Advances in Bioresearch
Adv. Biores., Vol 12 (2) March 2021: 214-219

Print ISSN 0976-4585; Online ISSN 2277-1573
Journal's URL:http://www.soeagra.com/abr.html
CODEN: ABRDC3
DOI: 10.15515/abr.0976-4585.12.2.214219

Advances in Bioresearch

ORIGINAL ARTICLE

Increasing of Production Yields - based on Empirical research results

István Takács[1] , Adrien Fenyvesi[2]
[1]PhD Student, University of Debrecen, Kálmán Kerpely Doctoral School, Debrecen, Hungary
[2]Pedagogic assistant, Lilleby Skole, Trondheim, Norway
Email: taktamist@gmail.com

ABSTRACT
In this research, we examined the agricultural sector of Szabolcs-Szatmár-Bereg county. The results utilization of different investigated agricultural researches. We have surveyed, quantified, and evaluated the opinion of farmers in the county on the basis of which topics they observe and can use in farming. The purpose of this study is to find out to what extent the results of research, including research on increasing yields, are of use in practical farming. The interdisciplinary study of agriculture is a timely and important task. In addition to food production, it also plays a decisive role in environmental protection, the preservation of rural habitats, employment, and regional development. In a complex way, agriculture performs product-producing, value-creating, and value-preserving tasks.
Keywords:primer research, system approach, primary data, processing Q13.

Received 21.12.2020 Revised 21.02.2021 Accepted 14.03.2021

How to cite this article:
I Takács , A Fenyvesi. Increasing of Production yields - based on Empirical research results. Adv. Biores. Vol 12 [2] March 2021. 214-219

INTRODUCTION

The environmental impact of agriculture is the most significant human activity. The potential basis for the enormous population growth of recent decades has been provided by the technological and technical development of agriculture. The engine of development today and in the future will be to meet the ever increasing demand. Based on the abilities and capabilities of Hungarian agriculture, it is our most important natural resource. It is determined by the totality of such conditions and system approach [3]. Based on the conditions that serve as the basis for this development, Hungarian agriculture (expertise, land quality, climatic and terrain conditions) has significant potential when examined internationally [14, 7]. Soil is the most important resource of Hungary [10, 20-23], it is synonymous with the Hungarians [6], and it is the basis of sustainable farming [8]. The output potential of the agricultural sector is steadily increasing, while we can observe a decline in arable land, the key to resolving this axiom is the practical transfer and use of research results in economic life. Agriculture can meet the globally examined sustainability and environmental requirements if the practical utilization of research that addresses rural development and social-societal challenges [11, 1, 17] is sufficient to solve the challenges. Accelerating environmental, technological, demographic changes are changing fundamental economic and social regularities [4]. The primary economic aspect of cereal production is from the farmer's point of view, creating profitability. Economic and production plans are made almost impossible by temperature fluctuations and the increasing occurrence of unplanned extreme events [5, 15, 16]. An economical utilization of resources, cost optimization, and income maximization are the main aspects of market-based agriculture. Beyond these paradigms, more complex solutions must be found to conserve resources, sustainably reduce costs, and sustainably increase revenues. Meeting the energy needs of technology and preserving resources that are part of nature can only be achieved through a systemic approach [10]. The application of this approach is rooted in solutions that can be easily projected across social, economic, and natural environments define it in its entire structure [16] and can thus be correctly interpreted in terms of technological, economic and social development. Taking into account this development process, the basis

for competitive and sustainable farming is the successful introduction of the practical results of scientific research into the farming system. The use of scarce resources, cost reductions, and increased revenues are all complementary pillars of research goals and practical utilization needs. Most of providing a framework for the study of Szabolcs-Szatmár-Bereg county underdeveloped peripheral regions [2, 12, 13], peripheral, economic and social center lost territory [17-19]. Nevertheless, our research provides a novel insight into a previously unexplored topic. Our empirical results can also contribute to the preparation of a larger (nationally representative) research.

MATERIAL AND METHODS

In this research, we examined the agricultural sector of Szabolcs-Szatmár-Bereg county through the opinions and experiences of farmers. we researched organizations that deal with the production of the two most important field crops, maize and winter wheat. The basic population of the survey is the agricultural entrepreneurial world of the county, which I got access to through the sixty National Chamber of Agriculture farmers in Szabolcs-Szatmár-Bereg County. I contacted them through the county directorate of the National Chamber of Agriculture with a closed questionnaire (Google Forms Program-CAPI – Computer-Aided-Personal-Interview). The questionnaire was sent electronically to the village farmers and they sent it back electronically. The correlation coefficient analysis was used for detecting relationships between variables. Farmers were able to answer the questions by choosing multiple-choice numeric values and a 5-point Likert scale (a measurement scale between two extremes); 1 with less, 5 with very textual explanation. A well-known and highly manageable choice of five stages proved to be a usable solution, because everyone could relate the value of individual grades to the value of school grades. We used SWOT analysis to get more answers for questions. The focus of the questions was on getting to know the farms that produce field crops.

The village farmers filled in the questionnaire based on the subjective and objective knowledge of their clientele (400-450 farmers/farmer), together with a randomly selected field farmer in their clientele, to know about crop production's data. The knowledge of the target group (about 8000 clients/year) is convincing and based on a large database, so the results are considered representative due to the randomization. The ideal starting date for the research is December 12, 2018. and the closing date is September 15, 2019.

Sampling frame 60 persons.

Sampling: The questionnaire was sent to all farmers, the return rate was 98.3%, 59/60. To increase the level of response, I have used the following methods: motivational letter of invitation through the board, question, and answer in person and over the phone. The results can be generalized to the whole county because this sampling group is responsible for liaising, providing information and providing any assistance related to their farming activities. The filling may have been influenced by the following factors: Internet access (provided by the village manager to access the Internet), interest, and commitment to the topic. These criteria are taken into account when interpreting our results.

RESULTS AND DISCUSSION

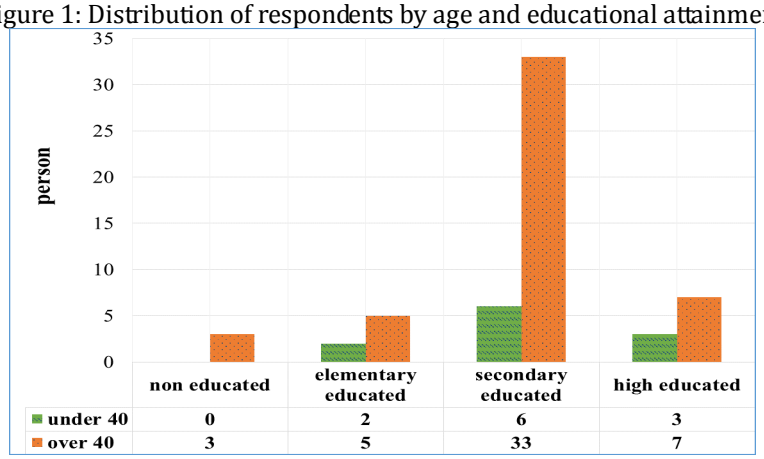
The graphs in the study (Figures 1-5) show the data and rating points of the study participants and their views on a particular question. From the data in Table 1, which shows the results of the entire research, we examine the results for the utilization of research to increase production volumes in this publication. The data in Table 2 evaluate the importance of production yields based on different characteristics of the sample population. The tables show average values.

Fillers included nearly four times as many men (47 persons, 80%) as women (12 persons, 20%). At the whole county's agriculture is typically a greater proportion of men's work. By age distribution: 11 people (40%) under 40, 48 (81%) over 40 years. The average age of farmers is 49.06 years. The average age difference between farmers is 24 and + 16 years.

The respondents were divided into four groups according to their education. Higher secondary 10 people (17%), secondary 39 (66%), primary 7 (12%) and no education 3 (5%). In terms of agricultural education, it has 53 (90%) and has no agricultural education 6(10%).

Based on the educational level and age classification of the sample, the county has the largest number of farmers with secondary education (over 40 years of age) (Figure 1).

Figure 1: Distribution of respondents by age and educational attainment



Source: Own Survey (2019)

Responding farmers selected nine districts as the main territorial classification of their farming. In Szabolcs-Szatmár-Bereg county, the survey participants attended in the number and percentage of districts shown in the figure. The data of our survey are shown in the figure (Figure 2).

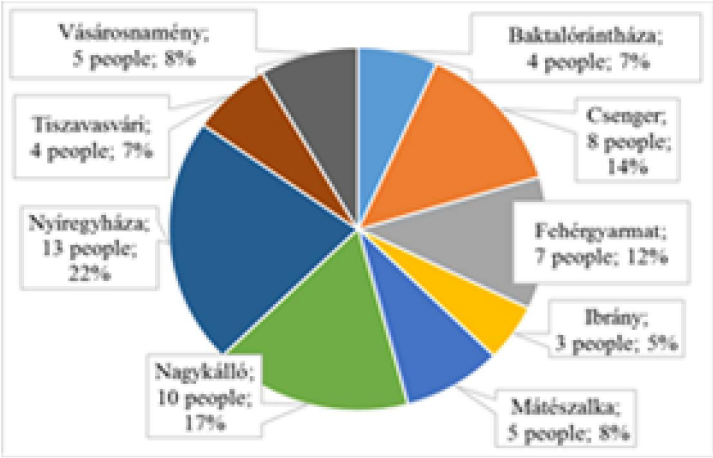
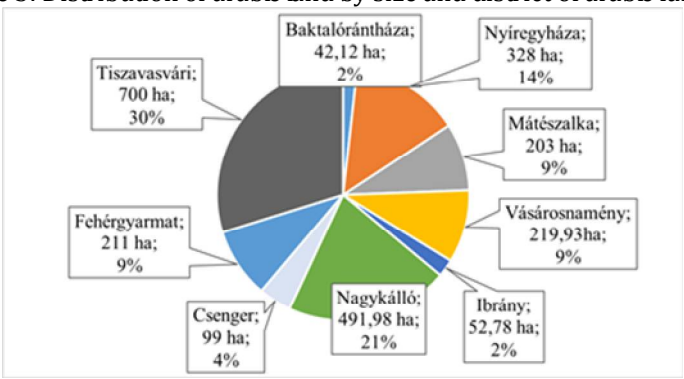


Figure 2: Geographical location of farmers in the population by district

Source: Own Survey (2019)

The size of the arable area given by the fillers in hectares (Figure 3). The largest area data was given from the Tiszavasvár district. The smallest value is from the Baktalórántháza and Ibrány micro-regions. Of the most populous Nyíregyháza district, the third largest area was given after Nagykálló district.

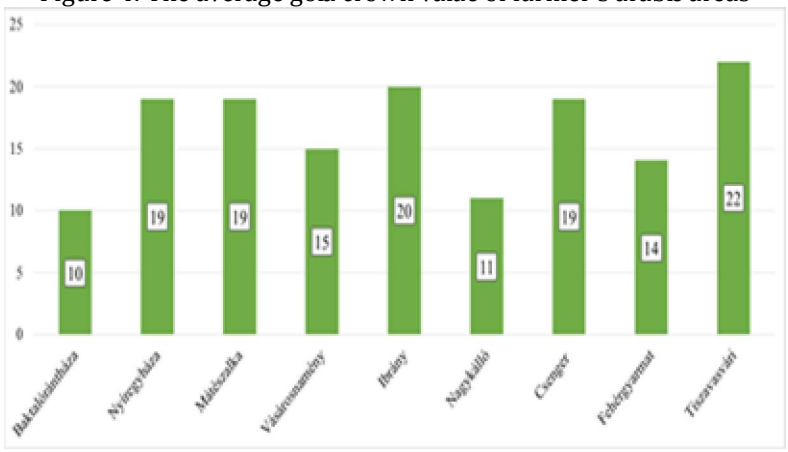
Figure 3: Distribution of arable land by size and district of arable farmers



Source: Own Survey (2019)

The average gold crown of the holdings of the participating farmers is 16.24 GC. The arable land given by survey participants is the typical gold crown (GC) value for each district. The best value is in the Tiszavasvári area. The data of our survey is illustrated in the figure. (Figure 4). From the figure, it can be seen that there is a significant difference in this value between the districts between this characteristic of the cultivated arable land.

Figure 4: The average gold crown value of farmer's arable areas



Source: Own Survey (2019)

In the county providing the geographical framework of the survey, on the basis of the values provided by the 59 participating farmers, the importance of increasing production volumes in their own farms was ranked second based on the average of the values reported, out of the practical utilization of different orientated research results (Table 1). The table below illustrates the other lines of research and their order of importance according to the averages obtained from the evaluation.

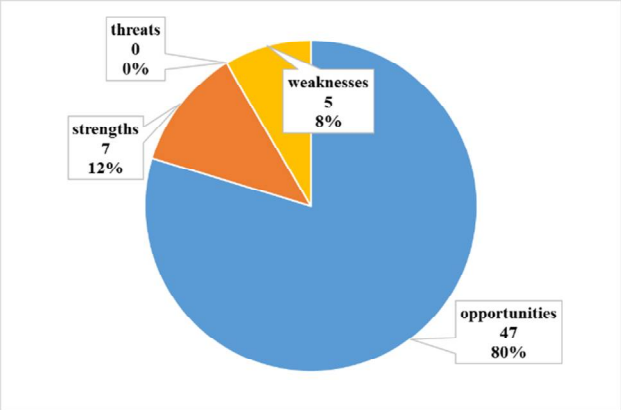
Table 1 : **Utilization of research results in practice, importance and average of results measured by research**

No.	Research result	average
1	Use of grants	4,02
2	Production quantities	3,95
3	Sales increase	3,93
4	Income increase	3,90
5	Production value increase	3,85
6	Reduce plantprotection costs	3,85
7	Improvement of seed quality	3,78
8	Reduction of tilling costs	3,69
9	Cost - ratio profitability	3,69
10	Activity income increase	3,66
11	Specific profitability	3,66
12	Reduce cost price	3,61
13	Reduce machine operating	3,61
14	Cost-level reduction	3,47
15	Precision farming	3,32
16	Introduction of precision	3,31
17	Enhance feed utilization	2,68

Source: Own Survey (2019)

Based on the SWOT analysis (strengths, weaknesses, opportunities, threats) prepared by county farmers, the role of scientific research was considered by the majority as “opportunity” (Figure 5).

Figure 5: **Utilization of scientific research in the economy**



Source: Own Survey (2019)

Table 2 : **Evaluation of the importance of production yields based on different characteristics of the sample population**

Type/Value	Average	Variation
male	4,09	0,78
female	3,42	1,08
elementary educated	4,00	0,82
secondary educated	3,90	0,82
high educated	4,00	1,25
non educated	4,33	0,58
agricultural educated	3,92	0,90
non qualified in agriculture	4,17	0,75
the main volume	3,95	0,88

Source: Own Survey (2019)

CONCLUSIONS

We can conclude from the results that farmers consider quantity, yield, and profitability as the most important value. They cannot influence prices. They consider the most important aspects of revenue,
in which we can discover a lack of expertise. Another factor determining income, cost optimization, is less relevant based on farmers' valuation. They can be attributed to the difference between income, sales, and costs, so the primary reason for the information deficit is that they are considered only as an opportunity to use scientific research [18] and to rate lower the role of cost price.

In analyzing the data, we sought to determine whether there was a relationship between farmers' criteria and whether they were monitoring and utilizing the results of agricultural research. In this context, we made the following findings:

There was no correlation between age (r = -0.104), arable land (r = 0.027), gold crown values (r = -0.097) and the score given to the question by calculating a correlation coefficient.

Based on the standard deviation analysis for gender (H = 0.302), education (H = 0.110), and agricultural education (H = 0.082), these features had a negligible influence on the answers to the question, meaning that no significant relationship could be demonstrated either. If we were to rank the factors, the gender had the greatest influence on the difference in the answers to the question..

REFERENCES

1. Antal J. (2005): Fundamentals of Crop Production Cereals. In: Antal J. (ed.) Plant Cultivation 1. Mõllazda Kiadó. Budapest.
2. Baranyi B. (2006): Territorial aspects of peripheral formation in Hungary. In Baranyi B - J. Nagy (ed.) Regional Development, Agriculture and Regionality in Hungary. MTA RKK; DE Agricultural Science Center. Debrecen. 33-48.
3. Csete L. - Láng I., (2005): Sustainable agricultural economy and rural development. Hungary at the turn of the millennium, Strategic Studies at the Hungarian Academy of Sciences, II. Situation and future of agriculture. Social Research Center of the Hungarian Academy of Sciences. .313.

4. Dinya L. (2018): Changing emphases in regional development. In: J. Nagy (ed.). Emphasis in spatial development. Debrecen. 103-114.
5. Zs. Harnos -Csey L. (2008): Climate change: environment - risk - society. Expertise House For Rent. Budapest. 9-14.
6. Harsányi E. - Széles A. - Harsányi G. (2006): The development of the estate structure in Hungary. In Baranyi B - J. Nagy (ed.): Regional Development, Agriculture and Regionalism in Hungary. MTA RKK; DE ATC. Debrecen. 221-228.
7. Huzsvai L. (2006): Utilization of the natural endowments of the Northern Great Plain Region in agriculture. In Baranyi B - J. Nagy (ed.) Regional Development, Agriculture and Regionality in Hungary. MTA RKK; DE ATC. Debrecen.291-302.
8. Kátai J. (2012): Today's soil biological challenges. Agricultural science publications (Acta Agraria Debreceniensis). Debrecen. 2012/49 No. 193-196.
9. J. Nagy (2012): Competitive maize production. Farmer for rent. Budapest.
10. Nagy J. - Sinóros-Szabó B. (2014): Evaluation of technologies and resources from the spartial and social aspects. In: Jávor A. (ed.) Agricultural Science Publications (Acta Agraria Debreceniensis). Debrecen. 2014/59. No. 73-75.
11. O. Nagy - Kith K. (2014): The effects of climate change on agriculture. In: Z. Rajnai - Fregan B. - Ozsváth J. (ed.). 5. Báthory-Brassai Study Volume II. University of Óbuda, Doctoral School of Security Sciences. Budapest. 395-399.
12. Nemes-Nagy J. (1990): Dimensions of territorial inequalities. Additives to a "quasi-theory". Space and Society. 2 no. 15-30.
13. Nemes-Nagy J. (1996): Centers and peripheries in the economic transition of the market. Geographical Announcements. 2-3 no. 31-48.
14. Romány P. (2002): Lessons from agricultural history, agricultural policy requirements. In: Hunyadi L. (ed.) Statistical Review. KSH. Budapest. 80s No. 7 663-673.
15. Sárvári M. (2004) Investigation of the biological basis of fodder plants. In. Integrated agricultural economic models in the XXI. century agriculture. University of Debrecen ATC. Debrecen.
16. Sinóros-Szabó B. (2018): New dimensions of development - reality beyond the measurable world. In: J. Nagy (ed.). Emphasis in spatial development. Debrecen. 13-24.
17. Szucs, J. (1983): Three Historical Regions of Europe draft. Thought For Rent. Budapest.
18. Takács I. - Sinóros-Szabó B. (2019): Reduction of plant protection costs based on research results. Rural areas in the 21st century scientific conference. Szent Istvan University. Gödöllő. 222-230.
19. Takács I. (2010): The chances of the economic reunification of the historical Satu Mare County after the end of the dividing role of the borders. In: Szabó B, Szabó M. Szele T. (ed.) VI. Carpathian Basin Environmental Science Conference. Summaries of lectures and posters. Nyíregyháza College. April 22-24, 2010 97.
20. Gy. Várallyay (1994): Soil databases for sustainable land use: Hungarian case study. In: Greenland, D. J. - Szabolcs, I. (eds.). Soil Resiliance and Sustainable Land Use. CAB Int. Wallingford. UK. 26 ch. 469-495.
21. Gy. Várallyay (1997): Soil and its functions. Hungarian Science. XLII. 12. 1414-1430.
22. Gy. Várallyay (2005): Soil and water. In: Stefanovits P. - Micheli E. (ed.). Hungary at the turn of the millennium. Strategic studies at the Hungarian Academy of Sciences. II. Situation and future of agriculture. The importance of soils in the 21st century. Social Research Center. Budapest. 61-76.
23. Gy. Várallyay (2012): Soil - Environment - Sustainability. Agricultural Science Publications (Acta Agraria Debreceniensis), Debrecen, 49: 331-337.