UDC 528

LEASE RELATIONS AND AGRICULTURAL LAND USE IN UKRAINE

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Abstract. *The relevance of the research is due to the needs of planning of agricultural territories and the lack of comprehensive planning and mapping materials both within individual starosta districts and on the territory of communities. Also, the conducted research is the basis for the formation of a land bank of specific land owners and land users. The purpose of the conducted work is visualisation of borders of land shares and study of the comprehensive information on use of share areas. During the research, methods of mapping of territories were used, using analogue and digital mapping materials. Desktop land surveyor software was used to create and process digital data. The limits of all generated cartographic objects have coordinates of turning points, which establishes the work with real spatial objects of the terrain. As a result of research there were formed land plots in vector format within nine starosta districts of Radomyshl community, as well as semantic information to each of them. A thematic map of tenants within districts has*

been created. One of them is presented in the article as an example. The results of the created thematic maps of tenancies within the largest part of the community have been analysed. Also the article presents data on the agricultural development of the study area and the monetary valuation of land shares. The results obtained constitute a potential platform for the formation of fields; exchange of land plots to avoid "checkerboard" in the land use process; entering into lease agreements for the shares that are not legally used; arranging territories, which data are not available in the cadastre.

Key words: *lease relations, land management, land lease, agricultural land, land fund, community.*

Topicality. At present in Ukraine, lease relations are the predominant type of land use in rural areas. Almost all agricultural lands, which have been divided into shares, have their owners and the overwhelming, if not total, majority of such territories are leased. In this context, it is very important for land planning to investigate the state of leasehold relations. After all, it is impossible to carry out any planning activities within agricultural land without obtaining comprehensive information about the owners and users of the areas where planning is taking place. Our research is also prompted by the lack of scientific conclusions on the specific issues of leasehold land use and management. At present, there are only generalised data prescribed in Ukrainian regulations.

Analysis of recent studies and publications. The land tenure system in Ukraine is unique, because the entire area of former collective farm land was divided into shares between the participants of collective ownership equally. In this connection, a peculiar structure of land parcels (land shares) was formed. Therefore, land management and the formation of fields on such land also requires a peculiar approach, as well as a mapping basis for planning decisions. In the scientific literature on land management of agricultural lands there are only general approaches concerning a modern condition of the land fund, scientific bases of management of the land and underlining of importance of land management [1], rational use of the land, strategic directions of increase of efficiency of land and resource potential [2].

In Ukraine there is no scientifically grounded legally approved methodology for land management of agricultural areas, which would not only describe the basic principles of land management, but also contain specific practical advice and norms of land use, present data on the existing state of leased land, there are also no guidelines for the use of agricultural land, taking into account the boundaries of fields, owners and users of plots, the area of each share. For some time, for the organization of agricultural production, land management project on the environmental and economic justification of crop rotation and ordering of land was in force. Nowadays, the normative document mandating its introduction is no longer in force. Now the agricultural societies, which are the main tenants of land parcels (shares), have no mechanisms of justification of the use of leased territories and at their own discretion they look for ways of solving this problem. Many of them cooperate with land surveyors for management of their lands by visualizing and mapping the boundaries of land parcels (shares) and forming information about their owners, etc. Ordering such materials is now quite relevant. There are not many approaches to land management described in the scientific literature either. But all of them are based on a detailed study of territories and their mapping.

In scientific practice, there is a popular method of studying the use of agricultural areas using satellite imagery, which makes it possible to form land plot boundaries and to draw conclusions about farmers' compliance with the obligations imposed on them by the state on land use conditions [3]. Mapping specifically of leased land is practically unexplored. At the same time, there are few studies devoted to the term of lease of agricultural land and the impact of this factor on the deterioration of arable land quality [4]. Also the question of the size of fields arises when using cartographic materials and land management of agricultural territories. As it is known, the average size of a share in Ukraine is about 4 ha. Taking into account that the shares are mainly leased by their owners, the size of Ukrainian fields is much larger. The average size of agricultural land in the European Union ranges from 0.6 ha in Malta to 112.2 ha in the Czech Republic and 110.2 ha in the UK. The total agricultural area in the European countries ranges from 4 to 30 thousand

hectares. The share of the number of holdings ranges from 2.4 % to 46.1 %. The highest number of holdings is in Romania (624 470), Poland (403 660), Italy (171 430) and the lowest one is 90 (Luxembourg). Studies have also highlighted the problem of high competition for the best agricultural resources between large and small farms [5]. Researchers link the size of farm plots to the efficiency of their agricultural production. There is increasing evidence that small farms contribute significantly to food production worldwide [6, 7]. Researchers also consider the negative effects of land management associated with the enlargement of fields: lower diversity of plant and animal species in agricultural land is usually observed where arable land has been consolidated into large fields [8]. Monitoring of field sizes is proposed by most scientists to be carried out by remote sensing methods using up-to-date satellite images. Taking into account the complexity of land use issues of agricultural territories, the relevance of available baseline information about the boundaries of individual plots and fields, their location, level of development, quality of the soil resource, data on the owner and user, etc. is obvious. It is the cartographic basis and the application of GIS functions to obtain completeness of the data, the possibility of their filling and use that come to the fore.

Objective of the study. The objective of the study is to present data on the analysis of the results of lease relations within the Radomyshl community. The presented results can serve as a basis for making decisions on land management in the community and the formation of a land bank of a particular land user. During the research we were interested in whether and how much land the direct owners use for their land plots, how many and which tenants are present in the area and how the leased plots are located. The work done is an integral part of the research of the whole area. Therefore, the results obtained will further serve to form the basis for methodological approaches to the use of agricultural land in the entire Polissia region.

Materials and research methods. Source cartographic data for the research were analogue and vector materials: Projects of land shares territory organisation, Projects of rural councils borders formation, Index map in dmf format, Public cadastre map data (both raster basis and json format files), public access satellite

images of the studied territory, and orthophotomaps (Fig. 1). The national professional program Digitals was used to process the cartographic images. In this program the limits of the study area, individual land parcels of reserve lands, and all land parcels (shares), including those missing in the cadastral base, are formed for the use of the initial cartographic materials. In addition, thematic lease maps have been generated by the program functions to visualise the results of the surveys. Digitals has also been used to automatically download cadastral data. The indicator used the cadastral number of the plot. Vkursi Zemli, a commercial analytics service for land bank management, was used to speed up the formation of the database. The basis of the research was the area mapping process, the main task of which was to study and merge all existing mapping materials and collect all information about land plots. The cartographic materials created for the study area are part of the digital information within the whole Radomyshl community [9]. That allows to expand and update data on land plots, their owners, tenants, areas, location as changes are made in the state land cadastre base. Areas on agricultural land were surveyed. There are no data on plots within settlements.

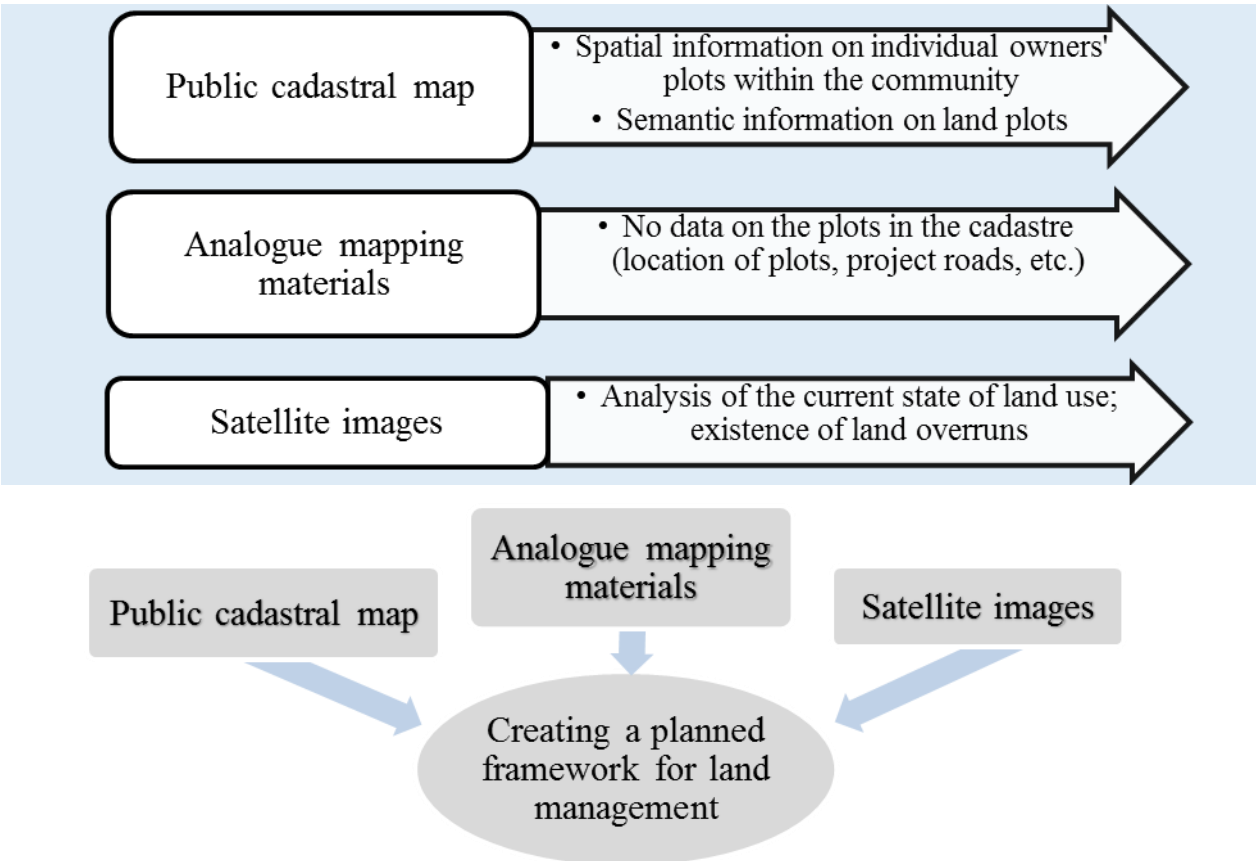


Figure 1. The process of using mapping materials to produce survey results

Research results and their discussion. The research was carried out on the territory of nine districts of Radomyshl community. And the research now is in the process of expansion of the research area. The total investigated area is 29,320 hectares. The area of Zabolot district presented in the article for example is 2493 ha. After digital processing and combining all cartographic data, layers of relevant information were formed: "Borders of cadastral zones", "Land parcels (shares)", "Project roads", "Existing roads", "Reserve lands", "Land parcels (shares)), information about which is absent in the land cadastre". In addition, 9 thematic maps have been created for the leasing of land shares within nine districts. In general, there is a "checkerboard" arrangement of leaseholds. There is not a single whole massif that has been formed from the plots of only one lessee (Figure 2).

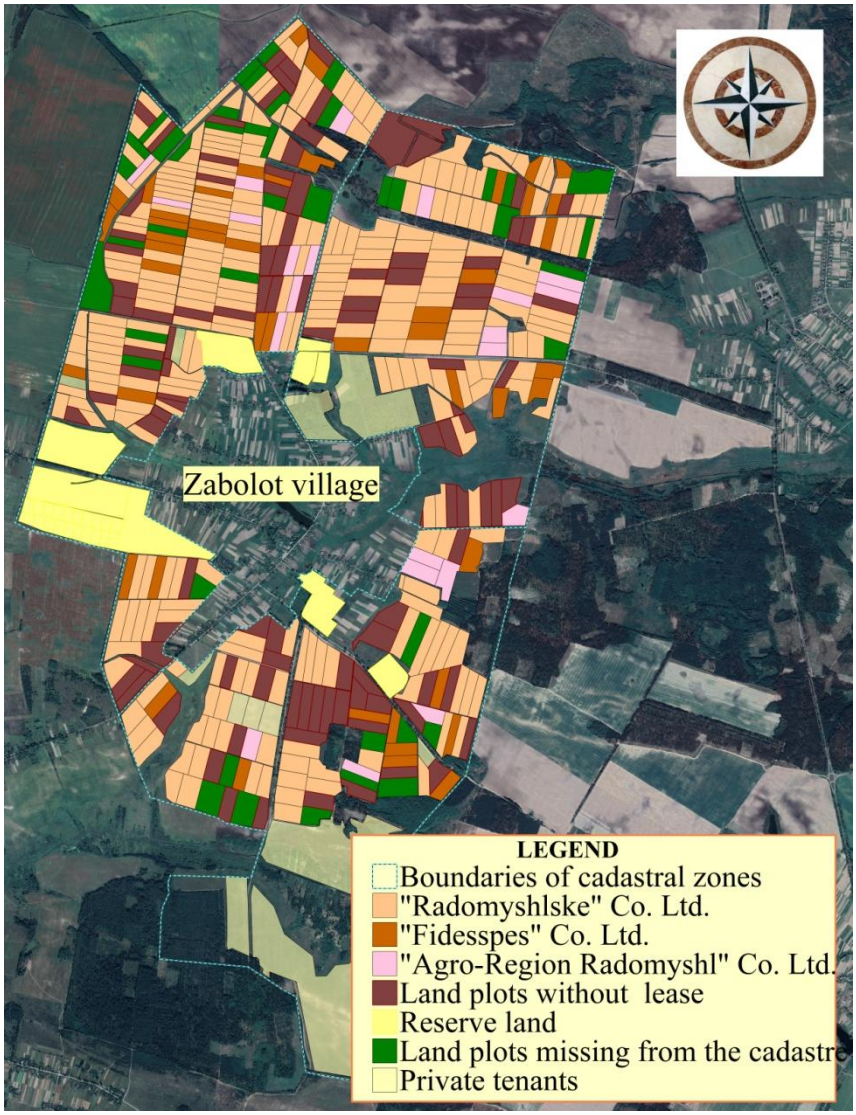
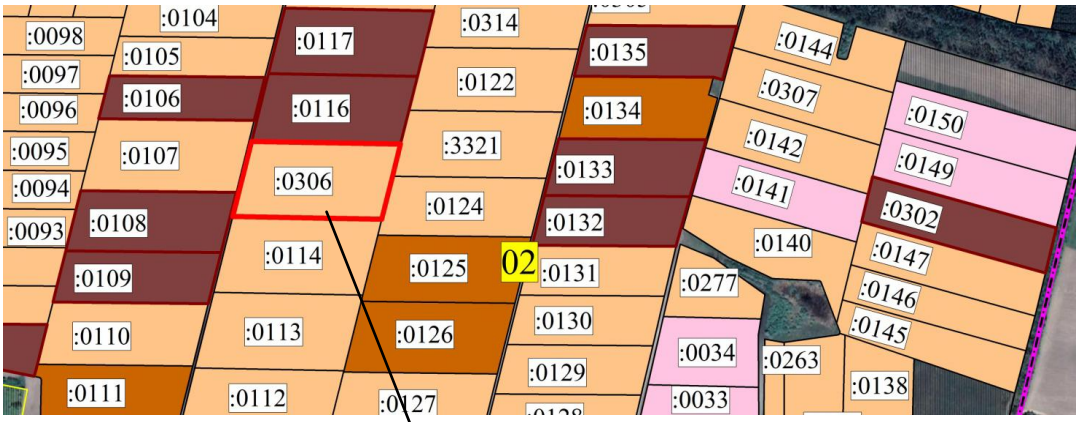


Fig. 2. Thematic map of land parcels (shares) by tenants on the territory of Zabolot district of Radomyshl community

As for the tenants themselves, limited liability companies predominate throughout the territory of Zabolot starosta district. On the presented map, Radomyshl Vegetable Enterprise Ltd. has the largest land bank of 701 ha with 273 plots. The second largest land bank (118 ha, 47 plots) is held by Fidesspes Ltd.

A somewhat smaller area is leased by Agro-Region Radomyshl Ltd (61 ha, 22 plots). The rest of the area is leased by individuals. On 291 hectares (107 plots) there is no final lease. However, most of them are used in the fields between the leased areas; as well as plots, information about which is missing in the land cadastre base. There are 44 areas missing from the cadastre, totalling almost 125 hectares. The reserve lands occupy individual plots with a total area of 120 hectares. A block of semantic information has been formed for each land share (Figure 3).



Layer	"Radomyshlske" Co. Ltd.
Cadastral number	1825082900:02:000:0306
Land category	A.01.01
Area	4,3957
Landowner	Yakovenko Viktor Volodymyrovych
Date of registration of ownership	2016-06-24
Tenant	"Radomyshlske" Co. Ltd.
The date of registration of the lease	2018-03-27
Land valuation	45222,41

Figure 3. Semantic information about land parcels (shares) in Digitals

The situation with regard to location of lease areas in other districts of the community is similar to the predominance of limited liability companies (Table 1). There are cases when the same company dominates several districts, which does not change the situation with regard to squeezing lease lands into neighbouring leaseholds. There is also a considerable area of land for which there are no final lease agreements. It can be stated that this area is used illegally, as 90 % of such plots are included in the area of the fields. Within the study area, the area without lease is 30 % of the total divided area.

1. Objects of lease of land parcels (shares) and their land banks

Tenant	Number of different tenants	Number of plots	Area, ha	%
Limited liability companies	18	2033	6359,5470	43
Private enterprises	4	865	2167,6330	15
Farms	9	862	1414,0427	9
Citizens	6	29	234,6900	2
Land parcels (shares) without lease		2856	4527,2421	31
Total	37	6645	14703,1547	100

The total area of shareholdings by starosta districts varies between 535 ha (Verlok starosta district) and 2227 ha (Mircha starosta district). The average size is about 1200 ha. The number of the parcels by districts varies from 376 to 1,473 plots correspondingly. The number of plots without a lease varies between 38 - 839 units. The smallest number of such plots is in the Pylypovychi starosta district, the largest number is in the Osychky district.

In general, the study area has a rather high level of actual ploughing (Table 2), despite the low soil fertility of the land, as evidenced by the monetary valuation of the land plots (Table 3).

2. An explication of the agricultural land within the community's districts

Structure and use of agricultural land within the community	Index
Area of agricultural lands in the land cadastre database, ha	14703
Number of plots in the land cadastre database, pcs.	6645
Used arable area	14175

Actual ploughed area %	96
Area of lands in reserve, ha	961
Area of shares absent in the land cadastre base, ha	812

The information on the monetary value of the plots is not complete. For about 17 % of the plots, the monetary valuation data are not available in the cadastre database. Besides, at the time of the research data of monetary evaluation were not available and were not unloaded from the state land cadastre database. However, the overall picture of land value within Radomyshl community shows low soil appraisal scores, and sometimes the monetary valuation is very low (less than 100 EUR per hectare of a parcel).

3. Monetary valuation of land parcels (shares) within the community

Index	UAH	EUR
Average monetary value of the plot	12466	336
Lowest value of 1 hectare per district	3169	85
Highest value of 1 hectare per district	24916	673

Conclusions and outlook. The presented results visualise the boundaries of land shares, which is important in land management, as most of the share borders are not marked on the ground. They also contain information on the owner, area, monetary value and tenant of each property, which enables a different thematic map to be created than the one presented in the Zabolot district at the time of land use planning decisions. The thematic map generated in terms of tenants within one district demonstrates the overall picture of lease relations within the community as a whole. In particular, it was determined that not a single owner of a land parcel (share) is its user; almost 1/3 of shares are used without registration of use rights. The dominant holders of the land bank within the whole study area are limited liability companies: "Radomyshl Vegetable Production Enterprise", "Agroviva", "Verlotske" and "Mezhyrichka". Within each starosta district there are from 1 to 8 different tenants. There are districts with complete dominance of one tenant. These are Osychky starosta district, where 95 % of the shares are leased by Osychky Ltd. And

Borshchivka, where there is only one tenant, Chaikivka Ltd. The research will be extended to a larger area and there are plans to improve the methodology to be able to download changes in land information more quickly, as the data obtained are quite dynamic and require continuous monitoring.

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ОРЕНДНІ ВІДНОСИНИ ТА СІЛЬСЬКОГОСПОДАРСЬКЕ ЗЕМЛЕКОРИСТУВАННЯ В УКРАЇНІ

Анотація. *Актуальність досліджень обумовлена потребами планування сільськогосподарських територій та відсутністю комплексних планово-картографічних матеріалів, як в межах окремих старостинських округів, так і на території громад. Також проведені дослідження є основою для формування земельного банку конкретних землевласників та землекористувачів; отримання інформації про розташування земельних ділянок, їх власника, орендаря, площу, грошову оцінку. Метою проведеної роботи є візуалізація меж земельних часток (паїв) та вивчення всебічної інформації стосовно використання пайових площ. В процесі досліджень застосовано методи картографування територій з використанням аналогових та цифрових картографічних матеріалів. Для створення та обробки цифрових даних використано настільне програмне забезпечення землевпорядника. Межі усіх сформованих картографічних об'єктів мають координати поворотних точок, що налагоджує роботу з реальними просторовими об'єктами місцевості. Методика проведення досліджень передбачає поєднання усіх існуючих даних про земельні ділянки, які містяться в українській земельно-кадастровій базі, а також нецифрових матеріалів для встановлення місця розташування земельних ділянок, відомості про які відсутні в кадастрі. В результаті*

досліджень сформовано земельні ділянки у векторному форматі в межах дев'яти старостинських округів Радомишльської громади, а також, семантичну інформацію, до кожної з них. База даних, що утворилася в результаті формування семантичної інформації кожної земельної ділянки, містить дані про власника, цільове призначення, площу, орендаря та грошову оцінку. Створено тематичну карту орендарів в межах округів. Одну з яких презентовано у статті, як приклад. Проаналізовано результати створених тематичних карт орендних відносин в межах більшої частини громади. Встановлено, що на 60 % території паїв заключено договори оренди. Серед орендарів переважають товариства з обмеженою відповідальністю (43%). Набагато меншу площу орендують приватні підприємства (15%) та фермерські господарства (9%). Жодна земельна частка (пай) не використовується власником. Попри велику орендну площу кількість орендарів не значна. Всього налічується 18 товариств з обмеженою відповідальністю, 4 приватні підприємства, 9 фермерських господарств. Також присутні окремі випадки оренди ділянок громадянами, які не є власниками паїв. Дослідженнями також представлено дані сільськогосподарської освоєності досліджуваної території та грошової оцінки земельних часток (паїв). Встановлено, що фактична розораність становить більше 90%, що є значним показником у порівнянні з іншими громадами Житомирщини. Крім того, площа земель запасу сягає майже 1 тис.га, що складає 3% від загальної досліджуваної площі. Найбільша площа земель запасу в межах округу становить майже 300 га. В середньому цей показник наближається до 100 га. Є й винятки, округи, де земель запасу немає зовсім. В межах досліджуваної території є один округ без земель запасу та один округ з невеликою порівняно їх площею (36) га. Грошова оцінка земель є низькою. Найменша вартість 1 га паю становить 85 EUR, найбільша – близько 700 EUR. Середній показник грошової оцінки земельних ділянок знаходиться в межах 300 EUR. Отримані результати є потенційною платформою для формування полів; проведення обміну ділянками для уникнення «шахматки» в процесі землекористування; заключення договорів

оренди на паї, що використовуються не законно; впорядкування територій, дані про які відсутні в кадастрі. Крім того, проведені дослідження є складовою досліджень в межах усієї громади. Також планується їх розширення в межах більшої території для напрацювання висновків щодо системи орендних відносин в межах Поліського регіону Житомирської області.

Ключові слова: *орендні відносини, землеустрій, оренда паїв, сільськогосподарські землі, земельний фонд, територіальна громада.*