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# INNOVATIONS AND DIVERSIFICATIONS TOWARD SUSTAINABLE BULGARIAN AGRICULTURE

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## Abstract

*This article proposes an interpretation of the process of adopting innovations and farm manager perceptions of innovations and diversification in Bulgarian agriculture. Bulgarian agriculture is operating in new macro-conditions since Bulgaria joined the EU. This paper shows the main trends of agricultural sector and the level of diversification of the activities, which also is the aim of the study. It represents the adoption of innovation as a possibility for farm development using the collected data. The well-known models of farm management are not bringing the required profit of agricultural activities every time. Furthermore, the scarcity of resources and the increasing need for environmental protection lead to a search for innovative processes and techniques for reaching decent development in the sector. There is a link between the farmer's age and the willingness to innovate the activities. The main findings show that farmers under 50 are more likely to adopt innovations. Around 37% of the farmers are planning to adopt innovations. The paper outlines some factors that are constraining the processes. Other evidences show that some diverse activities in Bulgaria are an innovation for the area. The innovative activities are: provision of health, social or educational services, snow cleaning, craftsmanship and restaurant services, rural tourism, etc. The methodological framework is based on the following logic: theoretical review of innovation and item discussing the diversification as an innovative concept in agriculture; the state and condition of the Bulgarian*

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*agriculture; evaluation of some factors influencing innovative processes in the agriculture based on own survey; evidence of diversification activities based on statistics and own research.*

*According to the analysed information some general conclusions are made.*

**Keywords:** agriculture, development, sustainability.

**JEL codes:** Q10, Q16, O13.

## Introduction

Agriculture has long-standing traditions in the Bulgarian economy. The development of the sector is one of the key priorities for the Bulgarian policymakers. Based on the recent conditions of resource scarcity and increasing demands of the society for safety and quality of production, the sector has faced challenges which have an impact on its activities. Innovations in agriculture trigger processes of rearrangement of the resources, which reflects in an increased competitiveness and better profitability of the activities. The alternative production or a vertical integration is often used by the farms as an innovative strategy on farm level to diverse the risk of their activities. The induced innovation literature has been the most important item in the economics of technical change in agriculture. We argue that the concept of technological innovation is one of the ways to reach sustainability in the Bulgarian agriculture. The introduction of innovations in the economy is a good strategy for survival on the national and international markets. Innovative farming methods can achieve greater sustainability and higher production quality, and minimize unnecessary production costs. New machinery and technologies help to ensure the precision and speed of production processes, facilitate the farmer and increase the competitiveness of the farm. Furthermore, we suggest that diversification of the activities is an innovative approach used on farm level. The research questions are "What is the current level of willingness of the Bulgarian farmer to adopt innovations?" and "What is the level of diversification?" To answer these questions, we adopt the following structure in this paper: (1) theoretical review of innovation (2) an item discussing the diversification as an innovative concept in agriculture; (3) finally, from this theoretical standpoint, we intend to suggest how to study the present empirical evidence by statistics and own survey.

## Literature review in the context of innovation and diversification

The use of innovations helps to increase the competitiveness of the farm, but also to measure the effect of the innovation potential and the possibility of its utilization. The innovation potential measures the farm's readiness to implement and complete the process of introducing new solutions or technologies. According to the received information, the farmer can propose and apply the right decision of which type of innovation to use (Blagoev, 2014).

There are authors who point out that to reach sustainability by innovations in the sector, one should look closer to the territory development (Dineva, 2017) and

on this base to propose a competitive strategy for development by links between agriculture and industries considered – both "downstream" (agroindustries corresponding to different products or product lines, mainly food industries) and "upstream" (fertilizers, pesticides, seeds, farm machinery), as their characteristics and trends (Possas, Salles-Filho and da Silveira, 1996). Some researchers state that the competitiveness and sustainability of the sector depends on specialization and the size of the farm (Harizanova-Metodieva and Metodiev, 2014).

Furthermore, there are also differences between types of economic activity and types of innovation (Panteleeva, Varamezov and Kostadinova, 2018). They state that farmers who have not implemented product innovation do not upgrade production processes, and there is a close link between a product and process innovation. Farms that have replaced amortized equipment with innovative technologies have increased the competitiveness of their production and increased revenue from their activities. Another conclusion that can be drawn from the findings of the authors is that the competitive advantages of the farms are directly proportional to the period of use and the type of innovation (product, marketing, organizational, etc.). If a longer period and different types of innovations are exploited, then the farm will be more competitive on the domestic and international markets. As we state in the previous paragraph, there is a sectoral competitiveness and that is why some of the researchers studied the innovations on that level to enhance their effectiveness. Innovations and their implementations are very important for cattle breading sector, and they can lead to the decrease of some diseases by reaching a clean environment (Harizanova-Metodieva and Metodiev, 2016). Intellectual property is also a source of innovation, contributing to the stability of national economies and the competitiveness of farms by stimulating future innovation, supporting investment in innovation, providing funding for research, etc. (Edvinsson and Sullivan, 1996). Business entities that benefit from intellectual property objects report higher economic performance and market value than their competitors who are not willing or cannot implement innovative solutions. Competitiveness can be achieved not only with large investments, but also through the creation, exchange and dissemination of know-how via cooperation networks and development research centres. Up-to-date technological globalization is at different level in different countries or regions. The relationships between agricultural entrepreneurs and research institutions are very important, as well is the use of the cluster approach and the importance of innovation systems (Panteleeva et al., 2018).

Some authors (Terziev and Arabska, 2015) state that another innovative way of enhancing competitiveness is the production of organic products. Besides being effective in symbiosis with the environment and being socially responsible, this is a good example of both a sparing agriculture and an increase in yields from production. However, this is relevant only in certain cultures and conditions. The development of the agrarian sector in the country reflects all historical and cultural traditions and peculiarities in different regions. The traditions have a major impact on the structure of production and organic farming, which can be seen as a combination of traditions, innovation and high production capacities.

The diversification model in some countries is pointed as innovative and it adopts production principles based on "nature's work" as ecosystem services without prohibiting the use of synthetic or biological raw materials (Plumecocq et al., 2018). With farming systems, farmers in the diversification model apply adaptive management in order to reduce the uncertainty. The model involves creating new organizational forms that interact with each other through knowledge sharing to reduce the risk of agrarian activities. Management of these farms has developed good practices for different types of activities and adding value to their products (Fig. 1).

The main features that distinguish this model from other models are: (a) nature is seen as a major factor in the production and living space for people; (b) introducing new social forms aimed at restructuring production in order to increase productivity.

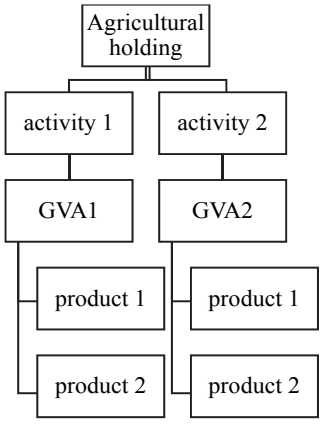



*Fig. 1*. Diversified model of agriculture.
Source: own adaptation.

The concept of diversification has been the subject of research by a number of authors. Part of them (Davis and Pearce, 2001) focus on the factors that cause farmers to develop non-agricultural activities. Among these factors are the increased number of inhabitants, limited access to land, lower labour productivity, low return on invested capital, market risk, etc. Other authors (Reardon et al., 1998) consider diversification as a consequence of the relative advantages of off-farm employment. According to some authors (Singh, 2006), the degree of diversification depends on the competition among farm activities. Diversification can be seen as a tool for enhancing competitiveness.

Diversification of agriculture can be classified into the following three categories: (1) transfer of resources from agricultural to non-agricultural activities; (2) moving resources in agriculture from less profitable crops or breeds to more profitable crops or businesses; (3) using resources in different but complementary activities (Delgado and Siamwalla, 1999). The process of diversification of agriculture is triggered

by the availability of improved agricultural infrastructure, rapid technological advances in agricultural production and changing patterns of food demand.

Diversification of agriculture as a strategy leads to a great opportunity to add value as well as to better harvest planning and raising income in the farming community. Many economists support diversification as a risk management tool. This is a strategy that involves performing more than one activity in the same time line, including a reduction in pricing and manufacturing risks (Chaplin, 2000).

Van Der Ploeg and Roep (2003) propose an operational classification of diversification activities according to three dimensions of farming: first, the agricultural side (Deepening), second the rural one (Broadening) and third the mobilisation of resources (Regrounding) (see Fig. 2).

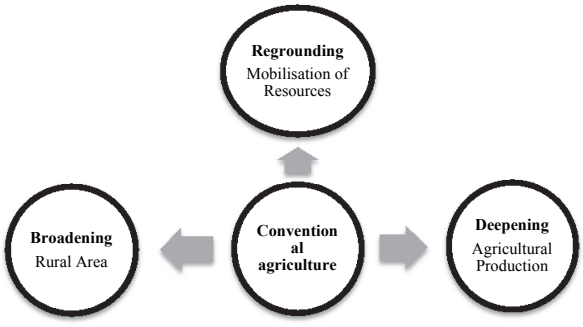



*Fig. 2.* Classification of diversification activities.
Source: adaptation by Van Der Ploeg and Roep (2003).

## Methodological framework

The methodological framework, according to the main aim of the study – reveals the current level of willingness of the Bulgarian farmer to adopt innovations, and what is the level of diversification, which also is the research question of the study. The paper is divided into several parts.

1. Theoretical review of innovation and item discussing the diversification as an innovative concept in agriculture. Literature review is based on theory in the context of innovation and diversification. This part examines theories for a different type innovation as a way of increasing the stability of the sector and the factors which are influencing the implementation of these practices. On a theoretical level, the diversification is considered as an innovative approach for increasing the competitiveness and reducing the risk in the sector.
2. State and condition of the Bulgarian agriculture. This part shows the main indicators of the Bulgarian agriculture as GDP (gross domestic product), GVA (gross value added), employment rate, etc.
3. Evaluation of some factors influencing innovative processes in the agriculture based on own survey. Findings of a research in innovations and competitiveness in agriculture are presented in this part.

The obtained methodology is as follows: the findings by the literature review were used to compose a questionnaire which can collect data for evaluating the willingness of the Bulgarian farmer to adopt innovative approaches and factors which constrain that process. The possible diversification activities were formulated as questions based on the statistics. The idea is to find out: (1) if any of these innovation activities are present for the area where the farmer is from; (2) do the farmers implement any of these activities; (3) do they attempted to implement any of them in a short term. The open questions and the Likert scale were used to evaluate the current condition in the studied topics. The survey was held in the period between 2018 and 2019. The sample was based on collected data from random farmers and does not claim to be representative. At the same time, the gathered information can direct the researches to deepen the statements of this report. The results are rather informative than quantitatively describing and aiming towards the farmers to show their own perception of willingness and readiness to adopt innovations.

The sample is part of a pre-test survey among Bulgarian farmers. It counts 30 respondents in a sample size representing the agrarian structure by economic size, It is well known that the Bulgarian farm structure is a dualistic one and that is why the biggest share of interviewed farmers are relatively small-sized.

The used methods are descriptive one-dimensional and two-dimensional distributions and they are used to reveal the innovation and diversification as a tool for development of Bulgarian's agriculture.

The data is collected under the scientific project NID NI-16/2018 – Integrated approach to risk management in the agrarian sector.

According to the analysed information some general conclusions and recommendations are made.

## Analyses of the state of Bulgarian agriculture toward innovations and diversifications

### *Place and role of agriculture for economic development in Bulgaria*

According to NSI data, the GVA created by the sectors of the national economy in 2017 amounts to BGN 87 634 million. The GVA from the agricultural sector in 2017 amounts to BGN 4114 million in current prices. By economic sectors, GVA in 2017 is distributed: industry – 28.4%, services – 66.9% and agriculture – 4.7%. For 2011-2017, there is a very slight increase in agricultural GVA, services have the largest share which is about 67%. The data is presented in Figure 3.

According to the Bulgarian National Bank, the Foreign Direct Investment in Bulgaria, during 2017 amounted to BGN 2718 million (EUR 1390 million). The highest amount of investments was attracted by the Manufacturing; Finance and Insurance Sectors; Car, Motorcycle Trade and Repair; and Real Estate Operations. Net foreign investment in agriculture, forestry and fisheries in 2017 is below 1% of the total.

The is the dynamics in the foreign direct investment in agriculture for 2011--2017. There is an increasing tendency of 87% between 2011 and 2014, but after that the trend is decreasing. The data is presented in Figure 4.

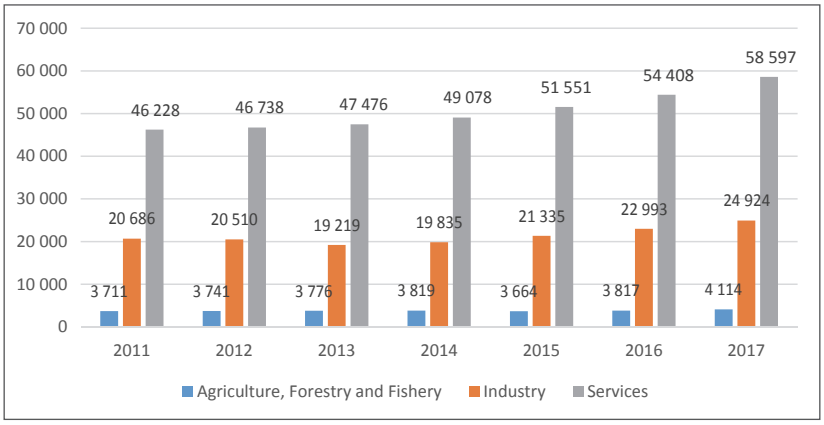



*Fig. 3.* GVA by economic sectors (BGN million).
Source: NSI, Main indicators 2011-2017.

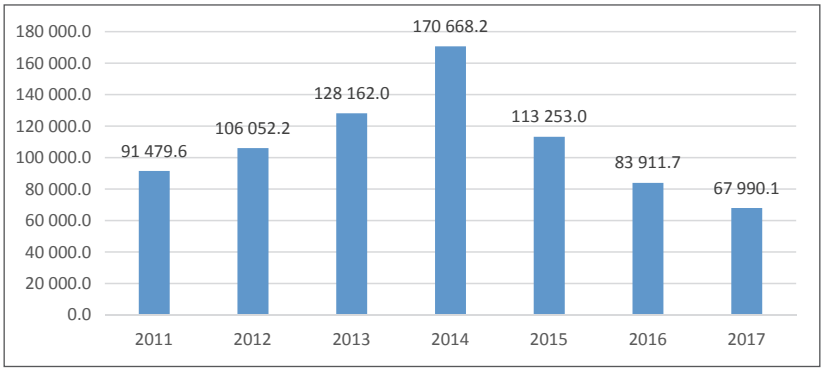


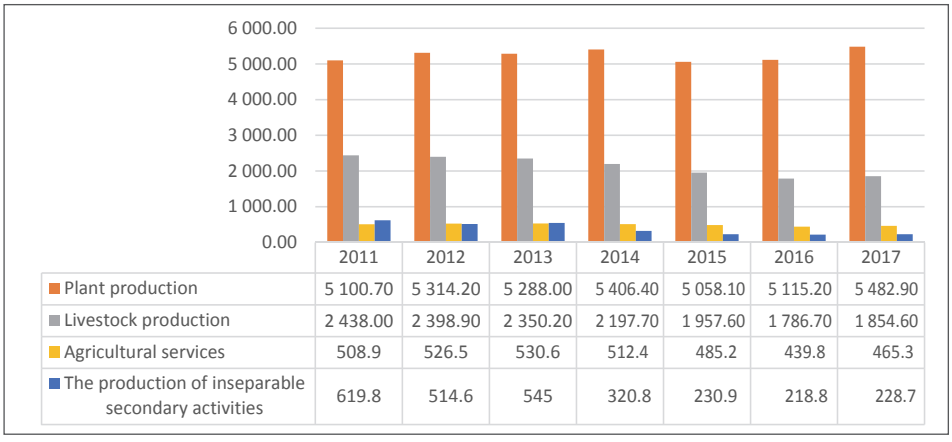

*Fig. 4.* Foreign direct investments in agriculture, forestry and fishing (EUR thousand).
Source: NSI, Main indicators 2011-2017.

The value of the gross agricultural production for 2017 by current producer prices amounted to BGN 8031.5 million, marking an increase of 6.2%, compared to the previous year. It is made up of the value of:

- Plant production – BGN 5482.9 million (with a share of 68.3%);
- Livestock production – BGN 1854.6 million (with a share of 23.1%);
- Agricultural services – BGN 465.3 million (with a share of 5.8%);

The production of inseparable secondary activities – BGN 228.7 million (with a share of 2.8%).

Figure 5 shows the gross output of the agriculture sector for 2011-2017. Relative stability in crop production was observed for the studied period. There is a slight decrease of 23% in livestock production in 2017 compared to 2011. The most significant change by 63% was in non-agricultural activities for the same period.




| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Plant production | 5 100.70 | 5 314.20 | 5 288.00 | 5 406.40 | 5 058.10 | 5 115.20 | 5 482.90 |
| Livestock production | 2 438.00 | 2 398.90 | 2 350.20 | 2 197.70 | 1 957.60 | 1 786.70 | 1 854.60 |
| Agricultural services | 508.9 | 526.5 | 530.6 | 512.4 | 485.2 | 439.8 | 465.3 |
| The production of inseparable secondary activities | 619.8 | 514.6 | 545 | 320.8 | 230.9 | 218.8 | 228.7 |

*Fig. 5.* Main economic indicators for agriculture for 2011-2017 (BGN million).
Source: MAFF, Agrostatistics Department, DG ARP, FSS.

Table 1 presents the main indicators for the development of the agrarian sector. It shows that the number of farms is reduced by 46%, but the arable area increased. Also, the final output of agricultural activities has increased by 54% and the labour input has decreased. The trend of the employed family labour in the holding is decreasing by 45%. On the other hand, there is an increase in non-family labour by 13%.

Table 1

*General indicators of the agrarian sector in Bulgaria*

| General indicators | 2010/2016 (%) |
|---|---|
| Agricultural holdings (number) | -46 |
| Utilized Agricultural Area of the agricultural holdings (ha) | 5 |
| Total standard output of agricultural holdings (EUR thousand) | 54 |
| Labour input – AWU | -38 |

Source: MAFF, Agrostatistics Department, DG ARP, FSS.

The dynamics of the agricultural farms in Bulgaria according to their economic size shows a tendency for decreasing the number of farms in all groups in the recent years. The overall change for 2010-2016 is negative (-46%). The most significant decrease is in the group of small farms, including farms with an economic value corresponding to EUR 2000, which amounts to 58%. In the next group, up to EUR 4000, the decrease is about 40% and up to EUR 8000 – 12%. For all other groups, the number is increasing. The data is presented in Table 2.

Table 2

*Economic size of the holdings*

| Limits in EUR | 2010 | 2013 | 2016 | 2010/2016 (%) |
|---|---|---|---|---|
| | 370 222 | 254 142 | 201 014 | -46 |
| < 2 000 | 255 105 | 140 228 | 104 898 | -59 |
| >= 2 000 < 4 000 | 59 473 | 51 384 | 34 956 | -41 |
| >= 4 000 < 8 000 | 26 286 | 27 547 | 22 955 | -13 |
| >= 8 000 < 15 000 | 12 509 | 13 849 | 13 746 | 10 |
| >= 15 000 < 25 000 | 6 043 | 7 056 | 8 248 | 36 |
| >= 25 000 < 50 000 | 4 733 | 6 020 | 6 675 | 41 |
| >= 50 000 < 100 000 | 2 535 | 3 229 | 3 967 | 56 |
| >= 100 000 < 250 000 | 1 908 | 2 383 | 2 676 | 40 |
| >= 250 000 | 1 630 | 2 446 | 2 893 | 77 |

Source: MAFF, Agrostatistics Department, DG ARP, FSS.

## Analysis and discussion based on results of the research

According to the survey, there are some factors which constrain the Bulgarian farmer to adopt innovative processes. The main findings are based on the evaluation of the following factors:

1. the lack of information about the new high-tech achievements of science in the sector;
2. the high cost of investment for innovation and the lack of funding from banking and non-bank institutions;
3. the willingness to implement activities innovations in the next 3 years.

The results are presented in Table 3.

Table 3

*Results of factor evaluation*

| Factor evaluation 1 – no influence, 5 – very high influence | | | | | | |
|---|---|---|---|---|---|---|
| Researched question | 1 | 2 | 3 | 4 | 5 | total |
| The lack of information about the new high-tech achievements of science in the sector | 0 | 10% | 10% | 30% | 50% | 100% |
| The high cost of investment for innovation and the lack of funding from banking and non-bank institutions | 10% | 37% | 3% | 17% | 33% | 100% |
| Willingness to adopt innovation in the next 3 years | 23% | 7% | 17% | 17% | 37% | 100% |

Source: own survey.

From the information above, we can conclude that the farmers are more constrained by lack of information rather than the price of the implementation.

The lack of information about new practices and technologies is not a new statement, in 1971 Wharton defined it as the main problem. After a number of studies, he concludes that poorly-informed farmers have extremely high expectations of innovative solutions on their output, and if the results are not as expected, they immediately dismiss innovation as unprofitable although they have received higher revenues than through conventional farming, which they usually practice (Wharton, 1971).

Studying the data reveals that there is a difference between the self-perception for innovation implementation and constrains and the age of the farmer. The average age of the farmer in the sample is 55 years. The distribution by age and the willingness to adopt innovation is shown in the table below (Table 4).

Table 4

*Distribution of the farmers by age and researched factors*

| | Farmer age | | |
|---|---|---|---|
| | Under 50 | Between 50 and 63 | Pensioners 63+ |
| % of farmers | 30 | 50 | 20 |
| Willingness to adopt innovations in the next 3 years | 4.44 | 3.4 | 1.7 |
| The lack of information about the new high-tech achievements of science in the sector | 4.66 | 3.93 | 4.16 |
| The high cost of investment for innovation and the lack of funding from banking and non-bank institutions | 2.22 | 2.94 | 4.83 |

Source: own survey, where 1 – no influence, 5 –high influence.

According to the data, we can conclude that there is a connection between the age of the farmer and the willingness to adopt innovations in a short term of 3 years. With increasing age of the farmer the willingness to adopt innovations is decreasing.

The other related statement can be found by the two constrains in the study, where the price of the innovation is less important to the younger respondents, than to those above 63 years of age.

Farmers' point of view on their personal attitude toward innovation differs from objective results. Many manufacturers stress that they are very innovative and invest in new high-tech equipment, but the obtained data contradicts this statement. Most farmers deal with risk on their holdings through time-tested methods and find it difficult to accept new variants that are unknown to them to mitigate the adverse effects of the business.

Another contradiction is revealing the problem of environmental protection. In the survey, 80% of the farmers marked environmental protection as the main motive for introducing innovations to their holdings, which is in contrast to the official statistics of increased level of pollution by agricultural activities.

Diversification of farms is another practice to increase competitiveness by adding value to the production. The total number of farms diversifying their activities is unstable and it is presented in Table 5. In 2016 there was a tendency to reduce the number of farms diversifying their activities. Their change compared to 2010 is 42%. The most significant reduction is in the number of farms offering mechanized services. In 2010, the number was 2645 and in 2016 – it dropped to 1037. There is a slight trend of increasing farms in the categories: processing agricultural products; forestry; production of fish and aquaculture; non-agricultural mechanized services and other side activities. A minimum change is observed in the rural tourism and the production of renewable energy.

Table 5

*Holdings by other gainful activities carried out in the holding – statistic evidence*

| Type of activity | 2010 | 2013 | 2016 |
|---|---|---|---|
| Provision of health, social or educational services | - | - | 27 |
| Agricultural mechanized services (ploughing, sowing, digging, harvesting, etc.) | 2645 | 1918 | 1037 |
| Non-agricultural mechanized services (e.g. snow cleaning) | 255 | 283 | 285 |
| Rural tourism (hotel and restaurant services) | 145 | 106 | 138 |
| Craftsmanship (pottery, weaving, cutlery, etc.) | 45 | 11 | 3 |
| Processing of farm products (processing of agricultural products produced on the farm, excluding processing of grapes for wine) | 307 | 376 | 312 |
| Forestry | 46 | 45 | 79 |
| Wood processing | 72 | 8 | 53 |
| Production of renewable energy for the market (from wind, hydropower, biogas, etc.) | 12 | 33 | 11 |
| Production of fish and aqua-crops, please specify | 5 | 98 | 11 |
| Other gainful activities, please specify | 108 | 268 | 137 |
| Total | 3640 | 3146 | 2093 |

Source: MAFF, Agrostatistics Department, DG ARP, FSS.

One of the reasons for reduction of a number of farms which diversify their activities can be explained with the total reduction of farms in Bulgaria. The other possible reason is lack of popularity of some of the tracked activities. Last but not least, for the past 10 years of Bulgarian agriculture there continues a process of specialization and transformation of farms into large profitable structures (grain sector, vineyards).

The data collected by the survey related to diversification as an innovative tool by the research data is shown in Table 6.

Table 6

*Holdings by other gainful activities carried out in the holding – survey results*

| Activities | Is this activity an innovation for the region? | Is this activity a well-known practice/ activity for the region? | Do you offer such an activity | Do you plan in the next 3 years to offer such an activity? | Do you consider this practice as a perspective? |
|---|---|---|---|---|---|
| provision of health, social or educational services | 43% Yes<br>67% No | Yes 20%<br>No 80% | Yes 0%<br>No 100% | Yes 0%<br>No 100% | Yes N/a<br>No N/a |
| agricultural mechanised services (ploughing, sowing, digging, harvesting etc.) | Yes 25%<br>No 75% | Yes100%<br>No 0% | Yes 60%<br>No 40% | Yes 70%<br>No 30% | Yes 100%<br>No 0% |
| non-agricultural mechanised services (e.g. snow cleaning) | Yes 70%<br>No 30% | Yes 35%<br>No 65% | Yes 33%<br>No 66% | Yes 40%<br>No 60 % | Yes 83%<br>No 16% |
| rural tourism (hotel and restaurant services) | Yes 83%<br>No 16% | Yes 40%<br>No 60% | Yes 3%<br>No 97% | Yes 7%<br>No 93% | Yes 25%<br>No 75% |
| craftsmanship (pottery, weaving, cutlery, etc.) | Yes 90%<br>No 10% | Yes 43%<br>No 57% | Yes 0%<br>No 100% | Yes 0%<br>No 100% | Yes 0%<br>No 100% |
| processing of farm products (processing of agricultural products produced on the farm, excluding processing of grapes for wine) | Yes 73%<br>No 27% | Yes 50%<br>No 50% | Yes 13%<br>No 87% | Yes 13%<br>No 87% | Yes 67%<br>No 43% |
| forestry | Yes 0%<br>No 100% | Yes 100%<br>No 0% | Yes 0%<br>No 100 | Yes 0%<br>No 100 | Yes 60%<br>No 40% |
| wood processing | Yes 0%<br>No 100% | Yes 100%<br>No 0% | Yes0%<br>No 100% | Yes 0%<br>No 100 | Yes 60%<br>No 40% |

Source: own survey.

## Conclusions and findings

In conclusion, it can be assumed that the main constraints for achieving competitiveness through the introduction of innovations are the lack of information about the proposed innovations and the lack of motivation for the managers of farms to use innovations, etc. Intergenerational continuity is also an important factor in achieving competitiveness in modern ways.

A link between the age of the farmer and the perception of innovations and willingness to adopt new technologies and practices is also observed.

According to the presented information about diversification processes in the Bulgarian agriculture, we can state that:

1. Forestry and wood processing cannot be considered as an innovation, but is evaluated as a perspective one, although no farmer from the interviewed consider this as an option for the future.
2. Agricultural mechanised services (ploughing, sowing, digging, harvesting, etc.) are well known activities and some of the farmers have them as a diversification (60%) and other (10%) are planning to start incorporating such activities in the next 3 years.
3. New and innovative strategies are connected with processing of farm products (73%), craftsmanship (90%), rural tourism (83%), and non-agricultural mechanized services (70%).
4. According to the evaluation of most prospective diversified activities, at the first place are the agricultural mechanized services (100%), followed by non-agricultural mechanised services (83%).
5. Less prospective activities are craftsmanship (pottery, weaving, cutlery, etc.) and rural tourism (hotel and restaurant services).

The results do not claim to be representative, but at the same time they are opening new research questions about the Bulgarian agriculture.

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## Abstrakt

*Niniejszy artykuł przedstawia interpretację procesu przyjmowania i postrzegania innowacji i dywersyfikacji w rolnictwie bułgarskim przez zarządców gospodarstw. Odkąd Bułgaria przystąpiła do UE, rolnictwo bułgarskie funkcjonuje w nowych warunkach makroekonomicznych. Niniejszy dokument przedstawia główne tendencje sektora rolnego oraz poziom dywersyfikacji działalności, która również jest celem badania. Prezentuje on przyjęcie innowacji jako możliwość rozwoju gospodarstw rolnych za pomocą zgromadzonych danych. Dobrze znane modele zarządzania gospodarstwem rolnym nie przynoszą za każdym razem wymaganego zysku z działalności rolniczej. Ponadto niedobór zasobów i rosnąca konieczność ochrony środowiska prowadzą do poszukiwania innowacyjnych procesów i techniki w celu osiągnięcia odpowiedniego rozwoju w tym sektorze. Istnieje związek między wiekiem rolnika a gotowością do innowacyjnych działań. Główne ustalenia pokazują, że rolnicy w wieku poniżej 50 lat są bardziej skłonni do przyjmowania innowacji. Około 37% rolników planuje przyjęcie innowacji. Procesy te są ograniczane przez odrzucanie dokumentów, jak również inne czynniki. Badania również pokazują, że niektóre różnorodne działania w Bułgarii stanowią innowację dla tego obszaru. Działania innowacyjne to: świadczenie usług zdrowotnych, socjalnych lub edukacyjnych, usuwanie śniegu, usługi rzemieślnicze i restauracyjne, turystyka wiejska itp. Ramy metodyczne bazują na następującej logice: teoretyczny przegląd innowacji i szczegółowe omówienie dywersyfikacji jako innowacyjnej koncepcji w rolnictwie; stan bułgarskiego rolnictwa; ocena niektórych czynników wpływających na procesy innowacyjne w rolnictwie w oparciu o własną ankietę; dowody na działalność w zakresie dywersyfikacji oparte na badaniach statystycznych i własnych.*

*Zgodnie z analizowanymi informacjami wyciągnięto pewne ogólne wnioski.*


**Słowa kluczowe:** rolnictwo, rozwój, zrównoważenie.

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