REVIEW OF THE STATUS OF AGRICULTURAL INFORMATION SYSTEMS IN MACEDONIA[2]

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Abstract

The paper includes theories and literature starting with the development and implementation of agricultural information systems in Macedonia, which is the importance of agricultural information systems and the importance of their use, as well as analysis of the work of agricultural information systems. The purpose is to identify the components that are necessary for promotion, initiation and use of information systems in the field of agricultural production in Macedonia. Also the paper presents advantages, importance and significance of agricultural information systems and how they can be stimulated to improve and accelerate the growth and development of agro-production, departing from the fact that Macedonia is agro-product country. The paper also presents the importance of the development and implementation of agricultural information system particularly for Macedonia as well as which steps should be implemented in the future.

Key word: Information, agricultural information system,

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[2] review scientific paper

INTRODUCTION

Information systems constitute generality of components for collecting, recording, storage, processing and transmission of information. Information systems are the place where you can find the necessary information to solve the problems.[3] Their application is quite large. With the availability of information from information systems new opportunities are emerging as well. With the help of information systems users are enabled to share information and solve problems daily.

IMPORTANCE AND SIGNIFICANCE OF THE AGRICULTURAL INFORMATION SYSTEM FOR FAST GROWTH AND DEVELOPMENT OF AGRICULTURE IN MACEDONIA

Starting from the fact that Macedonia is agro-production country, the need for agricultural information system is especially indispensable. The information obtained from the agricultural sector is very important factor that can be in interaction with other production factors. Productivity and functionality of other factors such as land, capital, labor, and knowledge can be improved using relevant and useful data. It is necessary to understand the operation of the agricultural information systems in order to manage and improve them. The new agro-technologies that are used are generated by research institutions, universities, and private companies. Agricultural information systems together with services for knowledge sharing, along with new technologies allow connection and exchange of information with the end users. The main role of search of information is to obtain highly accurate, relevant and accurate data to end users. The purpose of this connectivity is to help customers in their decision-making and to ensure appropriate knowledge in order to get the best results.

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[3] Jones, G. E. (1963). "The diffusion of agricultural innovations."

DEFINING THE WORK OF AGRICULTURAL INFORMATION SYSTEMS IN AGRICULTURAL PRODUCTION

Agricultural information systems can be represented as systems that are being filled with information, completing their transformation, processing and transmission and then returned back, in order to enable cooperation and collecting of information from various profiles of agricultural production. Accordingly agricultural information system consists of processes that are mutually related with information search, transfer and processing, and search mechanisms for certain operational services. Agricultural information systems are essential for agriculture in the process of education and collecting advice and input of certain comments. When analyzing the information system the source of the information needs to be reviewed as well, content information, exchange of information, and the degree of access to information. Agricultural information system can be of great importance for users primarily in the planning of land, labor, capital and management.
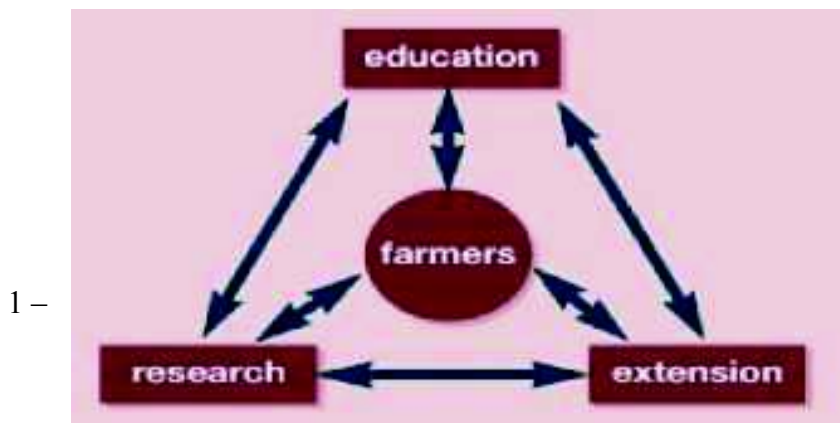
Figure 1 – Triangle for definition of agricultural information system (https://www.slideshare.net/arpitasharma410/agriculture-knowledge-information-system)

REVIEW THE STATE OF AGRICULTURAL INFORMATION SYSTEMS FROM DIFFERENT COUNTRIES

Agricultural information systems are one of the recent innovations in the agro sector. The use of agricultural information systems in the agro-sector is different for each country. Figure 2 presents a list of countries where the use of agricultural information systems is supported.
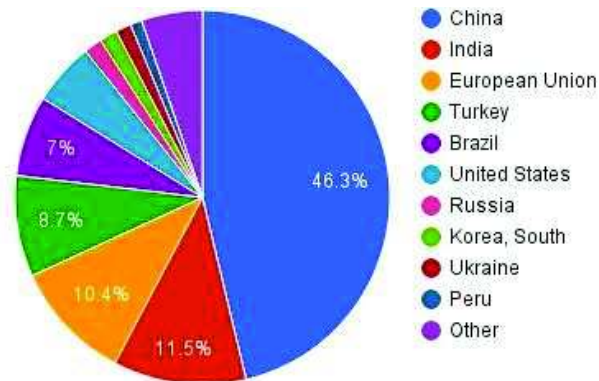

Figure 2 - List of countries that support the use of agricultural information systems
(https://www.google.com/search?q=top+10+agricultural+countries+in+the +world&source=lnms&tbm=isch&sa=X&sqi=2&ved=0ahUKEwjLwN37c HTAhXMthQKHeFJBA8Q_AUIBygC&biw=1440&bih=794#imgrc=Lgm LZwCPSszuLM)

Countries that have successfully implemented agricultural information system, and where much of the population is engaged in agriculture are India and Ghana.

India - Agricultural information systems in India is of strategic importance and used in locations where that are most suitable for their use, and they have major implications for GDP in their own country. [4]India globally uses different information systems for different areas. Currently India is ranked as the second country in crop production thanks to agricultural information

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[4] Ramkumar, S. N. (1995). The analysis of farmer information systems for feeding of dairy cattle in two villages of Kerala State, India, The University of Reading, Reading

systems. Despite advances in cereal, India great progress with the use of agricultural information systems has in the area of cattle farming which is placed as the second country in number of cattle bred in the world. As one of the most used agricultural information systems in India is AgRIS information system.

Ghana - The main culprits for the creation of agricultural information system in Ghana are three target groups, namely: The first target group refers to institutional customers who have quite a large benefit from this system. The benefit applies to that you can view different data involving agriculture internationally, or locally which applies for the country internally. The second target group are users who are concerned with agriculture, as a group where such benefits include advice and experience from different breeders and producers of agricultural production. The third target group refers to students, where the benefit is that they can explore and access information that they need. With the help of agricultural information systems this country significantly is improved regarding communication and support in the field of agriculture. Mostly used agricultural information system in Ghana is e-Agriculture.

THE NECESSITY OF DEVELOPMENT AND IMPLEMENTATION OF AGRICULTURAL INFORMATION SYSTEM IN MACEDONIA

Information systems represent a set of components[5], where information is stored. Information systems are a place to find the necessary information. Considering the fact that Macedonia is agro-production country, the implementation of this kind of information systems is of great importance.
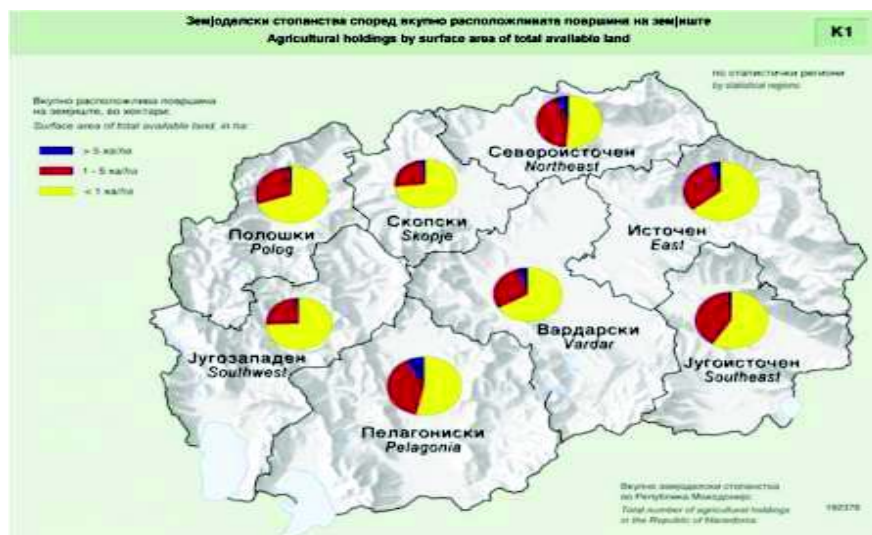
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[5] http://www.stat.gov.mk/OblastOpsto.aspx?id=33

Figure 3 - View of the population which is engaged in agriculture and
availability of agricultural land in the Macedonia
(http://www.stat.gov.mk/OblastOpsto.aspx?id=33)

Figure 3 presents the population which is engaged in agriculture in regions
of Macedonia. According to Figure 5 part of graph which is colored in
yellow refers to the population which processes more than 1 ha/ha ground
and it dominates in all regions of Macedonia. The red color refers to that
population processed 1-5 ha/ha land and it dominates in the Pelagonia
region, northeastern, eastern and southeastern regions, while the blue color
corresponds to a population that process less than 5ha/ha land, and such
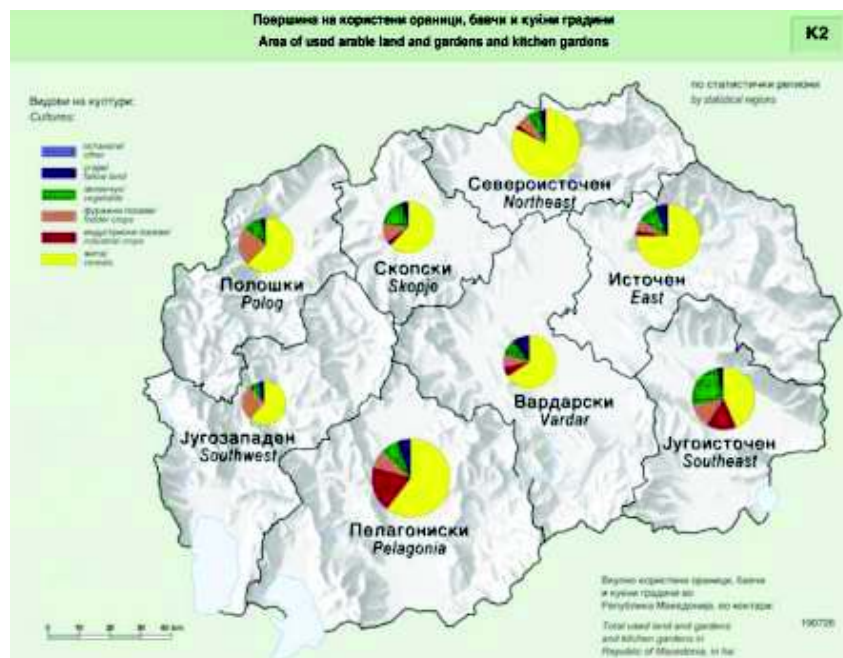populated in mainly in the Pelagonia region, eastern region and the
northeast.

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Figure 4 - View the active use of agricultural land and crops processed
(http://www.stat.gov.mk/OblastOpsto.aspx?id=33)

Figure 4 presents the image of an active processing of land and cultivation of agricultural commodities. According to Figure 4 part of graph which is colored in yellow refers to a population that mainly deals with cultivation of cereals and the highest percentage in all regions, but is massively in Eastern and Northeast Pelagonia. The red color refers to that population bred energy crops which are most represented in the Pelagonia region and the Southeast region. The green color refers to the populated who grow vegetables and standing in all regions of Macedonia but most widespread in Southeast and Skopje, while orange color refers to population grown feed products which are mainly grown in all regions of the Macedonia and is most prevalent in Polog. Blue color corresponds to the population growing other crops.
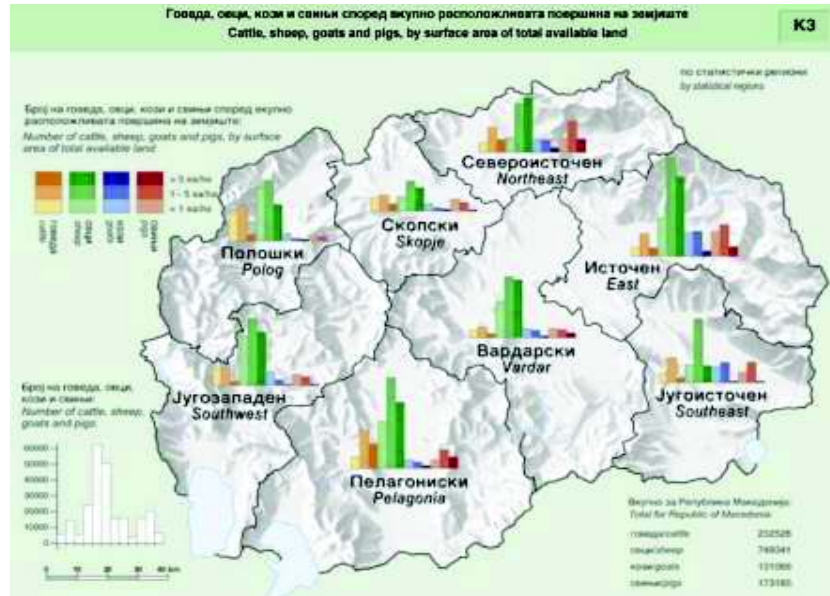
Figure 5 - View the number of animals based on all available area of land in Macedonia by region (http://www.stat.gov.mk/OblastOpsto.aspx?id=33)

Figure 5 shows the number of cattles based on all available land area in Macedonia by region. The graph which is colored green in figure 5 (dark and bright) color is a population that is mainly concerned with sheep and the highest percentage in all regions, but is massively in Pelagonia, Polog and East region. Orange (dark and bright) color refers to it that the population is growing and cattle standing in all regions of Macedonia mostly concerning Pelagonia and Polog. Blue (light and dark) color refers to the population that rears goats but most represented in the southeastern and eastern regions, with red (light and dark) color refers to the population growing pigs but is most common in the Northeast and the Pelagonia region.

As one of the advantages that follow with the implementation of agricultural information systems in this sector are:

• Productivity - increased economic contribution

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• Profitability
• Potential and maintenance
• Environmental security
• Energy saving
•Availability of real-time information
• Availability of content from different agricultural commodities
• Integrated, flexible work
• Ability for processing large amounts of data.

Despite the advantages that are indicated information which is available can be stored and viewed in different ways:

• in print - newspapers, articles, magazines;
• computer - website, email, social networks;
• mobile phones and tablets - SMS applications.

Macedonia through the years has seen a great progress and increase in the use of information and communication services that are not a major problem for the operation and management of agricultural information systems.

NEXT STEPS AND RECOMMENDATIONS

As next steps and actions that will be taken in future consideration in the introduction and implementation of agricultural information systems are:

- Checking the knowledge of agricultural information system of the population in Macedonia.
- Increasing awareness on the use and need for agricultural information system in Macedonia.
- Create a strategy for development and implementation of agricultural information system.
- Training and provision of appropriate equipment.
- Development of marketing strategy and promotion.

CONCLUSION

In order to perform different actions in the agriculture it is necessary to have access to its information. However, in some rural areas in the country where the population is engaged in agriculture there is a lack of appropriate access to information, and because of that agricultural information systems are of great importance for access to information and practical application. For improving the agricultural information systems it is advisable to use communication between farmers, coordinators, agricultural experts. The information needs to be based on the user needs, while the Internet can be used as an advanced way of transmitting information in the community. As with the help of the analysis of agricultural information systems one may come to a conclusion about its components. It allows users to perceive the benefits of agricultural information systems. In addition the exchange of information is very important in order to find solutions to the problems. Further on the paper presents the results in different parts of the business where the population is engaged in agriculture. Based on these results it can be concluded that the implementation of information systems for Macedonia is of great importance.

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