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MECHANISMS OF SUPPORTING INFORMATION MANAGEMENT IN AGRICULTURE

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ABSTRACT

Considering the aspect of the role of information in the development of Polish agriculture, one should pay attention to the existing needs in this field, as well as to the existing support mechanisms stimulating the activity of the agricultural producers' community in obtaining professional information in the form of e.g. consulting or the use of the training offered. At the same time, it should be noted that often the barrier in keeping abreast is not the lack of activity on the part of producers, but the cost associated with it. That is why it is so important to initiate actions, which, on the one hand, serve boosting the efforts of agricultural producers to seek professional knowledge (information), and on the other hand, creating the possibility of compensation for costs incurred in this respect. Given the above, the main objective of this paper is the analysis of the level of implementation of the measures implemented under the Rural Development Programme 2007–2013. The study takes into account the farmers' computer equipment level and access to the Internet compared to other social groups. Analysis of the distribution of funds to each voivodship showed that the allocation of funds was uneven, and this applied to all analysed measures. In the most part, agricultural producers already have the necessary information infrastructure, but its use is insufficient.

Key words: agriculture, EU funds, training, information, ICT

INTRODUCTION

The ability to efficiently obtain information and, consequently, knowledge, depends mainly on two groups of factors. The first is the agricultural producers' ability to acquire knowledge. In this case, one should take into account, among others, the ability to acquire knowledge – "the knowledge about the sources of knowledge", and the willingness to learn. Also important here is access to the sources of knowledge. The second group of factors is related to the resources of obtainable information. Apart from the aspect of quantity, important is the accessibility of the necessary information, or the linkage between complementary sources of knowledge [Janc 2013]. In the twenty-first century, information is the ubiquitous part of business processes, and its importance continues to grow. But it is choosing the right tools to gather information, and processing it, that becomes a problem. In today's economy, information is seen as one of key and strategic resources. It becomes an asset that has a specific value for companies [Macias, 2008]. The importance of information efficiency highlights also by other authors [Parlińska 2010, Babiak and Parlińska 2014].

Agriculture, like other businesses, becomes increasingly dependent on modern technologies, which themselves require possession of specific information resources. Besides, there are noticeable changes in the environmental conditions and in the agriculture itself (growing importance of the so-called GRIN technologies, i.e.

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genetics, robotics, Internet and nanotechnology). All these processes require the producers to have knowledge of a wide range of areas. Quick access to information, keeping up with global trends, obtainability of information on markets, on dealing with suppliers, customers, co-producers – are all necessary for the agricultural producer. Therefore, in connection with the political, technological and socioeconomic changes in agriculture, it is necessary for producers to constantly obtain information, and to supplement their knowledge and skills [Lorencowicz and Figurski 2008, Janc 2013]. Accordingly, one must agree with the opinion of Sajna et al. [2013] Szeląg-Sikora et al. [2015], who wrote in their work that in the modern economy, after the repeal of the paradigm of perfect information, the role of information in gaining a competitive advantage in all sectors becomes increasingly evident. This applies not only to obtaining information on the market, competition or innovation from the enterprise's environment, but that, which is obtained from within the company as well (e.g. in creating business plans, a marketing strategy). The responsibility of the person managing the enterprise is to select information and adequate analysis, regardless of the industry in which the business operations are conducted. Properly selected information can serve the manager as a tool of control and evaluation. For this purpose, the manager must learn the distinguishing characteristics of useful information [Griffin 2007]. Useful information should have the characteristics shown in Table 1.

Table 1. Features of useful information

Feature	Description of the feature
Accuracy	Information is appropriate when it reflects reality accurately and reliably
Topicality	Topical information is available in time for the manager to take up appropriate action
Completeness	Information is complete when it provides the manager with all the necessary facts and details
Adequacy	Information is adequate when the manager is confident that the information is useful in the specific conditions of the business, and in relation to its needs

Source: Griffin [2007], Sajna et al. [2013].

To meet the information needs of the agricultural sector, it became necessary to create mechanisms to support the stimulation of the agricultural producers' activity in obtaining broadly defined information. Therefore, apart from the existing consulting system in the form of, e.g. the functioning agricultural consulting centres, in the Common Agricultural Policy for 2007–2013 implemented were measures facilitating the raising of awareness and providing the possibility of reimbursement of the costs associated with the use of paid information and consulting services. An important element supporting the acquisition and management of knowledge is the sufficient technical infrastructure, i.e. computer hardware. In combination with the Internet, it is one of the major carriers of information. Also, this aspect was taken into account by the existing support mechanisms, in the form of the completed measures of the Rural Development Programme (2007–2013), including the measure "Modernisation of agricultural holdings", under which it was possible to obtain co-financing for the purchase of said infrastructure.

As a result of consideration, the main objective of this paper is the analysis of the level of implementation of the measures under the Rural Development Programme 2007–2013, i.e. "Use of consulting services by agricultural producers and forest owners" and "Vocational training for persons employed in agriculture and forestry". The current research in the field of agricultural information conducted by the authors [Cupiał 2006, Szeląg-Sikora and Cupiał 2010] led to the recognition of the necessity to refine the analysis. What requires identification is the level of expenditure of available funding for the purchase of computer equipment being a supporting element in the acquisition and management of information. Also analysed was the data relating to level of allocation of funds for computer equipment in the measure "Modernisation of agricultural holdings RDP 2007–2013" in the region of Małopolska.

MATERIAL AND METHODS

The paper analyses the level of utilisation of the selected existing support mechanisms of obtaining information used by Polish agricultural producers. The source data were obtained from the Agency for Restructuring and Modernisation of Agriculture (arimr.gov.pl). The time range of the analysed data related to the accession period 2007–2013. The work uses comparative analysis, and the main grouping variable is the country's territorial division (voivodships). In case of the analysed measure "Modernisation of agricultural holdings", details as to the final allocation of the obtained funding (for the purchase of computer equipment) was acquired at the level of Małopolskie Province, and the analysis takes into consideration the direction of production of the studied holdings.

Measure "Vocational training for persons employed in agriculture and forestry"

The conditions and procedures for granting assistance was determined the Regulation of the Minister of Agriculture and Rural Development dated 7 July 2009 on detailed conditions and procedures for granting financial assistance under the measure "Vocational training for persons employed in agriculture and forestry" under the Rural Development Programme for 2007–2013" (Journal of Laws 2009 No 113, item 944, as amended) – the implementing regulation for the measure. Its purpose was free professional training for agricultural producers and forest owners, leading to the restructuring and modernization of agriculture, to increase the competitiveness and profitability of agricultural or forestry businesses, and to meet the national and EU standards. Chosen in a competition, the beneficiaries of the measure were private or public training institutions and companies, as well as their consortiums, experienced in organizing training courses for agricultural producers and forest owners, with adequate teaching staff and training facilities and meeting the conditions set out in the above-cited implementing regulation for the measure. Beneficiaries of the measure could be reimbursed up to 100% of eligible costs incurred (eligible costs include VAT) that have been specified in detail in the above implementing regulation for the measure.

Measure "Use of consulting services by agricultural producers and forest owners"

It was a mechanism in the form of reimbursement of costs incurred for the provision of consulting services for individuals, legal persons or organizations without legal personality. The applicant was obliged to run an agricultural holding. The grant had a form of a refund and amounted to 80% of the incurred and documented eligible costs for consulting services (without VAT), and the amount received under this measure during the period covered by the RDP 2007–2013 could not exceed the equivalent of 1,500 EUR. The substantive scope of reimbursable services was very broad; from those relating directly to the agricultural production, i.e. good forestry practices, to those in the area of agribusiness, i.e. developing business plans.

Measure "Modernization of agricultural holdings"

The measure was to support the modernization of agricultural holdings in order to increase their efficiency by, among others, introduction of new production technologies. The beneficiaries were individuals, legal persons and partnerships running an agricultural holding. The criteria for accessing funding under this measure assumed that the implemented project will contribute to improving the overall performance of the holding. The agricultural holding, to which the investment related to, had to be economically viable (the economic size of the applying holding was at least equal to 4 ESU) and was run by a person with appropriate professional qualifications. As part of this measure, supported were tangible and intangible investments to modernize agricultural production, including the purchase of computer equipment. This aid was in the form of refunds from 40 to 60% of eligible investment costs. The maximum amount of aid granted to one beneficiary and one holding under the measure, during the implementation of the RDP 2007–2013 could not exceed 300 000 PLN. Accepted could be investments, which amount of eligible costs was over 20 000 PLN (www.arimr.gov.pl).

To fully meet the adopted objective of the work, a field research was carried out. It allowed gathering source information on, e.g. the areas of information sought by agricultural producers. The analysis of data obtained from the Central Statistical Office (GUS) allowed also to determine the villagers' activity in using modern information technology.

RESULTS AND DISCUSSION

The amount of funds per individual voivodships in the measure, "Use of consulting services by agricultural producers and forest owners RDP 2007–2013" is shown in Figure 1 (part of the funds was also released in 2014). The total number of applications in this measure, amounting to 250,400,000 PLN, was 65,780, pursuant to which 47,110 decisions were issued, amounting to 139,610,000 PLN. On average, one grant amounted to 2,960 PLN, with the highest amount in Mazowieckie Province (3,740 PLN) and the lowest in Zachodniopomorskie Province (1,640 PLN).

On analysing allocation of funds in individual provinces, significant disparities can be observed. Over 45% of the allocated funds went to two provinces: Mazowieckie and Wielkopolskie, and after adding Podlaskie Province, the amount was 62%. The least funds went to Zachodniopomorskie Province. It is worth noting that the biggest spending coincided with the year 2012, driven primarily by three voivodships with the highest absorption of funds.

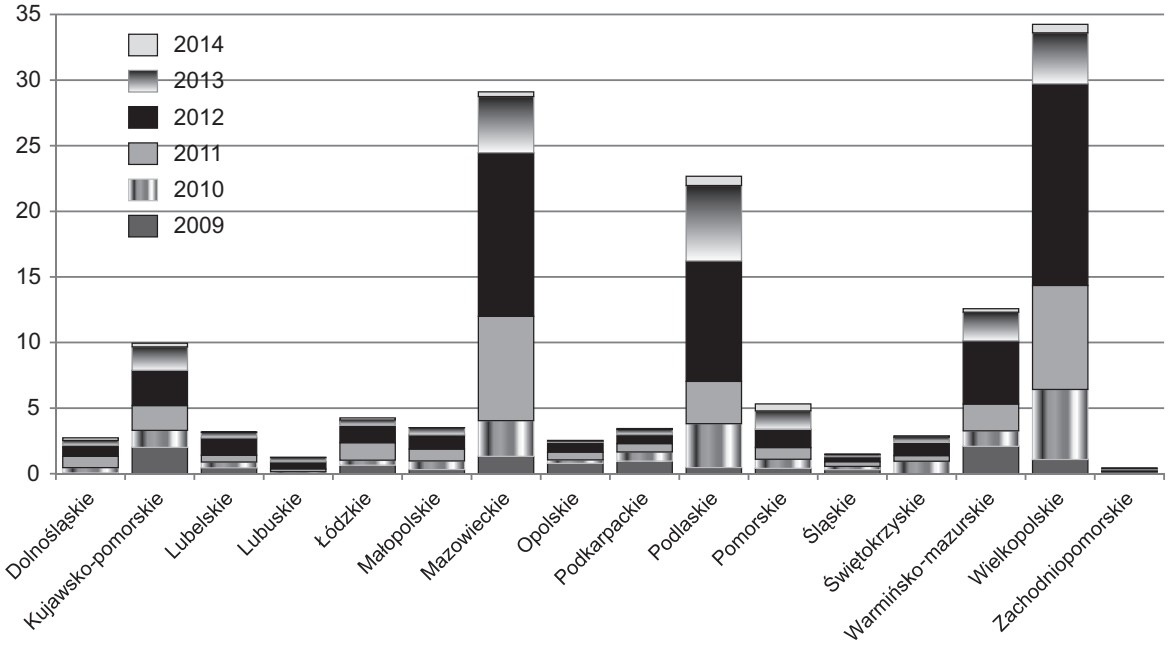

Fig. 1. The amount of funds per province in the measure "Use of consulting services by agricultural producers and forest owners RDP 2007–2013"

Source: Own study based on the Agency for Restructuring and Modernisation of Agriculture (ARiMR).

Figures 2 and 3 illustrate the level of implementation of the measure "Vocational training for persons employed in agriculture and forestry RDP 2007–2013" in individual regions (since part of the training was carried out in several voivodships, in such cases the amount of separated proportionally). The total number

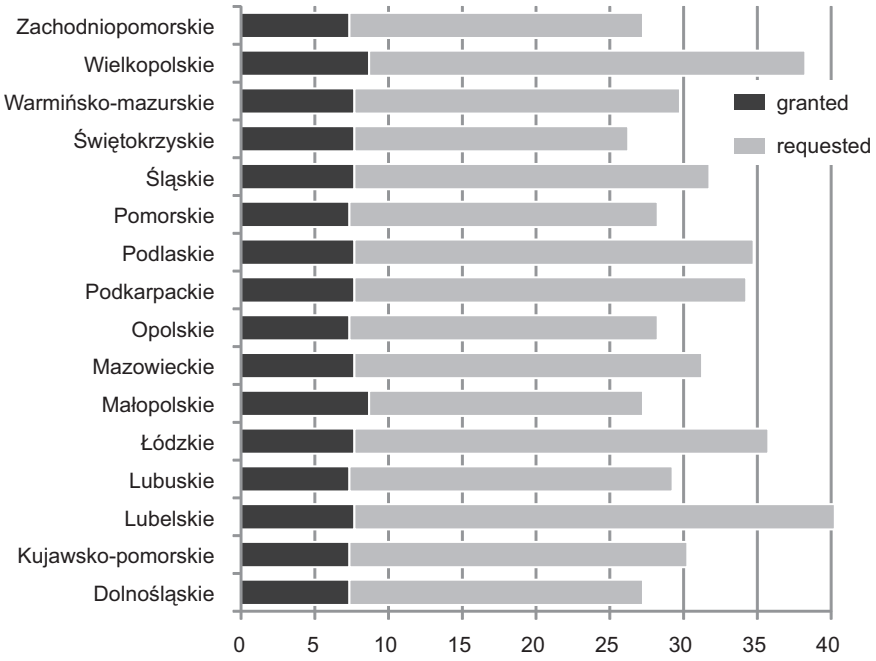

Fig. 2. The number of applications in the measure "Vocational training for persons employed in agriculture and forestry RDP 2007–2013"

Source: Own study based on the Agency for Restructuring and Modernisation of Agriculture (ARiMR).

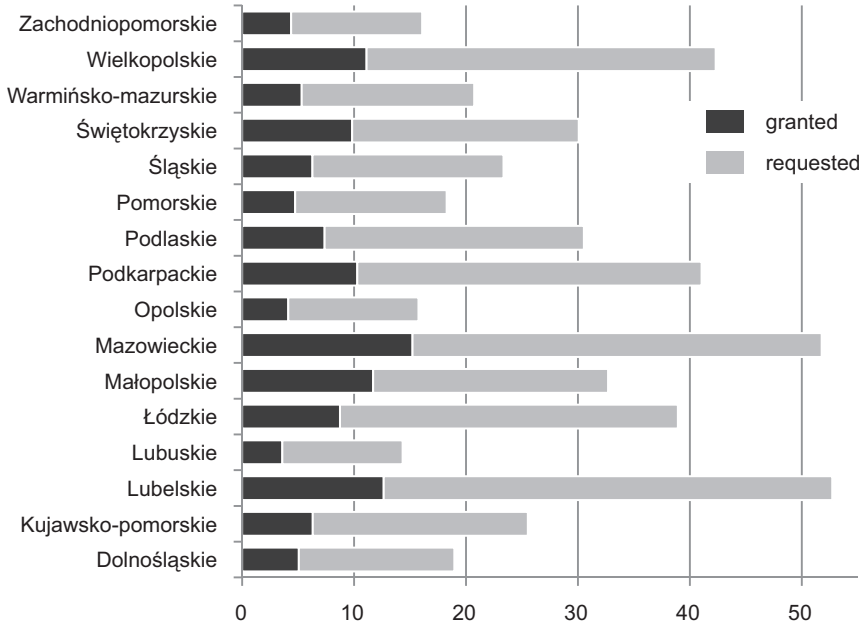

Fig. 3. The amount of funding in the measure "Vocational training for persons employed in agriculture and forestry RDP 2007–2013"

Source: Own study based on the Agency for Restructuring and Modernisation of Agriculture (ARiMR).

of applications in this measure, amounting to 473,140,000 PLN, was 500, pursuant to which 123 decisions were issued, amounting to 126,830,000 PLN. The average grant amount per beneficiary was 1,030,000 PLN. The drawings present the number and the amount of applications, as well as the share of applications that received funding. It should be noted that the disparity in the amount of funding (granted and applied for) in the provinces is much higher than the corresponding number of applications. The largest grant per application occurred, as in the previously analyzed measure, in Mazowieckie Province (1,980,000 PLN) and the lowest in Lubelskie Province (490,000 PLN).

The most effective raising of funds was recorded in Małopolskie Province, where 36% of the amount requested was granted (32% of applications), while the least, in Łódzkie Province (22% of applications and the amount). On average, beneficiaries received 27% of the funds. As in the previous measure, the largest amount was allocated in Mazowieckie Province, while the lowest in Lubuskie Province.

One of the primary media is computer equipment. Figure 4 presents the allocations of funds for computer equipment in the measure "Modernisation of agricultural holdings RDP 2007–2013", depending on the direction of production. The research relates to Małopolskie Province. According to research, these devices were purchased mainly by pig holdings, and to a lesser extent, gardening holdings. In total, agricultural producers allocated 140,800 PLN of grants to the purchase of computers, which constituted only 0.03% of the amount granted under this measure.

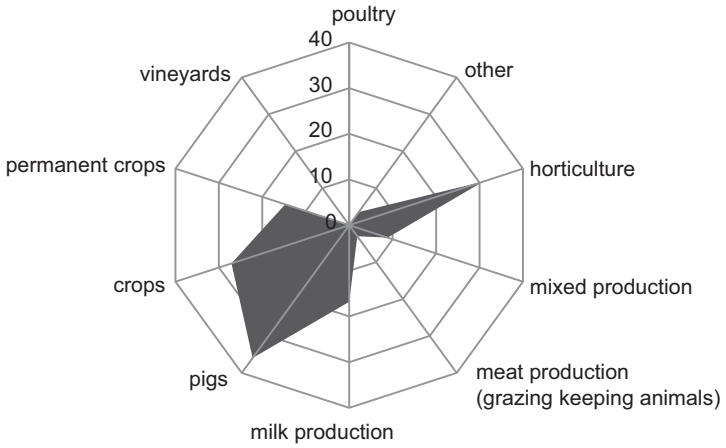

Fig. 4. Allocation of funds for computer equipment in the measure "Modernisation of agricultural holdings RDP 2007–2013" in Małopolskie Province, per the direction of production (thou. PLN)

Source: Own study based on the Agency for Restructuring and Modernisation of Agriculture (ARiMR).

The existing support mechanisms should equip agricultural holders with adequate knowledge for conducting their operations efficiently and effectively. Figure 5 shows the results of a survey conducted in agricultural holdings in southern Poland, related to information currently obtained by agricultural producers. The most frequently acquired information related to the purchase of agricultural machinery. Such information was sought by most respondents, and repeatedly, too. Probably, such importance of this information stems from the possibility of obtaining aid for the purchase of agricultural equipment. But perhaps in another study period, this share would also be significant. Very significant for the producer are also the market information related to the sales of agricultural products and the purchase of the means of production.

Fig. 5. The number of person and the amount of information obtained by the surveyed producers in making production decisions in individual per year

Source: Own study.

The question whether farmers are willing to use modern media is answered by specific data included in Table 2. The data refer to 2014, but it should be mentioned that in the current year the computer equipment and Internet access rate has exceeded 80%, and Internet access in rural areas reached 77.8%. Please note that as far as indicators of computer equipment in rural areas lag behind the national average, in the case of farmers they generally exceed this average. On the other hand, expenditure on Internet access in rural areas (including producers) are much higher than in urban areas. It is significant that in terms of Internet use, producers are significantly superseded by the national average in each of the presented indicators.

We can conclude that for the most part, agricultural producers already have the necessary infrastructure, but its use is still too scarce. Another motivating factor should be the fact that indicators of ICT usage in our country continues to lag behind the European Union average.

Table 2. Differences in the use of information technology in selected groups of people

Specification	Total	Village	Agricultural producers
Household equipment (%)[a]			
Households with a PC	77.9	75.0	83.1
– with Internet access	75.8	72.0	82.1
– broadband	71.0	64.7	76.0
– mobile broadband	28.2	24.9	31.2
Households incurring expenditure on ICT	75.3	71.6	80.8
– on computer hardware, equipment, accessories and other	46.8	44.6	52.5
– on software	18.0	16.6	16.0
– on Internet-based services	74.5	70.4	79.6
The value of expenditure on ICT (PLN)[a]			
– on computer hardware, equipment, accessories and other	41.44	39.27	39.44
– on software	5.39	4.96	3.57
– on Internet-based services	53.17	55.77	57.00
Use of the Internet (%)			
To access information	57.4		45.3
– research on goods or services	42.2		33.0
– downloading computer programs	11.1		3.2
– reading on-line newspapers or magazines	46.6		33.7
– research on health-related information	28.3		19.5
– information on education or training offers	18.3		7.9
– use of on-line dictionaries and encyclopedias	29.8		15.1
For educational and professional purposes	9.9		1.8
– participation in an on-line course	2.6		0.3
– other training materials	6.9		0.9
– contacting an instructor/teacher	2.7		0.8
On-line administration services	26.6		11.7
Ordering goods or services	36.9		23.8

[a] Household in which there is at least one person who is an agricultural producer.
ICT – information and communication technologies.
Source: Own study based on the Central Statistical Office (GUS).

CONCLUSION

Considerable resources allocated for the implementation of the three analyzed measures, undoubtedly affect the availability of information for agricultural producers. Producers are searching for a lot of information, and as shown by field studies, they bear the costs of it, declaring willingness to spend even larger amounts. This shows that farmers appreciate the importance of information in the modern world, and especially in supporting their business. Analysis of the distribution of funds to each voivodship showed that the allocation of funds was uneven, and this applied to all analysed measures. The largest amounts went to where the beneficiaries were more active, and it was not related to the degree of development of agriculture in the area, the size of farms and the size of agricultural production. Strengthening the competitive position of Polish agricultural producers in the international market must be supported by a variety of measures, to increase the level of use of agricultural information and tools used to obtain the data necessary for proper holding management. This applies both to information supporting the production processes, as well as for buying the means of production and selling the products. Supporting the measures improving the producers' knowledge is therefore necessary, both in the case of less technically and organizationally advanced holdings (in order to reduce their distance from the market--leading entities) and the most advanced (since these producers are the most open to innovation). It can be clearly stated that enhancing Polish agriculture, especially in the conditions of international competition, is not possible without conducting adequate subsidizing policies aimed at raising the level of knowledge, such as presented in this paper.

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MECHANIZMY WSPIERAJĄCE ZARZĄDZANIE INFORMACJĄ W ROLNICTWIE

STRESZCZENIE

Rozpatrując aspekt roli informacji w rozwoju polskiego rolnictwa, należy zwrócić uwagę na istniejące potrzeby oraz na istniejące mechanizmy wspierające pobudzenie aktywności społeczności rolniczej w zakresie pozyskiwania fachowej informacji w formie m.in. doradztwa czy korzystania ze oferowanych szkoleń. Równocześnie należy zaznaczyć, że barierą dla posiadania aktualnych informacji nie jest brak aktywności ze strony rolników, a koszty z tym związane. Z tego powodu podejmowanie działań służących pobudzeniu aktywności producentów rolnych w dążeniu do poszukiwania fachowej wiedzy oraz tworzenie możliwości rekompensaty kosztów ponoszonych z tego tytułu są bardzo ważne. Biorąc powyższe pod uwagę, za główny cel opracowania przyjęto ocenę poziomu realizacji działań w ramach Programu Rozwoju Obszarów Wiejskich 2007–2013. W badaniach uwzględniono poziom wyposażenia rolników w sprzęt komputerowy oraz dostęp do Internetu na tle pozostałych grup społecznych. Analiza dystrybucji środków w poszczególnych województwach wykazała, że ich alokacja była nierówna, a dotyczyło to wszystkich analizowanych działań. Większość producentów rolnych posiada już niezbędną infrastrukturę informacyjną, ale jej wykorzystanie jest wciąż niewystarczające.

Słowa kluczowe: rolnictwo, fundusze unijne, szkolenia, informacja, ICT