

Agricultural Land Utilization Efficiency: The Case of Latvia

I. Pilvere, A. Nipers, and I. Upite

Abstract—Agricultural land is critically important, but limited resource for production of agricultural goods. Therefore, it is essential to exploit agricultural land efficiently to provide the planet's growing population with food. We evaluated how efficient is utilization of the agricultural land in a northern country called Latvia. Based on statistical data at micro level, we evaluated inefficiently exploited areas that potentially might be available for the production of agricultural products. It is discovered that in 2013 as much as 37% (or 874.4 thousand hectares) of utilized agricultural area were not efficiently exploited in the country. The reasons for ineffective use are described and production potential is evaluated.

Index Terms—Agricultural land utilization, land availability, efficiency.

I. INTRODUCTION

As scientists Achim Dobermann and Rebecca Nelson [1] pointed out, agriculture is the world's largest use of land, occupying about 38% of the Earth's terrestrial surface. The Food and Agriculture Organization (FAO) of the United Nations [2] emphasise that for rural women and men, land is perhaps the most important household asset to support production and provide for food, nutrition and income security. The European Commission [3] points out that agriculture depends on the use of natural resources such as land, soil, water, and nutrients. In an economy, land is one of the most important factors of production along with entrepreneurial ability, information, labour, and capital [4], which, if rationally exploited, maintain fertility, and it may be also exploited by future generations. Agricultural land is an important resource in the economy of Latvia, as in Latvia 98% of land is situated in the countryside. From the total area in Latvia, woodland comprises 46% of this area, but 38% is agricultural land [5]. In the European Union (EU), Latvia may be regarded as a country rich in natural capital. Latvia's population density is relatively low, therefore, the country is one of the "greenest" and least-urbanised EU territories. Latvia's largest natural endowments are forests, soil, some mineral deposits, and water as well as flora and fauna [6].

In the world, scientists much discuss about how to more efficiently exploit resources, including land, to provide the planet's population with necessary food. The agricultural

community has had tremendous successes in massively increasing world food production over the past five decades and making food more affordable for the majority of the world's population, despite a doubling in population [1]. Yet, according to J. N. Pretty, J. Thompson and F. Hinchcliffe [7] as the previous century drew to a close, agricultural development faced some unprecedented challenges. By the year 2020, the world will have to support some 8.4 billion people. Even though enough food is produced in aggregate to feed everyone, some 800 million people still do not have access to sufficient food.

Continuing population and consumption growth will mean that the global demand for food will increase for at least another 40 years. But the world can produce more food and can ensure that it is used more efficiently and equitably [8]. Investing in agriculture is also one of the most effective strategies for achieving critical post-2015 development goals related to poverty and hunger, nutrition and health, education, economic and social growth, peace and security, and preserving the world's environment [1].

Richard Flavell [9] stresses that ... we need to increase the rate of gain in food production and ... intensify food production on less land and free up land for other needs. This means working rapidly and purposefully towards intensifying agriculture sustainably to produce the amounts and diversity of food needed using as little land as possible. May the farmers, knowledge generators and entrepreneurs of the world teach us all, and especially disconnected decision-makers and citizens, how to overcome our current challenges, decade by decade and create the sustainable promised land for 9 billion people [9].

Sustainable intensification of agriculture is known to offer significant opportunities to improve food production. Sustainable intensification is a term now much used in discussions around the future of agriculture and food security. On the one hand, scientists T. Garnett and C. Godfray [10] emphasise that sustainable intensification is not wedded to any one agricultural approach. It is based upon the principle that in a complex world with a growing population, the more effective use of inputs and the reduction of undesirable outputs in order to achieve greater yields – intensification – is fundamentally required in order to achieve sustainability. A similar opinion belongs to J. N. Pretty, J. Thompson and F. Hinchcliffe [7], who point out that the basic challenge for sustainable agriculture is to make better use of available biophysical and human resources. This can be done by minimising the use of external inputs, by optimising the use of internal resources, or by combinations of both.

One of the opportunities is to support national policies and strategies for sustainable agriculture. However, a critical

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I. Pilvere is with the Latvia University of Agriculture, Faculty of Economics and Social Sciences, Latvia (e-mail: ipilvere@gmail.com).

A. Nipers is with the Latvia University of Agriculture, Institute of Economics and Business in Riga, Latvia.

I. Upite is with the Latvia University of Agriculture, Faculty of Economics and Social Sciences, Department of Business and Management, Latvia.

debate and dialogue is essential to move forward with the alternative agriculture movement, especially if the goal is to promote a truly alternative agricultural path [11]. FAO [2] stresses that sound policies are needed to create the incentives and capacities for sustainable consumption and production and to enable consumers and producers to make sustainable choices.

In Latvia, the problems of land utilisation have been researched by many scientists – A. Dobele [4], V. Baumanė [12] and [13], A. Lenerts un I. Pilvere [14], A. Dobele, I. Pilvere, E. Ozols, L. Dobele [15], I. Pilvere [16] and others. Foreign scientists point out that sustainable intensification has been focused on developing countries, where the imperative for output increases are paramount. Fewer studies have applied the concept to developed economies. A.P. Barnes and C. E. Z. Poole [17] emphasise that a number of influential policy circles have championed the concept of sustainable intensification as a technology to meet the challenge of a growing population. Various definitions exist for sustainable intensification, but the concept is driven by future constraints on land use.

In Latvia, the inefficient exploitation and excess of land are regarded as problems, whereas in other EU countries there are discussions about the lack of land [18]. That is why a *hypothesis* is defined in the present research as follows: it is possible to increase the exploitation efficiency of utilised agricultural area (UAA) in Latvia that could be used for agricultural production in the future.

To prove or reject the hypothesis, it is necessary to assess Latvia's land resources exploited in agriculture and whether it is possible to exploit them more efficiently in order to contribute to the worlds' food security, maintaining the sustainability of land resources.

Research object: utilised agricultural area.

Research aim: to assess the resources of agricultural land in Latvia in order to determine the possibilities for their intensive and effective use in agricultural production in the future.

In order to reach the research aim, the following *research tasks have been set:*

- 1) To determine the resources of UAA in Latvia in various groups of use.
- 2) To assess the availability of inefficiently exploited agricultural land for agricultural production in Latvia.
- 3) To estimate the output of agricultural products for the improved exploitation of UAA.

Research methodology and methods – several research methods were used. In order to determine UAA resources and their quality, as well as to estimate the output of agricultural products, were used constructive calculation method, the statistical analysis method, as well as data grouping method. Data grouping was performed by using the MS Excel tool Data Filter. The monographic method, the document analysis method, analysis and synthesis methods were used to describe and represent the research results. The research analysed information from the State Land Service (SLS) and the Rural Support Service (RSS) databases and statistical data from Eurostat. In the study design process, special and general literatures in relation to the topic of research were used.

II. ASSESSMENT OF THE EXPLOITATION OF UAA IN LATVIA

In 2011 in Latvia, the UAA occupied 37.6% of the country's total territory, which was a 1.7% decrease compared with 2005 [12]. Land resources can ensure the country's food security. Yet, large areas of agricultural land are not exploited for agricultural purposes and gradually overgrow, degrading the surrounding environment. The reason for it is the large number of farms that are not practically able to compete in producing traditional agricultural products [6]. There were more than 83 thousand farms in Latvia in 2010, and the average UAA per farm was 19.6 hectares [19] and [20]. Besides, only approximately 45% of the total number of farms in Latvia produces agricultural goods for sales in the market [21]. The European Commission's opinion has to be taken into consideration that smallholder farms are an important part of the solution and they must be supported to achieve productivity gains [3]. Therefore, in Table I, the uses of UAA by category in Latvia are summarised:

- Productive areas are arable land, fallows, plantations of perennial grasses, perennial fruit-trees, nectar plants, short-rotation coppice species (aspen, osier, grey alder with a 5-year harvest cycle), and permanent meadows and pastures used for raising livestock;
- Areas declared for the Single Area Payment Scheme (SAPS), which are maintained in good agricultural and environmental condition;
- The RSS uses the Field Register's geographical information system (GIS) information on agricultural land in the form of agricultural parcels. The agricultural parcels are the UAA that was maintained in good agricultural condition as of 30 June 2003 and the area of which is equal or less than 0.30 ha and which border on the boundaries of stable objects identifiable in nature;
- The SLS classifies the land whose purpose of use is defined as "agricultural" into two types: land for agriculture as the main economic activity and land for crops, moving grass, grazing livestock, growing feed crops, orchards, and other perennial fruit-trees, vegetable gardening, floriculture, fungiculture, and crops under glass;
- Since 2004, the Latvian State Forest Research Institute (LSFRI) "Silava" has been surveying the entire territory of Latvia, thus collecting statistical information on land resources.

TABLE I: DISTRIBUTION OF THE UAA BY CATEGORY IN LATVIA IN 2010 AND 2013

Distribution of the area	2010 (ha)	2013 (ha)	Change from the base year	
			ha	index
Productive area	1368000	1459051	91051	107
Area declared for the SAPS	1566000	1638574	72574	105
Area of the agricultural parcels	2162000	2038986	-123014	94
UAA, SLS data	2430000	2386574	-43426	98
UAA, LSFRI "Silava" data	2369000	2191070	-177930	92

Source: RSS, SLS, LSFRI "Silava" data bases, 2013 [22], [23] and [24]

A comparison of the productive area and the area declared or the SAPS (Table I) shows that there were 5-7% increases in these areas in Latvia in the period 2010-2013, yet, the total

potential resources of agricultural land, for their use in the future, decreased within a range of 2-8%, depending on the data source.

To determine the potential of exploitation of UAA in the future, it is necessary to analyse the distribution of UAA by size (Table II).

The analysis of the RSS Field Register's GIS information leads to a conclusion that agricultural holdings occupying

from 31% (productive area) to 36% (agricultural parcel area) of the total UAA are small and fragmented – less than 20 ha in size – in which raising productivity is difficult. Nevertheless, 63-69% of the total UAA consists of relatively large holdings in which it would be possible to increase the indicators of land exploitation.

TABLE II: DISTRIBUTION OF THE UAA BY SIZE GROUP IN LATVIA IN 2013

Size group of holdings	Productive area		Area declared for the SAPS		Area of the agricultural parcels	
	ha	distribution, %	ha	distribution, %	ha	distribution, %
< 1 ha	1157	0	1511	0	9834	0
1 - 5 ha	50608	3	66487	4	129808	6
5 - 10 ha	137813	9	170756	10	234426	11
10 - 20 ha	273513	19	316485	19	381909	19
20 - 50 ha	373970	26	410764	25	466348	23
50 - 100 ha	183588	13	195618	12	218172	11
100 - 200 ha	112723	8	120481	7	134251	7
200 - 500 ha	111103	8	120265	7	139051	7
More than 500 ha	206202	14	226598	14	298280	15
Unrecognised areas	8375	1	9608	1	26906	1
Total	1459051	100	1638574	100	2038986	100

Source: RSS and SLS databases, 2013 [22] and [23]

The quality of UAA has to be taken into account, for instance, the proportion of ameliorated area in the total UAA and agricultural land qualitative estimates in points, as it indicates the suitability of these areas for agricultural production.

Since soil moisture is high in Latvia, it is important whether a particular agricultural parcel is ameliorated. The characteristics of the relatively intensively exploited UAA, broken down by whether it is ameliorated, are presented in Table III.

TABLE III: DISTRIBUTION OF THE UAA BY SIZE GROUP AND BY WHETHER IT IS AMELIORATED IN LATVIA IN 2012

Size group of holdings	Productive area, ha			Area declared for the SAPS, ha		
	ameliorated	unameliorated	unameliorated, %	ameliorated	unameliorated	unameliorated, %
< 1 ha	1424	638	31.0	1673	878	34.4
1 - 5 ha	48884	13205	21.3	57965	18168	23.9
5 - 10 ha	109596	29092	21.0	126613	38595	23.4
10 - 20 ha	253480	57508	18.5	283259	72953	20.5
20 - 50 ha	420147	82321	16.4	455736	100159	18.0
50 - 100 ha	231591	36165	13.5	247404	42823	14.8
100 - 200 ha	96204	14919	13.4	104693	19670	15.8
200 - 500 ha	41185	4607	10.1	42895	5184	10.8
More than 500 ha	12984	1256	8.8	13662	1779	11.5
Unrecognised areas	3024	822	21.4	3372	1093	24.5
Total	1218518	240533	16.5	1337272	301303	18.4

Source: RSS and SLS databases, 2013 [22] and [23]

According to the RSS Field Register database, the proportion of ameliorated area on small agricultural holdings with the size of less than 20 ha is lower, but the greater is the size of an agricultural holding, the relatively greater is its ameliorated area; on average in the country, 84% of the productive area and 82% of the area declared for the SAPS are ameliorated.

A similar situation is observed regarding UAA qualitative estimates – 19% of small holdings (less than 20 ha) and 12% of larger holdings (more than 20 ha) are estimated below 25 points (average in Latvia is 38 points), which, according to experienced agronomists, is insufficient in Latvia to exploit this area for agricultural production, as too large investments are necessary for it [24].

III. ASSESSMENT OF THE INEFFICIENTLY EXPLOITED AGRICULTURAL AREA IN LATVIA

To identify the inefficiently exploited agricultural area in

Latvia, the following calculations were performed (Table IV):

- The mowed area, which was only mowed once a year and thus contributed to the formation of nice rural landscapes but on which no agricultural production took place, was calculated. It was a difference between the area declared for the SAPS and the productive area;
- The area undeclared for the SAPS, which indicated that the owners of these holdings, for some reasons, did not apply for support payments, was calculated; it was a difference between the area of agricultural parcels and the area declared for the SAPS. There might be several reasons for it – the land was not maintained in good agricultural condition as of 30 June 2003, as its owners
- Did not wish inspections to be done on their farm or were not aware of the eligibility criteria for direct payments. Thus, one may make an assumption that the owners of these holdings were not active farmers engaged in intensive agricultural production and, most

likely, these areas also contributed to maintaining the surrounding landscape;

- The unfarmed agricultural area, which was made up of the difference between the area registered by the SLS and the area of agricultural parcels, was calculated.

Even though the inefficiently exploited agricultural area decreased in Latvia in the period 2010-2013, yet, 37% of the UAA registered with the SLS are still exploited inefficiently. Of the total inefficiently exploited agricultural area, 66% contribute to creating “public goods” in rural territories,

thereby shaping tidy and attractive landscapes, whereas 34% are unfarmed and overgrown lands that may not be exploited without making large investments in agricultural production, but they may be used for other purposes, for instance, in forestry.

To assess the availability of inefficiently exploited land for agricultural production in the future, calculations on the distribution of this area by size group were performed (Table V).

TABLE IV: INEFFICIENTLY EXPLOITED AGRICULTURAL AREA IN LATVIA IN 2010 AND 2013

Distribution of the area	2010 (ha)	2013 (ha)	Change from the base year	
			ha	index
Mowed area	198000	179523	-18477	91
Area undeclared for the SAPS	596000	400412	-195588	67
Unfarmed area	366403	294508	-71895	80
Inefficiently exploited area	1160403	874443	-285960	75
Proportion of the inefficiently exploited area, SLS data, %	48	37	-11	77

Source: RSS and SLS data bases, 2013 [22] and [23]

TABLE V: DISTRIBUTION OF THE INEFFICIENTLY EXPLOITED AGRICULTURAL AREA BY SIZE GROUP IN LATVIA IN 2013

Size group of holdings	Mowed area		Area undeclared for the SAPS		Unfarmed area		Inefficiently exploited agricultural area, in total	
	ha	distribution, %	ha	distribution, %	ha	distribution, %	ha	distribution, %
< 1 ha	489	0.3	11647	2.9	3	0.0	12139	47.0
1 - 5 ha	14044	7.8	71568	17.9	35258	12.0	120871	66.3
5 - 10 ha	26520	14.8	66792	16.7	47697	16.2	141009	51.2
10 - 20 ha	45225	25.2	85843	21.4	68788	23.4	199855	38.7
20 - 50 ha	53427	29.8	89743	22.4	81020	27.5	224190	29.8
50 - 100 ha	22471	12.5	36837	9.2	34725	11.8	94033	24.9
100 - 200 ha	13240	7.4	19628	4.9	19767	6.7	52636	30.7
200 - 500 ha	2288	1.3	4647	1.2	3602	1.2	10537	17.8
More than 500 ha	1201	0.7	5302	1.3	3648	1.2	10151	41.0
Unrecognised areas	618	0.3	8404	2.1	0	0.0	9022	x
Total	179523	100.0	400412	100.0	294508	100.0	874443	36.6
Distribution, %	x	20.5	x	45.8	x	33.7	x	100.0

Source: RSS and SLS data bases, 2013 [22] and [23]

In 2013 in Latvia, higher proportions of inefficiently exploited agricultural area were observed for small holdings sized less than 20 ha: 51% of the mowed area, 50% of the area undeclared for the SAPS, and 46% of the unfarmed area, which objectively indicated that these areas were not exploited for agricultural production.

The database indicators showed that relatively high proportions of unameliorated area were observed for the

inefficiently exploited area among various categories: 34% of the mowed area, 41% of the area undeclared for the SAPS, and 52% of the unfarmed area. A higher proportion of unameliorated area was specific to the small size groups [24].

The distribution of inefficiently exploited land by quality is presented in Table VI.

TABLE VI: DISTRIBUTION OF THE INEFFICIENTLY EXPLOITED AGRICULTURAL AREA BY QUALITY IN LATVIA IN 2013

Size group of holdings	Mowed area, ha			Area undeclared for the SAPS, ha			Unfarmed area, ha		
	> 26 points	< 25 points	<25 points, %	> 26 points	< 25 points	<25 points, %	> 26 points	< 25 points	<25 points, %
< 1 ha	314	76	19.5	1626	6638	80.3	2	1	29.9
1 - 5 ha	11645	2138	15.5	163	143	46.6	10200	25229	71.2
5 - 10 ha	21570	4745	18.0	14500	54825	79.1	15856	31939	66.8
10 - 20 ha	36882	8149	18.1	16584	51450	75.6	24583	44369	64.3
20 - 50 ha	43567	9659	18.1	21654	67378	75.7	30844	50220	62.0
50 - 100 ha	17842	4600	20.5	24129	71338	74.7	14299	20470	58.9
100 - 200 ha	9506	3633	27.6	9921	29030	74.5	8752	11016	55.7
200 - 500 ha	1569	717	31.4	6742	13726	67.1	1809	1942	51.8
More than 500 ha	684	398	36.8	1540	3270	68.0	2910	70	2.4
Unrecognised areas	4	4	52.3	3209	2546	44.2	-	-	-
Total	143582	34119	19.2	100069	300343	75.0	109253	185255	62.9

Source: RSS and SLS databases, 2013 [22] and [23]

Among the various categories of inefficiently exploited land, relatively high proportions were observed for the land areas having low qualitative estimates, especially the area undeclared for the SAPS – 75% and the unfarmed area – 63%. Yet, of the mowed area, 4/5 had a qualitative estimate of more than 26 points. A low qualitative estimate (<25 points) was specific to the groups of small agricultural holdings.

The areas, the use of which in intensive agriculture will be problematic in the future, have to be excluded from the inefficiently exploited area:

- A part of the unfarmed area, based on the results of previous researches – 199787 ha [18];
- The mowed area and the area undeclared for the SAPS – totally 346598 ha, including:
 - 1) Agricultural holdings sized less than 1 ha – 12136 ha;
 - 2) Agricultural holdings whose qualitative estimate is below 25 points–34119 ha and 300343 ha, respectively [22] and [23].

Therefore, additionally 328058 ha or 37.5% of the area exploited inefficiently in 2013 are available for intensive agricultural production in Latvia in the future.

IV. AGRICULTURAL PRODUCTION GAINS FROM RAISING THE EFFICIENCY OF USE OF AGRICULTURAL LAND IN LATVIA

Foreign scientists admit that in the first instance, emphasis should not be placed on agricultural extensification (i.e. bringing more land under production), but on sustainable agricultural intensification. There is no need for agriculture to expand into uncultivated lands, as existing farmlands contain huge potential that is currently being overlooked [7]. Yet, the situation in Latvia is different, and it is possible to increase the output of agricultural products by: 1) intensifying production on the present productive area; 2) exploiting a part of the presently inefficiently exploited agricultural area.

A similar approach is used in researches performed by other scientists, for example, A.Dobermann and R.Nelson [1] point out that a multi-faceted agro-ecological intensification of food production is necessary to 1) increase productivity by at least 70% on existing crop and pasture land; 2) make farming an attractive economic development opportunity for

people living in rural areas, particularly smallholder farmers and small to medium entrepreneurs.

Therefore, there were performed calculations (Table VII) on the productivity levels achieved in EU Member States – agricultural output and gross value added (GVA) averages in the years 2007-2012 per ha UAA (on average in 2007 and 2010).

Based on productivity levels, the EU Member States may be classified into several groups:

- 1) Member States with a high agricultural output level and a relatively high GVA per ha of UAA, as well as a high proportion of GVA in agricultural output;
- 2) Medium agricultural output and GVA per ha of UAA;
- 3) Very low agricultural output and GVA per ha of UAA in traditional agriculture, which is indicated by the low proportion of GVA in agricultural output.

Unfortunately, the lowest analysed indicators are observed in Latvia compared with the other EU Member States, which implies that it is possible to increase agricultural production intensity in Latvia. Therefore, 3 possible development scenarios were elaborated for the efficient and intensive exploitation of UAA in Latvia:

- 1) **Minimal** (scenario 1) – agricultural output, measured per ha UAA, is increased in the productive area up to 75% of the EU-12 level, and the presently inefficiently exploited area is not additionally engaged into production; it may be achieved in a medium-term (5-7 years) by efficiently exploiting production resources;
- 2) **Optimal** (scenario 2) – agricultural output is increased in the productive area up to the EU-12 level, and the presently inefficiently exploited high-quality land is additionally engaged into production; it may be achieved in a period of 8-12 years;
- 3) **Maximal** (scenario 3)– agricultural output is increased in the productive area up to the EU-27 level, and the presently inefficiently exploited high-quality land is additionally engaged into production, which may be achieved in along-term (at least 13-20 years).

The calculation results are summarised in Table VIII.

TABLE VII: AVERAGE OUTPUT VALUE AND GROSS VALUE ADDED IN THE EU MEMBERS STATES

Countries	Output value per ha UAA		Gross value added per ha UAA		GVA per ha as a share of output per ha UAA, %
	EUR	deviation from the average in the EU-27, %	EUR	deviation from the average in the EU-27, %	
Latvia	586	27	159	18	27
Estonia	776	36	287	33	37
Lithuania	849	39	290	33	34
Bulgaria	1073	50	402	46	37
Slovakia	1094	51	245	28	22
Romania	1164	54	515	59	44
EU12	1249	58	471	54	38
Czech Republic	1264	58	329	38	26
Ireland	1327	61	324	37	24
Poland	1394	64	540	62	39
Hungary	1564	72	529	61	34
United Kingdom	1584	73	556	64	35
Spain	1692	78	923	106	55
Sweden	1707	79	469	54	27
Portugal	1764	82	655	75	37
Finland	1904	88	611	70	32
Austria	2152	99	886	102	41

EU27	2164	100	872	100	40
Slovenia	2374	110	881	101	37
France	2499	115	1001	115	40
Luxembourg	2696	125	796	91	30
Greece	2829	131	1453	167	51
Germany	2915	135	920	106	32
Italy	3602	166	1952	224	54
Denmark	3657	169	925	106	25
Cyprus	5104	236	2350	269	46
Belgium	5582	258	1651	189	30
Malta	11851	548	5287	606	45
Netherlands	12984	600	4394	504	34

Source: authors' calculations based on Eurostat, 2013, 2013, 2013 [25], [26] and [27]

TABLE VIII: DEVELOPMENT SCENARIOS FOR THE INTENSIVE AND EFFICIENT EXPLOITATION OF AGRICULTURAL AREA IN LATVIA

Groups of area exploited intensively/ Indicators	Additional agricultural output, million EUR			Additional gross value added, million EUR		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Productive area	725.1	967.4	2302.4	341.4	454.7	1041.0
Mowed area	0	96.1	228.7	0	45.2	103.4
Area undeclared for the SAPS	0	58.6	139.5	0	27.6	63.1
Unfarmed area	0	62.8	149.5	0	29.5	67.6
Total	725.1	1184.9	2820.1	341.4	557.0	1275.0
Increase against the level of 2007-2012, %	69.3	113.2	269.4	120.4	196.4	449.6

Source: authors' calculation

So, at any scenario, an additional 69-269% increase in agricultural output can be achieved in Latvia compared with the level reached in the period 2007-2012, which leads to a 120-450% increase in GVA if a more intensive and efficient use of UAA is practised, thereby contributing to providing the world's population with food. Besides, given the low intensity indicators in agriculture, it is possible to produce additional quantities of agricultural products, maintaining the sustainability of land resources.

V. CONCLUSION

Land is an important resource in Latvia's economy, as 98% of land is situated in the countryside. Agricultural land occupies 38% of Latvia's total area; its efficient exploitation has to be considered an important political objective, as land, according to studies, is the key resource used in producing food in the country.

In Latvia, a part of UAA is not exploited for agricultural production, as there are 83 thousand small agricultural holdings and their agricultural land is fragmented. Therefore, it is important to identify the intensity of use of UAA. Even though the productive agricultural area increased 7% in 2013 compared with 2010, yet, the area of agricultural parcels decreased by 6%, which indicated that the potential land resources for intensive agricultural production declined.

The analysis of the sizes of agricultural holdings showed that the holdings occupying 31% of the productive area and 36% of the agricultural parcel area are small – less than 20 ha. Besides, the proportion of ameliorated area among the small agricultural holdings was lower and their qualitative estimate was also lower, which limited the intensive exploitation of these holdings.

Although the inefficiently exploited area in Latvia decreased in Latvia in the period 2010-2013, 37% or 874.4 thousand ha of the UAA, registered by the SLS, are still exploited inefficiently. Of the total inefficiently exploited

agricultural area, 66% contribute to creating “public goods” in rural territories, thereby shaping tidy and attractive landscapes, whereas 34% are unfarmed and overgrown lands that may not be exploited without making large investments in agricultural production, but they may be used for other purposes, for instance, in forestry.

Analysing the possibilities of exploiting the UAA in the future based on the 3 scenarios, one can conclude that in Latvia, by intensively and efficiently exploiting the agricultural area, an additional 69-269% increase in agricultural output can be achieved, compared with the level reached in the period 2007-2012, and an additional 120-450% increase in GVA – depending on the scenario and the amount of investments in agriculture.

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Irina Pilvere received her doctor degree of economics in 2001. And she is now working in Latvia University of Agriculture, Faculty of Economics and Social Sciences as the Dean and Professor. She has 130 scientific publications and experience in 13 international and 35 national research projects, with scientific focus on following subjects: Agricultural and Rural Development, EU Funds, Effective Use of Resources, Challenges and Trends in Public Administration.



Aleksejs Nipers has earned a doctor's degree in Economics from Riga Technical University, Riga, Latvia, in 2010. His major field of interest during the doctoral studies was modelling of economic processes in a small open economy. He was started his working experience as an Economist at Latvian State Institute of Agrarian Economics in 2004, later continued as a leading researcher at Latvia University of Agriculture and director of RISEBA Institute of Economics and Business in Riga, Latvia. Policy impact evaluation for businesses and public institutions is his current research interest.



Ilze Upite received her doctor degree of economics in 2010 and she is working in Latvia University of Agriculture, Faculty of Economics and Social Sciences, Department of Business and Management as the assistant professor and as senior specialist in the Ltd "The Latvian Rural Advisory and Training Centre". Research interests: support for agriculture and rural development, competitiveness of enterprises.