

Some structural, economic and production-related problems of small farms in the Małopolskie Voivodeship

Wybrane problemy strukturalne, ekonomiczne i produkcyjne drobnych gospodarstw rolnych w województwie małopolskim

Wiesław Musiał

Uniwersytet Rolniczy w Krakowie

Abstract. The study discusses various aspects of the functioning of small agricultural farms in Poland, especially in its southern part. Among the provinces (voivodeships) of southern Poland, where small farms with up to 5 ha of agricultural land dominate in terms of both number and area, the Małopolskie Voivodeship shows the greatest variability of the conditions of agricultural production in the whole country. This results from the combination of mountains, foothills, uplands and fertile valleys with high-quality soils occurring in its area. For at least 10 years, various problems connected with disagrarisation have been observed to exacerbate in the voivodeship. Namely, the use of the productive potential of land has decreased and the area of fallow lands, especially in the western part of the voivodeship and in areas with prevailing poor soils, has increased. These changes have been concomitant with the decrease in the animal population. The present study touches also upon the position of agriculture in the Małopolskie Voivodeship compared to entire Poland and upon the issues of rural development.

Key words: small agricultural farms • disagrarisation • Małopolskie Voivodeship

Streszczenie. Opracowanie obejmuje różne aspekty funkcjonowania drobnych gospodarstw rolnych w Polsce, zwłaszcza w jej południowej części. Wśród województw południowej Polski, gdzie zarówno pod względem ilościowym, jak i obszarowym dominują gospodarstwa drobne, posiadające do 5 ha użytków rolnych, wyróżnia się województwo małopolskie. Województwo to charakteryzuje się największym w kraju zróżnicowaniem warunków produkcji rolnej. Wynika to stąd, że obok terenów górskich, pogórzy i wyżyn występują tu urodzajne doliny o glebach najwyższej jakości. Od co najmniej 10 lat na terenie województwa obserwuje się narastanie różnych problemów związanych z dez-

agraryzacją. Zmniejsza się wykorzystanie potencjału produkcyjnego ziemi, a zwiększa areał odłogów, zwłaszcza w zachodniej części województwa oraz na terenach z przewagą gleb słabych. Jednocześnie maleje pogłowie zwierząt. W artykule odniesiono się także do pozycji rolnictwa Małopolski na tle kraju oraz do problematyki rozwoju obszarów wiejskich.

Słowa kluczowe: małe gospodarstwa rolne • dezagraryzacja • województwo małopolskie

Introduction

The concept of a “small farm” falls into a relative, not fully defined, and in fact indefinable category, nevertheless, it is often used to describe, quite arbitrarily, private farms that are considered little by most farmers or inhabitants of a particular country. Their area, measured by the size of agricultural land, or their economic size, expressed in European size units (ESU) or in terms of market output, differ significantly between countries with prevalent large farms (e.g. the USA, the UK or the Czech Republic) and those with small-scale farming (e.g. Greece, Portugal, Romania or Poland).

The definition of a small farm and the difference between small and medium-sized farms or plots is still being discussed extensively, especially among economists and agricultural economics, but also among rural sociologists or political scientists. The key issue here is to adopt appropriate delimitation criteria. They may be based on the size of possessed or disposable (own or external) factors of production, such as land, labour and capital, or on the volume and value of agricultural production measured by different categories (e.g. gross output, market output, net final output). Other important category of measuring the size of farms may be the strength of ties with the market, reflected in the volume of purchases of production means and the volume of sales, as well as in the contribution of a farm to the supply chain, at least on local markets. Farms which are absent from the market perform only social functions (if so) for the owner, and ecological and perhaps cultural functions for society. The potential for creating employment constitutes a very important criterion of farm classification. The distinction between small and larger (or large) farms may be based on their ability to create effective workplaces for at least the owner of the farm or for the owner and partially for his wife or children. It can be assumed that medium-sized farms create at least two workplaces while large ones require hiring employees from outside the farm. Another criterion might be the level of agricultural income and its ability to fulfil the needs of the household and its owners, cover the value of their work, etc. The derivative of this condition is the ability to reconstruct or expand the reproduction and development of the productive assets of the farm.

Farm size depends largely on the direction of agricultural production. A small (1–2 ha) farm may be considered large in terms of economic size and sales value if it is involved for example in the greenhouse growing of horticultural crops, the production of vegetable or flower seeds, or even garlic. At the same time, a 100-hectare farm with a moderately intensive or extensive crop production may provide only

seasonal employment and thus may actually be considered a semi-agricultural farm (requiring its owner to have two occupations). The size of a farm is also a mental category; it may be subjectively perceived by the farm owner as a burden. In Małopolska¹, for example, farmers with 7–8 hectares of land and poorly-mechanised production often claim that their farms are too large, too cumbersome, extremely time-consuming, etc.

Finally, for the issue of the position and role of small farms it is very important to find an answer to a more general question: “Is small beautiful?” This means that there is a need to answer many detailed questions, including: “What is the function of small farms nowadays?”, “Are their economic and social functions still very important to their owners?”, “Are they important for the rural economy?”, “What ecological functions of small farms are the most valuable to the local community and to society?”, “Do these farms still play a positive role in shaping the rural production space and rural landscape, or are they a kind of threat to maintaining the positive and precious demographic, material and cultural values of the countryside?”

To facilitate the understanding of the specific nature of Polish agriculture and rural areas, especially of the structurally fragmented regions of southern Poland, the present paper provides a brief characterisation of agriculture in the Małopolskie Voivodeship. Particular attention is given to the economic and structural problems connected with the situation and development of small farms in the face of competition within the European Union, increasing globalisation of trade in agricultural products, and new challenges and reforms of the Common Agricultural Policy, which probably will take place after the year 2013.

Material and methods

An overview of the problems of small farming in Poland, with special emphasis on the Małopolskie Voivodeship, is largely based on the statistical data published by the Central Statistical Office of Poland and the regional Statistical Office in Kraków. It also uses the results of the author’s research conducted at the Institute of Economic and Social Sciences of the University of Agriculture in Kraków. The methods employed in the study include induction, deduction, and comparative analysis.

Results

Some remarks on Polish agriculture

To assess the organisation, management economics, and development perspectives of farms in Poland, it is necessary to emphasise that agriculture in our country shows a high spatial variability. This is due to the fact that the area and agrarian structure of farms have been formed in the course of complex processes including historical

¹ The name “Małopolska” is used in this study as an equivalent of the “Małopolskie Voivodeship”.

changes and partitions of farms, migrations, political changes, frequent revisions of the agrarian law, rural collectivisation, and privatisation of state farms.

According to farm area, the territory of Poland may be divided into at least three agricultural sub-regions: south-eastern; central; western and northern. The south-eastern sub-region has a highly fragmented agriculture, very low percentage of medium-sized and large farms, and a high number of very small holdings of a social or (and) residential nature (Fig. 1). The area of agricultural land per farm in voivodeships belonging to this region averages 8 ha, but usually it does not exceed 4 ha. A statistical farm in the central sub-region (the Dolnośląskie and Podlaskie voivodeships) covers an area of 8 to 16 ha. The third sub-region (western and northern parts of the country) has farms with an area exceeding 16 ha.

The size of a farm, understood as the area of agricultural land in its possession, presently seems to be a key issue in defining the production and economic potential of farms.



Fig. 1. Average size of agricultural holdings in Poland by voivodeship (data for holdings receiving subsidies from the Agency for Restructuring and Modernisation of Agriculture in 2008); AL – agricultural land

Source: Author's study based on the data of the Central Statistical Office (GUS 2009)

The recessive effects caused by the abandonment of agricultural production and the poor economic condition of farms are strongest in the regions with highly fragmented agriculture, among them Małopolska and Podkarpackie. The agricultural village there is no longer keeping up with the agrarian changes in the country as a whole, although the latter proceed at a rather slow pace. In quantitative terms, farms in both regions, especially small and micro farms, are in various stages of recession and even in the state of production and economic bankruptcy.

Figure 2 displays the fragmentation of agriculture and strong regional diversification of its agrarian structure in Poland. In three voivodeships of south-eastern Poland (Małopolskie, Podkarpackie and Świętokrzyskie), small farms (under 5 ha AL) account for around 50% of the total number of farms. To compare, the proportion of such farms in the Warmińsko-Mazurskie and Kujawsko-Pomorskie voivodeships, lying in the north of Poland, is 23% and 24%, respectively, and in six voivodeships in the central and northern parts of the country generally does not exceed 30%.

Farms which in Polish conditions can be considered as medium-sized, providing parity income from agriculture and producing mainly for the market, i.e. those with an area of over 30 ha AL, constitute a small proportion of farms in the coun-



Fig. 2. Percentage of agricultural holdings between 1 and 5 ha in Poland by voivodeship

Source: GUS (2008)

try. Their percentage is particularly small (from 0.2% to 0.7%) in the southern part of Poland, i.e. in the Małopolskie, Podkarpackie, Świętokrzyskie and Śląskie voivodeships (Fig. 3). As you move to the west and to the north of the country, the percentage of larger farms increases, to reach 9.3% and 9.5%, respectively, in the Zachodniopomorskie and Warmińsko-Mazurskie voivodeships with the highest concentration of land.

The productive and economic potential of a farm is directly related to its area. Small and micro farms have for at least 20 years been showing limited ability to reproduce their productive assets. They have made little or none investments in machinery and technical equipment, and have abandoned or reduced animal production, especially cattle. These farms as a rule are technologically backward, and the gap compared to larger farms seems to increase. Therefore, the productive potential of the region is inversely proportional to the number and percentage of small and micro farms.

When taking the average production potential of Poland as 100 points, the highest production capacity is exhibited by holdings from traditionally agricultural regions, i.e. the Wielkopolskie and Kujawsko-Pomorskie voivodeships (135 and 139



Fig. 3. Percentage of agricultural holdings above 30 ha in Poland by voivodeship

Source: GUS (2008)

points, respectively). Also holdings from the north-western regions have an above-average production potential. The Warmińsko-Mazurskie Voivodeship with a very low production potential (44 points) and the Kujawsko-Pomorskie Voivodeship with the highest potential in the country (139 points) constitute the two ends of this scale. The voivodeships of south-eastern Poland differ greatly from the average, scoring between 64 points (Małopolskie) and 79 points (Podkarpackie; Fig. 4).

The stock of animals (cattle, pigs, sheep and horses) varies widely across the country. However, the actual animal stock depends mainly on two species, i.e. cattle and pigs. The distribution of bovine animal production in Poland is closely related not to the fodder base, especially not to the proportion of permanent grassland, but to the percentage of medium-sized and large farms in a given voivodeship. It is also connected with breeding traditions and livestock institutional support, mostly dairying. Thus, in the southern part of the country, where the percentage of meadows and pastures is relatively higher because of the presence of mountains and foothills, the animal stock is not high (Fig. 5). This refers in particular to the Podkarpackie and Dolnośląskie voivodeships, however, other voivodeships in the southern part of the country also



Fig. 4. Productive potential of individual holdings in Poland by voivodeship (expressed as % of country average)

Source: "Wieś Jutra" ["Countryside of Tomorrow"], no. 6–7/2008

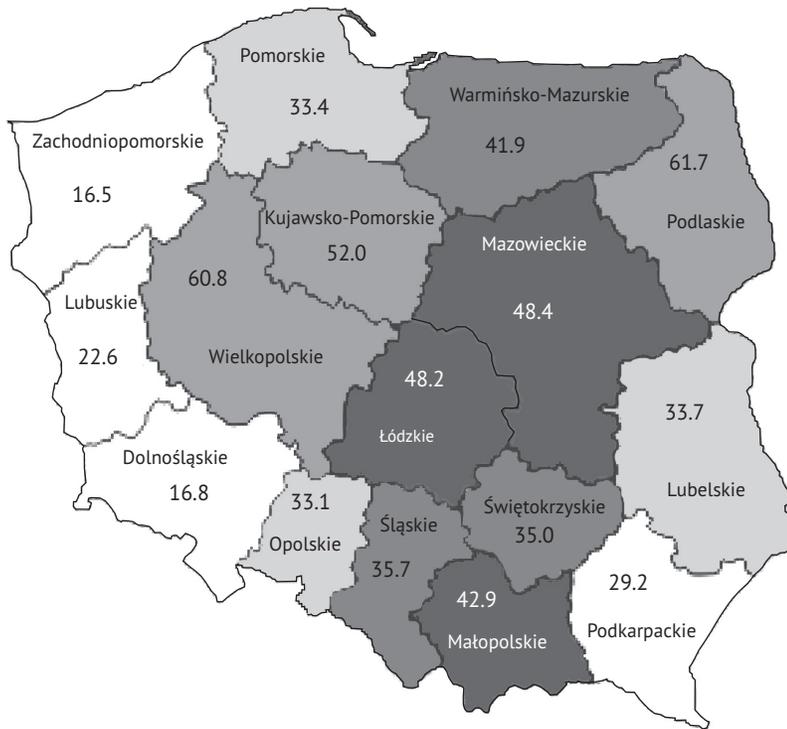


Fig. 5. Animal stock (LSU/100 ha arable land; LSU – livestock unit) in Poland by voivodeship

Source: “Wieś Jutra” [“Countryside of Tomorrow”], no. 6–7/2008

tend to abandon animal breeding, especially the raising of milk cows. Also in the western provinces, where animal production was previously carried out in large state holdings, there has been a dramatic reduction in livestock after their liquidation (and privatisation). The newly-established farms here usually specialise in crop production (mainly cereals).

Regional specialisation in the breeding of milk cows is particularly evident when looking at milk quotas (Fig. 6). Nearly 40% of the total national milk quota (which amounts to 9.568 million tons) is located in two voivodeships: the Podlaskie Voivodeship, which has become a real centre of cow breeding, and the Mazowieckie Voivodeship. Southern Poland voivodeships, specifically the Podkarpackie and Małopolskie, and western voivodeships, such as the Lubuskie and Dolnośląskie, receive less than 2% of the national quota each.

Another issue worth considering in the context of the agricultural development of Poland is the employment in the agricultural sector. Small and medium-sized farms are based on their own family labour, which normally is not sufficiently productive. Such farms tend to be a “storage” of labour surplus. The largest labour reserves are located in three southern voivodeships, i.e. the Podkarpackie, Małopolskie and Świętokrzyskie



Fig. 6. Percentage of producers with milk quotas in Poland by voivodeship

Source: Author's study based on the data from the Bulletin of the Ministry of Agriculture and Rural Development, no. 1–2/2009

(Fig. 7). The first two of them have a high population density exceeding 130 people per km². At the same time, their great demographic potential provides perfect opportunities for the intensification of production, although this refers only to fruit- and vegetable-specialised sub-regions. In other sub-regions, the population surplus (in statistics counted among those employed in agriculture) leaves quite often the village or region for a long time or temporarily.

The labour surplus is also permanently or temporarily employed in services, especially tourism, and also in the grey market. In the northern and western voivodeships of the country, where medium-sized and larger farms prevail, the employment in the agricultural sector ranges from 3 to 8 workers per 100 ha, which forms a basis for effective employment, a higher productivity, and a more reasonable organisation of farms.



Fig. 7. Employment in agriculture (workers/100 ha agricultural land) in Poland by voivodeship

Source: "Wieś Jutra" ["Countryside of Tomorrow"], no. 6–7/2008

Brief characterisation of the Małopolskie Voivodeship

Rural areas located in mountains and foothills are of particular importance to the country because of the resources of drinking water and the natural landscape values they possess. The prevalence of extensive farming in Małopolska is largely due to natural barriers and the fragmentation of holdings. The natural barriers to the development of agriculture and rural areas in the southern part of the region are a high proportion of land situated on steep slopes and a short growing season. In addition, factors causing soil degradation (e.g. water erosion) lead to a decrease in the organic matter of arable soils, which impairs environmental quality. A major threat to the soil is also posed by the abandonment of farming on arable lands. The latter is usually due to natural conditions (poor soil quality, unfavourable land relief, deficit or excess of rainfall), the economic and organisational conditions of agricultural activity, as well as external factors.

The Małopolska countryside experiences a gradual decline in the population working in agriculture. There is a steady outflow of the population from periph-

eral zones of the region to large cities, and a very dynamic daily work-orientated migration. Mono-functional agricultural districts, especially those with traditional agriculture, suffer the greatest loss of population. An inflow of people can be seen in multifunctional areas, mainly in the neighbourhood of large cities. There is also an opposite trend consisting in the migration of urban residents to the countryside. Their inflow to some areas is so heavy that some of the agricultural land is taken over for housing development. The excessive expansion of housing in some districts represents a threat to the natural environment and landscape. Villages that do not have proper sewage systems and waste-management systems but abound in holiday residences lose their original nature constituting their natural and cultural value, appropriate for rural areas.

Małopolska is a region where a population of over 3.2 million inhabitants (i.e. 8.3% of the total Polish population) lives on a relatively small territory (4.9% of the country area). Consequently, the region ranks 12th in the country in terms of area, and 4th in terms of population. The population density in Małopolska is 212 people per km² (Poland – 124 people per km²).

The rural areas of Małopolska are inhabited by 1.6 million people (10.7% of the total rural population in Poland). The percentage of persons with a secondary or higher education is significantly lower in rural than urban areas. In cities, 10% of people have a higher education and 34% of inhabitants have a secondary education, while in villages this is 2% and 16%, respectively. Persons with a primary education account for 45% of the rural population of Małopolska (compared to 48.5% in Poland).

The socio-economic transformations taking place in Poland have brought about changes in the traditional model of both village and agriculture. The share of agriculture in the GDP has declined, although the proportion of this sector in the employment structure has remained large, which indicates a great potential of the agricultural sector, on the one hand, and a need for increasing its efficiency and diversifying economic activities in rural areas, on the other. The basic condition for rural development is to increase this diversity, mainly through enhancing the structure of socio-economic functions. The Polish countryside remains dominated by agriculture, which calls for developing its non-agricultural economic functions, i.e. services, tourism, housing, and forestry.

To combat severe unemployment and social problems, very much attention is paid to the development of small businesses, including small and medium enterprises, especially in rural areas. It is commonly believed that the number of businesses operating within a district, county or voivodeship creates its economic strength. The level of the non-agricultural entrepreneurship of the inhabitants of mountain areas can be assessed by using such indicators as the density of business entities and their number per 10 thousand inhabitants (Table 1). The data shown in the table refer to businesses registered in the REGON system. In 2009, there were about 314.0 thousand businesses in Małopolska (about 8.4% of all the registered entities in Poland). Although the number of businesses per 10 thousand inhabitants in the Małopolskie Voivodeship – 952 – was lower than the country's average (981), the number of business entities per square kilometre in Małopolska (about 20.7) was almost twice higher than in Poland (12.0 on average).

Table 1. Entrepreneurship indicators for Poland and the Małopolskie Voivodeship

Item	Poland			Małopolskie Voivodeship		
	2002	2005	2009	2002	2005	2009
Total number of business entities (thousand)	3468.2	3615.6	3742.7	278.2	289.7	314.0
Number of business entities per 10 thousand inhabitants	907	948	981	859	887	952
Newly registered business entities per 10 thousand inhabitants	–	69	92	–	63	95
Business entities deleted from the registry per 10 thousand inhabitants	–	56	94	–	58	58
Number of business entities per km ²	11.1	11.6	12.0	18.4	19.1	20.7

Source: Author's study based on the data of the Central Statistical Office (GUS 2003, 2006, 2010)

During the period 2002–2009, the number of businesses both in Poland and Małopolska tended to rise, with the increase being greater in the latter. It should also be noted that Małopolska had a higher rate of newly registered business entities (95 entities/10 thousand inhabitants) and a lower rate of those going out of business (58 entities/10 thousand inhabitants).

Comparison of the number of registered entities with the number of people of working age suggests that the rate of entrepreneurship in the Małopolska region was quite high, about 150 entities per 1000 people of working age, close to Poland's average (152 entities per 1000 people). Most businesses, both throughout the country and in Małopolska, operated in the services sector, less in the industry, and the least in the agricultural sector.

Looking at individual counties of the voivodeship it can be noted that the highest rates of entrepreneurship, referred to both population and area, were in the counties with larger cities (Kraków, Nowy Sącz, Tarnów). The latter had a higher number of companies from the services sector than Poland on average, and a few agri-business companies. Very high rates of entrepreneurship were also found in the Tatrzański County where companies operate mostly in the tourism sector. The situation was worst in the Tarnowski and Dąbrowski counties with entrepreneurship rates twice lower than in Małopolska on average.

Unemployment in Małopolska varied markedly between the counties and had mainly a structural nature. This was caused by several factors, among them a mismatch between supply and demand in terms of area and profession. It is also necessary to account for hidden agrarian unemployment, considering that the law on the labour market² does

² Ustawa z dnia 20 kwietnia 2004 r. o promocji zatrudnienia i instytucjach rynku pracy. Dz.U. 2004 Nr 99, poz. 1001 (z późniejszymi zmianami) [The Act of 20 April 2004 on the promotion of employment and labour market institutions. Journal of Laws 2004, No. 99, item 1001 (as amended)].

not include farmers⁵ among the unemployed. According to the General Agricultural Census, in the year 2002, about one-fifth of the people working in agriculture in southern Poland represented hidden unemployment. The scale of employment (and unemployment) in Małopolska did not significantly differ from that in the country as a whole, nevertheless, the figures were slightly better than those at the national level.

In 2009, the total number of unemployed people in the Małopolskie Voivodeship was 130.0 thousand, with women accounting for about 52.0% of the registered unemployed (Table 2). In the years 2000–2009, the proportion of registered unemployed persons in the productive-age population in Małopolska was lower than their average percentage in Poland, and tended to decrease (Table 2).

Table 2. Number of unemployed people in Poland and the Małopolskie Voivodeship, and their proportion in productive-age population

Item	Poland			Małopolskie Voivodeship		
	2000	2005	2009	2000	2005	2009
Number of unemployed (thousand)	2702.6	2773.0	1892.7	185.2	178.1	130.0
of which women	1491.6	1486.4	966.4	103.4	98.7	67.6
Proportion of unemployed in productive-age population (%)	11.6	11.4	7.7	9.6	8.7	6.2
of which women	6.4	6.1	3.9	5.4	4.8	3.2

Source: Author's study based on the data of the Central Statistical Office (GUS 2001, 2006, 2010)

The unemployment rate calculated for the voivodeship according to the International Labour Organisation averaged 9.7% in 2009, and was higher by 2.2 percentage points than the previous year. The situation was worst in the eastern part of Małopolska (Dąbrowski, Gorlicki, Limanowski and Nowosądecki counties), where the unemployment rate exceeded 15%, and clearly better in the central part of the voivodeship (Krakowski County and Kraków city, Wielicki County) and on its outskirts (counties: Miechowski 8.5%, Tatrzański 8.6%, Suski 9.5%) (US 2010).

Assessment of the current state of agriculture in the Małopolskie Voivodeship

The current state of agriculture and the processes of its development, including transformation and integration, in Małopolska have been and still are influenced by various factors. Some of them facilitate certain types of agricultural activities in the area, the

⁵ A farmer is an owner or a holder per se (or a dependant) of agricultural property comprising agricultural land with an area exceeding 2 ha (taxable acreage), or a person who is subject to pension or annuity insurance for permanent work as a spouse or a household member on a farm.

other have an impeding effect. Therefore, it is worth discussing the determinants of the functioning of farms, focusing special attention on the major directions of agricultural production.

Crop production

A characteristic feature of agricultural production is its dependence on natural conditions such as soil quality, climate, altitude and slope of fields, etc. The Małopolskie Voivodeship shows the greatest variety of both natural and economic conditions of agricultural production in Poland. This variety determines the diverse structure, intensity and level of production across the voivodeship. The land-use pattern, especially the proportion of agricultural land, defines the principles of agricultural activity as well as the capacity and structure of agricultural production, it is thus of vital importance to agricultural development.

In 2009, agricultural land constituted 61.6% of the voivodeship area, which was only slightly higher than the average percentage for Poland. The second important land-use type was forests and wooded areas (30.3%), with the data for Małopolska being also very similar to those for Poland (Table 3). By contrast, the percentage of fallow land in the voivodeship was two times lower (0.8%) than in the entire country.

As follows from the information published by the Central Statistical Office (GUS 2003, US 2010), no major changes occurred in the land-use pattern of Małopolska over the period 2002–2009. The largest portion of all agricultural land in the voivodeship was arable land, followed by meadows and permanent pastures, and the smallest was gardens. This pattern was very similar to that for Poland. It should be noted, however, that Małopolska displays a wide diversity of terrain features. To properly characterise the conditions for agricultural development in the voivodeship, it is thus necessary to conduct the analysis at least at the level of individual counties.

As shown in Figure 8, the northern part of the voivodeship, where the natural conditions for agricultural production are best, has a very high percentage of arable land, in

Table 3. Structure of land use in Poland and the Małopolskie Voivodeship (%)

Item	Poland			Małopolskie Voivodeship		
	2002	2005	2009	2002	2005	2009
Forests	29.3	29.9	30.4	30.1	30.0	30.3
Agricultural land	61.3	61.2	60.7	62.0	62.0	61.6
of which:						
– arable land	45.1	45.0	44.8	44.0	44.0	43.8
– meadows and permanent pastures	13.0	12.9	12.6	12.8	12.8	12.7
– gardens	1.0	0.9	0.9	2.3	2.2	2.1
– land under buildings and water reservoirs	2.2	2.3	2.4	2.8	3.0	2.9
Other land	9.4	8.9	8.9	7.9	8.0	8.1
of which fallow land	1.6	1.6	1.6	0.6	0.7	0.8

Source: Author's study based on the data of the Central Statistical Office (GUS 2003, 2006, 2010)

certain districts (e.g. Iwanowice, Miechów, Raclawice) exceeding 90% of agricultural land. In the south, the proportions are different: it is permanent grassland which accounts for the largest percentage of agricultural land. In the Tatrzański, Nowotarski and Limanowski counties, situated in mountain areas, permanent pastures occupy above the half of the total area used for agriculture. This should be considered positive, as permanent grassland constitutes the most appropriate type of land use in mountain areas, especially at altitudes of above 700 m a.s.l., where temporary crops should not be cultivated. To compare, the percentage of permanent grassland in the German and Austrian Alps is around 90% (Musiał 2011).



Fig. 8. Agricultural land structure in the Małopolskie Voivodeship by county

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

Gardens cover a relatively small area in the Małopolskie Voivodeship. Again, there are differences at the county level: the percentage of gardens in the agricultural land structure is low in the northern and western parts of the region, and higher in the south, the production being concentrated mainly in such counties as Limanowski (5.4% agricultural land), Nowosądecki (3.9%) and Myślenicki (3.1%).

Sown area and structure of the major crops

In 2009, the area under cereals in the Małopolskie Voivodeship totalled 258.4 thous. ha, which was 10.3% less than in 2000 (Table 4). Wheat occupied the largest portion of this area, i.e. 43.0% (13.2% less compared to 2000). It should be noted, however, that the

values for 2009 were higher compared to 2005. The sown area of rye decreased sharply between 2000 and 2005 (by nearly 60%), and tended to further decline in the following years, but its yields rose. Also the area under oats shrank, although to a smaller extent. By contrast, a steady increase in sown area was observed for barley. There was a clear rising trend in the sown area of such root crops as rape and turnip rape, which may be attributed to their increased production profitability between 2000 and 2009. Thus, assuming that the EU energy policy will continue to be focused on the increased use of vegetable oils, a further increase in the sown area of these plants can be expected.

Comparison of the yields of cereals in 2009 and 2000 demonstrates that the cereal production in Małopolska has increased over the last decade, despite some fluctuations caused by weather conditions (the same was true for the entire country). The increase was due to at least two factors, i.e. the more frequent (though not sufficient) use of seeds of more productive varieties and the abandonment of cereal production in areas with poor environmental conditions and very low yields (mainly in the south of the voivodeship).

The most dramatic decreases in area, both absolute and relative to other plants, were detected for potatoes, with the sharpest drop between 2000 and 2005. A worrying phenomenon is relatively low yields, which in 2009 were only 161 dt/ha. Changes occurred also in the case of ground vegetables and fruit trees. While the area of either group of plants was reduced in relation to the year 2000, the yields of ground vegetables slightly decreased and those of fruits significantly increased during the decade.

Table 4. Sown area and yields of major crops in the Małopolskie Voivodeship

Plants	Sown area (thousand ha)			Change (2009 : 2000)	Yields (dt/ha)		
	2000	2005	2009		2000	2005	2009
Cereals (total)	288.0	255.9	258.4	89.7%	28.1	33.3	31.8
Wheat	128.2	104.6	111.2	86.8%	29.0	34.4	32.7
Rye	21.6	9.8	8.8	40.8%	24.2	26.3	26.1
Barley	45.8	48.6	48.9	106.8%	29.0	33.2	31.9
Oats	29.4	23.2	19.3	65.7%	22.9	24.7	24.2
Potatoes	89.9	49.1	42.8	47.6%	178.0	178.0	161.0
Sugar beets	1.8	1.7	1.3	76.0%	393.0	491.0	584.0
Rape and turnip rape	2.3	2.8	4.7	205.2%	26.5	29.0	31.8
Ground vegetables	20.4	23.0	19.8	89.7%	279.1	267.2	271.1
Fruit trees	25.2	15.3	14.8	86.8%	55.5	86.9	92.4

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

Due to the fact that the Małopolskie Voivodeship has very diverse agricultural conditions, both the absolute sown area and its structure vary widely among counties. While cereals prevail in all counties, covering from 66% (Proszowicki County) to 82% (Oświęcimski County) of the overall sown area of a county, their absolute sown area varies according to the proportion of arable land in the agricultural land structure. As shown in Figure 9, in southern Małopolska the proportion of arable land is lower than 30%, and as you move to the north, it gradually increases to reach the values of over 90% in the Olkuski and Miechowski counties.

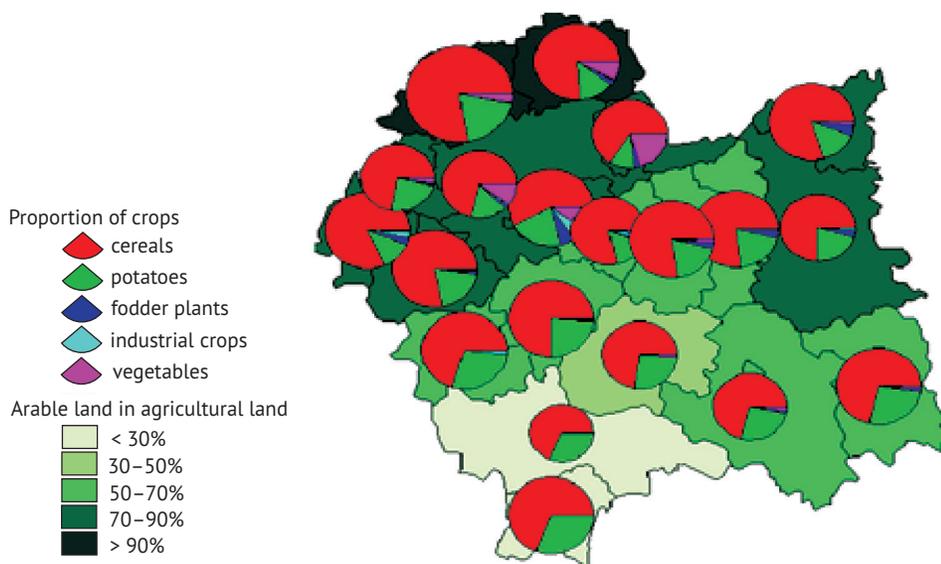


Fig. 9. Sown area structure of cultivated plants vs. percentage of arable land in agricultural land in the Małopolskie Voivodeship by county

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

In the southern part of the voivodeship, i.e. the Tatrzański, Nowotarski and Limanowski counties, the share of potatoes in the sown area of plants is very high (up to 30%), with the importance of other groups of plants, such as industrial crops and vegetables, being marginal. The sown structure in the northern part of the voivodeship, i.e. the Proszowicki, Krakowski and Miechowski counties, follows a bit different pattern: besides cereals, also vegetables play there an important role. In the western part, mainly in the Oświęcimski and Suski counties, a comparatively large percentage of industrial crops, such as rape and turnip rape, is also recorded.

While the proportion of cereals as a group in the sown structure is relatively similar throughout the voivodeship, the percentages of individual crops differ greatly between the counties (Fig. 10). This results from the varied environmental conditions and nutritional needs of livestock. It should be pointed out that oats have a relatively large share in the sown structure of cereals in the areas the least suitable for

crop production (Tatrzański and Nowotarski counties), where horses are relatively numerous. Similarly, counties with large numbers of pigs (Proszowicki, Miechowski and Krakowski) show a relatively high proportion of barley (cultivated for fodder). In the Wadowicki, Tarnowski and Dąbrowski counties, the group of other cereals (mainly cereal mixtures used as a fodder for pig production) represents a relatively large percentage of the total area sown with cereals.

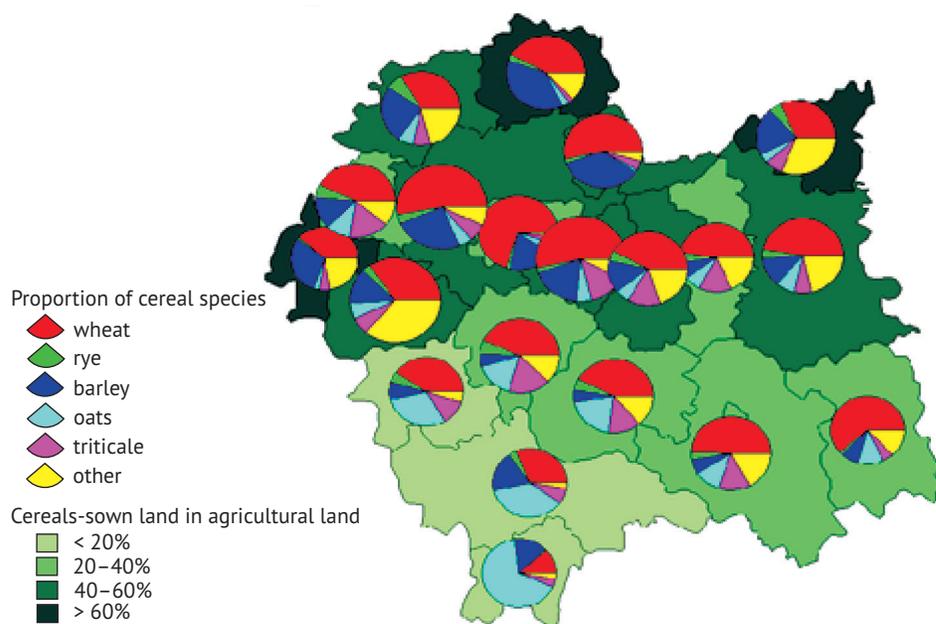


Fig. 10. Sown area structure of cereals vs. percentage of cereals-sown land in agricultural land in the Małopolskie Voivodeship by county

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

Animal production

The main source of income in the agriculture of developed countries is animal production, which largely determines crop production. This results from economic calculation, because animal products are usually more processed than products of plant origin and reach relatively higher prices. In Poland, especially in mountain areas, animal production also plays an important role both as a sector of the economy and a source of income for farming families.

The natural environment in most of Małopolska has predisposed it with time to develop herbivore animal production. According to statistical data (US 2010), in 2009, there were about 187.5 thousand cattle, among them 114.9 thousand cows, in the Małopolskie Voivodeship (Table 5). Compared to 2000, the population of cattle declined almost by half, showing a steady downward trend during the 9-year period in question.

Pigs also played an important part in the agricultural production of Małopolska, with their number in 2009 amounting to 346.1 thousand. This was about 30% less than in the year 2000. The largest decrease in the number of pigs occurred after 2005, which followed the pattern of the country as a whole.

In 2009, the sheep population of Małopolska was 60.6 thousand, which constituted almost 30% of the total sheep population in Poland. Compared to the year 2000, the number of these animals increased by almost a quarter, but was much lower than in 2005. The abandonment of sheep breeding was caused by the significant fall in wool and lamb prices, and the resulting decrease in the profitability of farming compared with other sectors of the economy.

Table 5. Livestock population in the Małopolskie Voivodeship

Item	Number of animals (thousand)			Change (2009 : 2000)
	2000	2005	2009	
Cattle	353.4	265.7	187.5	53.1%
of which cows	221.9	161.2	114.9	51.8%
Pigs	505.4	526.7	346.1	68.5%
of which sows	54.9	55.9	38.9	70.8%
Sheep	49.1	91.8	60.6	123.4%
of which ewes	41.5	68.7	50.5	121.5%
Horses	56.9	30.9	29.1	51.2%

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

In 2009, the levels of livestock expressed in livestock units (LSU) per 100 hectares of agricultural land in the Małopolskie Voivodeship (41.0 LSU/100 ha AL) were lower than average for Poland. In this year, the stock of the largest group of animals, i.e. cattle, corresponded to 22.6 LSU/100 ha AL and was about 33% lower than in 2000 (Table 6). The reduction in livestock over the period 2000–2009, though smaller (10%), was also observed for pigs, the number of which per 100 ha AL fell to a level of 8.4 LSU in 2009. A better situation was noted in the case of sheep and other animals (mainly poultry), whose stock increased significantly compared to the year 2000.

The relative values (livestock per 100 ha AL) decreased less than the absolute figures (size of animal population), which can be associated with a significant reduction in the area of agricultural land. The information on livestock describes the scale of reduction in the animal production more accurately than the data on population size do.

The scale of animal production in the Małopolskie Voivodeship, similar to crop production, varies greatly between the counties. The herds of farm animals are largest in the Nowotarski, Nowosądecki and Tarnowski counties, and smallest in the Chrzanowski, Oświęcimski and Olkuski counties. The size of animal population is also relatively small in the highly urbanised counties: Wielicki, Bocheński and Brzeski (Fig. 11). The number of animals (converted to LSU) per 100 ha AL is highest in the south of the voivodeship, but only in mountain areas (Tatrzański and Nowotarski counties) it

exceeds 50 LSU/100 ha AL. The livestock levels are also high in counties situated in the Carpathian Foothills (Gorlicki, Nowosądecki, Limanowski and Myślenicki), and in two counties located in the northern part of the voivodeship (Miechowski and Proszowicki).

Table 6. Total animal stock, expressed in LSU per 100 ha AL, on farms in the Małopolskie Voivodeship

Item	Animal stock (LSU/100 ha AL)			Change (2009 : 2000)
	2000	2005	2009	
Cattle	33.6	27.3	22.6	67.1%
of which cows	25.2	19.9	16.6	66.2%
Pigs	9.3	10.4	8.4	90.3%
of which sows	3.1	3.5	2.8	90.4%
Sheep	0.6	1.1	0.9	157.6%
of which ewes	0.5	0.9	0.7	155.2%
Horses	5.2	3.1	3.4	65.4%
Other animals	3.6	4.5	5.8	159.1%
Total	52.3	46.5	41.0	78.5%

LSU – livestock unit, AL – agricultural land

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

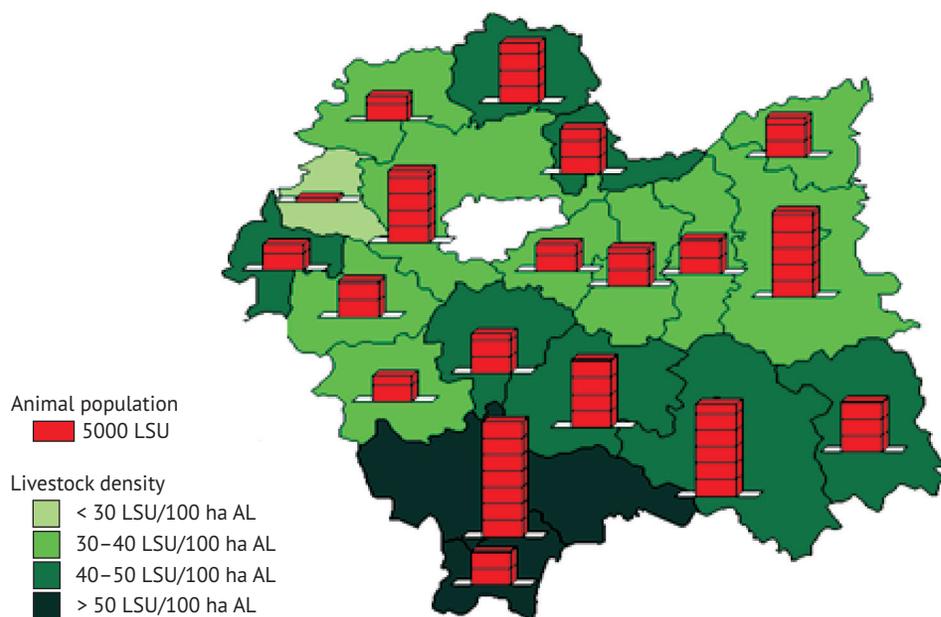


Fig. 11. Animal population and livestock density on farms in the Małopolskie Voivodeship by county; LSU – livestock unit, AL – agricultural land

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

Counties with the largest percentage of permanent grassland in the area of agricultural land, i.e. the Nowotarski and Tatrzański counties, have also the highest proportion of herbivores (cattle and sheep) in the animal population (Fig. 12). In the foothill part of Małopolska, having a long cattle-raising tradition, cattle accounts for over 70% of the total livestock population. Poultry is an important group of animals in the western part of the voivodeship, i.e. the Oświęcimski, Chrzanowski and Myślenicki counties.

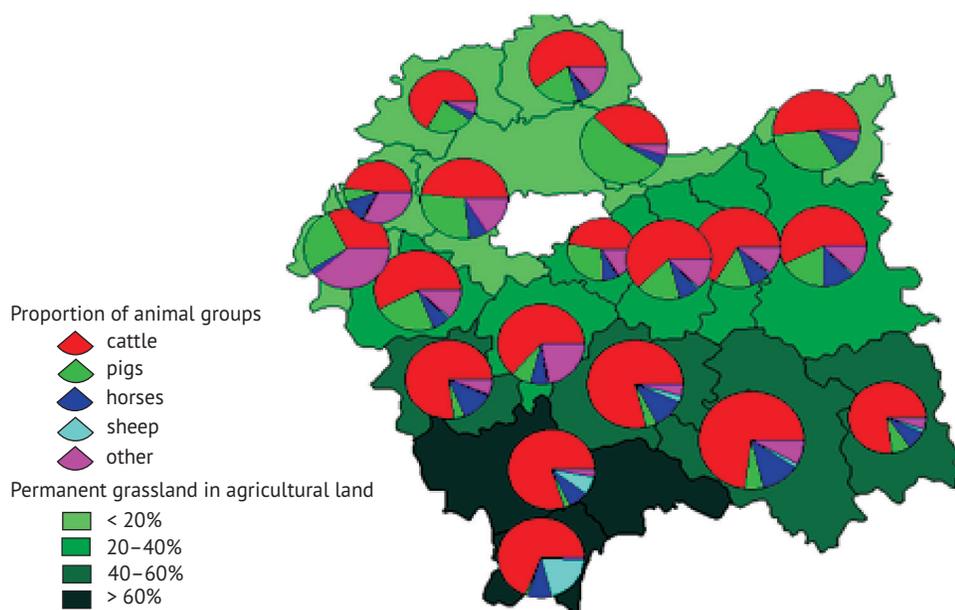


Fig. 12. Animal population structure vs. percentage of permanent grassland in agricultural land in the Małopolskie Voivodeship by county

Source: Author's study based on the data of the Statistical Office in Kraków (US 2010)

The economic results of farms depend on the size of production. The animal production can be measured in absolute values (e.g. the number or live weight of animals; the volume of milk; the value of production) or, more accurately, relative for example to the area of agricultural land (livestock in LSU per 100 ha AL, or in kg per ha AL; milk volume or milk production value per ha AL). As shown in Table 7, the values of some indicators of animal production suggest that the Małopolskie Voivodeship can achieve better average results for the beef, veal and sheep production than the country on average. In addition, the three indicators display a positive increasing trend. Thus, given the natural environmental conditions of the southern part of the voivodeship, it would be beneficial for this area to further develop these types of animal production.

Małopolska exhibits somewhat worse results for milk production (640 l/ha; ca. 3600 kg/cow) than Poland on average (747 l/ha; ca. 4500 kg/cow). The worrying fact is that the trends in productivity of this sector in Małopolska, unlike those in the entire country, are decreasing.

Table 7. Animal production per hectare of agricultural land in Poland and the Małopolskie Voivodeship

Item	Poland		Małopolskie Voivodeship	
	2005	2008	2005	2008
Milk (l)	728.0	747.0	723.0	640.0
Beef livestock (kg)	37.6	44.7	49.6	53.4
Veal livestock (kg)	3.9	4.1	7.7	9.1
Pig livestock (kg)	159.7	153.7	115.2	100.3
Sheep livestock (kg)	0.3	0.3	1.6	1.9

Source: Author's study based on the data of the Central Statistical Office (GUS 2006, 2009a)

Conclusions

The prevalence of small agricultural holdings in southern Poland seems to be a permanent feature of its agriculture. The fragmentation of agricultural land creates unfavourable situation for the Małopolska's agriculture when faced with a market economy and international competition, which includes a limited access of small farmers to the EU agricultural markets. Although farmers in the Małopolska village exhibit a strong emotional attachment to land and highly value its possession and inheritance, this does not translate into an interest in the rational management of land or the raising of livestock, particularly herbivores. The livestock shortage, in turn, is reflected in the decreased agricultural use of land, leading to its abandonment (this is especially the case of grassland).

The governing bodies of the Małopolskie Voivodeship make real efforts aimed at the economic activation of its rural areas and farms. This is done mainly by supporting the development of fruit- and vegetable-growing, agritourism, local and regional products. Areas with poor soils, in particular those located close to cities, are faced with the rising problem of land abandonment and an increase in fallow lands. In the years to come, this will represent a serious challenge for the municipality and agricultural policy.

References

- Grosse T.G., Hardt Ł. (2010), Sektorowa czy zintegrowana, czyli o optymalnej strategii rozwoju polskiej wsi. Warszawa, Wyd. Key Text.
- GUS (2001), Rocznik statystyczny Rzeczypospolitej Polskiej. Warszawa, Główny Urząd Statystyczny.
- GUS (2003), Rocznik statystyczny Rzeczypospolitej Polskiej. Warszawa, Główny Urząd Statystyczny.
- GUS (2006), Rocznik statystyczny Rzeczypospolitej Polskiej. Warszawa, Główny Urząd Statystyczny.

- GUS (2008), Rocznik statystyczny rolnictwa i obszarów wiejskich [Statistical yearbook of agriculture and rural areas]. Warszawa, Główny Urząd Statystyczny.
- GUS (2009a), Rocznik statystyczny Rzeczypospolitej Polskiej. Warszawa, Główny Urząd Statystyczny.
- GUS (2009b), Rocznik statystyczny województw. Warszawa, Główny Urząd Statystyczny.
- GUS (2010), Rocznik statystyczny Rzeczypospolitej Polskiej. Warszawa, Główny Urząd Statystyczny.
- Kukuła K. (2010), Statystyczne studium struktury agrarnej w Polsce. Warszawa, Wyd. Nauk. PWN.
- Musiał W. (2010), Wyzwania wobec gospodarstw drobnotowarowych w Polsce – przyczynek do rozważań. Uniwersytet Ekonomiczny w Poznaniu / Zeszyty Naukowe, no. 150, pp. 385–398.
- Musiał W. (2011), Kulturowe i ekonomiczne przesłanki odłogowania ziemi w regionach rozdrobnionych agrarnie, [in:] A. Skarżyńska, ed., Gospodarstwa małotowarowe przed nowym okresem planistyczno-rozliczeniowym Unii Europejskiej. Warszawa, Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, pp. 70–85.
- Poczta W. (2010), Przemiany w rolnictwie, [in:] Raport o stanie wsi. Polska wieś 2010. Warszawa, Wyd. Nauk. Scholar, pp. 9–43.
- UMWM (2010), Program wsparcia rozwoju rolnictwa w woj. małopolskim ze szczególnym uwzględnieniem gospodarki tradycyjnej, w tym sadownictwa, warzywnictwa i owoców miękkich. Kraków, Urząd Marszałkowski Województwa Małopolskiego.
- Sikorka A., ed. (2009), Instrumenty oddziaływania państwa na kształtowanie struktury obszarowej gospodarstw rolnych w Polsce. Rola systemu ubezpieczeń społecznych rolników w kształtowaniu tej struktury. Warszawa, IERiGŻ PIB.
- US (2010), Rocznik statystyczny województwa małopolskiego. Kraków, Urząd Statystyczny w Krakowie.