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TRENDS AND CHALLENGES FOR IMPLEMENTING DIGITAL SOLUTIONS IN LAND MANAGEMENT IN BULGARIA

Marina NIKOLOVA, Penka CHERNAEVA

Tsenov Academy of Economics, 2 Em. Chacarov Street, 5250 Svishtov, Bulgaria, E-mails: m.nikolova@uni-svishtov.bg, d010322277@uni-svishtov.bg

Corresponding author: m.nikolova@uni-svishtov.bg

Abstract

Transformations in agriculture, the implementation of sustainable production models, require more and more digital agriculture to be placed at the heart of the modern agrarian revolution in Bulgaria. Increasing attention is being paid to understanding the need for the application and use of digital technologies as an innovative approach in the farming business. Undoubtedly, digital technologies are the ones that provide an opportunity to improve the economic sustainability of agricultural holdings. Digital solutions in the development of digital agriculture are an indisputable necessity and at the same time are a prerequisite for slowing down the negative economic and social processes, the demographic structure and the trend of depopulation of rural areas. Unfortunately, at this stage in Bulgaria, untimely implementation of effective solutions in connection with the digitalization of processes related to land administration is characteristic. A long-term management perspective is needed, leading to a transition to sustainable land management in every territory, especially in rural areas. This necessitates the need for timely digital solutions for administering land management processes and accelerating the development of a key economic sector, such as agriculture. In this context, the aim of the article is to explore the possibilities of implementing modern software solutions, taking into account the state and trends in the development of agricultural areas and farms in Bulgaria. On the other hand, to identify the problems in assessing the possible income from owned agricultural land and their solution through specialized software applications. The publication includes official data from national and European institutions, as well as own calculations from face-to-face interviews and data from archival protocols of a consulting organization. The research methods used include general scientific, empirical-theoretical and logical-theoretical methods, as well as analytical tools: analysis and summary of literature, graphic, tabular and schematic method for presenting characteristics and trends. The main results show that the number of individuals has the highest relative share compared to the total number of farms (91.43 %). However, individuals process only 37.4% of the UAA, which means that in most cases the use of expensive software solutions is unprofitable when managing small areas. Unfortunately, in Bulgaria, digital solutions for state control and management are still characterized by catching up, not overtaking, development. In conclusion, the issue of a management vision based on information systems and a reliable mechanism for controlling deviations, a synchronized institutional framework and digital solutions before their design and implementation is particularly acute.

Key words**:** *agricultural areas, agricultural land, digital solutions, land management, problems*

INTRODUCTION

The rural development policy is aimed at achieving sustainable development of economic sectors, as the rural area is a place for development not only for agricultural activities, but also offers a good perspective for the development of the economy in a regional scope, through adequate support for business, job creation and sustainable territorial development. Bulgaria is a country with great soil diversity and land use largely changes the environment and landscape. The provision of sustainable land resources requires a long-term management perspective leading to a transition to sustainable land management in every territory, especially in rural areas. In society's quest for a higher level of sustainable development, it is increasingly clear that land, as a limited resource in any territory, is an important tool for preserving and protecting the environment.

Agricultural land has always been and will be an invaluable asset for every economic unit and for every Bulgarian family. As a limited resource, it does not lose its value over time and is an important investment for any enterprising farmer. A real assessment of the market situation and the dynamics in determining the value of agricultural land is an opportunity for a correct assessment of its effective use and management. This is related to making decisions about renting and renting,

determining the average yield and assessing the risks of a specific decision. Effective management of land resources is an important condition for the economic prosperity of any company unit related to the ownership of agricultural assets (Nikolova, 2019) [18].

The transformation in the ownership of agricultural land and the modern economic conditions in the field of agricultural development have caused a number of problems that are related to agricultural territories.

Digital solutions for the administration of land management processes are an indisputable necessity for the accelerated development of the agricultural sector. And this is a prerequisite for slowing down the negative economic and social processes, the demographic structure and the tendency for depopulation of rural areas (Nikolova, 2021); (Chernaeva, 2024); (Chernaev, 2024) [16, 6, 5].

The importance and development of digital technologies in modern agriculture is becoming an increasingly urgent process not only worldwide, but also Bulgaria. That is why it is the basis of the modern agrarian revolution in the Republic of Bulgaria with the possibility of achieving quality results with high added value and sustainable development of the rural economy. It is more than clear that the formal implementation of digital solutions for agricultural business management leads to a decrease in its efficiency within wide limits.

There is a lack of sufficient research on the problems in the Bulgarian scientific literature. related to the implementation of working digital solutions in land management in agriculture. For this reason, the purpose of the study is aimed at studying the trends and challenges facing the implementation of digital solutions in agricultural areas and farms in Bulgaria. The two main research tasks are related to studying the possibilities for implementing modern software solutions, through an analysis of the state and trends in the development of agricultural areas and farms on the one hand, and on the other hand, systematizing the problems in assessing income from agricultural land and their solution through specialized software applications.

The study is a continuation of our previous publication, which examines the problems related to the possibilities of digital solutions for the administration of land management processes (Nikolova, M., Chernaeva, P., Chernaev, P., 2023) [20].

MATERIALS AND METHODS

This publication is based on two types of data - official data published by various institutions - National Statistical Institute of the Republic of Bulgaria (NSI) [13], Eurostat [7], State Fund Agriculture [21], Ministry of Health [12], Ministry of Agriculture and Food-MZH, [9, 10, 11], Bansik and own data collected through face-to-face interviews, on-site visits and archival protocols by an active consulting organization. The research methods used include general scientific research methods, empirical-theoretical and logical-theoretical methods, as well as analytical tools: analysis and summary of specialized literature, graphic, tabular and schematic method for presenting characteristics and trends.

RESULTS AND DISCUSSIONS

Status and Trends in the Development of Agricultural Areas and Agricultural Holdings in Bulgaria for the Application of Modern Software Solutions

In Bulgaria, there are conditions for environmentally friendly sustainable agriculture, because for many years its principles have been violated, the result of the desire to obtain higher yields from the grown crops, without taking into account the effect on the future development of the sector, as well as on the food security of the population (Nikolova, 2022) [17]. At first glance, competitive agriculture is contrary to environmentally friendly agriculture, insofar as the latter has a lower economic effect compared to conventional production. However, the task of sustainable development is, through the joint use of innovative technological solutions on the one hand, and public policies on the other, to ensure the

economic viability of environmentally friendly, natural resources and environmental protection agriculture (Bashev et al., 2019) [2]. Agriculture is a traditional branch of the Bulgarian economy, with particular importance for ensuring food security, raw materials for the food industry and incomes for a large part of the population in rural areas of the country. The most economically significant sectors in crop production are the production of cereals and oilseeds, fruits and vegetables, and in animal husbandry – the production of milk, pork, poultry, beef and lamb and eggs.

When tracing the balance of the territory in terms of permanent use of land properties in Bulgaria as of 31.12.2023, it is evident that the part of the agricultural territory is again the highest - 60,524 km^2 of the total area of the country, which in relative terms represents 54.53%. The forest territory occupies 33.25% and the urbanized territory only 4.76% of the territory of Bulgaria (Fig. 1).

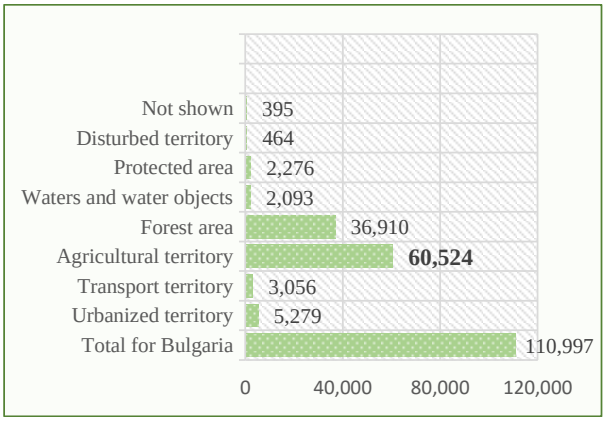

Fig. 1. Balance of the territory by way of permanent use of land properties, 2023
Source: National Statistical Institute [13].

The area with agricultural purpose occupies 47% of the country's territory and amounts to 5.2 million hectares. The areas with agricultural use in our country slightly decreased in the last year of the presented period (2023) by 0.3% to 5,208,482 hectares compared to the previous year. In the last three years, the share of these lands is 47.1% of the total area of the country: orthophoto maps, increasing protected areas, abandoned lands unsuitable for agriculture, etc. Over 96% of it is agricultural area (UAA). The agricultural sector in Bulgaria occupies a low relative share (about 4%) of the economy, despite the fact that our country has the potential to truly transform the sector into a priority for the Bulgarian economy.

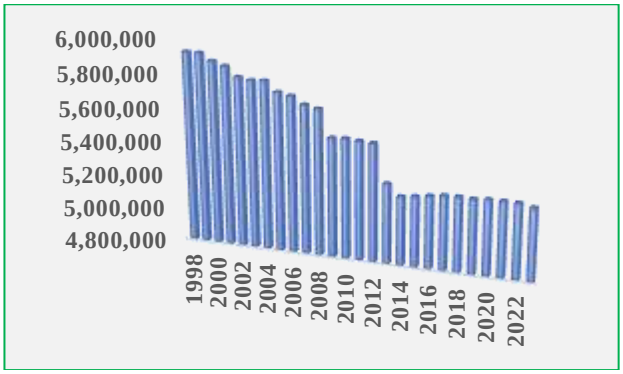

Fig. 2. Dynamics of areas in the agricultural sector, 1998 - 2023
Source: BANSIK, Bulgaria [22].

The gross value added (GVA) in the Bulgarian agricultural sector for 2021 amounted to BGN 4,950 million. As a share in the Bulgarian economy, this amount represents 4.3% of the total GVA. Investments in the sector for the acquisition of long-term tangible assets, as an important condition for increasing the competitiveness of Bulgarian farmers, vary around BGN 1.3 – 1.5 billion. per year.

They are mainly aimed at modernising farms and achieving food and feed safety standards; environmental protection; animal welfare; updating equipment and introducing new technologies; modernization in the processing industry, etc. The total value of agricultural exports in 2021 is a little over 6 billion. The leading groups of products in the structure of agricultural exports are cereals and oilseeds, followed by fats of vegetable or animal origin, etc. (MZX, 2023) [11].

Since the 1990s, the institutional framework of agriculture has undergone a structural transformation. Institutional imperatives and fluctuations in agribusiness development are likely to be permanently the subject of scientific research, as agriculture is a major structurally determining sector of the national economy (Linkova, 2019) [8]. The researchers' aim is to study the main actions that help to avoid negative fluctuations in the development of agribusiness, the result of the structural transformation in the institutional framework of agriculture and the adaptation of

organizational structures to the dynamic changes of the market environment (Nikolova & Linkova, 2020) [15].

In modern conditions, agriculture is facing serious challenges related to the implementation of the "fourth revolution", positive effects are sought, but also possible manifestations of negative ones. (Nenova, 2019) [14]. The goal is to minimize negative manifestations to the highest degree.

The development of agrarian business in the conditions of a transforming economy is an opportunity that can only be realized with effective management of land resources, as an important condition for the economic prosperity of any company unit related to the ownership of agricultural assets. (Nikolova, 2021) [19].

In order to track the general state and trends in the development of agricultural areas and agricultural holdings, it is necessary to consider some specific indicators, namely: used agricultural land (UAA); number of agricultural holdings; distribution of agricultural holdings and UAA by legal status and by statistical regions. A similar opinion has Beluhova-Uzunova (2019) and Beluhova-Uzunova et al (2023) [3, 4]. Also, it is important to know more about employment and land use ownership, both in the short and long term. This allows us to analyze the changes and dynamics in employment and ownership of land use over different ranges, such as duration over time. Table 1 presents official data covering key indicators of the structure of agricultural holdings in Bulgaria.

Table 1. Change in the structure of agricultural holdings by land use

General indicators	2010	2013	2016	2020	Amendment
Agricultural holdings (number)	370,222	254,142	201,014	132,742	**- 68,272**
Utilized Agricultural Area of the agricultural holdings (ha)	3,616,965	3,794,911	3,795,534	3,959,288	**+ 163,754**
Total Utilized Agricultural Area (common land for grazing incl.)* (ha)	4,475,528	4,650,936	4,491,860	4,564,152	**+ 72,292**

Source: Statistics and analyses. Ministry of Agriculture (www.mzh.government.bg) [9, 10, 11].

Table 1 shows that during the years under review the change related to the number of agricultural holdings is aimed at their progressive decrease (2.79 times less) compared to 2010.

The data show that the trend is undoubtedly towards the consolidation of the agricultural business in terms of the use of land resources in individual farms.

Table 2. Utilised agricultural area by statistical regions

Statistical regions	UAA (ha) *Utilized agricultural area (ha)*	Average UAA (ha) *calculated on the basis of the total number of holdings*
North-West	942,446	**61.9**
North Central	803,040	**54.0**
North East	824,760	**50.4**
South East	841,741	**45.9**
South West	480,895	**19.1**
South Central	671,271	**15.7**

Source: Statistics and Analyses, (MZH) [11].

Table 2 shows the UAA in the individual statistical regions.

The northwestern region is characterized by the highest share (61.9 ha) compared to the others.

The South-Western and South-Central regions are distinguished by the least UAA, which is due to the peculiarities in the relief.

Table 3 presents the distribution of UAA in the statistical regions, paying attention to the managed land and in particular to the forms of its use.

It can be seen that in the regions with the least UAA (South West and South Central region) there are relatively the largest number of farms that cultivate mainly their own land. Accordingly, this requires the digital technologies that are implemented to be tailored to the scale of the business.

The data in Figure 3 illustrate the trends regarding the status of agricultural holdings in Bulgaria and their distribution by groups. The figure convincingly shows that the numbers of

individuals is the largest, compared to the other three groups - cooperatives, commercial companies, associations and others, taken separately. Their relative share is also the highest in relation to the total number of holdings in Bulgaria, taken together (91.43%). The comparison of Fig. 3 and Fig. 4 show that natural persons cultivate UAA only 37.4%, which confirms the thesis that they are relatively small-scale, despite the fact that they are the backbone of the Bulgarian agrarian economy.

When managing such small areas, it is usually unprofitable to use expensive software solutions and therefore the information they have is insufficient to make adequate decisions.

Table 3. Distribution of the utilized agricultural area by type of management by statistical regions and districts*

Statistical regions and districts	UAA of farms (ha)		Own land		Land leased or leased, other uses and common land	
	Holdings (number)	Area (ha)	Holdings (number)	Area (ha)	Holdings (number)	Area (ha)
BULGARIA	**127,278**	**4,564,152.4**	**85,509**	**409,118.4**	**97,024**	**4,155,034**
North-West	14,360	942,446.0	9,745	62,411.4	11,545	880,034.6
North Central	13,773	803,039.8	9,502	89,179.0	10,861	713,860.9
Northeast	15,125	824,759.8	9,939	70,825.4	11,792	753,934.4
South Eeastwards	17,204	841,741.1	11,185	79,694.8	13,317	762,046.3
South Western	24,740	**480,894.8**	**14,434**	**25,572.1**	18,984	455,322.7
South Central	42,076	**671,270.8**	**30,704**	**81,435.7**	30,525	589,835.1

*Data on area is presented as a integer, so their sums do not correspond to physical totals.
Source: Statistics and analyses (MA, www.mzh.government.bg) [10, 11].

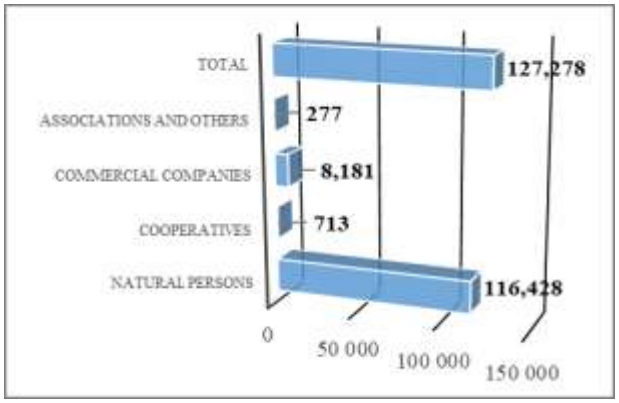

Fig. 3. Distribution of the utilized agricultural area (UAA) by holdings legal status
Source: Statistics and analyses (MZH) [11].

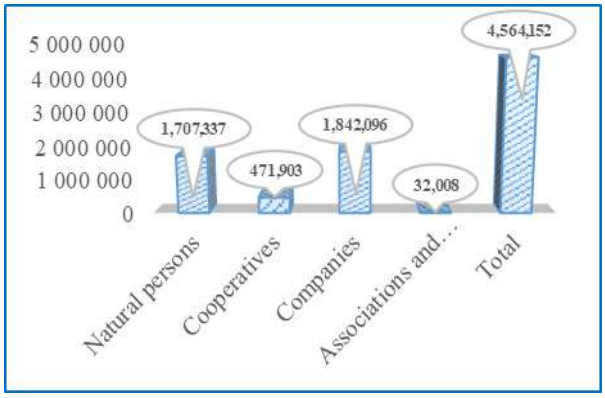

Fig. 4. Area (ha) by ownership type
Source: Ministry of Agriculture (MZH) [11].

For this reason, the need for an appropriate state toolkit to promote digital innovations in small-scale farms is increasingly evident. At this stage, small agricultural producers in Bulgaria find it difficult to implement digital solutions in their business. It is the state that should play a leading role in supporting access to information and digital solutions that are possible and applicable not only for large, but also for small farms.

Estimation of the possible income from the owned agricultural land - problems and their solution through specialized software applications

One of the most important characteristics determining the quality of agricultural land is its category. The visualization below shows the coverage of the individual categories of land, such as area distribution within the Bulgarian territorial boundaries (Figure 5).

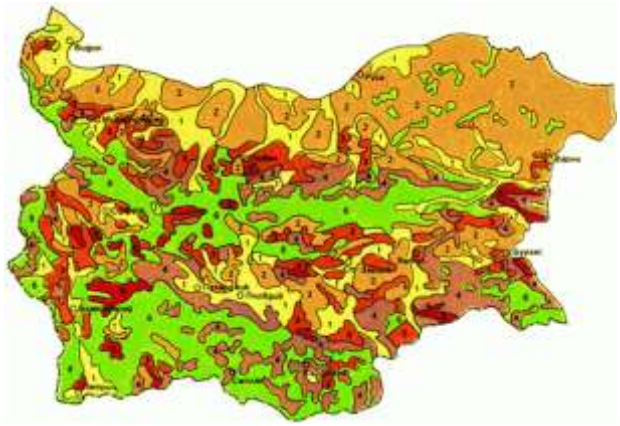

Fig. 5. General distribution map of agricultural land categories
Source: Bglands.2012, http://bglands.weebly.com/, 2012 [1].

In Bulgaria, agricultural land categories are divided into a total of ten quality groups. The conditions for assigning land to individual groups are related to the characteristics and the corresponding assessment of soil and climatic conditions, depending on the suitability of the land for growing specific crops. In this case, this is the average quality score for each of the groups. The highest quality and, accordingly, the most highly valued are the lands of the first two categories, after which their quality continuously decreases to the lowest position - the tenth (MZH, 2018) [10].

The price of land is a direct function of rent, i.e. the income that is received from processing, harvesting and its realization on the market. Accordingly, there are different ways of managing land, depending on the size of the operating agricultural holding. In order to trace the interconnection and problems in the administration of the relationships between the different types of owners and users of agricultural land on the one hand and the applied digital solutions, on the other, we will systematize the main groups of users and owners in Bulgaria.

Types of agricultural land users:

Small owners **= Users**, who usually work "within real limits", harvest their produce and usually sell it on the local market. Since they do not invest enough in machinery (for economic reasons), they are usually dependent on larger producers to use harvesting equipment. However, the income they make is sufficient, especially if it is supplemented by subsidies for producers.

Agricultural cooperatives (usually with "inherited" ownership) are the successor of the old APCs. An agricultural cooperative is a type of company in which one can "participate" with land and other assets (usually inherited), which determine the profitability of the land. The collective body for management and distribution of income, unfortunately, turns the member cooperatives more into landlords (i.e. owners who receive rent for their land), due to the fact that the management does not bring enough profitability so that the dividends from the additional capital can be used for investment in business development. That is, purely psychological inertia "kills" the proprietary thinking of the generation after the restoration of the land and does not allow the development of this business model.

Tenants of the "Family business" type usually start farming with inherited properties and supplement with other people's land, for which they conclude short- or medium-term lease or lease agreements and gradually grow. Since the owners are usually hereditary farmers and/or with appropriate education and management structure, this business model is flexible enough and provides many opportunities for rapid development.

Tenants of the "Holding" type. These are companies with a lot of capital that expand, usually investing funds from other businesses in leasing and managing agricultural land. Since the strategy of these companies allows them to work for a relatively long time without real profit and reinvest in development, they manage to develop on a very large scale. Through many connected companies, one of the largest holdings in Northern Bulgaria, as early as 2010 reached the lease and cultivation of over 120,000 hectares "from Varna to Vidin". As can be seen from Table 1, the process of consolidation of farms is moving almost exponentially and in 2020 users are less than 35% of the number of users in 2010.

Types of agricultural land owners:

-*Small owners* - they usually manage inherited properties by receiving the income from rent or rent and distributing it among themselves. Renting/leasing or participating in

cooperatives is a process that is digitized only by the users. The state has no interest (no taxes are due for agricultural land) and therefore does not administer, but only registers the property. that the burden of declaring the changes - death (inheritance), sale, donation, exchange and all other changes of ownership are registered first in the Property Register (Cadastre Agency, built in 2013-2018), the Registry Agency and only after the fact in the Municipal Agriculture Service. In other words, in the actuality of the ownership data, there is an information vacuum, which is skillfully used by unscrupulous users - this is how the concept of "blank spots" appears.

-Owners - tenants. A large part of the owners are also users of agricultural land, which allows them to receive income from the land directly, i.e. through the sale of production. Here there are problems related to the fact that the form of management of the salary is equated to a natural person, therefore there is no way to conclude a contract and pay rent between the same natural person in his different capacities. In the Agricultural Land Use Act, this issue is regulated by Article 69, but there are many controversial practices regarding the tax legislation. In this case, the digital decisions for accrual, payment and declaration of the amounts paid to the NRA (Art. 73 of the Personal Income Act) have been repeatedly changed in the last few years due to various interpretative decisions.

-Owners - "REIT" or the Special Investment Purpose Company is a joint-stock company which, under the terms and conditions of a special law – the Special Investment Purpose Companies Act (promulgated, SG No. 46/2003), invests the funds raised through the issuance of securities in real estate or in receivables (securitization of real estate and receivables). Such a company may not acquire real estate or receivables, which are the subject of a legal dispute. The law requires the real estate acquired by the company to be located on the territory of the Republic of Bulgaria. In professional circles, Special Purpose Investment Companies (SPICs) are known as Real Estate Investment – REITs . Their main activity is aimed at purchasing land from small landowner companies. Within the borders of our country is the largest such company in the European Union, in terms of the size of the available land. Digitization in the management of these companies is quite a serious part of their budget, and serious solutions such as Xerox, Canon for archiving and scanning all documents and usually individual technological solutions for the legally mandatory revenue reporting system come into play. One of the first such solutions ("Agrosystems") could not be implemented, precisely because of the lack of information about the real location of the properties and their condition at the time of acquisition by the fund, i.e. the information is incomplete if it is based only on documents and does not allow analysis and comparison of the possible profitability.

The majority of landowners in Bulgaria benefit from the rent paid to them by tenants (users) on the basis of a pre-concluded lease or lease agreement between the owner (or his proxy) and the tenant. The main goal is for the rent to be the most attractive for landlords (landowners) compared to that offered by other tenants for the same land. In practical terms, the most common options for determining the amount of annuities are the following:

-"Average yield" per hectare. This option is typical for the majority of cooperatives and tenants in the first stages of the development of private relations in the agricultural business. The study found that in this case, the rent is determined as a *percentage of the average yield of the crops grown or as a percentage of the area of each specific landlord.*

-Determination of **% of the average yield of all crops** sown in the respective business year (usually 15 to 20%) and distribution of income **in "kind"** per member of the cooperatives. Since the land is very heterogeneous (categories, locality, remoteness from the base, making cultivation more expensive, etc.), and very often the owners prefer to receive part of the income in monetary terms, or to increase the production received from one crop at the expense of another, In many places, the next type of rent is imposed;

-Definition of rent as **"% of acres"** (usually about 25-30%). Each owner has the opportunity to determine what crops to sow the

area he rents or rents, and to receive the entire average yield of the respective land/area. The disadvantage of this option is that if an owner owns properties of a worse category (5-6) he is almost always harmed by the fact that high yields of the crops he wants cannot be achieved on his land, which creates conflicts. Because of this, we move on to the next type of rent;

-In the last 2-3 years (2020 - 2023), the average rent payment ranges between BGN 50 and BGN 100 per decare, and of course the black soil in Dobrich is more expensive, with a higher rent (up to BGN 180 for 21-22), while for the semi-mountainous regions, it is much less. Often, tenants "bid" in order to be able to attract additional land. The fact is that during the initial acquisition of land, usually no attention is paid to the **quality of the land** - category, remoteness from the tenant's base, arable land (i.e. whether the property is partially or fully suitable for cultivation in its entirety), etc.

On the basis of this study, several **groups of problems have been identified in assessing the possible income from the owned agricultural land and their solution through specialized software solutions:**

-inclusion of clauses in lease and lease agreements for workability;

-division by categories, localities and the discrepancy between the characteristics in the register and the actual ones;

-incorrect entries in the official documents for uncultivated areas;

-the determination of the rent for multi-category properties;

-concluding long-term contracts on clearly unfavorable terms;

-difficulties in determining the rent based on the size of a particular property;

-offering additional "social" solutions instead of higher rent than cooperatives;

-the practice of "personal use" in operating cooperatives in contradiction with tax legislation.

A negative practice is the inclusion of clauses in the lease and lease agreements, which allow the tenant to reduce the rent according to the categories and arableness of the property. Unfortunately, the information about the parameter of cultivability of the property has changed over the years, and the digital system (under DOS until 2016) does not allow updating this parameter. In 2008, after the start of orthophotography, a map of the workability was made, but its overlay with the map of ownership is not public and available for use.

The other criterion for assessing the income from the specific land is its *division into categories*, localities (i.e. remoteness from the base), whether it is irrigated or not. Here, the mistakes that we commented on when preparing the map of the restored ownership affect the decisions of the tenants, since when calculating rents, work is done mainly on documents. This approach is often complicated, as X BGN/decare, it also depends on other characteristics of the land, such as the "method of permanent use" (according to documents) and the actual condition of the land. Since the official Ordinance No. 5 of 10.05.1999 contains more than 120 different types of permanent use, of which more than 30 could be counted as real arable land, a large part of the challenge for calculating rent using this method is the consolidation of the criterion and the creation of a methodology for Charging. For example, in the registers of the KBC there are entries such as "arable land", fields, desolate fields, grassed fields, sown area, etc., which in practice usually turn out to be arable fields. In the KBC it is assumed that a property can be multi-categorical, i.e. part of it to be in one category, part two in another, and part three in a completely different category, for this reason the concept of "prevailing category" is adopted. It is common practice for tenants to conclude more profitable contracts with landlords who are willing to conclude a longer-term contract. I.e. the impact of the term of the contract and/or its type (lease and lease) on the income from the land is also a matter of negotiations and search for the most profitable option for the Tenant-Lessor. Last but not least, properties with a larger size or more total leased land in one contract also enjoy special, inflated financial conditions. This is due to the fact that the cultivation of a property over 15 decares is relatively easier and with less losses than of a property close to the average size of the properties (about 7.2 decares - for Northern Bulgaria and 5.8 decares - for Southern

Bulgaria). In order to be competitive on the "land market", cooperatives usually offer additional "social" solutions – bread coupons, distribution of oil instead of sunflower, flour instead of wheat, meat or dairy products, etc. In the past, cooperatives often offered another type of relationship "personal use", which is practically a contract for joint processing or a service performed by the cooperative of the individual member-cooperator. This approach has been "copied" by the more progressive tenants since 2008 and works until the "change of generations" in the villages.

The entire set of ways to calculate rent and the possible variations for choice lead to an increase in the opportunities for development of the market related to digital solutions and their improvement in practical conditions. The correct calculation of rent payments is associated with a comprehensive process when implementing digital solutions. That is why these systems find a wide field of applicability and are one of the first to be developed by business practice. At this stage in Bulgaria, digital solutions for control and management by the state are characterized by catching up, not anticipatory development.

CONCLUSIONS

The distribution of agricultural holdings in Bulgaria by legal status shows that the number of natural persons has the highest relative share compared to the total number of farms in our country (91.43%). However, natural persons cultivate only 37.4% of the UAA, which confirms the thesis that they are relatively small-scale, despite the fact that they are the backbone of the Bulgarian agrarian economy. It is usually unprofitable to use expensive software solutions. Therefore, the information they have is insufficient to make adequate management decisions.

The challenges of implementing modern software solutions in agricultural areas and farms are related to the need to promote the implementation of digital solutions in business practice. In this sense, it is the state that is the administrator of the owner-user relationship of agricultural land and holds comprehensive information on the condition of the land resource. It should play a leading role in supporting access to information and digital solutions that are possible and applicable not only for large, but also for small farms.

The set of ways to calculate the rent from agricultural land and the possible variations for choice lead to an increase in the opportunities for development of the market related to digital solutions and their improvement in practical conditions. Systems for implementing digital solutions in calculating rent payments from agricultural land find a wide field of applicability and are one of the first to be developed by business practice. At this stage, digital solutions in Bulgaria are characterized by catch-up, not overtaking, development.

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