achieved by creating subgroups within the 3 main groups.

Garden plots with residential and holiday function

Based on the data describing the current land use, there are a considerable number of residential and holiday buildings on the garden plots in question. These plots gradually turned into areas with an urban function throughout the history of garden plots. While establishing the groups, we primarily considered the potential for development and transformation, which have two significant prerequisites: geographical location and former transformative processes. The categories established based on the location and the pace and direction of the transformation represent 12 varieties. However, we were able to decrease the number of types to 8 by considering the number of cases. The 501 garden plots that have residential and holiday functions have the following distribution in the different categories:

¹ Source: EEA

Table 1: Types of garden plots with residential and holiday function (1990-2016)

Garden plots with residential and holiday functions			number of g.p.s	percent of g.p.s	unit of area	percent of area
Garden plots in the proximity of urban areas	no change		351	70 %	7,742.87	71%
	change, transformation	urban sprawl	18	4 %	502.26	5%
		change of cultivation method	14	3%	613.62	6%
		abandonment	5	1 %	80.46	0.7%
Garden plots further away from urban areas	no change		60	12%	1,043.56	9.5%
	change	change of cultivation method	3	0.5%	23.14	0.2%
Garden plots further away from urban areas without paved road access	no change		42	9%	810.89	7%
	change	urban sprawl	8	1.5%	120.86	1%
			501	100%	10,937.71	100%

Garden plots with agricultural function

According to the Corine Land Cover database, garden plots with agricultural function are characterised by different kinds of cultivation methods. In many cases, however, differentiating the agricultural plots or vine areas that have a complex cultivation structure from the new holiday areas is problematic. The transformation process is often gradual, and the plots used for agricultural farming and the recreational areas might be situated next to each other. For this reason, we created the subgroups based on the types of buildings that can be found on the garden plots with agricultural function. According to the information available in the building database, garden plots with agricultural function can be subcategorized as follows:

- No building (2073 garden plots)
- Built-up area covers less than 3% of total area (3115 garden plots)
- Built-up area covers more than 3% of total area (247 garden plots)

Semi-natural or abandoned garden plots, garden plots affected by raw material extraction

We did not create further subcategories in the case of semi-natural or abandoned garden plots, garden plots affected by raw material extraction. The management of these is primarily relevant to land administration and land reparcelling, thus, they should be regarded as areas not fit for being built on from the perspective of urban planning and urban management.

Pilot study

In order to discover more about the historical development as well as about the current and possible future use of garden plots, we also conducted a detailed study on the garden plots located in the Danube Bend pilot area. By examining garden plots from a landscape historical perspective, we will be able to understand the use mechanism of garden plots as well as their future development paths. The results gained during the pilot study may facilitate the validation of garden plot types and the subsequent refining of the subgroups.

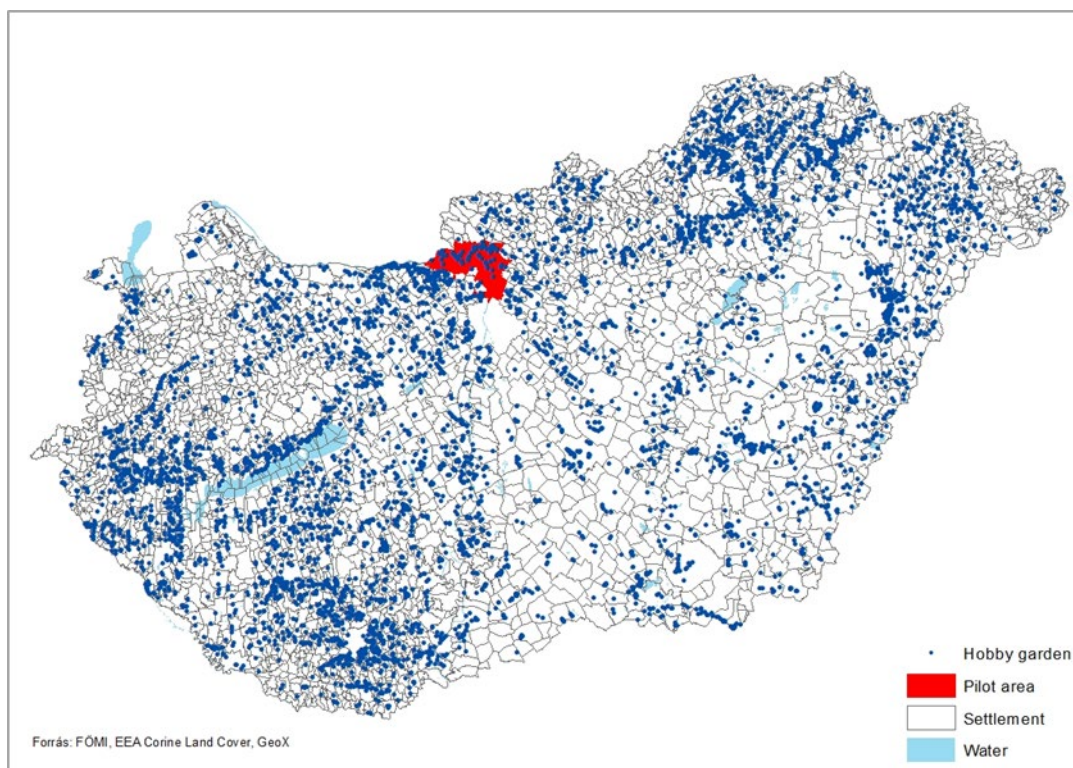


Fig. 4.: Pilot area located in North Hungary, above Budapest (Capital city-white) (Source: FÖMI-EEA Corine Land Cover, GeoX)

Pilot area

Our study follows the land use changes along the Danube Bend with particular attention to garden plots. Figure 5 shows the location of Area of interest (AOI). The Google Earth cut-out contains the borders (red) of selected settlements within the garden plot areas (yellow). Sample Settlements in the Danube Bend have different geographical and soil conditions, because geographically, they belong to several natural microregion areas.

We examined the garden plot zones of 21 settlements and made conclusions about their land use since the 19th century. The examined settlements are geographically situated on the Great Hungarian Plain and in the North-Hungarian Mountain area.

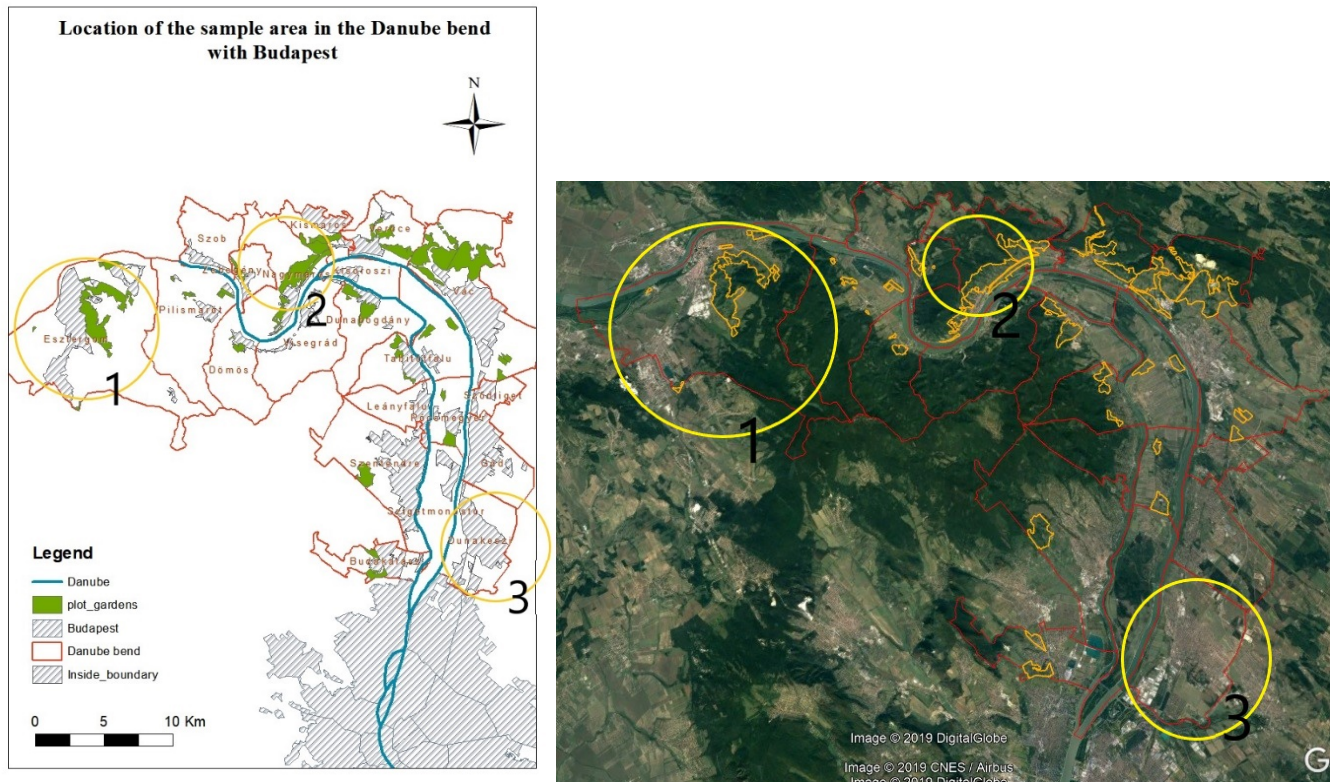
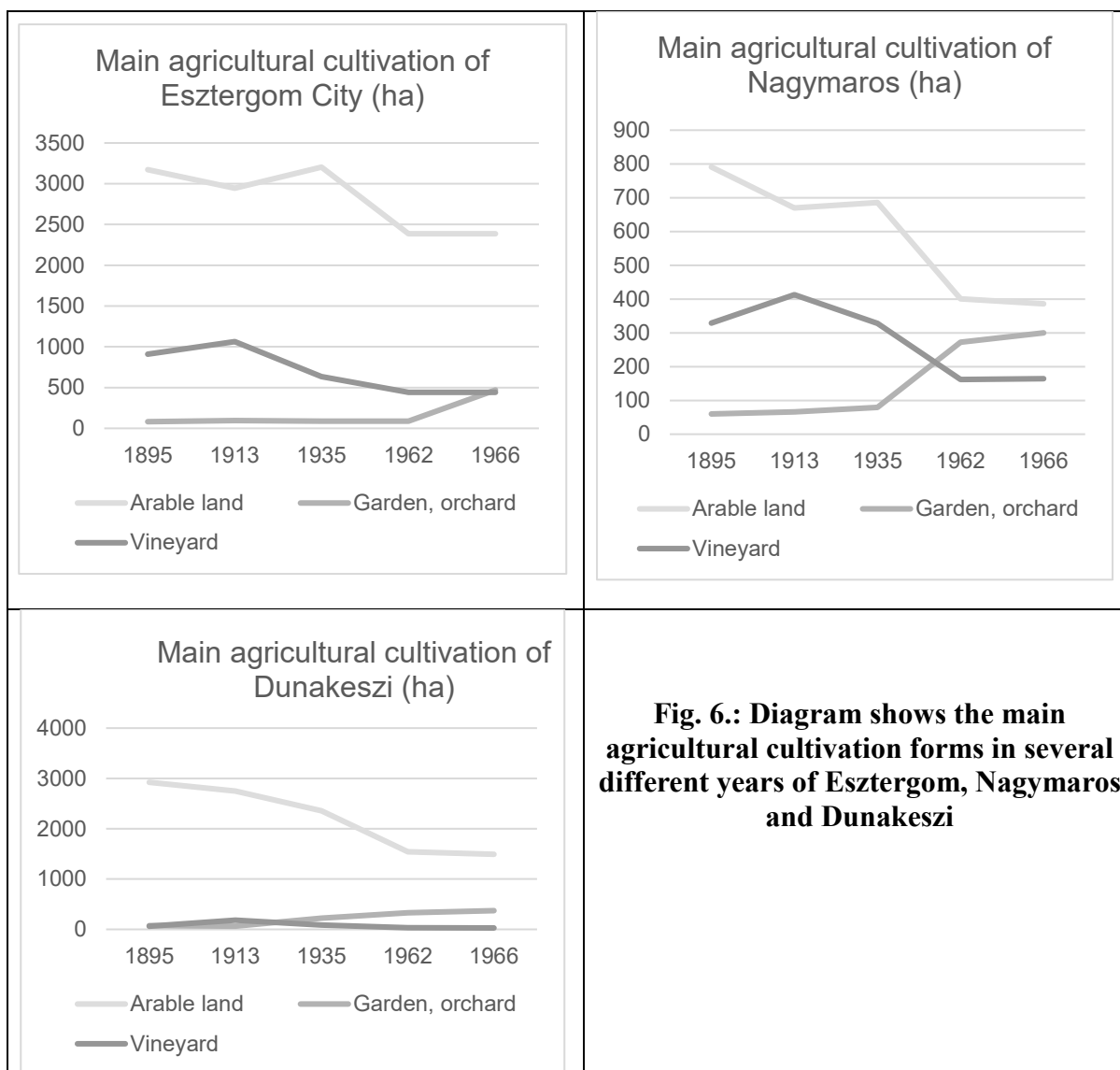


Fig. 5.: Location of sample area in the Danube Bend with garden plot areas (yellow), Source: FÖMI (Government Office of the Capital City of Budapest), Google Earth Pro

Historical study of garden plots from the perspective of land use

We analysed historical land use and landscape use changes based on the examination of historical maps and the available settlement data of 3 settlements in the Danube Bend. As vine cultivation along the Danube started in ancient times, we attempted to make overall conclusions about the historical, social and economic changes that took place in the Danube Bend area by analysing the data of a shorter period of time. The effect of the processes mentioned above on the landscape in a given moment in time paints a picture of the time-specific factors that shaped the landscape. There is one larger city (Esztergom, Fig. 5/1) among the selected settlements which is considerable both in terms of population size and as an administrative region, moreover, it had a large (approximately 1000-hectare) vine area in the 19th century. The second settlement (Nagymaros, Fig.5 /2) can be described as medium with regards to its population size, nevertheless, a large area (450 hectares) in it is used for vine cultivation according to the royal cadastral map. The third settlement (Dunakeszi, Fig. 5/3) was included due to its small population size and small vine growing area (circa 30 hectares).



Before the phylloxera crisis (end of the 1800s, beginning of the 1900s) vine cultivation emerged in Esztergom – and in many other Hungarian cities – as the major – almost sole – form of cultivation (Hetvesné, 1993). The volcanic soil was a great foundation for the tradition of vine growing, which remained a defining element of the landscape for centuries. In 1900, agriculture was still the most significant sector (Lettrich, 1959), in 1932 according to the annual statistical logs, the majority of the total, 4995-hectare land area is used as arable land or pasture land, while a smaller portion is meadow, vineyard or orchard. The number of vineyards and orchard has gradually decreased after 1930, and the socialist industrialization lasting until 1960 displaced traditional small-scale production almost completely, and the size of the population employed in agriculture decreased to 11-20% in the industrial area of Dorog within Esztergom.

Nagymaros also has a larger arable area. Alsómező – located in the eastern part of the settlement – and its surrounding area is a sizable agricultural area to this day, part of it constituting of garden plots. Nagymaros

had the legal state of a market town in the 16th century, with a large arable area and vines on the sloping hillsides (Ónodi-Cros-Kárpáti, 2004). By the 19th century, however, sources from the period describe the city as a land of vine cultivation and fruit growing, and indeed, the vine areas were the most extensive in this period. This continued until the end of the phylloxera crisis, when the size of vine areas started to decrease drastically (Fig. 6). Phylloxera together with the subsequent damage done by peronosporales, exerted a lasting effect on the history of vine cultivation in Nagymaros – just as in Esztergom. At the beginning of the 20th century, reconstruction works started in connection with vines, and a vine species that is resistant to phylloxera appeared (Fig 1: Pilismarót). In the case of Nagymaros, however, the re-planting of vine areas was more characteristic, which meant that other fruit species (currant, raspberry, apricot, peach and plum) were planted here (Kiss et al., 2014). Vine areas took up almost 10% of the total area of Nagymaros in 1932. By the end of the 19th century, the hillsides of Nagymaros formerly used as vineyards were utilised for recreation, then – in the period of garden plots – significant changes happened due to the increasingly emphatic utilisation of the landscape. In the second half of the 20th century, the recreational function became so prominent that it resulted in serious damages to the terraces and stone alignments preserving the signs of past landscape use. Nowadays, evidence of early vine areas is scarce. In 1865, a register was created that included all the settlements of Dunakeszi, and a letter addressed to Frigyes Pesty by the municipality of Dunakeszi lists the following data: “population: 980, the town has 203 houses in three streets, such as: Main, Church and Small streets” (Kerekes, 2017). Its arable area was 1913 hectares, garden and meadow 230 hectares, vine 52 hectares, and pasture 1048 hectares. Data from the period and the diagram both highlight the tendency of using arable areas in the middle of the 19th century. Its vine areas were located in Telki, Vác street, Kis and Nagy Somló and on the sandy grassland of Alag. The size of its vine areas gradually decreased, while urban areas grew to such an extent that according to the military survey map from 1941, areas suitable for agricultural farming could be found in the Alag part of the settlement, along with meadows and pastures. Currently, the settlement is surrounded by arable lands, and there are no garden plots in it.

Current land use of pilot area

We identified 69 garden plot blocks within the total examined area. Together, these take up 3,642 hectares, with each of them covering an average of 50 hectares. The smallest one is less than 1 hectare, while the largest block in Vác has a size of 445 hectares.

Their land use can be described as mixed, 13 blocks are highly built-up areas, 7 are built-up areas. In the case of 43, agricultural farming is characteristic, 5 are mostly covered by forest and 1 area does not have a dominant land use, it can be said to have a mixed method of cultivation (Figure 7).

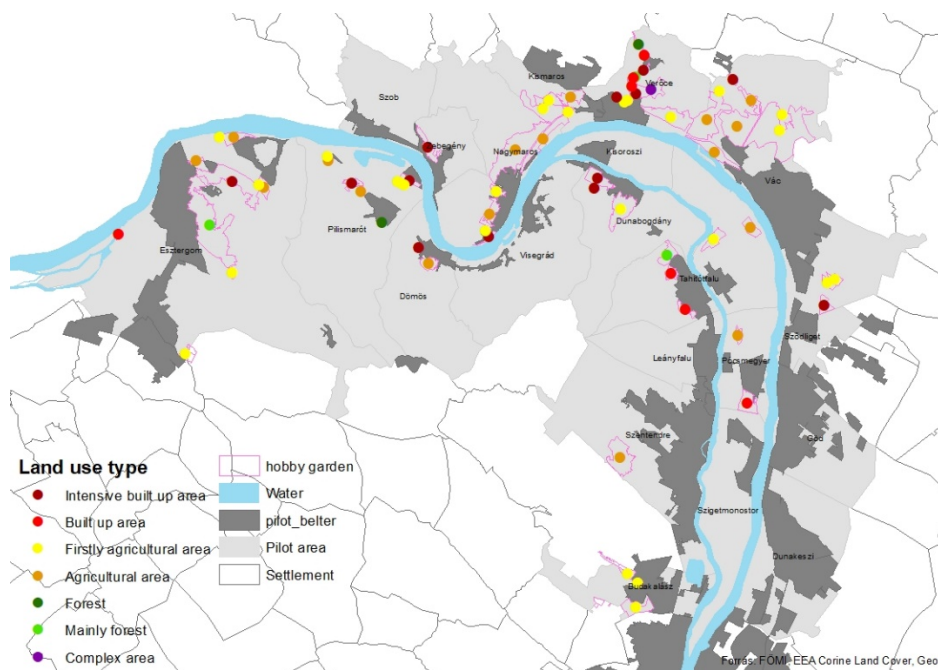


Fig 7: Pilot area and garden plots, based on current geodatabase (Source: FÖMI-EEA Corine Land Cover)

Types of garden plots in the pilot area

Almost every garden plot is located in the proximity of the current urban areas. The land use of the vast majority of them did not change in the past few years. In Nagymaros, the typical method of cultivation changed in some of the garden plots. There is a built-up garden plot further away from the central residential area of Esztergom, which was also affected by a slight change in terms of land use (change of cultivation method) in the last years.

6 areas among the garden plots typically used for agricultural purposes do not have a building on them. Such garden plots can be found in Budakalász, Verőce, Esztergom and Vác. In the case of the rest of the agricultural blocks, there are buildings on the plot, but the built-up ratio does not reach 3%. Two garden plots in Vác and Esztergom are exceptions.

Discussion and Conclusion

Garden plots are special territorial units in Hungary, exhibiting great variety in them. The aim of our study is to provide national and local decision-makers with useful insight about garden plots that might facilitate creating a framework of management, help define the role of garden plots in municipal development, and select the appropriate regulatory tools for spatial planning. Our national analysis and typology serve the same purpose, but the latter cannot be considered complete yet, as there is a need for conducting further detailed analysis on different pilot areas in order to support the preliminary methodology. We are currently conducting research on the first pilot area in the Danube Bend.

To achieve our goals, we examined the historical land use of the Danube Bend and the ongoing processes related to garden areas before and after the creation of garden plots. In the pilot area, the tradition of vine cultivation has been a defining factor in the settlements since ancient times and retained its importance until the 18-19th century. Garden plots first emerged in an unordered manner on the periphery of villages

and towns as well as around foothills due to the ideal climate and topological conditions. Vineyards took up large areas, and there were fruit trees between the vines that provided their owners with ample wine and fruit for the year, and in the case of several settlements the leftover could also be sold.

Vineyards disappeared gradually throughout the centuries as they lost their significance, either as a result of urban sprout, or due to the change of cultivation method which led to the transformation of parcels. In addition, the phylloxera crisis brought about the destruction of vine areas, and raspberry, currant and other species of fruit were planted as a form of alternative land use. The parcels on the slopes were eliminated and they attempted to reconstruct the vines on sandy territories. The population involved in the cultivation of vine in earlier centuries kept looking for the opportunity to take up vine cultivation again, but the sector completely lost its validity among the agricultural cultivation methods at the time of the socialist state economy. Only a few remnants were left of the once famous royal vineyards.

Designating the Danube Bend as a landscape heritage would mean that protection could be extended to garden plots as well. This can potentially result in another period of transformation in terms of the agricultural function of garden plots, the species of plants and the local biogenesis of animals and plants and their survival. Moreover, it could bring about the re-evaluation of the landscape and the settlements connected to it.

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