

ANALYSIS OF DECLARATION DATA OF FARMING LAND AND CROP AREAS

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Abstract

Declaration data of farming land and crop are analyzed in the article. Ukmergė district is chosen for the more detailed analysis. Statistical data of farmers and other land users are analyzed in the article; the declaration data of farming land and crop are analyzed and mathematical statistical dependence between the declared area and soil productivity index is determined. The results show that there are 2,506 registered farms in Ukmergė district and they manage the area of 18,430.07 hectares. The average parcel size amount to 7.35 ha. The number of farming persons in Ukmergė district as well as in Lithuania have considerably decreased during 7 years period. In 2014, the number of farming persons was by 38.12 percent smaller in Ukmergė district and by 41.24 percent in the whole territory of Lithuania compared to 2007. The comparison of the declaration data of 2011 with the data of 2014 shows that the declared area of farming land and crop in Ukmergė district has increased by 2.46 percent although the number of received applications has decreased by 22.2 percent. During the period of 2011–2014 the majority of assessed applications were received in 2013, i.e., 99.04 percent of all applications received that year. It shows that the size of land parcels has increased. Cereal crops (oat, wheat, triticale, barley, rye, buckwheat and corn) composed the major part of the declared areas in Ukmergė district in 2013–2014 (48.84 percent of all declared crops in 2013 and 53.79 percent in 2014). The analyzed agricultural holding “Egvila” during 2011–2014 period declared the area of approximately 272 hectares annually. This company grows white clover for seed, timothy for seed and cumin. Direct payments are received for all land areas. The analysis shows that farmers generally declared their own land. The analysis of the declared land distribution in Ukmergė district by land property right shows that 75 percent of the declared land are private and the remaining 25 percent are leased either from the state or from natural persons.

Key words: farming land, crop, declaration.

Introduction

Since 2004 the support scheme under which the direct payments are paid for owned area of farming land is applied in Lithuania. Since 2009 the State Enterprise Agricultural Information and Rural Business Centre is responsible for applications' and other documents' reception, registration, initial inspection and entry into the information system in the neighborhoods and agricultural departments of municipalities. A few years ago this Centre had started to implement an electronic system for crop declaration in Lithuania. Crop declaration is one of the most important tasks for farmers allowing supplement of a farm's and family's income. Farmers receive payments and increase their income only for proper maintenance of used land and growing certain crops.

The agriculture and rural development law of the Republic of Lithuania (Lietuvos..., 2002) is the main law regulating the principles of agriculture and rural development policy formation and implementation. Administration rules of 2014–2020 years' program of Lithuanian rural development (Lietuvos..., 2015) determine a general order of rural development administration. Direct payments are paid only to active farmers; this status is provided following the common criteria of the EU members.

According to G. Bunevičienė (Bunevičienė, 2010), 368,043 applications of payment for areas of farming land and crop were provided in Lithuania in 2008. Comparing years 2008 and 2014, it is seen from statistical data of the National Paying Agency that the number of provided applications is significantly smaller as only 140,445 applications were received in 2014.

Only 72 percent of farming land are declared in territories of unproductive land (Molėtai, Zarasai, Utena, Trakai, Vilnius, Ignalina, Šalčininkai and Švenčionys municipalities) and 87 percent in other localities. Less crop products are obtained in territories of unproductive land, and thus there are less declarations in these areas (Abalikštienė, 2013). The support for declared crop is also provided in less favorable for farming areas. The aim of the Less Favoured Areas (LFA) Support Scheme is to develop agricultural activities and also to maintain and encourage balanced farming systems, to improve environment of such locations following the EU legislation. However, the support only partly achieved the goals during 2004–2006, because LFA support did not promote agricultural production activity, besides fertility had decreased. LFA farms in Lithuania are smaller compared to other farms

in the country (Kriščiukaitienė et.al., 2007). The average farm size in Lithuania is by one third larger compared to average LFA farm. The same can be said about the farms of the analyzed holding “Egvila” which are also smaller as they belong to LFA.

The development of ecological farming accelerated after Lithuania had entered into the EU and compensatory payments for ecological farming increased. The size of compensatory payments has a great influence on development of ecological production in Lithuania. Ecological production is a promising economic sector in Lithuania, too (Pekarskas, 2012).

The aim of the article is to perform the analysis of declaration data of farming land and crop declaration. The following tasks are set for achievement of the aim:

1. to study the statistical data of farmers and other land users,
2. to analyze declaration data of farming land and crop in Ukmergė district,
3. to determine the dependence between the declared area and soil productivity index.

Land users use the information system with provided orthophotographic material when declaring farming land and crop. Declarants draw the fields of farming land and crop into auditorial land plots. An auditorial land plot (hereinafter referred to as ALP) is an entire land plot limited by natural and artificial objects (rivers, forests, roads, buildings etc.) possessing its characteristic natural features, dominant cover type, peculiarities of economic use. Each ALP has a provided unique identification code in the database of auditorial land plots. The size of this plot is used to control the size of applicants' declared fields (the sum of areas of fields declared in ALP is compared to ALP area or/and area suitable for the support).

Methodology of research and materials

Literature sources, statistical data, applications to receive direct payments for farming land and crop areas, cartographic material were used to perform the research. The collected data were analyzed using methods of literature analysis, statistical and comparative analysis and cartographic studies. Ukmergė district was chosen for a more detailed analysis. This district is situated in the middle of Lithuania. Data of the chosen district were compared with statistical data of the whole Lithuania. The data were received from agricultural holding “Egvila”, Statistics Lithuania, the Geoportal, the Agricultural Information and Rural Business Centre, National Paying Agency etc. The total declared area in 2014 in neighborhoods of Ukmergė district and an average soil productivity index were used to determine mathematical statistical dependence. The data of the agricultural holding “Egvila” were analyzed in more detail. “Egvila” declared land plots that belong to ecological farming, also these parcels belong to LFA, and therefore within the new financial period of Lithuanian rural program for 2014-2020 a corrected LFA map of 2007-2013 period was applied. Areas of two categories were isolated in it. The first category of large natural obstacles involved former areas of important and minor disfavor. The second category involves areas with specific obstacles, i.e. overflowed territories and territories of intensive cave (Lietuvos..., 2015). The agricultural holding “Egvila” was established on 18th March, 2011. It is a legal entity of limited financial responsibility; assets are separated from shareholders and members of the holding. There are two founders and shareholders who have equal rights in decision making. The holding performs activity in Lyduokiai neighborhood, Ukmergė district. The main field of activity is crop production: growing and realization of cereal crops and aromatic crops. The holding has the status of an ecological farm. Currently all production grown by the farmer is sold in Lithuania: joint stock company “Baltic Agro” and joint stock company “Litagros prekyba”. Agricultural activity is performed following European standards adopted in the fields of environment and food. New technologies and new farming techniques are being implemented in the holding. New technologies reduce costs and thus ensure the safety and quality conformity with the EU requirements of production placed on the market. Hereby the problem of competitiveness is being solved in the holding.

Discussions and results

Statistical data analysis of number of people working in agriculture in Ukmergė district in 2007 and in 2013 revealed the decrease of workers by even 33.92 percent in 2013 (Table 1).

Table 1

Number of people working in agriculture in Ukmergė district municipality and in Lithuania in 2007 and 2014

	All farms							
	Number of people employed in agriculture, in total		Farming persons and their family members		Permanent employees		Temporary workers	
	2007	2014	2007	2014	2007	2014	2007	2014
Ukmergė district	7,884	5,210	7,516	4,651	335	523	33	36
Lithuania	482,002	300,274	449,833	264,069	28,331	33,881	3,838	2,324

A downward tendency is also observed in the whole Lithuania. The total number of people working in agriculture decreased even more in Lithuania than in Ukmergė district municipality, i.e. by 37.70 percent.

During 7 years period an impressive decrease of the number of farming persons in Ukmergė district as well as in Lithuania is observed. The comparison between 2014 and 2007 shows that the number of farming persons has decreased by 38.12 percent in Ukmergė district and by 41.24 percent in the whole of Lithuania. Employees of Ukmergė district municipality in 2007 composed 1.64 percent of the total number of people working in agriculture in Lithuania.

The analysis of statistical data of the Land Fund of Ukmergė district municipality of years 2011-2014 proved that the amount of the used (declared) farming land has increased. The comparison between 2010 and 2014 shows that the declared farming land in Ukmergė district has increased by 14.71 percent. The analysis of the data of the whole of Lithuania revealed the increase by 12.97 percent accordingly. Therefore it can be concluded that the amount of the used (declared) farming land in Ukmergė district has increased more than in the whole of Lithuania.

It can be seen from the statistical data of direct payments for farming land and crop areas in Ukmergė district within 2011-2014 that the number of applications for declaration has decreased yearly (Table 2).

Table 2

The statistics of direct payments for farming land and crop in Ukmergė district

Year	Received applications, units	Declared area, ha	Requested support sum, EUR	Assessed applications, percent	Authorized sum, EUR	Paid amount, EUR	Paid off (from assessed support)
2011	3,488	62,552	7,181,486	98.62	6,843,394.48	6,843,379.64	99.99
2012	3,335	62,623.48	7,426,237.73	99.04	7,277,285.01	7,275,300.99	99.97
2013	3,102	63,348.49	8,328,428.43	99.13	7,936,355.22	7,934,401.50	99.98
2014	2,748	64,130.17	8,163,604.09	86.79	7,298,548.84	7,294,164.47	99.94

The comparison between 2011 and 2014 shows that the number of received applications has decreased by 22.2 percent, i.e. by 740 applications, although the declared area from 2011 to 2014 has continually been increasing. The growth of the declared area shows that the size of farms owned by land users has increased. It means that there is a constant process of appearing of farmers who expand their holdings and thus increase their income gained from agricultural activity.

On the whole, farmers declare their own land. The analysis of declared land distribution in Ukmergė district by land property rights showed that 75 percent of declared land is private and the rest is leased either from the state or from natural persons.

The use of arable land is very much dependent on soil productivity. Surveillance data show the dependence of declared farming land from soil productivity index. If soil productivity index has increased, the area of farming land also increases. To delineate the relations between the declared farming land and productivity of farming land, a linear equation was obtained:

$$y = 31,7446 + 1840,6768x, \quad (1)$$

where:

x – average productivity index of farming land;

y – the size of farming land, ha.

According to surveillance data, it can be stated that areas of farming land increased by approximately 1,840 hectares, if soil productivity index had increased by one point. The calculated correlation coefficient is equal to 0.76. It shows that analyzed relations are direct and strong. The determination coefficient is equal to 0.58. Hence, the declared area of farming land in Ukmergė district by 58 percent depends on the productivity of farming land. The estimated correlation and determination coefficients are reliable with confidence level 0.95.

According to statistical data of assessed applications from received applications for years 2011-2014, it was determined that the most of applications were evaluated in 2013 – even 99.13 percent of applications received that year, and the least of them in 2014 – 86.79 percent, respectively.

In accordance with statistical data of direct payments for farming land and crop areas in the whole of Lithuania within 2011-2014 it was determined that the number of received applications decreased in Lithuania as well as in Ukmergė district (Table 3).

Table 3

Statistical data of direct payments for farming land and crop areas in Lithuania within 2011-2014

Year	Received applications, units	Declared area, ha	Requested support sum, EUR	Assessed applications, percent	Authorized sum, EUR	Paid amount, EUR	Paid off (from assessed support)
2011	166,758	2,737,801	317,598,111	99.85	299,377,456.13	299,023,659.77	99.88
2012	157,895	2,752,574.51	325,576,539.57	99.49	318,620,290.77	318,437,454.16	99.94
2013	149,314	2,765,851.38	363,626,587.82	99.41	347,479,860.27	347,295,320.06	99.95
2014	140,445	2,800,258.55	359,935,244.20	87.37	319,015,647.55	317,769,476.40	99.61

The declared area increased in proportion during 2011-2014. Comparing the declared area in Ukmergė district and in the whole Lithuania, it was observed that the declared area has increased both in Ukmergė district municipality and in Lithuania. The analysis of what Ukmergė district's share was in the declared land of Lithuania in the time period 2011-2014 revealed that the largest (2.29 percent) declared land plot at Lithuanian scale was observed in 2013 and 2014, and the smallest one (2.27 percent) – in 2012. The statistical data of assessed applications from received applications in Lithuania in the time period 2011-2014 allow to conclude that the most of them were evaluated in 2011, i.e. even 99.85 percent of applications received that year. The largest number of applications assessed in Ukmergė district were in 2013. The analysis of data of Lithuania and Ukmergė district of 2013 concerning the assessed percentage of all received applications revealed that by 0.72 percent more applications were evaluated in Lithuania compared to Ukmergė district. The largest amount both in Lithuania and in Ukmergė district were in 2013. The largest difference between the requested and paid amounts in Lithuania were in 2014 when only 88.29 percent of the requested sum were paid off. The comparison of Ukmergė district with Lithuania in 2014 shows that the difference between the requested and paid off amount in Ukmergė district was 8.51 percent less compared to Lithuania.

The statistical data of the declared crop areas show that winter and spring crops in 2013 composed 48.84 percent of all declared crops and even 53.79 percent in 2014. Comparing the fields of winter and spring crops in 2013 with the fields in 2014, the number of hectares has increased by 4.95 percent (Table 4).

Table 4

Cereal crops declared in Ukmergė district in 2013-2014

Cereal crops	Composition	In total in 2013	In total in 2014
Winter cereal crop	Wheat, rye, triticale, barley	14,447.93	14,120.45
Spring cereal crop	Oat, wheat, triticale, barley, rye, buckwheat, corn	14,174.11	17,102.07
Pulses	Peas, beans, vetches, lupines, soy	1,729.49	1,285.99
Industrial crop	Beet, rape, hemp for seeds and fiber, first year and second year caraway, aromatic and spicy plants	7,028.24	6,632.75
Grasslands and pastures	Pastures-grasslands (up to 5 years), perennial pastures-grasslands (more than 5 years), natural and semi-natural grasslands, perennial pastures (grasslands) (more than 5 years), intended for merchant herbaceous production	20,580.88	18,292.68
Potatoes and vegetables	Potatoes, vegetables	385.37	376.25
Orchards and berry plantations	Orchards, berry plantations	255.16	232.65

Grasslands and pastures also composed a large part of all declared crops: 35.12 percent in 2013 and 31.51 percent in 2014. The least part consisted of orchards and berry plantations: 0.44 percent of all declared crops in 2013 and only 0.4 percent in 2014 accordingly.

The comparison between 2013 and 2014 shows that the total number of declared hectares has decreased by 558 ha or 0.95 percent of the total declared area.

One agricultural holding was also chosen for a more detailed analysis. Almost all land used by agricultural holding “Egvila” is leased from private persons. According to the data of 2014 the land area of the holding was equal to 272 hectares. All parcels belong to LFA but productivity of grown crops is quite high. The compliance to agrochemical requirements and qualitative seeds ensure such productivity. Currently the owners of leased parcels would like to sell their land, and therefore agricultural holding is planning to purchase it. “Egvila” leased only 7 parcels from private persons in 2011; several land plots were divided into separate fields. Buckwheat, rye, mustard were grown, and pastures (grasslands) (up to 5 years) also composed a large part. Direct payments were received for all land plots. In 2013 the agricultural holding already leased 16 parcels from natural persons. Several land plots were divided into different fields. White clover for seeds, timothy for seeds and cumin were grown in the fields. Direct payments were received for all land plots. All land parcels managed by the holding participated in 2007-2013 Lithuanian rural development programs: ecological farming and belonging to less favoured areas. All land plots were certified as the ones that follow the requirements of ecological production. The analysis of the data of the agricultural holding “Egvila” in the time period 2011-2014 proved that cumin composed the largest part, i.e. 30.95 percent of all crops declared by the company.

The comparison between the areas of farming land declared by the holding “Egvila” and the areas of farming land declared in Ukmergė district in the time period 2011-2014 allows to conclude which farming land declared by the agricultural holding is located in Ukmergė district (Fig. 1).

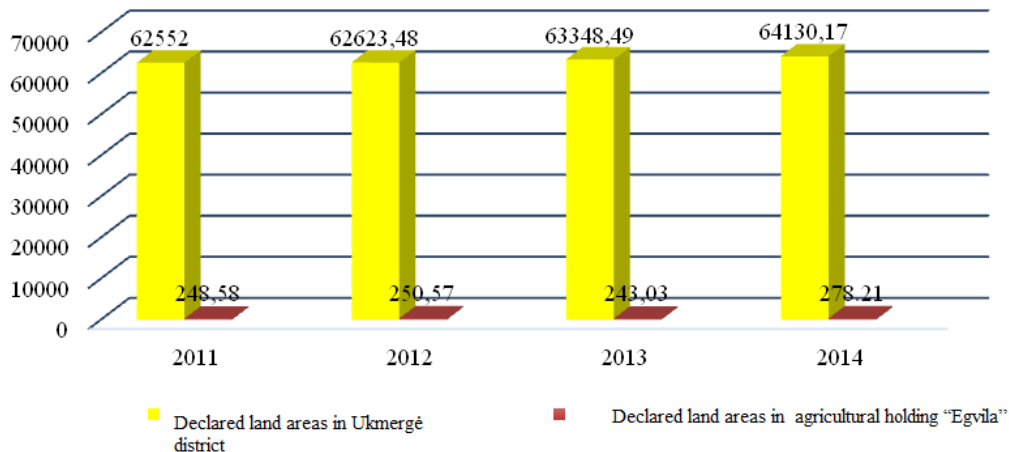


Fig. 1. Declared land areas in Ukmergė district and the agricultural holding "Egvila".

Revision of the farm's areas is performed every summer. The areas declared by agricultural holding "Egvila" coincided with the plots measured during the revision. The data presented in applications corresponded to the real situation in the farm, thus the holding "Egvila" did not receive any sanctions and no violations were determined. The agricultural holding operates according to the European Union standards adopted in the fields of environment and food. New technologies and new farming techniques are being implemented in the holding. New technologies reduce costs and thus ensure the safety and quality conformity with the EU requirements for products in the market. Hereby the problem of competitiveness is being solved in the holding.

On the whole, the analyzed data shows that agriculture activity in Ukmergė district is determined. Land users declare farming land and crop, and it results in obtained support from both Lithuania and the EU. Although the number of farmers has decreased, the amount of the total declared area remains steady.

Conclusions

1. The decrease of number of farming persons in Ukmergė district as well as in Lithuania is observed. During 7 years period, the comparison between 2014 and 2007 shows that the number of farming persons has decreased by 38.12 percent in Ukmergė district and by 41.24 percent in the whole Lithuania.
2. The comparison of the declaration data of 2011 with the data of 2014 shows that the declared area of farming land and crop in Ukmergė district has increased by 2.46 percent although the number of the received applications decreased by 22.20 percent. During the period of 2011–2014, the largest number of assessed applications were in 2013, i.e. 99.04 percent of all applications received in that year. It shows that areas of properly used land has increased.
3. Cereal crops (oat, wheat, triticale, barley, rye, buckwheat and corn) was used in the major part of the declared areas in Ukmergė district in 2013-2014 (48.84 percent of all declared crops in 2013 and 53.79 percent in 2014, respectively).
4. The statistical analysis shows that the areas of declared crops and farming land have increased if the recorded soil productivity index is higher.

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